

CMOS LSIs

Product Catalog



2001/2002

SEIKO EPSON CORPORATION



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The information of the product number change

Starting April 1, 2001 the product number will be changed as listed below. To order from April 1, 2001 please use the new product number. For further information, please contact Epson sales representative.

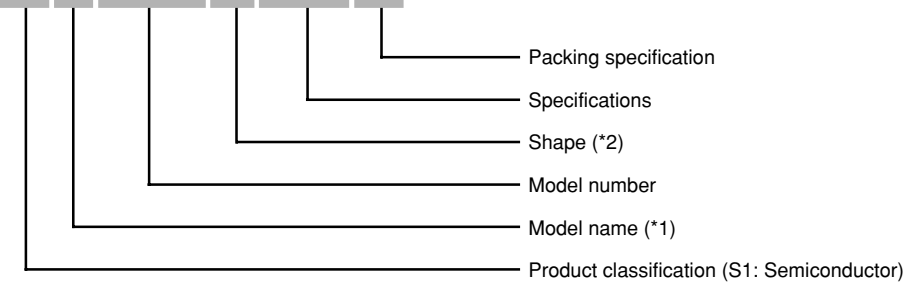
How to describe the Product number on this document

Product number are basically described with previous number, such as Product Number (Previous number).

Configuratoin of product number

● Devices

S1 D 15605 T 00A0 00



*1: Medel name

C	Microcomputer
D	Driver, Digital Products
F	Power Supply
K	Standard Cell
L	Gate Array

M	RAM
R	Peripheral
V	Melody, Voice
X	Embedded Array

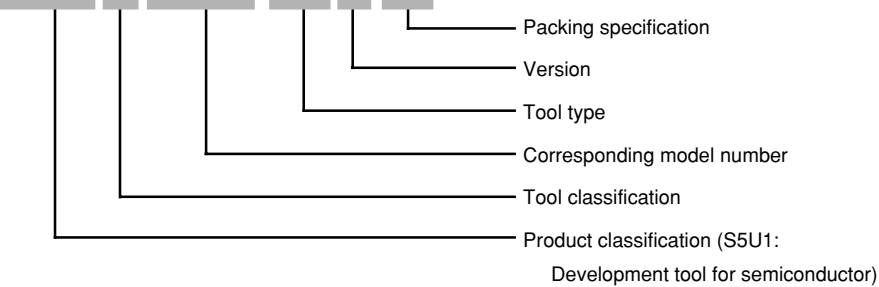
*2: Shape

B	Assembled on board, COB, BGA
C	Plastic DIP
D	Bare Chip
F	Plastic QFP
H	Ceramic DIP
L	Caramic QFP
M	Plastic SOP

R	TAB-QFP
S	Plastic Shrink DIP
T	Tape Carrier (TAB)
Y	SOT89 (3 terminals)
2	TSOP (Standard Bent)
3	TSOP (Reverse Bent)

● Development tools

S5U1 C 88348 D1 1 00



Comparison table between new and previous number

ASICs

●S1L60000 series

Previous number	New number
SLA6009	S1L60093
SLA600Q	S1L60094
SLA6017	S1L60173
SLA601Q	S1L60174
SLA6028	S1L60283
SLA602Q	S1L60284
SLA6040	S1L60403
SLA604Q	S1L60404
SLA6059	S1L60593
SLA605Q	S1L60594
SLA6083	S1L60833
SLA608Q	S1L60834
SLA6123	S1L61233
SLA612Q	S1L61234
SLA6158	S1L61583
SLA615Q	S1L61584
SLA6190	S1L61903
SLA619Q	S1L61904
SLA6251	S1L62513
SLA625Q	S1L62514

●S1L50000 series

Previous number	New number
SLA5028H	S1L50282
SLA502TH	S1L50283
SLA502QH	S1L50284
SLA5075H	S1L50752
SLA507TH	S1L50753
SLA507QH	S1L50754
SLA5099H	S1L50992
SLA509TH	S1L50993
SLA509QH	S1L50994
SLA5125H	S1L51252
SLA512TH	S1L51253
SLA512QH	S1L51254
SLA5177H	S1L51772
SLA517TH	S1L51773
SLA517QH	S1L51774
SLA5250H	S1L52502
SLA525TH	S1L52503
SLA525QH	S1L52504
SLA5335H	S1L53352
SLA533TH	S1L53353
SLA533QH	S1L53354
SLA5442H	S1L54422
SLA544TH	S1L54423
SLA544QH	S1L54424
SLA5506H	S1L55062
SLA550TH	S1L55063
SLA550QH	S1L55064
SLA5668H	S1L56682
SLA566TH	S1L56683
SLA566QH	S1L56684
SLA5815H	S1L58152
SLA581TH	S1L58153
SLA581QH	S1L58154

●S1L35000 series

Previous number	New number
SLA3504	S1L35043
SLA3506	S1L35063
SLA3509	S1L35093
SLA3516	S1L35163

●S1L30000 series

Previous number	New number
SLA3018	S1L30182
SLA301T	S1L30183
SLA3030	S1L30302
SLA303T	S1L30303
SLA3042	S1L30422
SLA304T	S1L30423
SLA3055	S1L30552
SLA305T	S1L30553
SLA3075	S1L30752
SLA307T	S1L30753
SLA3109	S1L31092
SLA310T	S1L31093
SLA3125	S1L31252
SLA312T	S1L31253
SLA3216	S1L32162
SLA321T	S1L32163

●S1L90000F series

Previous number	New number
SLA902F	S1L902F2
SLA904F	S1L904F2
SLA907F	S1L907F2
SLA909F	S1L909F2
SLA913F	S1L913F2
SLA919F	S1L919F2
SLA927F	S1L927F2
SLA944F	S1L944F2

●Designing the embedded arrays

Previous series	New series
SSL60000 series	S1X60000 series
SSL50000 series	S1X50000 series
SSL35000 series	S1X35000 series

●Standard cells

Previous series	New series
SCB70000 series	S1K70000 series
SCB60000 series	S1K60000 series
SCB50000 series	S1K50000 series

●Ultra low voltage standard cell

Previous series	New series
SSC2500 series	S1K2500 series

●Supporting libraries for ASIC design tools

Previous number	New number
SLA60000	S1L60000
SLA50000H	S1L50000
SLA35000	S1L35000
SLA30000	S1L30000
SLA9000F	S1L9000F

MCUs

●S1C60 series

Previous number	New number
E0C6001	S1C60N01
E0C60L01	S1C60L01
E0C6002	S1C60N02
E0C60L02	S1C60L02
E0C6003	S1C60N03
E0C60L03	S1C60L03
E0C6004	S1C60N04
E0C6005	S1C60N05
E0C60L05	S1C60L05
E0C6006	S1C60N06
E0C6007	S1C60N07
E0C6008	S1C60N08
E0C60L08	S1C60L08
E0C60A08	S1C60A08
E0C6009	S1C60N09
E0C60L09	S1C60L09
E0C6011	S1C60110

●S1C62100 series

Previous number	New number
E0C621A	S1C621A0
E0C621C	S1C621C0

●S1C6S200 series

Previous number	New number
E0C6S27	S1C6S2N7
E0C6SL27	S1C6S2L7
E0C6SB27	S1C6S2B7
E0C6SA27	S1C6S2A7

●S1C62N30/6S300 series

Previous number	New number
E0C6S37	S1C6S3N7
E0C6SL37	S1C6S3L7
E0C6SB37	S1C6S3B7
E0C6S32	S1C6S3N2
E0C6SL32	S1C6S3L2
E0C6SB32	S1C6S3B2
E0C6SA32	S1C6S3A2
E0C6233	S1C62N33
E0C62L33	S1C62L33
E0C62A33	E0C62A33
E0C623B	S1C6N3B0
E0C62A3B	S1C6A3B0

●S1C62400/6S400 series

Previous number	New number
E0C6244	S1C62440
E0C624A	S1C624A0
E0C6S46	S1C6S460
E0C6248	S1C62480
E0C6S48	S1C6S480
E0C624C	S1C624C0

●S1C62N50/62500 series/ S1C62900 series

Previous number	New number
E0C6251	S1C62N51
E0C62L51	S1C62L51
E0C6256	S1C62560
E0C6292	S1C62920

●S1C62600 series

Previous number	New number
E0C6266	S1C62660

●S1C62700 series

Previous number	New number
E0C6274	S1C62740

●S1C62N80 series

Previous number	New number
E0C6281	S1C62N81
E0C62L81	S1C62L81
E0C6282	S1C62N82
E0C62L82	S1C62L82
E0C62A82	S1C62A82

●S1C62M00 series

Previous number	New number
E0C62M2	S1C62M20

●S1C63100 series

Previous number	New number
E0C63158	S1C63158

●S1C63200 series

Previous number	New number
E0C63256	S1C63256

●S1C63300 series

Previous number	New number
E0C63358	S1C63358
E0C63P366	S1C6P366

●S1C63400 series

Previous number	New number
E0C63454	S1C63454
E0C63455	S1C63455
E0C63458	S1C63458
E0C63466	S1C63466
E0C63P466	S1C6P466

●S1C63500 series

Previous number	New number
E0C63557	S1C63557
E0C63558	S1C63558
E0C63567	S1C63567

●S1C63A/B00 series

Previous number	New number
E0C63A08	S1C63A08
E0C63B07	S1C63B07
E0C63B08	S1C63B08

●FSK receiver

Previous number	New number
E0C5250	S1C05250
E0C5251	S1C05251

●S1C88100 series

Previous number	New number
E0C88104	S1C88104
E0C88112	S1C88112

●S1C88300 series

Previous number	New number
E0C88308	S1C88308
E0C88316	S1C88316
E0C88317	S1C88317
E0C88348	S1C88348
E0C88365	S1C88365
E0C88F360	S1C8F360

●S1C88400 series

Previous number	New number
E0C88408	S1C88408
E0C88409	S1C88409

●S1C88800 series

Previous number	New number
E0C88832	S1C88832
E0C88862	S1C88862
E0C88816	S1C88816

●S1C88A00 series

Previous number	New number
E0C88A32	S1C88A32

●S1C33200 series

Previous number	New number
E0C33209	S1C33209
E0C33264	S1C33222
E0C332129	S1C33221
E0C332F128	S1C33240

●S1C33L00 series

Previous number	New number
E0C332L01	S1C33L01
E0C332L02	S1C33L02

●S1C33T00 series

Previous number	New number
E0C332T01	S1C33T01

MCUs

●S1C33S00 series

Previous number	New number
E0C332S08	S1C33S01

●S1C33 special-purpose line-up

Previous number	New number
E0C33210	S1C33210

●S1C62 Family/S1C60 family development tools

Hardware

Previous number	New number
ICE62R	S5U1C62000H2
EVA62**	S5U1C62***E
KIT60**	S5U1C60***K

●Software package

Previous number	New number
ASM62	S5U1C62000A

●S1C63 Family development tools

Hardware

Previous number	New number
ICE63	S5U1C63000H1
PRC63***	S5U1C63***P

●Software package

Previous number	New number
ASM63	S5U1C63000A

●S1C33 Family development tools

Hardware

Previous number	New number
ICD33	S5U1C33000H
EPOD33***	S5U1C33***E
DMT33***	S5U1C33***D
MEM33***	S5U1C33***M

●Software package

Previous number	New number
CC33	S5U1C33000C

●Middleware package

Previous number	New number
VOX33	S5U1C330V1S
JPEG33	S5U1C330J1S
ROS33	S5U1C330R1S
MON33	S5U1C330M2S
MELODY33	S5U1C330M1S
VRE33	S5U1C330V2S
SOUND33	S5U1C330S1S
TS33	S5U1C330T1S
CF33	S5U1C330C1S
GRAPHIC33	S5U1C330G1S

●S1C88 Family development tools

Hardware

Previous number	New number
ICE88UR	S5U1C88000H5
PRC88***	S5U1C88***P
DMT88348-DB	S5U1C88348T

●Software

Previous number	New number
	S5U1C88000C1

●Flash writing tool

Hardware

Previous number	New number
URM00002	S5U1C88000W1
ADP88***	S5U1C88***X1
ADP63***	S5U1C63***X1
ADS00002	S5U1C88000X1
GWH00002	S5U1C88000W2

ASSPs

●S1D13305 series

Previous number	New number
SED1335F _{0A}	S1D13305F00A
SED1335F _{0B}	S1D13305F00B

●S1D13503/13700 series

Previous number	New number
SED1353D _{0A}	S1D13503D00A
SED1353F _{0A}	S1D13503F00A
SED1353F _{1A}	S1D13503F01A
SED1374F _{0A}	S1D13704F00A
SED1375F _{0A}	S1D13705F00A
SED1376F _{0A}	S1D13706F00A
SED1376D _{0A}	S1D13706D00A
SED1376D _{0A} *	S1D13706D00A*
SED1378F _{0A} *	S1D13708F00A*
SED1378B _{0B} *	S1D13708B00B*
SED1378D _{0A} *	S1D13708D00A*

●S1D13A00 series

Previous number	New number
SED13A3F _{0A} *	S1D13A03F00A*
SED13A3B _{0B} *	S1D13A03B00B*
SED13A4B _{0B} *	S1D13A04B00B*
SED13A5B _{0B} *	S1D13A05B00B*

●S1D13500/13800 series

Previous number	New number
SED1354F _{0A}	S1D13504F00A
SED1354F _{1A}	S1D13504F01A
SED1354F _{2A}	S1D13504F02A
SED1355F _{0A}	S1D13505F00A
SED1356F _{0A}	S1D13506F00A
SED1386F _{0A}	S1D13806F00A

●S1D12000 series lineup

Previous number	New number
SED1220D	S1D12200D
SED1220T	S1D12200T
SED1221D	S1D12201D
SED1221T	S1D12201T
SED122AD*	S1D12210D
SED1222D	S1D12202D
SED1225D	S1D12205D
SED1225T	S1D12205T
SED1230D	S1D12300D
SED1230T	S1D12300T
SED1231D	S1D12301D
SED1231T	S1D12301T
SED1232D	S1D12302D
SED1232T	S1D12302T
SED1233D	S1D12303D
SED1233T	S1D12303T
SED1234D	S1D12304D
SED1235D	S1D12305D
SED1240D	S1D12400D
SED1240T	S1D12400T

●S1D15000 series lineup

Previous number	New number
SED1510D _{0C}	S1D15100D00C*
SED1510F _{0C}	S1D15100F00C*
SED1526D _{-A}	S1D15206D**A*
SED1526D _{-B}	S1D15206D**B*
SED1526F _{-A}	S1D15206F**A*
SED1526T _{-A}	S1D15206T**A*
SED1528D _{-A}	S1D15208D**A*
SED1528D _{-B}	S1D15208D**B*
SED1528F _{-A}	S1D15208F**A*
SED1528T _{-A}	S1D15208T**A*
SED1530D _{0A}	S1D15300D00A*
SED1530D _{AA}	S1D15300D10A*
SED1530D _{0B}	S1D15300D00B*
SED1530D _{AB}	S1D15300D10B*
SED1530T _{AB}	S1D15300T10A*
SED1531D _{0A}	S1D15301D00A*
SED1531D _{0B}	S1D15301D00B*
SED1531T _{0A}	S1D15301T00A*
SED1532D _{0A}	S1D15302D00A*
SED1532D _{BA}	S1D15302D11A*
SED1532D _{0B}	S1D15302D00B*
SED1532D _{BB}	S1D15302D11B*
SED1532T _{0A}	S1D15302T00A*
SED1532T _{BA}	S1D15302T11A*
SED1533D _{FB}	S1D15303D15B*
SED1540D _{0A}	S1D15400D00A*
SED1540D _{0B}	S1D15400D00B*
SED1540F _{0A}	S1D15400F00A*
SED1560D _{0A}	S1D15600D00A*
SED1560D _{AA}	S1D15600D10A*
SED1560D _{0B}	S1D15600D00B*
SED1560D _{AB}	S1D15600D10B*
SED1560T _{0B}	S1D15600T00B*
SED1560T _{0A}	S1D15600T26A*
SED1561D _{0A}	S1D15601D00A*
SED1561D _{0B}	S1D15601D00B*
SED1561D _{AB}	S1D15601D10B*
SED1561T _{0B}	S1D15601T00B*
SED1561T _{AB}	S1D15601T10B*
SED1561T _{0A}	S1D15601T26A*
SED1562D _{0A}	S1D15602D00A*
SED1562D _{0B}	S1D15602D00B*
SED1562T _{0B}	S1D15602T00B*
SED1562T _{0A}	S1D15602T26A*
SED1065D _{0B}	S1D10605D00B*
SED1065T _{0A}	S1D10605T00A*
SED1066D _{0A}	S1D10606D00A*
SED1067D _{0B}	S1D10607D00B*
SED1068D _{0B}	S1D10608D00B*
SED1069D _{0B}	S1D10609D00B*
SED1565D _{BB}	S1D15605D11B*
SED1565D _{0B}	S1D15605D00B*
SED1565D _{1B}	S1D15605D01B*
SED1565D _{2B}	S1D15605D02B*
SED1565T _{0A}	S1D15605T00A*
SED1565T _{0B}	S1D15605T00B*
SED1565T _{0C}	S1D15605T00C*
SED1566D _{BB}	S1D15606D11B*
SED1566D _{0B}	S1D15606D00B*
SED1566D _{1B}	S1D15606D01B*
SED1566D _{2B}	S1D15606D02B*
SED1566T _{0A}	S1D15606T00A*
SED1567D _{BB}	S1D15607D11B*
SED1567D _{0B}	S1D15607D00B*
SED1567D _{1B}	S1D15607D01B*
SED1567D _{2B}	S1D15607D02B*
SED1567T _{0B}	S1D15607T00B*

Previous number	New number
SED1567T _{0C}	S1D15607T00C*
SED1568D _{BB}	S1D15608D11B*
SED1568D _{0B}	S1D15608D00B*
SED1569D _{BB}	S1D15609D11B*
SED1569D _{0B}	S1D15609D00B*
SED1569T***	S1D15609T****
SED15A6D _{0B}	S1D15A06D00B*
SED15B1D _{0B}	S1D15B01D00B*
SED15B1T _{0A}	S1D15B01T00A*
SED15E0D _{0B}	S1D15E00D00B*
SED15E0T _{0A}	S1D15E00T00A*
SED1575D _{0B}	S1D15705D00B*
SED1575D _{3B}	S1D15705D03B*
SED1575T _{0A}	S1D15705T00A*
SED1575T _{3A}	S1D15705T03A*
SED1577D _{0B}	S1D15707D00B*
SED1577D _{3B}	S1D15707D03B*
SED1577T _{0A}	S1D15707T00A*
SED1577T _{3A}	S1D15707T03A*
SED157AD _{0B}	S1D15710D00B*
SED157AT _{0A} *	S1D15710T00A*

●MLS drivers for medium sized displays

MLS driver lineup

Previous number	New number
SED1580D _{0B}	S1D15800D00B*
SED1580T _{0A}	S1D15800T00A*
SED1590D _{0B}	S1D15900D00B*
SED1590T _{0A}	S1D15900T00A*
SED1594D _{0B} *	S1D15904D00B*
SED1594T _{0A} *	S1D15904T00A*
SED1751D _{0B}	S1D17501D00B*
SED1751T _{0A}	S1D17501T00A*
SED1750D _{0B}	S1D17500D00B*
SED1750T _{0A}	S1D17500T00A*
SED17C0D _{0B}	S1D17C00D00B*
SED17C0T _{0A}	S1D17C00T00A*

●S1D16000 series lineup

Segment drivers

Previous number	New number
SED1606D _{0A}	S1D16006D00A*
SED1606D _{0B}	S1D16006D00B*
SED1606F _{0A}	S1D16006F00A*
SED1606D _{1A}	S1D16006D01A*
SED1606D _{1B}	S1D16006D01B*
SED1640D _{0B}	S1D16400D00B*

●Common drivers

Previous number	New number
SED1651D _{0A}	S1D16501D00A*
SED1670D _{0A}	S1D16700D00A*
SED1670D _{1A}	S1D16700D01A*
SED1670D _{0B}	S1D16700D00B*
SED1670D _{1B}	S1D16700D01B*
SED1672D _{0A}	S1D16702D00A*
SED1672D _{1A}	S1D16702D01A*
SED1672D _{0B}	S1D16702D00B*
SED1672D _{1B}	S1D16702D01B*
SED1672F _{0A}	S1D16702F00A*

ASSPs

●S1D17000 series lineup

Segment drivers

Previous number	New number
SED1758D _{0B}	S1D17508D00B*
SED1758T _{0A}	S1D17508T00A*
SED1758T _{0B}	S1D17508T00B*
SED1758T _{0G}	S1D17508T00G*
SED1752T _{0A}	S1D17502T00A*
SED1752T _{0B}	S1D17502T00B*
SED17A2T _{0A}	S1D17A02T00A*
SED17A2T _{0B}	S1D17A02T00B*
SED17A2T _{0E}	S1D17A02T00E*

●Common drivers

Previous number	New number
SED1743D _{1B}	S1D17403D01B*
SED1753D _{0B}	S1D17503D00B*
SED1753T _{0A}	S1D17503T00A*

●S1D18000 series lineup

Previous number	New number
SED1800D _{0B}	S1D18000D00B*
SED1801D _{0B}	S1D18001D00B*
SED18A1D _{0B}	S1D18A01D00B*

●TFT LCDdrivers

S1D17900 series lineup
(Gate drivers)

Previous number	New number
SED1790T _{0A}	S1D17900T00A*
SED1793T _{0B}	S1D17903T00B*
SED1794T _{0A}	S1D17904T00A*
SED1796D _{0B}	S1D17906D00B*
SED1797D _{0B}	S1D17907D00B*
SED1799T _{0A}	S1D17909T00A*

●S1D19000 series lineup

Previous number	New number
SED1906T _{0A}	S1D19006T00A*

●Thermal-head drivers

Previous number	New number
SED5035D _{0A}	S1D50350D0A0
SED5036D _{0A}	S1D50360D0A0
SED5036F _{0A}	S1D50360F0A0
SED5068D _{0A}	S1D50680D0A0
SED5300D _{0A}	S1D53000D0A0
SED5301D _{0A}	S1D53010D0A0
SED5310D _{0A}	S1D53100D0A0
SED5316D _{5A}	S1D53160D5A0
SED5316D _{6A}	S1D53160D6A0
SED5615D _{0A}	S1D56150D0A0
SED5620D _{0A}	S1D56200D0A0
SED5624D _{0A}	S1D56240D0A0
SED5625D _{0A}	S1D56250D0A0
SED5626D _{0A}	S1D56260D0A0
SED5628D _{0A}	S1D56280D0A0
SED5668D _{0A}	S1D56680D0A0
SED5680D _{0A}	S1D56800D0A0
SED5682D _{0A}	S1D56820D0A0
SED5684D _{0A}	S1D56840D0A0
SED5685D _{0A}	S1D56850D0A0
SED5686D _{0A}	S1D56860D0A0
SED5688D _{1A}	S1D56880D1A0

●LED printer-head drivers

Previous number	New number
SED4100	S1D41000
SED4101	S1D41010
SED4180	S1D41800

●IEEE1394 controller

Previous number	New number
SPC7281F _{0A}	S1R72801F00A
SPC7283F _{0A}	S1R72803F00A*
SPC7290F _{0A}	S1R72900F00A*
SPC7291F _{0A}	S1R72901F00A*

●USB2.0 device controller

Previous number	New number
SPC7202F _{0A}	S1R72002F00A*

●SCSI controller

Previous number	New number
SPC7213F _{0A}	S1R72103F00A
SPC7214F _{0B}	S1R72104F00B
SPC7215F _{0A}	S1R72105F00A
SPC7216F _{0A}	S1R72106F00A*

●Power supply ICs for logic

Previous number	New number
SCI7852*	S1F785200*
SCI7665*	S1F76650*
SCI7110M _{0A}	S1F71100M0A0
SCI7120M _{0A}	S1F71200M0A0
SCI7120M _{0B}	S1F71200M0B0

●Power supply ICs for liquid crystal

Previous number	New number
SCI7551*	S1F75510*
SCI7530M _{0A} *	S1F75300M0A0*

●DC to DC converters

Previous number	New number
SCI7660D _{0B}	S1F76600D0B0
SCI7660C _{0B}	S1F76600C0B0
SCI7660M _{0B}	S1F76600M0B0
SCI7662M _{0A}	S1F76620M0A0
SCI7662D _{0A}	S1F76620D0A0

●DC to DC converters and voltage regulators

Previous number	New number
SCI7661D _{0B}	S1F76610D0B0
SCI7661C _{0B}	S1F76610C0B0
SCI7661M _{0B}	S1F76610M0B0
SCI7661M _{BB}	S1F76610M2B0
SCI7654C _{0A}	S1F76540C0A0
SCI7654M _{0A}	S1F76540M0A0
SCI7664M _{0A}	S1F76640M0A0
SCI7664D _{0A}	S1F76640D0A0

●Switching regulators

Previous number	New number
SCI7631M _{LA}	S1F76310M1L0
SCI7631M _{BA}	S1F76310M1B0
SCI7631M _{KA}	S1F76310M1K0
SCI7631M _{AA}	S1F76310M1A0
SCI7633M _{BA}	S1F76330M1B0
SCI7638M _{HA}	S1F76380M1H0
SCI7638M _{LA}	S1F76380M1L0

●High precision voltage regulators

Previous number	New number
SCI7810Y _{HB}	S1F78100Y2H0
SCI7810Y _{GB}	S1F78100Y2G0
SCI7810Y _{FB}	S1F78100Y2F0
SCI7810Y _{LB}	S1F78100Y2L0
SCI7810Y _{RB}	S1F78100Y2R0
SCI7810Y _{DB}	S1F78100Y2D0
SCI7810Y _{CB}	S1F78100Y2C0
SCI7810Y _{TB}	S1F78100Y2T0
SCI7810Y _{NB}	S1F78100Y2N0
SCI7810Y _{KB}	S1F78100Y2K0
SCI7810Y _{PB}	S1F78100Y2P0
SCI7810Y _{MB}	S1F78100Y2M0
SCI7810Y _{BB}	S1F78100Y2B0
SCI7810Y _{AB}	S1F78100Y2A0
SCI7910Y _{HA}	S1F79100Y1H0
SCI7910Y _{GA}	S1F79100Y1G0
SCI7910Y _{DA}	S1F79100Y1D0
SCI7910Y _{PA}	S1F79100Y1P0
SCI7910Y _{BA}	S1F79100Y1B0

●High precision voltage detectors

Previous number	New number
SCI7720Y _{VA}	S1F77200Y1V0
SCI7720Y _{AA}	S1F77200Y1A0
SCI7720Y _{YA}	S1F77200Y1Y0
SCI7720Y _{BA}	S1F77200Y1B0
SCI7720Y _{NA}	S1F77200Y1N0
SCI7720Y _{CA}	S1F77200Y1C0
SCI7720Y _{FA}	S1F77200Y1F0
SCI7720Y _{TA}	S1F77200Y1T0
SCI7721Y _{CA}	S1F77210Y1C0
SCI7721Y _{CB#}	S1F77210Y2C0
SCI7721Y _{PA}	S1F77210Y1P0
SCI7721Y _{SA}	S1F77210Y1S0
SCI7721Y _{EA}	S1F77210Y1E0
SCI7721Y _{FA}	S1F77210Y1F0
SCI7721Y _{FB#}	S1F77210Y2F0
SCI7721Y _{RA}	S1F77210Y1R0
SCI7721Y _{GA}	S1F77210Y1G0
SCI7721Y _{HA}	S1F77210Y1H0
SCI7721Y _{3A}	S1F77210Y130
SCI7721Y _{TA}	S1F77210Y1T0
SCI7721Y _{MA}	S1F77210Y1M0
SCI7721Y _{JA}	S1F77210Y1J0
SCI7721Y _{2A}	S1F77210Y120
SCI7721Y _{KA}	S1F77210Y1K0
SCI7721Y _{LA}	S1F77210Y1L0

ASSPs

●Melody ICs

Previous number	New number
SVM7560M _{0A}	S1V75600M00A
SVM7560M _{0B} /C _{0B}	S1V75600M00B/ C00B
SVM7560D _{0K}	S1V75600D00K
SVM7560M _{0M} /C _{0M} / D _{0M}	S1V75600M00M/ C00M/D00M
SVM7560M _{0V}	S1V75600M00V
SVM7561M _{0B} /C _{0B} / D _{0B}	S1V75601M00B/ C00B/D00B
SVM7561M _{0C} /C _{0C} / D _{0C}	S1V75601M00C/ C00C/D00C
SVM7100M _{0J}	S1V71000M00J

●Music generators

Previous number	New number
SVM7570M _{5P}	S1V75700M05P
SVM7570M _{6F}	S1V75700M06F
SVM7571C _{5N}	S1V75701C05N
SVM7571C _{6G}	S1V75701C06G
SVM7571C _{6H}	S1V75701C06H
SVM7571C _{6J}	S1V75701C06J
SVM7571C _{6K}	S1V75701C06K
SVM7571C _{6N}	S1V75701C06N
SVM7571C _{6P}	S1V75701C06P

●Standard melodies

Previous number	New number
7571C _{5N} (5.0V spec.)	S1V75701C05N
7571C _{6G} (5.0V spec.)	S1V75701C06G
7571C _{6H} (5.0V spec.)	S1V75701C06H
7570M _{5P} / (5.0V spec.)	S1V75700M05P/S1V 75701C06J
7571C _{6K} (5.0V spec.)	S1V75701C06K
7571C _{6N} (5.0V spec.)	S1V75701C06N
7571C _{6P} (5.0V spec.)	S1V75701C06P
7570M _{6F} (5.0V spec.)	S1V75700M06F
7560M _{0A}	S1V75600M00A
7560M _{0B} /C _{0B}	S1V75600M00B/ C00B
7560D _{0K}	S1V75600D00K
7560M _{0M} /C _{0M} /D _{0M}	S1V75600M00M/ C00M/D00M
7560M _{0V}	S1V75600M00V
7561M _{0B} /C _{0B} /D _{0B}	S1V75601M00B/ C00B/D00B
7561M _{0C} /C _{0C} /D _{0C}	S1V75601M00C/ C00C/D00C

MEMORIES

● Static RAMs

Previous number	New number
SRM2AW216LLBT ₁	S1M0W026B0J1
SRM2AW216LLBT ₇	S1M0W026B0J7
SRM2AV213LLBT ₈	S1M0V023B0J8
SRM2AW416LLBT ₁	S1M0W046B0J1
SRM2AW416LLBT ₇	S1M0W046B0J7
SRM2AV413LLBT ₈	S1M0V043B0J8
SRM2AV400LLBT ₈	S1M0V040B0J8*
SRM2BW413LLBT ₇	S1M1W043B0J7*
SRM2AV613LLBT ₈	S1M0V063B0J8*
SRM2BV813LLBT ₇	S1M1V083B0J7

Plastic QFP & Plastic TQFP

Pin count	Package code	Body size (mm)	Lead type
48	QFP12	7 X 7 X 1.4	STD
	TQFP12	7 X 7 X 1.0	STD
64	QFP13	10 X 10 X 1.4	STD
	TQFP13	10.2 X 10.2 X 1.0	STD
	QFP15	14 X 14 X 1.4	STD
80	QFP5	14 X 20 X 2.7	S2
	QFP14	12 X 12 X 1.4	STD
	TQFP14	12 X 12 X 1.0	STD
100	QFP5	14 X 20 X 2.7	S2
	TQFP14	12 X 12 X 1.0	STD
	QFP15	14 X 14 X 1.4	STD
	TQFP15	14 X 14 X 1.0	STD
128	QFP5	14 X 20 X 2.7	S2
	QFP8	28 X 28 X 3.35	E1
	QFP15	14 X 14 X 1.4	STD
	TQFP15	14 X 14 X 1.0	STD
	QFP26	14 X 20 X 1.4	STD
144	QFP20	20 X 20 X 1.4	STD
	TQFP24	16 X 16 X 1.0	STD
160	QFP8	28 X 28 X 3.35	E1
176	QFP21	24 X 24 X 1.4	STD
184	QFP20	20 X 20 X 1.4	STD
	QFP23	32 X 32 X 3.4	STD
208	QFP8	28 X 28 X 3.35	S1
	QFP22	28 X 28 X 1.4	STD
216	QFP21	24 X 24 X 1.4	STD
240	QFP23	32 X 32 X 3.4	S1
256	QFP8	28 X 28 X 3.35	S3
	QFP22	28 X 28 X 1.4	STD
304	QFP10	40 X 40 X 3.8	S1

Plastic BGA

Pin count	Package code	Body size (mm)	Ball pitch (mm)
225	PBGA225	27 X 27	1.5
256	PBGA256	27 X 27	1.27
352	PBGA352	35 X 35	1.27
388	PBGA388	35 X 35	1.27

Ceramic Fine Pitch LGA

Pin count	Package code	Body size (mm)	Land pitch (mm)
104	CFLGA104	8 X 8	0.65
104	CFLGA104	9 X 9	0.8
152	CFLGA152	11 X 11	0.8
239	CFLGA239	13 X 13	0.8
307	CFLGA307	15 X 15	0.8
424	CFLGA424	17 X 17	0.8

Plastic Fine Pitch BGA

Pin count	Package code	Body size (mm)	Ball pitch (mm)
48	PFBGA48	7 X 7	0.8
81	PFBGA81	8 X 8	0.8
121	PFBGA121	10 X 10	0.8
180	PFBGA180	12 X 12	0.8
220	PFBGA220	14 X 14	0.8

Tape BGA

Pin count	Package code	Body size (mm)	Ball pitch (mm)
352	T-BGA352	35 X 35	1.27
420	T-BGA420	35 X 35	1.27
480	T-BGA480	35 X 35	1.27

HQFP

Pin count	Package code	Body size (mm)	Lead type
48	HQFP12	7 X 7 X 1.4	STD
	H3QFP12	7 X 7 X 1.4	STD
64	HQFP13	10 X 10 X 1.4	STD
	H3QFP13	10 X 10 X 1.4	STD
	H4TQFP13	10 X 10 X 1.4	STD
80	H3QFP14	12 X 12 X 1.4	STD
100	H2QFP5	14 X 20 X 2.7	S2
	H3QFP5	14 X 20 X 2.7	S2
	HQFP15	14 X 14 X 1.4	STD
	H2QFP15	14 X 14 X 1.4	STD
	H3QFP15	14 X 14 X 1.4	STD
	H4TQFP15	14 X 14 X 1.4	STD
128	HQFP5	14 X 20 X 2.7	S2
	H3QFP5	14 X 20 X 2.7	S2
	HQFP8	28 X 28 X 3.35	E1
	H3QFP15	14 X 14 X 1.4	STD
144	HQFP8	28 X 28 X 3.35	E1
160	HQFP8	28 X 28 X 3.35	E1
208	HQFP8	28 X 28 X 3.35	S1
	H2QFP8	28 X 28 X 3.35	S1
240	HQFP23	32 X 32 X 3.4	S1
	H2QFP23	32 X 32 X 3.4	S1
256	H2QFP8	28 X 28 X 3.35	S3

Plastic DIP

Pin count	Package code	Body size (mm)
8	DIP	9.7 X 6.4
18	DIP	23.2 X 6.3
24	DIP	32 X 13.6
28	DIP	37.4 X 13.4
32	DIP	42.5 X 13.4

Plastic SOP

Pin count	Package code	Body size (mm)	Lead type
8	SOP3A	5.2 × 4.4	STD
16	SOP3A	10.2 × 4.4	STD
28	SOP2	18.1 × 8.4	STD

Plastic TSOP

Pin count	Package code	Body size (mm)	Lead type
28	TSOP(I)	11.8 × 8	STD
44	TSOP(II)	18.81 × 10.16	STD

Plastic SSOP

Pin count	Package code	Body size (mm)	Lead type
16	SSOP2	7 × 4.4	STD
20	SSOP1	6.5 × 4.4	STD

SOT89

Pin count	Package code	Body size (mm)
3	SOT89	4.5 × 2.5
5	SOT89	4.5 × 2.5

Lead type

STD	Standard type	Standard Seiko Epson Product
S1	Short lead type1	Short lead version of Seiko Epson standard product
S2	Short lead type2	
S3	Short lead type3	
E1	Equivalent lead type1	Type with identical lead length, but different standoff height from Seiko Epson standard product

Ordering:

When placing device orders, always specify the package code (EPSON code), package material, pin count and lead type. For example,

Plastic	QFP5	100pin	S2
Material	Package code	Pin count	Lead type

Note:

- * If there is more than one assembly manufacture for a device, the package dimensions may differ for each manufacture. Detailed descriptions of each device, including package dimensions, are available on request.
- * Inch dimensions are given for reference only. When designing patterns, use the metric dimensions.

Plastic DIP



32 pin



24 pin



28 pin



18 pin



8 pin

Plastic SOP



SOP2-28 pin



SOP3A-16 pin



SOP3A-8 pin

Plastic TSOP



28 pin

Plastic SSOP

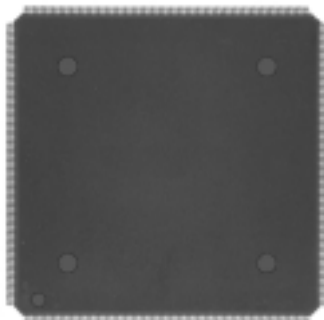


SSOP1-20 pin



SSOP2-16 pin

Plastic QFP



QFP10-304 pin

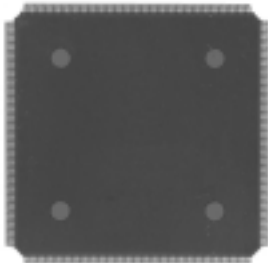


QFP22-256 pin



QFP8-256 pin

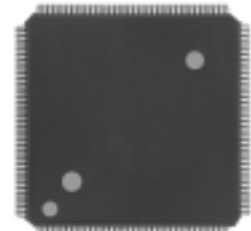
Plastic QFP



QFP23-240 pin



QFP20-184 pin



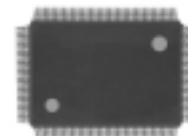
QFP8-128 pin



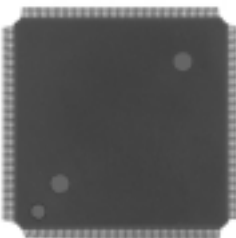
QFP22-208 pin



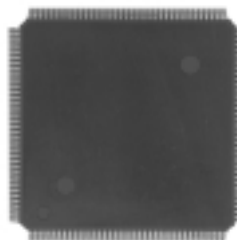
QFP21-176 pin



QFP5-128 pin



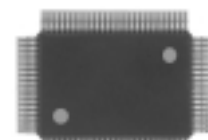
QFP8-208 pin



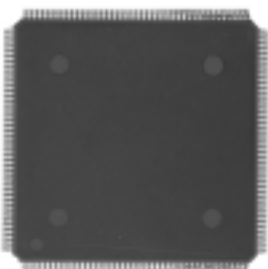
QFP8-160 pin



QFP15-100 pin



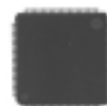
QFP5-100 pin



QFP23-184 pin



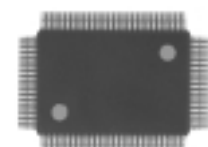
QFP20-144 pin



QFP14-80 pin



QFP15-128 pin



QFP5-80 pin

Plastic QFP

QFP15-64 pin



QFP13-64 pin



QFP12-48 pin

Plastic TQFP

TQFP15-128 pin



TQFP15-100 pin

Plastic HQFP

H2QFP23-240pin



HQFP8-144pin



HQFP15-100pin



HQFP8-208pin



HQFP8-128pin



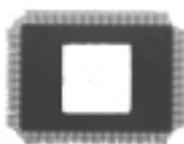
H3QFP13-64pin



H3QFP12-48pin



HQFP8-160pin



HQFP5-128pin

SOT 89



5 pin

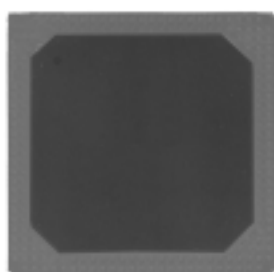


3 pin

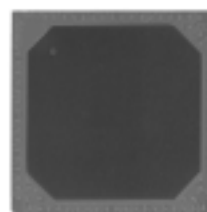
BGA



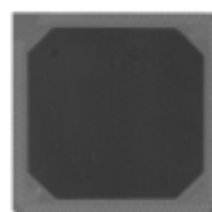
480 pin



388 pin



256 pin

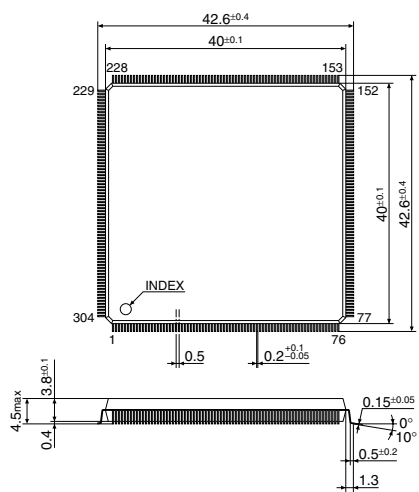


225 pin

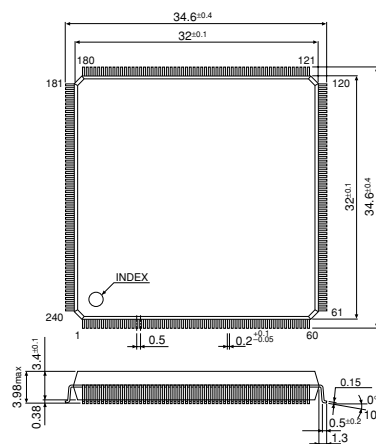
Unit: mm

Plastic QFP

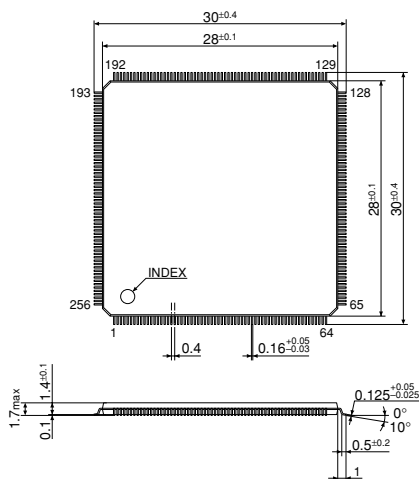
Plastic QFP10-304pin-S1



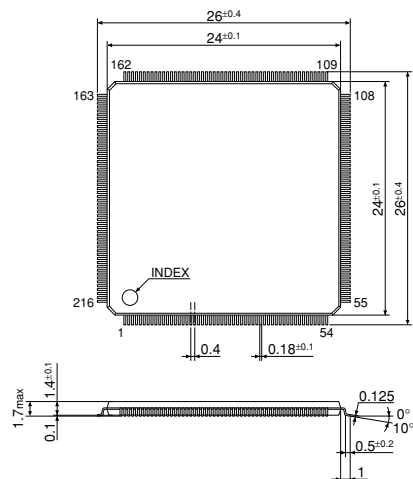
Plastic QFP23-240pin-S1



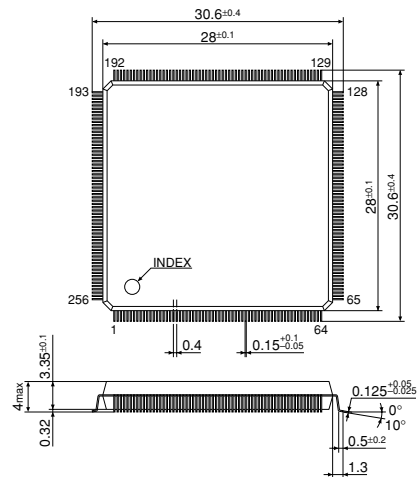
Plastic QFP22-256pin



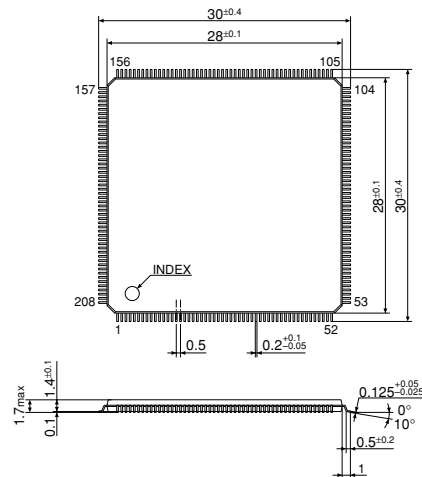
Plastic QFP21-216pin



Plastic QFP8-256pin-S3

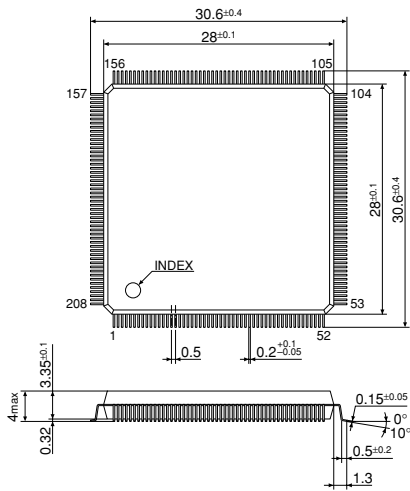


Plastic QFP22-208pin

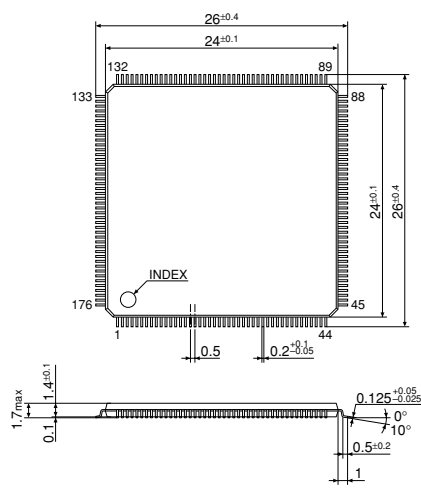


Plastic QFP

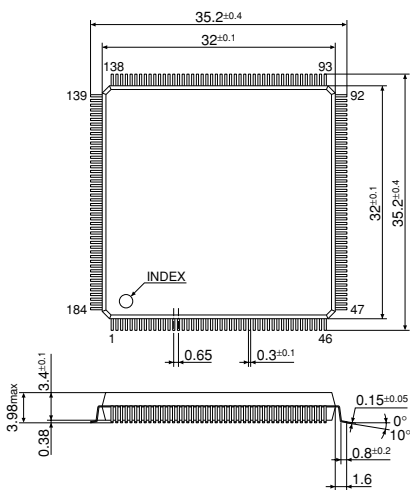
Plastic QFP8-208pin-S1



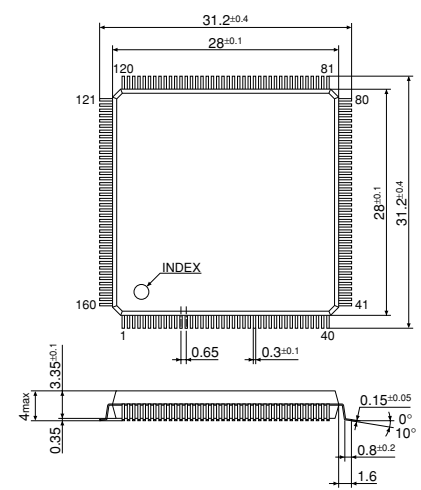
Plastic QFP21-176pin



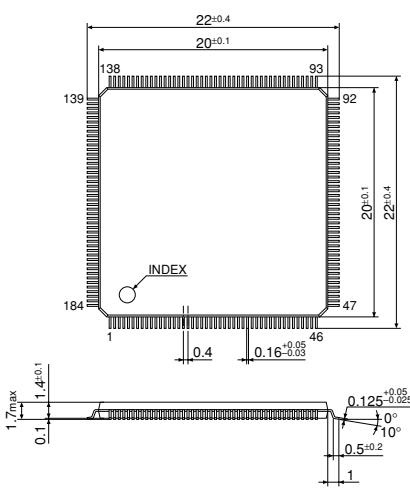
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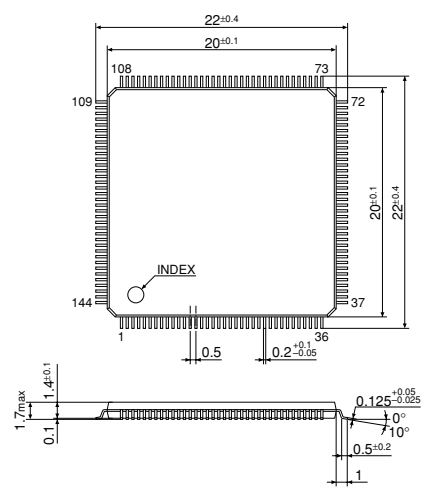
Plastic QFP8-160pin-E1



Plastic QFP20-184pin



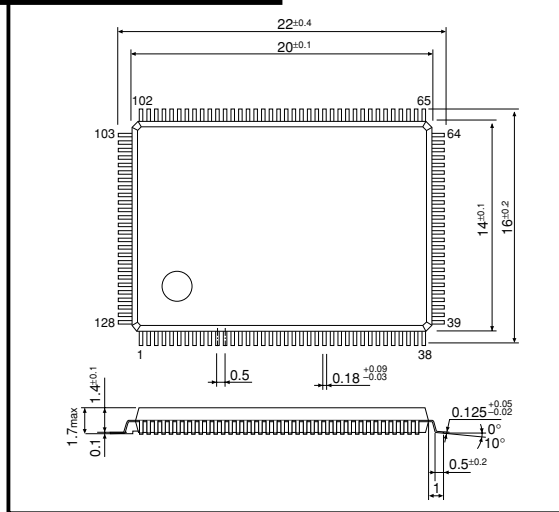
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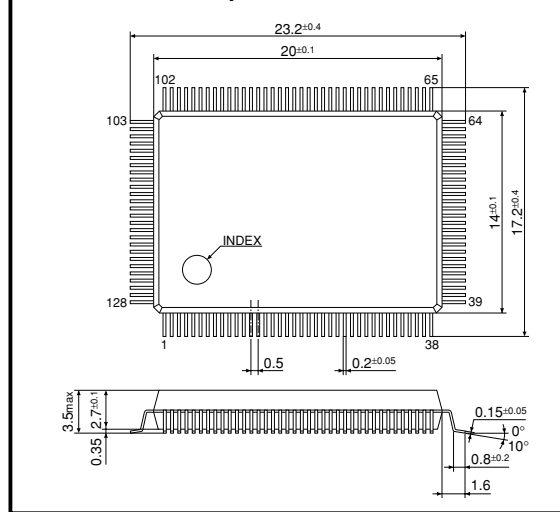
Unit: mm

Plastic QFP

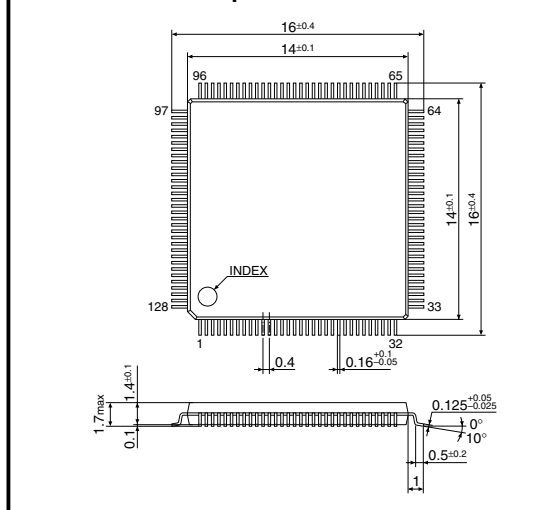
Plastic QFP26-128pin



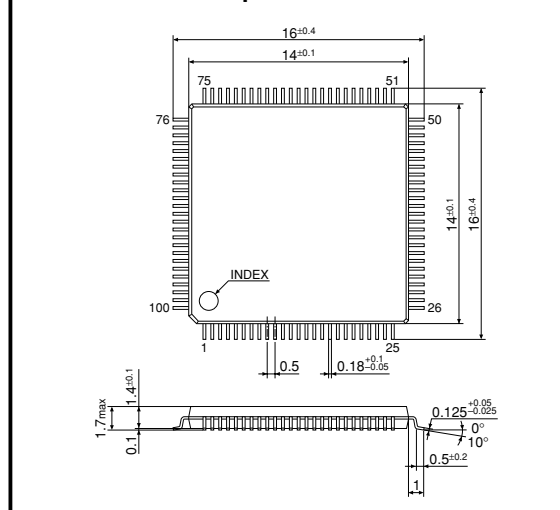
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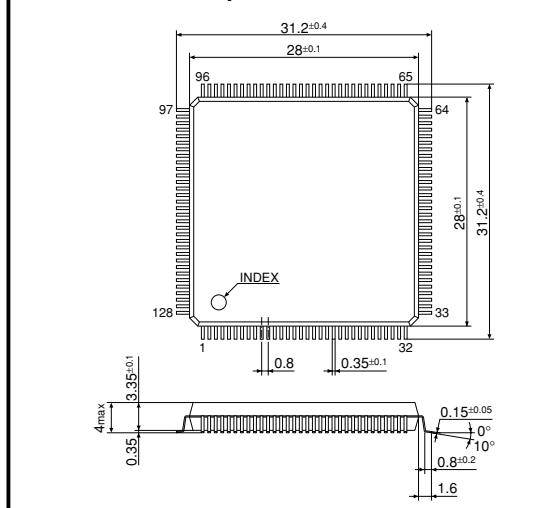
Plastic QFP15-128pin



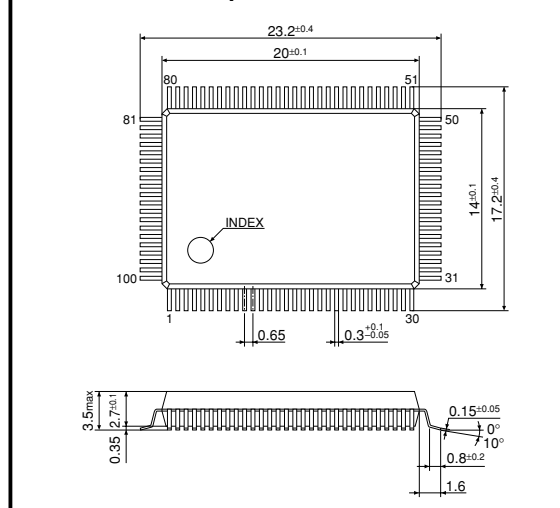
Plastic QFP15-100pin



Plastic QFP8-128pin-E1

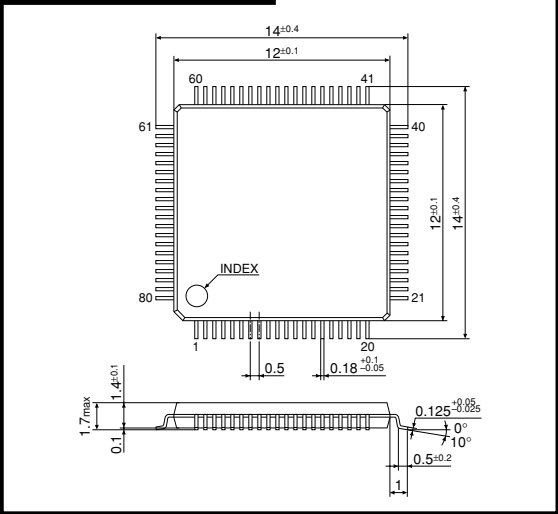


Plastic QFP5-100pin-S2

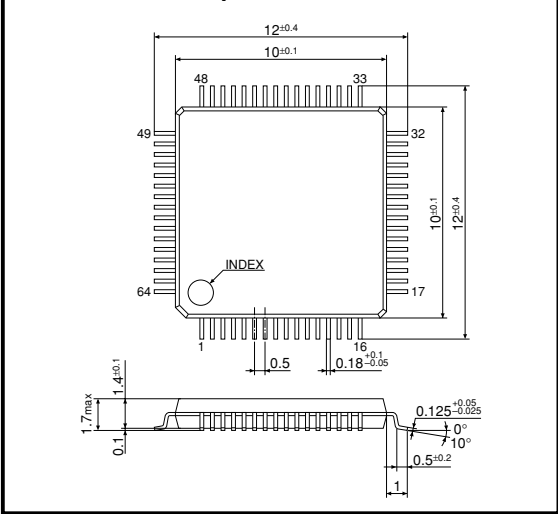


Plastic QFP

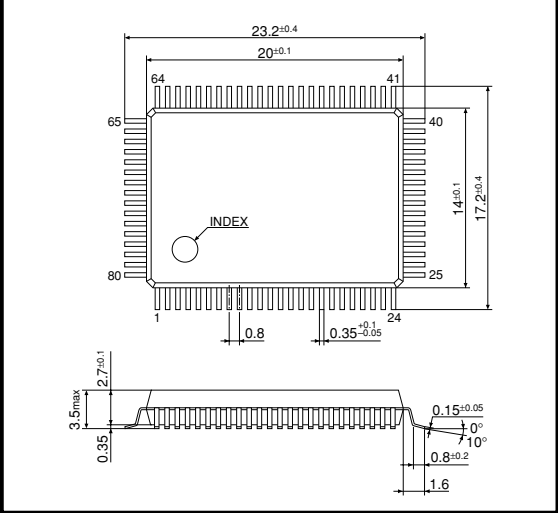
Plastic QFP14-80pin



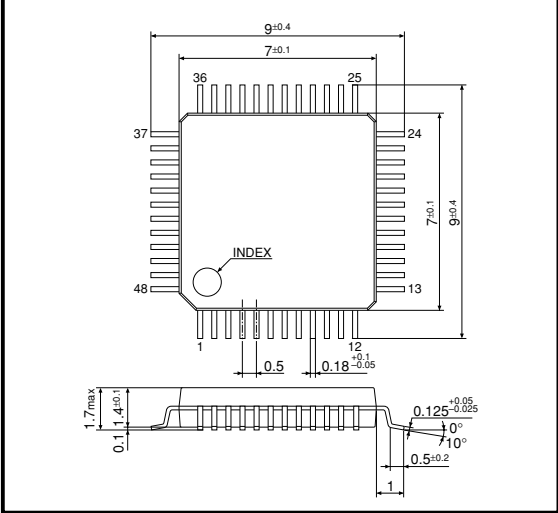
Plastic QFP13-64pin



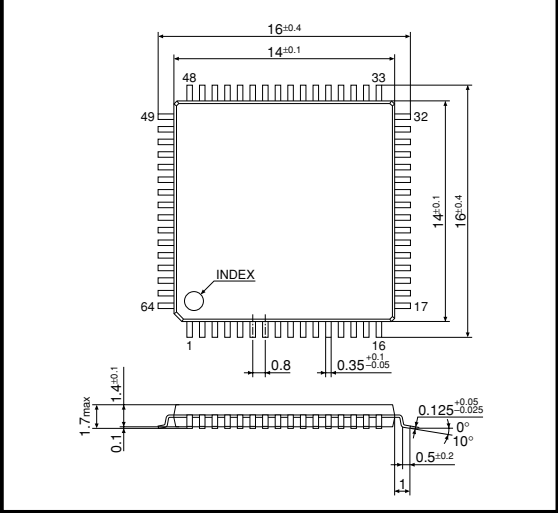
Plastic QFP5-80pin-S2



Plastic QFP12-48pin



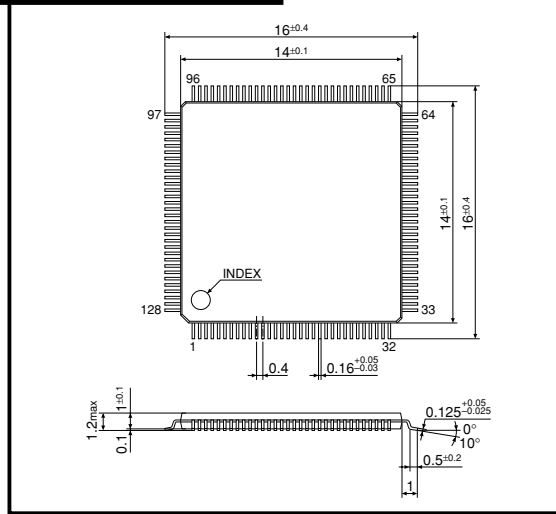
Plastic QFP15-64pin



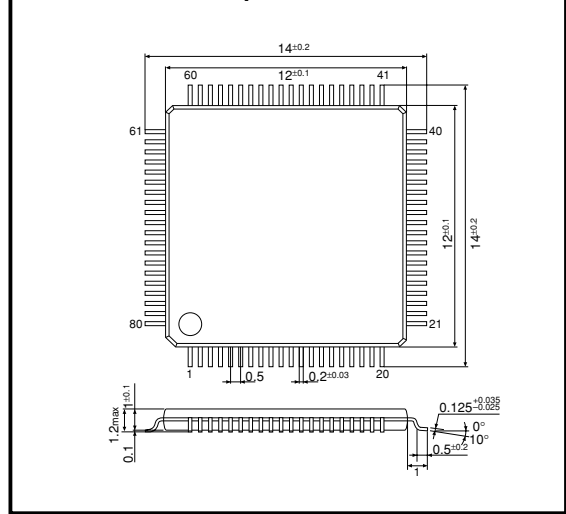
Unit: mm

Plastic TQFP

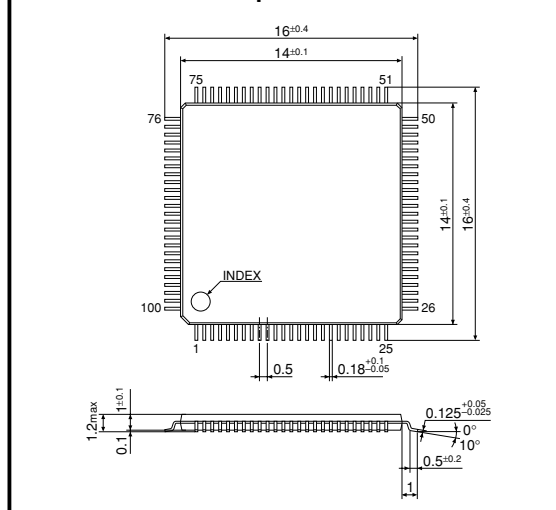
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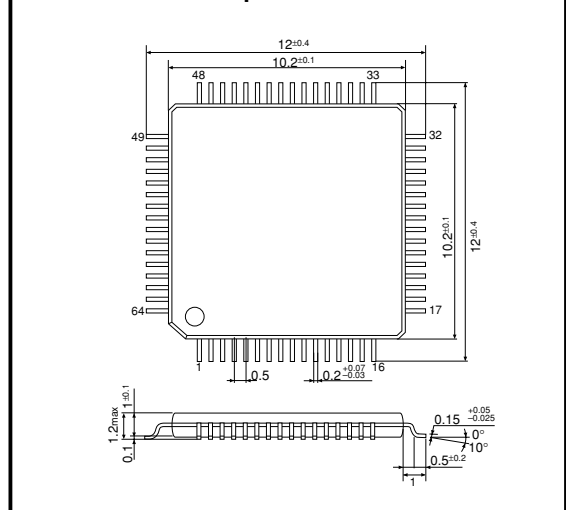
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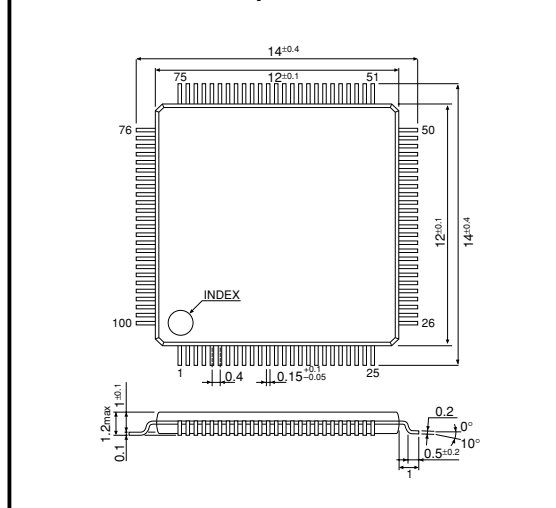
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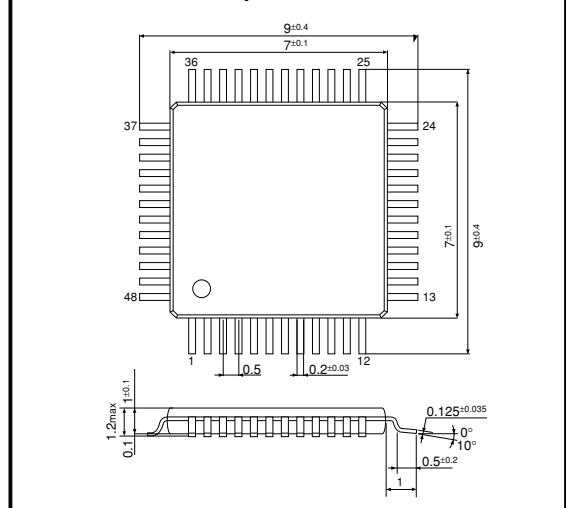
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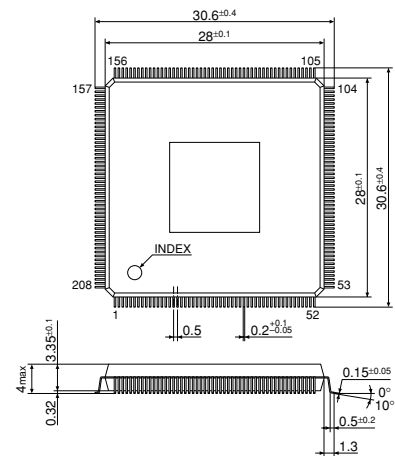
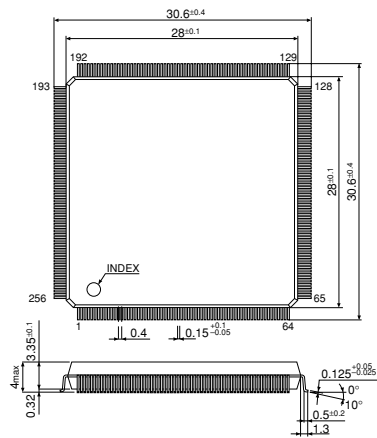
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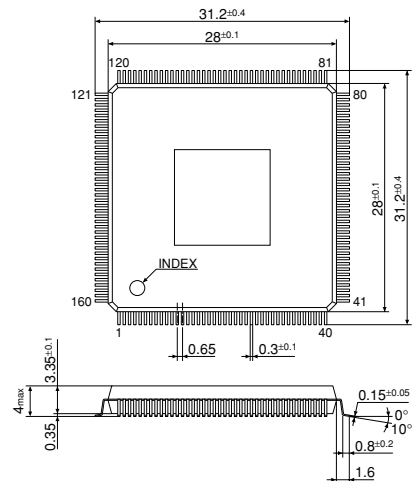
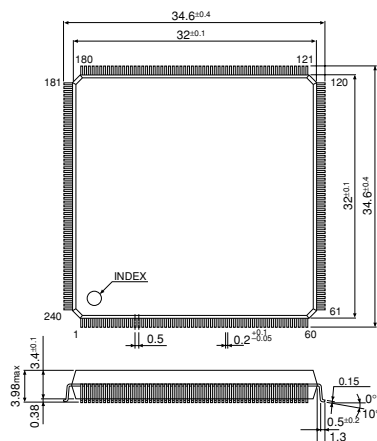
Plastic TQFP12-48pin



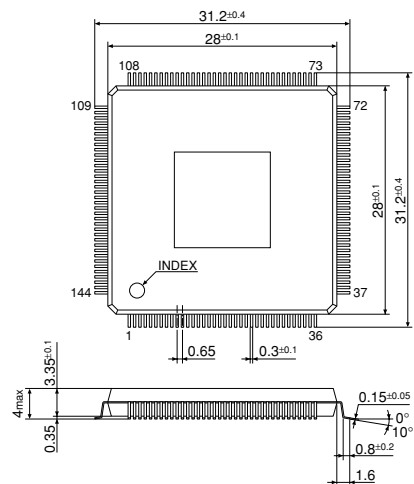
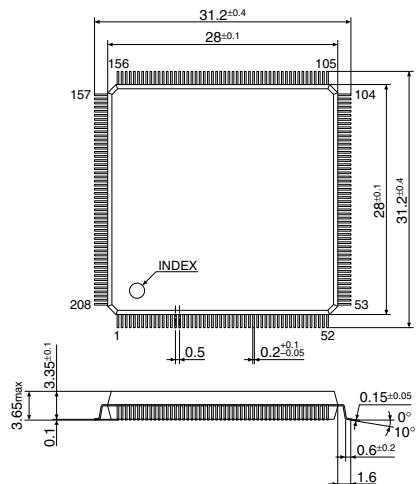
Unit: mm



Plastic HQFP8-160pin-E1



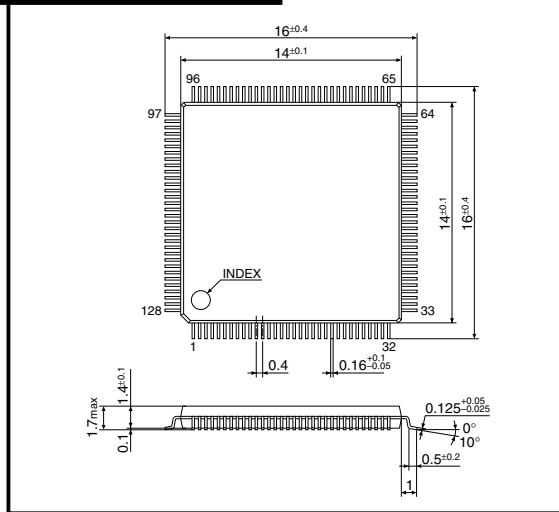
Plastic HQFP8-144pin-E1



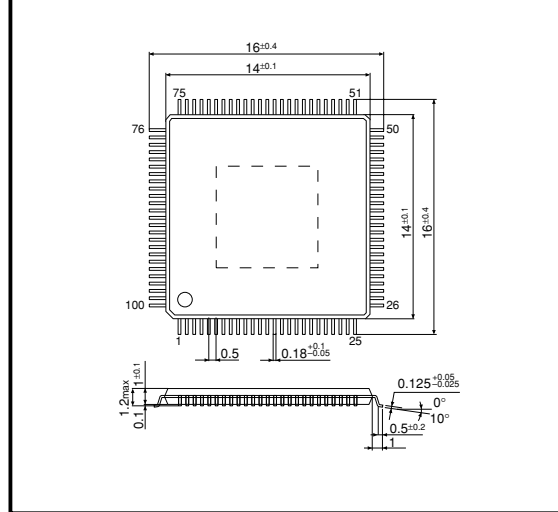
Unit: mm

Plastic HQFP

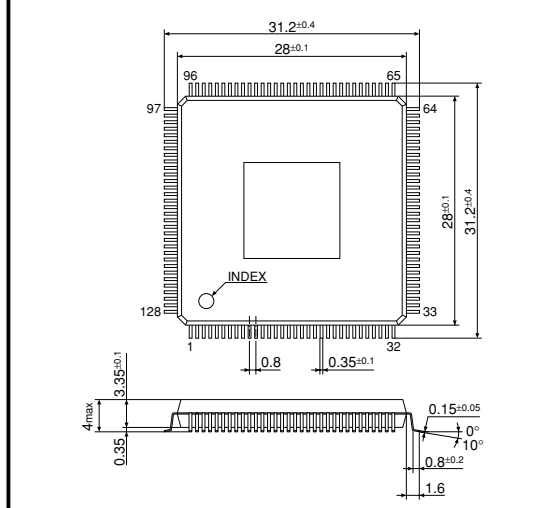
Plastic H3QFP15-128pin-STD



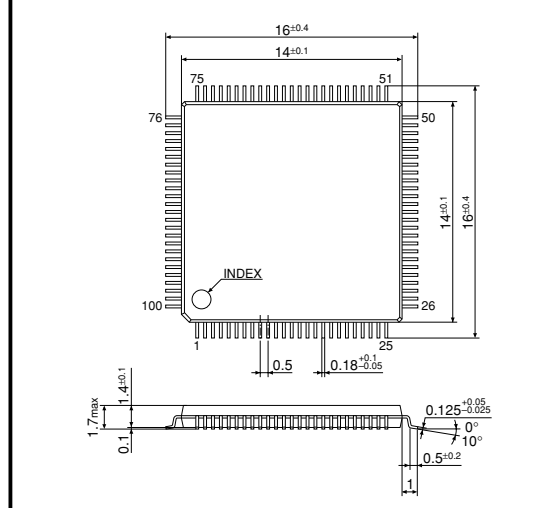
Plastic H4TQFP15-100pin



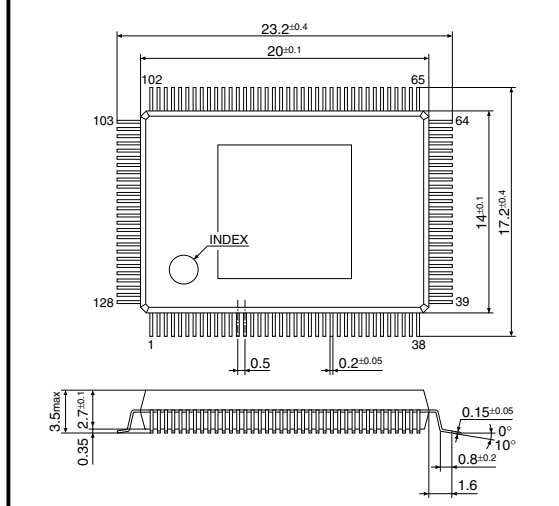
Plastic HQFP8-128pin-E1



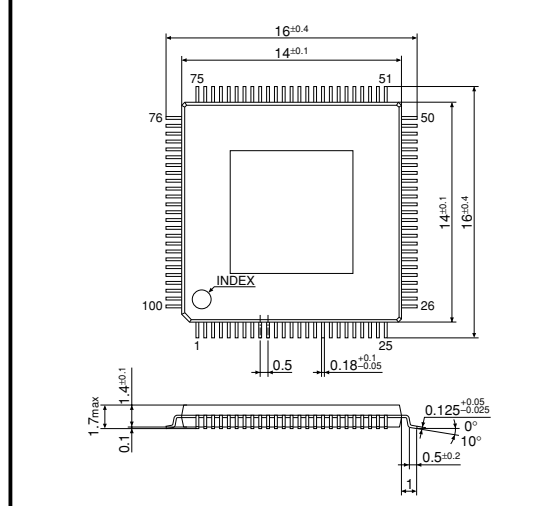
Plastic H3QFP15-100pin-STD



Plastic HQFP5-128pin-S2



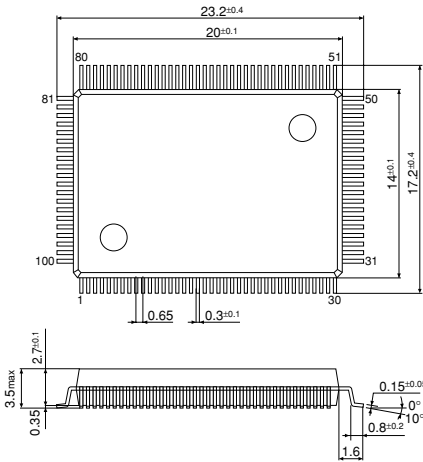
Plastic HQFP15-100pin-STD (Under development)



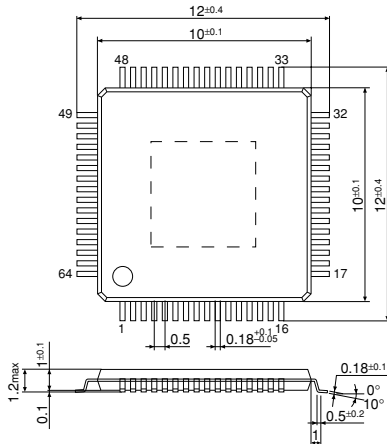
Plastic HQFP

Unit: mm

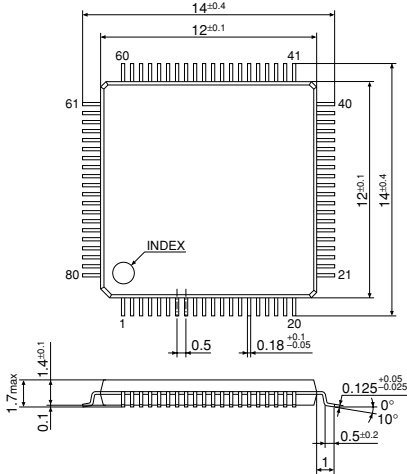
Plastic H2QFP5-100pin-S2



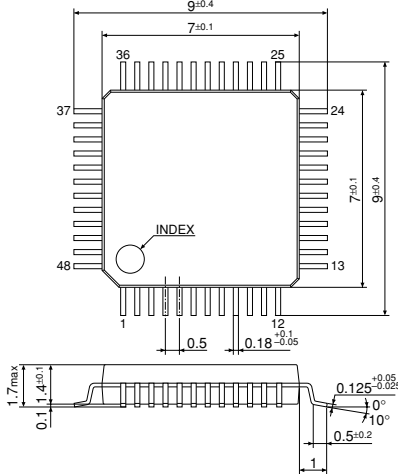
Plastic H4TQFP13-64pin



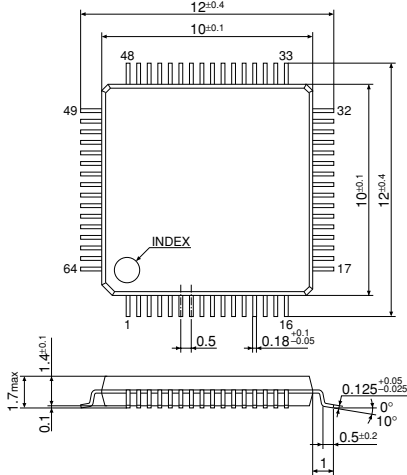
Plastic H3QFP14-80pin-STD



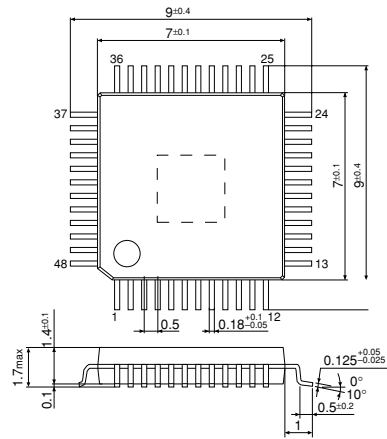
Plastic H3QFP12-48pin-STD



Plastic H3QFP13-64pin-STD



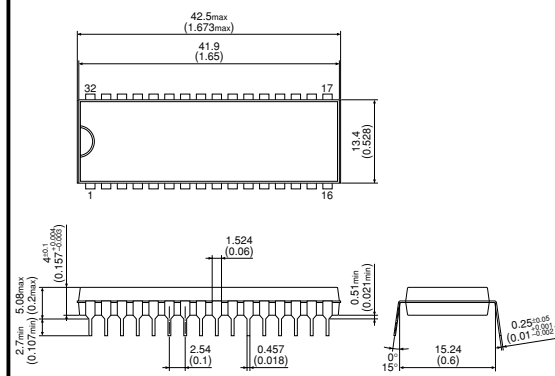
Plastic HQFP12-48pin



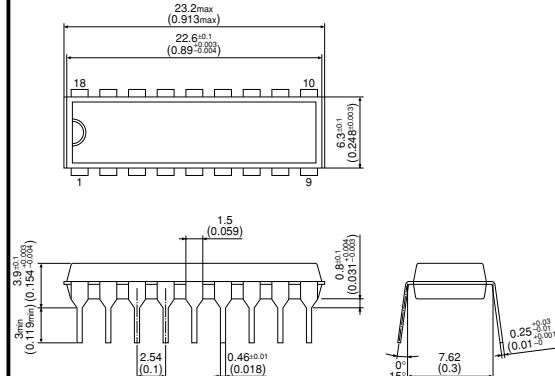
Unit: mm

Plastic DIP

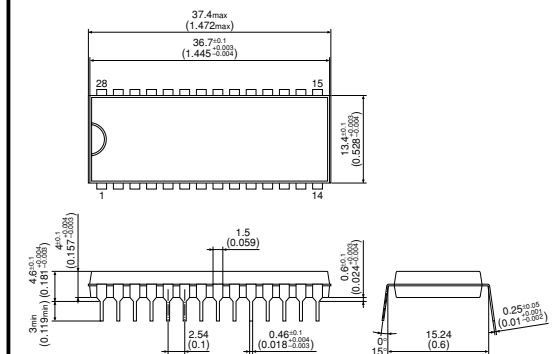
Plastic DIP-32pin (600mil)



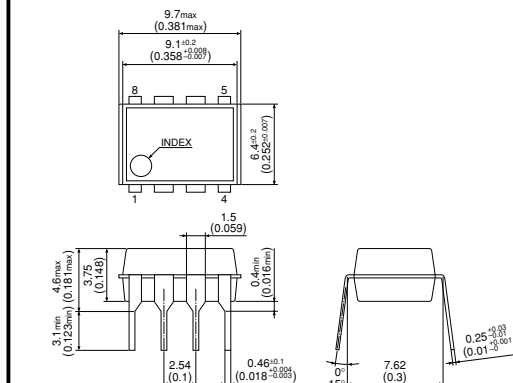
Plastic DIP-18pin (300mil)



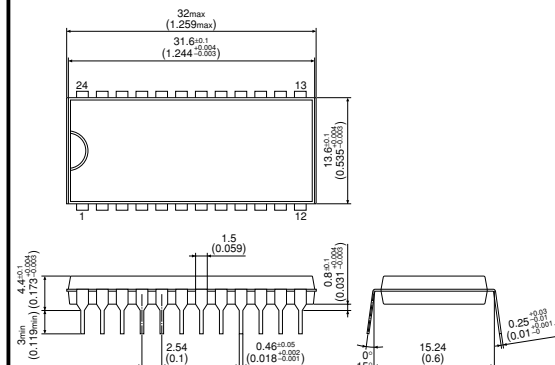
Plastic DIP-28pin (600mil)



Plastic DIP-8pin (300mil)



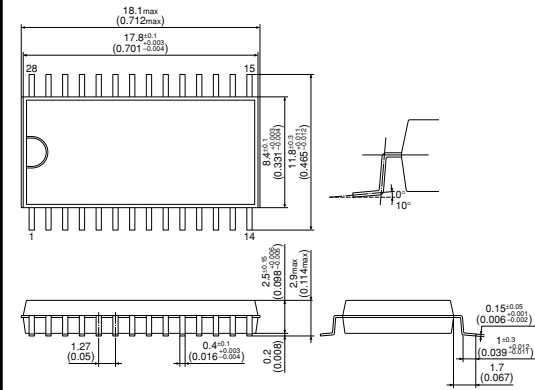
Plastic DIP-24pin(600mil)



Plastic SOP

Unit: mm

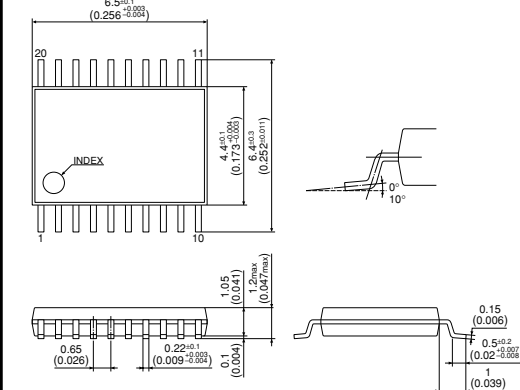
Plastic SOP2-28pin (450mil)



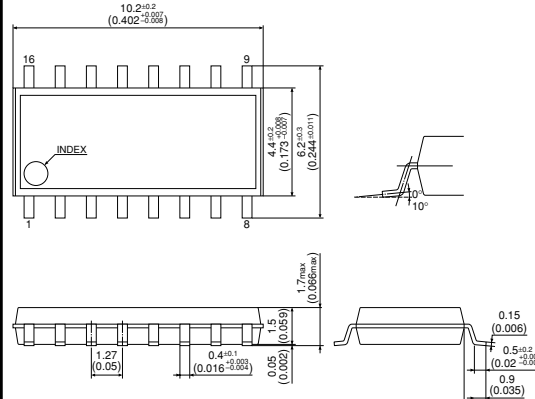
Plastic SSOP

Unit: mm

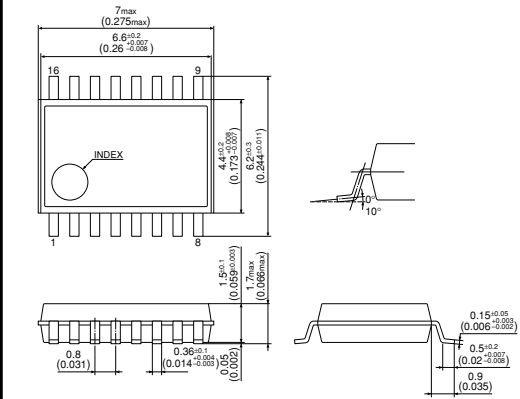
Plastic SSOP1-20pin



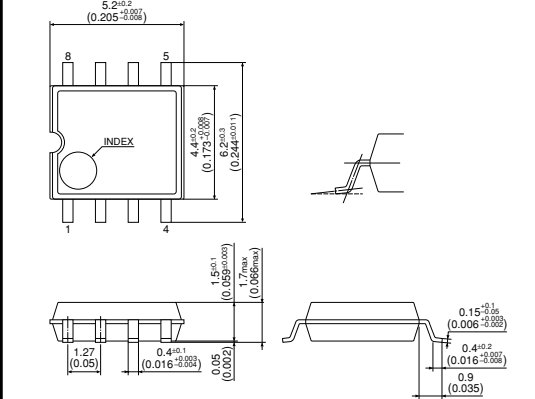
Plastic SOP3A-16pin (225mil)



Plastic SSOP2-16pin



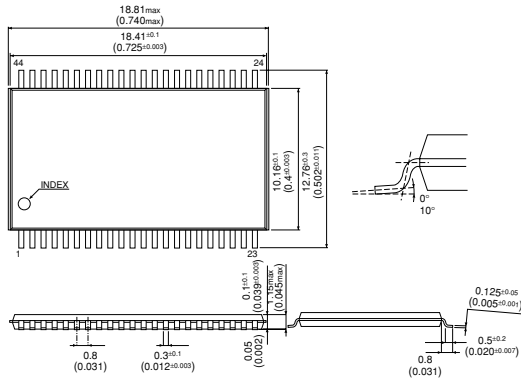
Plastic SOP3A-8pin (225mil)



Plastic TSOP

Unit: mm

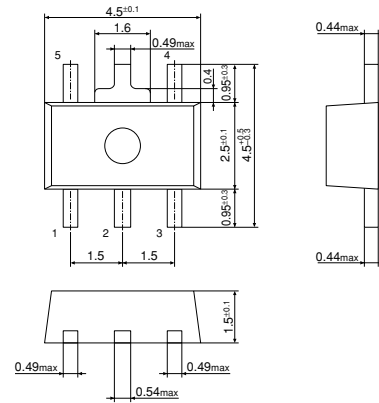
Plastic TSOP(II)-44pin



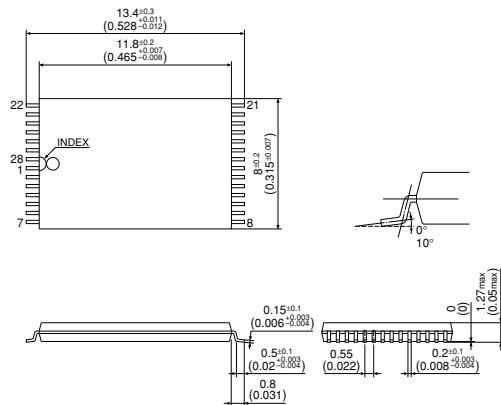
SOT89

Unit: mm

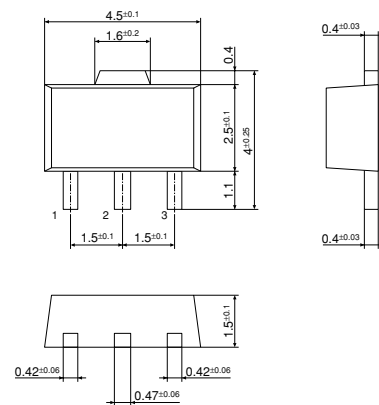
SOT89-5pin



Plastic TSOP(I)-28pin

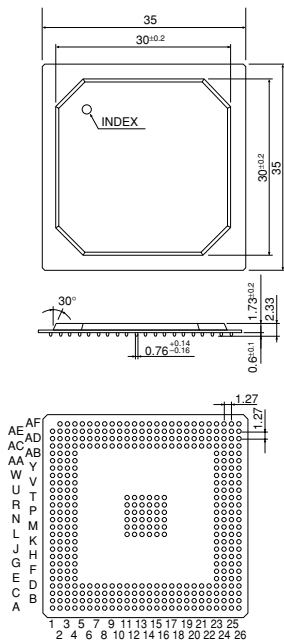


SOT89-3pin

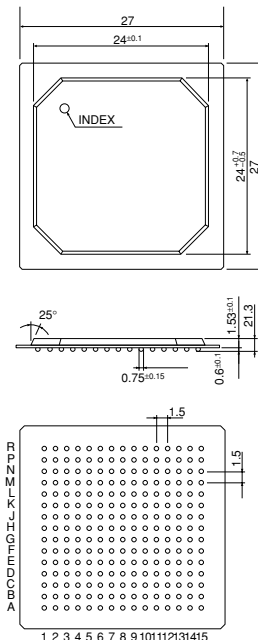


Plastic BGA

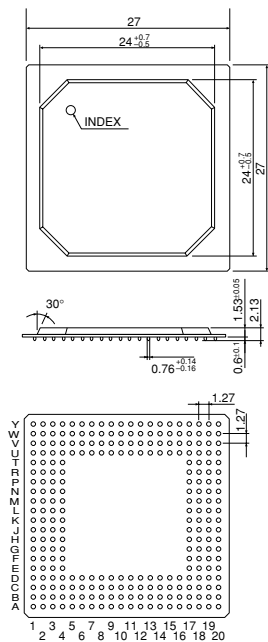
PBGA-388pin



PBGA-225pin

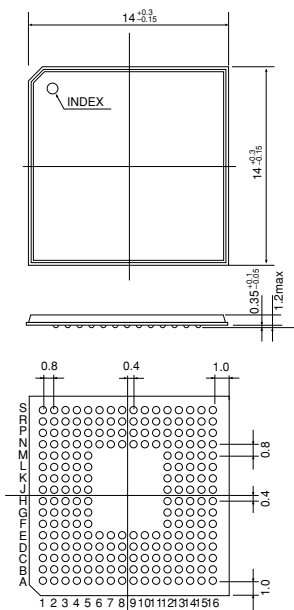


PBGA-256pin



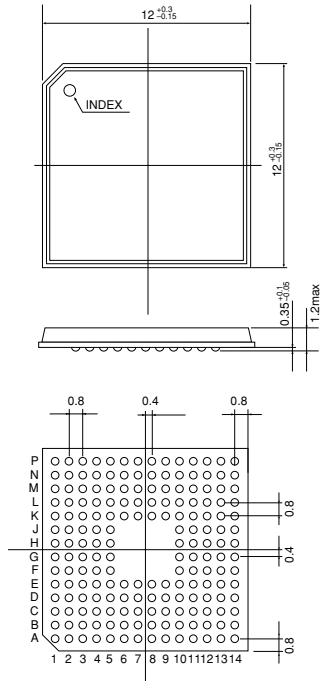
Plastic Fine Pitch BGA

PFBGA-220pin

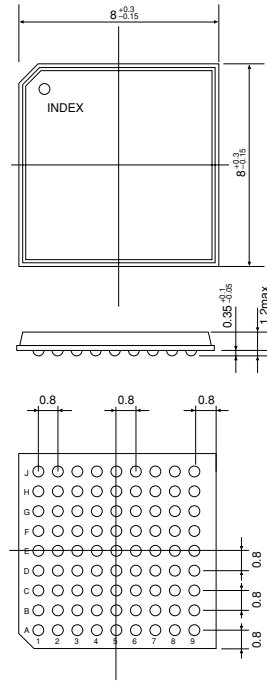


Plastic Fine Pitch BGA

PFBGA-180pin

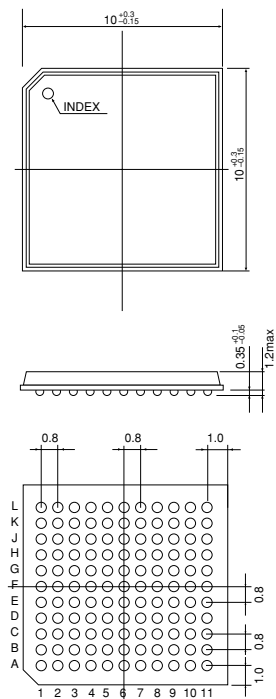


PFBGA-81pin



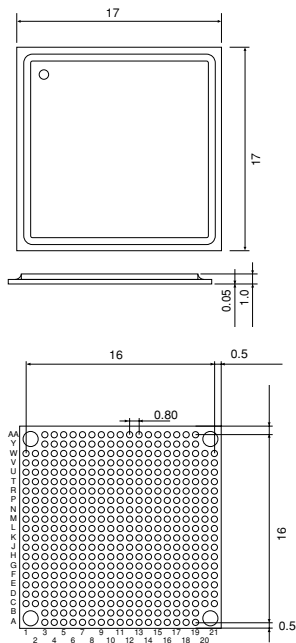
Unit: mm

PFBGA-121pin



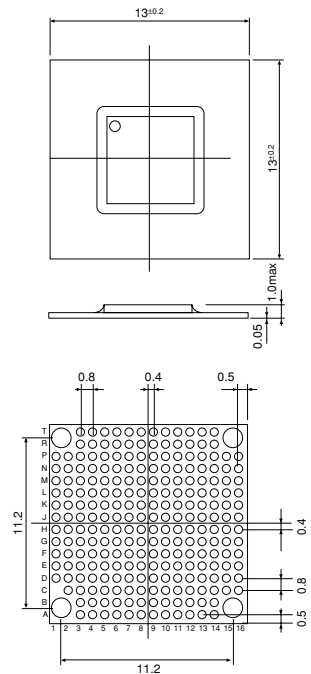
Ceramic Fine Pitch LGA

CFLGA-424pin

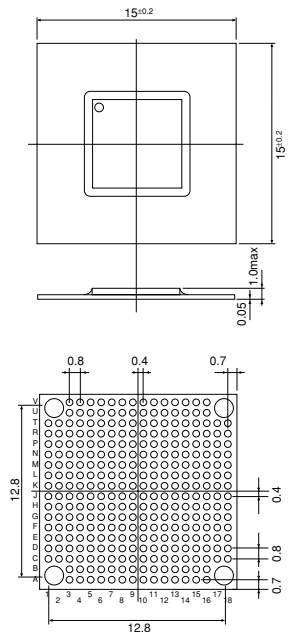


Unit: mm

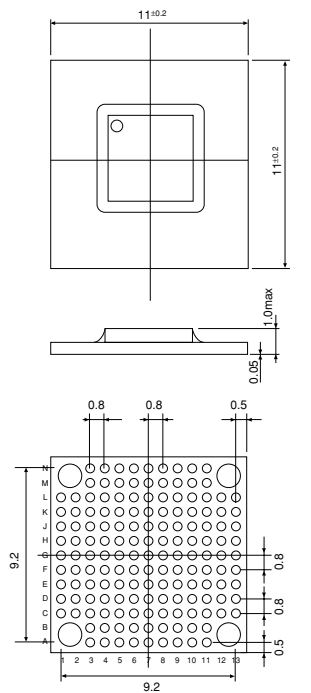
CFLGA-239pin



CFLGA-307pin



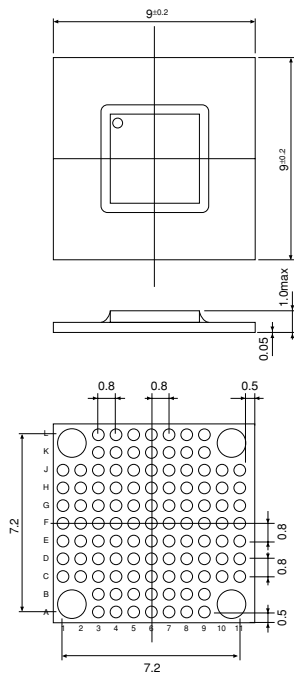
CFLGA-152pin



PACKAGE

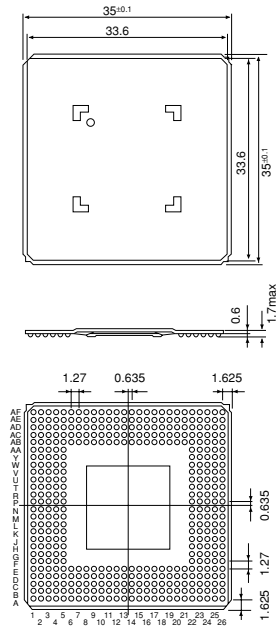
Ceramic Fine Pitch LGA

CFLGA-104pin



Unit: mm

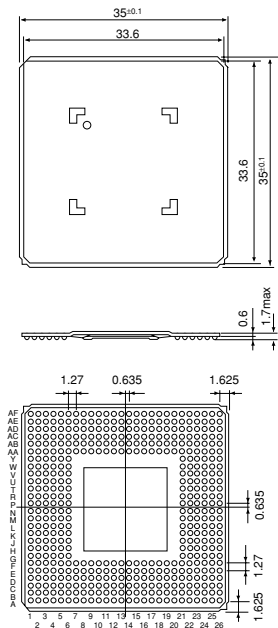
TBGA-420pin (Under development)



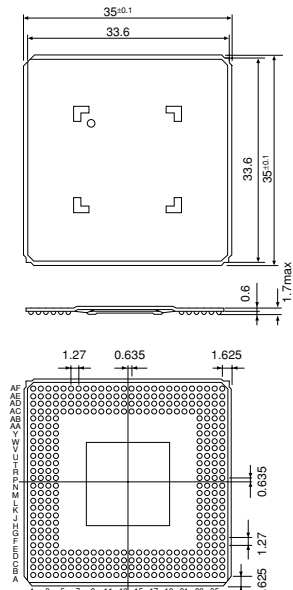
T-BGA

TBGA-480pin (Under development)

Unit: mm



TBGA-352pin (Under development)



ASICs

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* : Under development

1 ASICs

-1 Gate Arrays

■ High-speed, high-density lineup

S1L60000 Series

Series		S1L60000 Series (SLA60000 series)									
Features		<ul style="list-style-type: none"> ● Ultra-high density (0.25μm silicon gate CMOS with triple/quadruple layer metal) Raw gates: 99,220~2,519,604 gates ● Ultra-high speed operation (Propagation delay: 107 ps/2.5V, 2-input NAND, typical) ● Selectable supply voltage (Internal gate: 2.5V, 2.0V I/O Cell: 3.3V, 2.5V/2.0V) (built-in level shifter) ● Low power consumption (0.18μW/MHz/BC at 2.5V of the internal cell) ● Driving capacity (I_{OL}=0.1, 1, 3, 6, 12, 24mA, PCI/at 5.0V, I_{OL}=0.1, 1, 2, 6, 9, 12mA, PCI/at 2.5V, I_{OL}=0.05, 0.3, 1, 2, 3, 6mA/at 2.0V) ● On-chip RAM, PLL* and various other functions. ● Low noise output cell, PCI I/F, fail safe I/O, gated I/O, JTAG 									
Model	Triple layer	S1L60093 (SLA6009)	S1L60173 (SLA6017)	S1L60283 (SLA6028)	S1L60403 (SLA6040)	S1L60593 (SLA6059)	S1L60833 (SLA6083)	S1L61233 (SLA6123)	S1L61583 (SLA6158)	S1L61903 (SLA6190)	S1L62513 (SLA6251)
	Quadruple layer	S1L60094 (SLA600Q)	S1L60174 (SLA601Q)	S1L60284 (SLA602Q)	S1L60404 (SLA604Q)	S1L60594 (SLA605Q)	S1L60834 (SLA608Q)	S1L61234 (SLA612Q)	S1L61584 (SLA615Q)	S1L61904 (SLA619Q)	S1L62514 (SLA625Q)
Raw gates		99,220	171,720	284,394	400,290	595,362	831,572	1,234,820	1,587,754	1,902,960	2,519,604
Usable gates	Triple layer	79,376	137,376	199,076	280,203	416,753	540,522	802,633	1,032,040	1,141,776	1,511,762
	Quadruple layer	89,298	154,548	241,735	340,247	506,058	665,258	987,856	1,270,203	1,427,220	1,889,703
Pads		104*/112	132*/148	168*/188	200*/224	240*/272	284/320*	334/388*	388/440*	424/480*	488/552*
Propagation delay	Internal gates	tpd=107ps (at 2.5V, typical), 140ps (at 2.0V, 2-input NAND, typical)									
	Input buffer	tpd=260ps (at 5.0V, typical) level shifter, 270ps (at 2.5V, typical), 360ps (at 2.0V, typical)									
	Output buffer	tpd=1.5ns (at 5.0V, typical) level shifter, 1.6ns (at 2.5V, typical), 2.3ns (at 2.0V, typical), C _L =15pF									
I/O level		CMOS, LVTTTL, PCI									
Input mode		Normal, pull-up/pull-down, schmitt, level shifter, fail safe, Gated									
Output mode		Normal, open-drain, 3-state, level shifter, fail safe, Gated									

* : Under development

S1L50000 Series

Series		S1L50000 Series (SLA50000H series)										
Features		<ul style="list-style-type: none">● Ultra-high density (0.35μm silicon gate CMOS with double/triple/quadruple layer metal) Raw gates: 28,710~815,486 gates● Ultra-high speed operation (Propagation delay: 0.14ns/3.3V, 2-input Power-NAND, typical)● Selectable supply voltage (Internal gate: 3.3V, 2.0V I/O Cell: 5.0V, 3.3V/2.0V) (built-in level shifter)● Low power consumption (0.70μW/MHz/BC at 3.3V of the internal cell)● Driving capacity (I_{OL}=0.1, 1, 3, 8, 12, 24mA, PCI/at 5.0V, I_{OL}=0.1, 1, 2, 6, 12mA, PCI/at 3.3V, I_{OL}=0.05, 0.3, 0.6, 2, 4mA/at 2.0V)● On-chip RAM, PLL and various other functions.● Low noise output cell, PCI I/F, USB I/F, fail safe output, JTAG										
Model	Double layer	S1L50282 (SLA5028H)	S1L50752 (SLA5075H)	S1L50992 (SLA5099H)	S1L51252 (SLA5125H)	S1L51772 (SLA5177H)	S1L52502 (SLA5250H)	S1L53352 (SLA5335H)	S1L54422 (SLA5442H)	S1L55062 (SLA5506H)	S1L56682 (SLA5668H)	S1L58152 (SLA5815H)
	Triple layer	S1L50283 (SLA502TH)	S1L50753 (SLA507TH)	S1L50993 (SLA509TH)	S1L51253 (SLA512TH)	S1L51773 (SLA517TH)	S1L52503 (SLA525TH)	S1L53353 (SLA533TH)	S1L54423 (SLA544TH)	S1L55063 (SLA550TH)	S1L56683 (SLA566TH)	S1L58153 (SLA581TH)
	Quadruple layer	S1L50284 (SLA502QH)	S1L50754 (SLA507QH)	S1L50994 (SLA509QH)	S1L51254 (SLA512QH)	S1L51774 (SLA517QH)	S1L52504 (SLA525QH)	S1L53354 (SLA533QH)	S1L54424 (SLA544QH)	S1L55064 (SLA550QH)	S1L56684 (SLA566QH)	S1L58154 (SLA581QH)
Raw gates		28,710	75,774	99,198	125,772	177,062	250,160	335,858	442,112	506,688	668,552	815,468
Usable gates	Double layer	14,355	35,614	46,623	56,597	79,678	112,572	144,419	176,845	202,675	267,421	326,187
	Triple layer	25,265	64,408	84,318	100,618	132,797	187,620	251,894	309,478	354,682	467,986	570,828
	Quadruple layer	27,275	71,985	94,238	119,483	168,209	237,652	319,065	397,901	456,019	601,697	733,921
Pads		88/104	144/168	168/192	188/216	224/256	264/304*	308/352*	352/404*	376/432*	432/496*	480/548*
Propagation delay	Internal gates	tpd=0.14ns (at 3.3V, typical), 0.21ns (at 2.0V, typical)										
	Input buffer	tpd=0.38ns (at 5.0V, typical) level shifter, 0.4ns (at 3.3V, typical), 1.3ns (at 2.0V, typical)										
	Output buffer	tpd=2.12ns (at 5.0V, typical) level shifter, 2.02ns (at 3.3V, typical), 3.9ns (at 2.0V, typical), C _L =15pF										
I/O level		CMOS, LVTTTL, PCI, USB										
Input mode		Normal, pull-up/pull-down, schmitt, level shifter, fail safe, Gated										
Output mode		Normal, open-drain, 3-state, level shifter, fail safe, Gated										

* : Under development

Usable gates: Differ depending on the circuit and the listing is for your reference.

S1L35000 Series

Series		S1L35000 Series (SLA35000 series)			
Features		<ul style="list-style-type: none"> ● High density (0.6μm silicon gate CMOS with triple layer metal) ● High speed operation (Propagation delay: 0.4ns at 3.3V, 2-input Power - NAND, typical) ● Selectable supply voltage (5.0V, 3.3V, 3.0V) ● Low power consumption (0.77μW/MHz/BC at 3.0V of the internal cell) ● Driving capacity (I_{OL}=1, 4, 8, 12mA at 5.0V) (I_{OL}=0.5A, 2, 4, 6mA at 3.3V) ● On-chip RAM 			
Model		S1L35043 (SLA3504)	S1L35063 (SLA3506)	S1L35093 (SLA3509)	S1L35163 (SLA3516)
Raw gates		41,417	64,320	95,760	161,841
Usable gates		26,921	38,592	52,668	80,920
Pads		110	130	162	210
Propagation delay	Internal gates	tpd=0.3ns (at 5.0V, typical), 0.4ns (at 3.3V, typical)			
	Input buffer	tpd=0.48ns (at 5.0V, typical), 0.63ns (at 3.3V, typical)			
	Output buffer	tpd=2.08ns (at 5.0V, typical), 2.86ns (at 3.3V, typical), C _L =50pF			
I/O level		CMOS, TTL			
Input mode		Normal, pull-up/pull-down, schmitt			
Output mode		Normal, open-drain, 3-state			

S1L30000 Series

Series		S1L30000 Series (SLA30000 series)							
Features		<ul style="list-style-type: none"> ● High density (0.6μm silicon gate CMOS with double-layer/triple-layer metal) ● Ultra high speed operation (Propagation delay: 0.25ns at 5V 2-input Power-NAND, typical) ● Selectable supply voltage (5V, 3.3V, 3V) (built-in level shifter) ● High driving capacity (I_{OL}=0.1A, 1, 4, 8, 12 or 24mA at 5V, I_{OL}=0.05A, 0.5A, 2, 4, 6 or 12mA, PCI at 3.3V) ● On-chip RAM ● Low Noise Out Put Cell, PCI I/F 							
Model	Double layer	S1L30182 (SLA3018)	S1L30302 (SLA3030)	S1L30422 (SLA3042)	S1L30552 (SLA3055)	S1L30752 (SLA3075)	S1L31092 (SLA3109)	S1L31252 (SLA3125)	S1L32162 (SLA3216)
	Triple layer	S1L30183 (SLA301T)	S1L30303 (SLA303T)	S1L30423 (SLA304T)	S1L30553 (SLA305T)	S1L30753 (SLA307T)	S1L31093 (SLA310T)	S1L31253 (SLA312T)	S1L32163 (SLA321T)
Raw gates	Twin-power	18,544	30,846	42,262	55,341	75,450	109,080	125,836	216,216
	Single-power	23,572	37,232	49,680	63,784	85,251	120,802	138,400	232,582
Usable gates (Dual-power)	Double layer	9,272	15,423	19,863	26,010	33,952	49,086	54,109	86,486
	Triple layer	16,318	26,219	35,077	44,272	58,851	81,810	94,377	151,351
Usable gates (Single-power)	Double layer	11,786	18,616	23,349	29,978	38,362	54,360	59,512	93,032
	Triple layer	20,743	31,647	41,234	51,027	66,495	90,601	103,800	162,807
Pads		128	160	184	208	240	256	304	376
Propagation delay	Internal gate	tpd=0.25ns (at 5.0V, typical), 0.33ns (at 3.3V, typical)							
	Input buffer	tpd=0.48ns (at 5.0V, typical), 0.63ns (at 3.3V, typical)							
	Output buffer	tpd=2.08ns (at 5.0V, typical), 2.86ns (at 3.3V, typical), C _L =50pF							
I/O level		CMOS, TTL, PCI							
Input mode		Normal, pull-up/pull-down, schmitt, level interface							
Output mode		Normal, open-drain, 3-state, level shifter							

Usable gates: Differ depending on the circuit and the listing is for your reference.

1 ASICs

-1 Gate Arrays

S1L9000F Series

Series		S1L9000F Series (SLA9000F series)							
Features		<ul style="list-style-type: none">● 1.0µm silicon gate CMOS with double layer metal.● High speed operation (Internal gate delay tpd = 0.3ns at 5.0V, 2-input Power- NAND, typical).● Usable with simplified level shifter.● High drive output (I_{OL} = 0.1A, 2, 6, 12 or 24mA/at 5.0V, I_{OL} = 0.1, 1, 3, 6, 12mA/at 3.3V)● On-chip RAM● Low noise output cell							
Model		S1L902F2 (SLA902F)	S1L904F2 (SLA904F)	S1L907F2 (SLA907F)	S1L909F2 (SLA909F)	S1L913F2 (SLA913F)	S1L919F2 (SLA919F)	S1L927F2 (SLA927F)	S1L944F2 (SLA944F)
Raw gates		2,784	4,392	7,872	9,540	13,144	19,350	27,234	44,070
Usable gates		1,809	2,854	4,723	5,724	7,229	10,642	13,617	22,035
Pads		80	100	128	144	160	184	208	256
Propagation delay	Internal gate	tpd=0.30ns (at 5.0V, typical), 0.43ns (at 3.3V, typical)							
	Input buffer	tpd=0.91ns (at 5.0V, typical), 1.08ns (at 3.3V, typical)							
	Output buffer	tpd=3.5ns (at 5.0V, typical), 4.2ns (at 3.3V, typical), C _L =50pF							
I/O level		CMOS, TTL							
Input mode		Normal, pull-up/pull-down, schmitt							
Output mode		Normal, open-drain, 3-state							

Usable gates: Differ depending on the circuit and the listing is for your reference.

1

-2 Embedded Arrays

An embedded array is an ASIC under a new method featuring consolidation of "Sea of gates" of a gate array and hard-macro cells for specific applications. With this product, the concept of system-on-chip has been realized by use of hard-macro cells with high functions and quicker delivery leadtime has become available when modifying the circuit, thanks to adoption of the "Sea of Gates" for the logic portion.

■ Designing the embedded arrays

When designing embedded arrays, execute system design first and determine the number of gates for the logic section and select the macro-cell to be used before starting manufacture of base bulks.

The base bulks, placing necessary hard-macro cells and the Sea of Gates for the logic portion, are manufactured up to just before the routing process.

In parallel with this manufacturing processes, processes from the circuit designing of the logic portion through post-simulation fix should be executed, similar to the cases of ordinary gate arrays, to go into sample production process after sign-off.

After the sign-off, samples can be shipped with the same delivery leadtime as that of the gate arrays.

Also, when making logic circuit modifications or ROM data changes, NRE charge and developing leadtime can be reduced to a level similar to that of the gate arrays.

● Products

Series	S1X60000 Series (SSL60000 Series)	S1X50000 Series (SSL50000 Series)	S1X35000 Series (SSL35000 Series)
Process	0.25μm, 3/4/5 layer metal	0.35μm, 2/3/4 layer metal	0.6μm, 3 layer metal
Raw gates	~2.5M	~1.4M	~500K
Internal cell delay	107ps / 2NAND, 2.5V	140ps / 2NAND, 3.3V	300ps / 2NAND, 5.0V
Power consumption	0.17μW/MHz/gate, 2.5V	0.39μW/MHz/gate, 3.3V	2.4μW/MHz/gate, 5.0V
Supply voltage (Internal)	1.8~2.7V	1.8~3.6V	2.7~5.0V
Supply voltage (I/O)	1.8~3.6V	1.8~5.5V	2.7~5.5V

● Macro-cell list

• 1port RAM (Synchronous)	• DMAC (F37)	• IrDA Controller	• PLL
• 2port RAM (Synchronous)	• RTC (F42)	• USB Function Controller	• ADC
• FIFO	• USRAT (F51)	• PCMCIA Controller	• DAC
• ROM	• PIT (F54)	• USB2.0 Transceiver*	
• Flash	• PPI (F55)	• IEEE1394 LINK*	
• OTPROM*	• PIC (F59)	• IEEE1394 PHY*	
• 8bit CPU (F80)	• URAT (F65)	• LVDS Receiver	
• 32bit RISC (S1C33)		• LVDS Transmitter*	
• ARM7TDMI		• TMDS Receiver*	
		• LCD Controller	

* : Under development

1 ASICs

-3 Standard Cells

■ Standard Cells

The standard cells are semi-custom ICs that incorporates a well-designed internal logic cell and ROM/RAM, CPU peripheral circuits or analog circuits into a single chip. Compared to the gate arrays, they boast higher design flexibility, functionality and integration capabilities, providing system LSI chips optimized to the customer needs. These features greatly help electronic device manufacturers design products with a compact body, lower power consumption, and a lower price.

	Gate array	Embedded array	Standard cell
	S1L50000 Series (SLA50000H Series)	S1X50000 Series (SSL50000 series)	S1K50000 Series (SCB50000 series)
Integration (%)	100	73	40
Power consumption ($\mu\text{W}/\text{MHz}/\text{FF}$)	7.65	4.51	2.22

- The standard cells offer 2/5 the degree of integration and 1/3 the power consumption of our S1L50000 series gate arrays.

S1K70000 Series*

Series	S1K70000 Series (SCB70000 series)
Features	<ul style="list-style-type: none"> ● High integrated (Use of 0.25μm silicon-gate with 3/4/5-layer wiring process) ● High-speed operation (Internal gate delay:TBD) ● Selective supply voltage For a single power supply (1.8V, 1.5V, 1.1V) For dual power supplies (IO / Internal = 3.3V / 2.5V, 2.5V / 1.5V) ● Low power consumption (TBD) ● Output Current(TBD)
Macro cell	● Same as the embedded-array-mountable macrocells.
Package	● PKG lineup QFP48-304 pins, PBGA, TBGA, PFBGA, CFLGA

*: Under development

S1K60000 Series

Series	S1K60000 Series (SCB60000 series)
Features	<ul style="list-style-type: none"> ● High integrated (Use of 0.25μm silicon-gate with 3/4/5-layer wiring process) ● High-speed operation (Internal gate delay: 107ps/2.5V, 2-input NAND, typical load) ● Selective supply voltage For a single power supply (2.5V, 2.0V) For dual power supplies (3.3V I/O / 2.5V Internal, 3.3V I/O / 2.0V Internal) ● Low power consumption (2.5V/MHz/gate, Internal cell at 2.5V) ● Output Current ($I_{OL}=0.1, 1, 3, 6, 12, 24\text{mA}$ at 3.3V, $I_{OL}=0.1, 1, 3, 6, 9, 18\text{mA}$ at 2.5V internal, $I_{OL}=0.05, 0.3, 1, 2, 3, 6\text{mA}$ at 2.0V)
Macro cell	● Same as the embedded-array-mountable macrocells.
Package	● PKG lineup QFP48-304 pins, PBGA, TBGA, PFBGA, CFLGA

S1K50000 Series

Series	S1K50000 Series (SCB50000 series)
Features	<ul style="list-style-type: none"> ● High integrated (Use of 0.35μm silicon-gate with 2/3/4-layer wiring process) ● High-speed operation (Internal gate delay: 0.14ns/3.3V, 2-input power NAND, typical load) ● Selective supply voltage For a single power supply (2.0V, 2.5V, 3.3V) For dual power supplies (5.0V I/O / 3.3V Internal, 3.3V I/O / 2.5V Internal, 3.3V I/O / 2.0V Internal) ● Low power consumption (0.25$\mu\text{W}/\text{MHz}/\text{gate}$, Internal cell at 3.3V) ● Output Current ($I_{OL}=0.1, 1, 3, 8, 12, 24\text{mA}$ at 5.0V, $I_{OL}=0.1, 1, 2, 6, 12\text{mA}$ at 3.3V, $I_{OL}=0.05, 0.3, 0.6, 2, 4\text{mA}$ at 2.0V)
Macro cell	● Same as the embedded-array-mountable macro cells.
Package	● PKG lineup QFP48-304 pins, PBGA, TBGA, PFBGA, CFLGA

■ Ultra Low Voltage Standard Cell

S1K2500 Series

Series	S1K2500 Series (SSC2500 series)
Features	<ul style="list-style-type: none"> ● Silicon gate CMOS, two layers (1.6 μm) ● Ultra low operating voltage ($V_{DD} = 0.9$ to 5.5 V) ● 300 to 16,000 gates available ● Very low power consumption (1.0 $\mu\text{W}/\text{MHz}/\text{gate}$, 3.0V; 0.25 $\mu\text{W}/\text{MHz}/\text{gate}$, 1.5V) ● The internal power supplies (with built-in internal level shifter and I/O level shifter) ● Full built-in oscillating circuits (INV, RF, RD, CG, CD) ● Analog cells can be incorporated.
Package	● PKG lineup QFP48-144 pins, SOP

Usable gates: Differ depending on the circuit and the listing is for your reference.

1-4 Development of Gate Arrays

Gate Arrays are developed you to coraborate with Seiko Epson. We are preparing design libraries for various ASIC development tools

1. RTL Interface

After taking development as far as the function simulation stage, customers can send their Verilog-HDL or VHDL source files and test patterns to EPSON via an HDL interface, so that EPSON can perform logic synthesis.

2. Netlist Interface

Customers can use the netlist interface to send EPSON gate-level netlists and test patterns for Verilog-HDL or VHDL code that has completed the logic synthesis stage, and EPSON will then implement the logic simulation stage.

3. Simulation Interface

Customers can use this interface to send EPSON gate-level netlists and test patterns for Verilog-HDL or VHDL code that has completed the logic simulation stage.

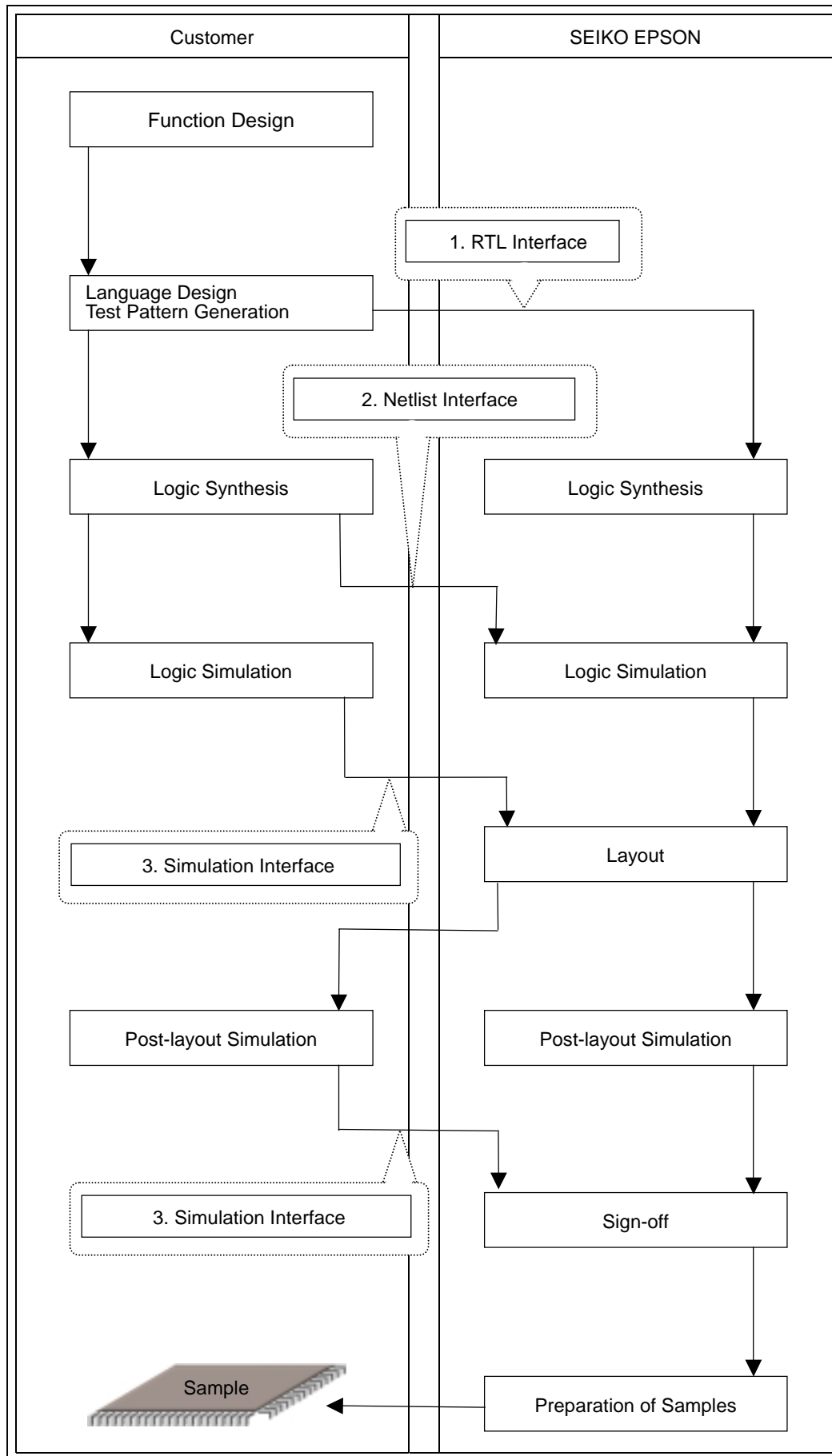
EPSON will then perform the subsequent tasks beginning with interconnect layout.

●Supporting libraries for ASIC design Tools Available as of January, 2001

ASIC Design Tools	S1L60000 (SLA60000)	S1L50000 (SLA50000H)	S1L35000 (SLA35000)	S1L30000 (SLA30000)	S1L9000F (SLA9000F)
Auklet	○	○	○	○	○
Verilog-XL	○	○	○	○	○
Design Compiler	○	○	○	○	○
Design Power	○	○	○	○	○
Prime Time	○	○	---	---	---
TestGen	○	○	---	○	○
ModelSim	○	○	○	○	○
Leonardo	○	○	○	○	○

○: Supported, ---: Not Supported

1-4 Development of Gate Arrays



MCUs

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2-1 MCUs 4-bit Microcomputers

■ 4-bit single-chip application-oriented microcomputers

S1C60/62(E0C60/62)Family:

Application-oriented microcomputer

S1C62/60(E0C62/60) family microcomputers are truly application-oriented, because they offer the features you need to get the job done -- flexible, modular architectures, a range of performance levels, and a wide selection of power supply voltages and package configurations. Built around the S1C6200(E0C6200) or S1C6200A(E0C6200A), SEIKO EPSON's powerful 4-bit core CPUs, the S1C62(E0C62) family lineup provides a wide choice of ROM and RAM capacities, I/O ports, on-chip LCD drivers, supply voltage detectors, and high-performance peripheral circuits. All devices are fabricated using power-saving, low-voltage (1.5, 3.0 or 5.0V) technology.

S1C60(E0C60) series

Using the same core CPU as of the S1C62(E0C62) Family, the S1C60(E0C60) series devices are optimized for specification upto 4Kword of ROM capacities. They are suitable for applications to small sized equipment such as clocks, timers and thermometers.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer					SIO		A/D	Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)		
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous Clock synchronous	External						Internal					
S1C60N01 (E0C6001)	1.8~3.6	1.0/2.5	32.768K	1,024	80	4	2	4	---	---	---	---	○	---	---	---	---	---	---	---	1	20×4	QFP12-48 Chip			
S1C60L01 (E0C60L01)	1.2~2.0					4	2	4	---	---	---	---	○	---	---	---	---	---	---	---	---		---	1	20×4	QFP6-60 Chip
S1C60N02 (E0C6002)	1.8~3.5					4	4	4	---	---	---	---	○	---	---	---	1	---	---	---	---		1	15×4		Chip
S1C60L02 (E0C60L02)	1.2~2.0			4	4	4	---	---	---	---	○	---	---	---	---	---	---	---	---	1	1	15×4	Chip			
S1C60N03 (E0C6003)	1.8~3.6			768	64	4	4	0	---	---	---	---	○	---	---	---	---	---	---	---	1		1		15×4	Chip
S1C60L03 (E0C60L03)	1.2~2.0					4	4	0	---	---	---	---	○	---	---	---	---	---	---	---	---	1	1	15×4		Chip
S1C60N04 (E0C6004)	2.7~3.6 4.5~5.5	330/450 (3V)	2M	1,536	144	4	4	4	---	---	---	---	○	---	---	---	---	---	---	1	1	26×4	QFP12-48 Chip			
S1C60N05 (E0C6005)	1.8~3.5	8/15	32.768K	1,536	80	4	4	4	---	---	---	---	○	---	---	---	2	---	---	1	2	20×4	QFP6-60 Chip			
S1C60L05 (E0C60L05)	1.2~2.0					4	4	4	---	---	---	---	○	---	---	---	---	---	---	---	---		1	2	20×4	QFP6-60 QFP13-64 Chip
S1C60N06 (E0C6006)	2.2~3.5	2/9(32K) /130(455K)	32.768K/ 455K	2,048	128	8	4	4	---	---	---	○	○	---	---	---	---	1	---	2	4	40×8/16	QFP15-100 Chip			
S1C60N07 (E0C6007)	2.2~5.5	2.5/6.5(32K) /1m(2M)	32.768K/ 2M	4,096	512	4	6	4	1	---	○	○	○	---	---	---	---	---	---	1	3		40×8/16	QFP15-100 Chip		
S1C60N08 (E0C6008)	1.8~3.5	1.0/2.2	32.768K	4,096	832	9	8	8	---	2	○	○	○	---	1	---	○	---	---	○	3	3	48×4	QFP5-100 QFP15-100 Chip		
S1C60L08 (E0C60L08)	0.9~1.7					9	8	8	---	2	○	○	○	---	1	---	○	---	---	---	○	3			3	48×4
S1C60A08 (E0C60A08)	2.2~3.5	1.1/3.0(32K) 50(500K)	32.768K/ 500K			9	8	8	---	2	○	○	○	---	1	---	---	---	---	---	---	1			3	
S1C60N09 (E0C6009)	2.6~3.6	1.0/3.0	32.768K	1,536	144	4	4	8	---	---	○	---	○	---	---	---	---	---	---	1	2	38×4	Chip			
S1C60L09 (E0C60L09)	1.2~1.8					4	4	8	---	---	○	---	○	---	---	---	---	---	---	---	---			---	1	2
S1C60N11 (E0C6011)	1.2~1.8	4.0/8.0 ×2	65~260K	1,536	144	4	4	8	---	---	---	---	○	---	---	---	---	---	---	1	1	38×4	QFP5-80 QFP14-80 Chip			
S1C60N13*	2.2~3.6	TBD	32.768K	4,096	256	5	9	8	---	2	---	○	○	---	1	---	---	---	---	○	2	3	38×4	QFP14-80 QFP5-80 Chip		
S1C60L13*	1.2~1.8					5	9	8	---	2	---	○	○	---	1	---	---	---	---	---	---	---			○	2
S1C60A13*	2.2~3.6	TBD	32.768K/ 1M			5	9	8	---	2	---	○	○	---	1	---	---	---	1	○	2	3	32×4	QFP5-80 Chip		
S1C60140*	2.2~3.6	TBD	32.768K/ 455K	4,096	208	8	10	4	---	---	---	○	---	---	---	---	---	1	○	2	3	32×4	QFP5-80 Chip			
S1C60N15*	1.8~3.6	TBD	32.768K	4,096	832	9	8	8	---	2	---	○	○	---	---	---	○	---	---	○	3	2	48×4	QFP5-100 QFP15-100 Chip		
S1C60L15*	1.2~1.7					9	8	8	---	2	---	○	○	---	---	---	○	---	---	---	---	○			3	2
S1C60A15*	2.2~3.6	TBD	32.768K/ 500K			9	8	8	---	2	---	○	○	---	---	---	---	---	---	---	---	---	---	48×4	QFP5-100 QFP15-100 Chip	

○ : Available

×1: SVD is an abbreviation for Supply Voltage Detector.

×2: At the time of Sleep is 0.3μA.

* : Under development

S1C62100(E0C6210) series

The microcomputer of this series integrates ROM, RAM, LCD driver, BLD (SVD) circuit, comparator (1/2 ch), and clock function provided with remote control carrier output circuit. This series can also be applied to handy equipment, including simplified electronic notes, from infrared remote controller.

Control/Timer Output Circuit: This series can also be applied to many equipment, including simplified circuit notes, from infrared remote controller.																								
Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port		Timer				SIO				Interrupts				LCD Driver seg×com	Package (Form of delivery)			
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous Clock	Clock synchronous	A/D	Comparator	RF Converter	Infrared output			SVD ×1	External	Internal
S1C621A0 (E0C621A)	2.2~3.5	2/9(32K) /130(455K)	32.768K/ 455K	4,096	208	8	9	4	---	---	---	---	○	---	---	---	1	---	1	○	2	4	32×4	QFP5-80 QFP14-80 Chip
S1C621C0 (E0C621C)	2.2~5.5	3/7(32K) 170(455K)	32.768K/ 455K or 1M		208		4	4				○	---	---	---	---	---	2	1	○	2	3	34×4	QFP5-80 Chip

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

S1C6S200(E0C6S20) series

The microcomputer of this series integrates ROM, RAM, LCD driver, stepping motor drive 1 ch, timer and stopwatch function. This series best fit for combination watches, timers, and counters.

for combination watches, timers, and counters.																							
Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port		Timer					SIO		A/D	Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous						Clock synchronous	External		
S1C6S2N7 (E0C6S27)	2.2~3.6	0.7/1.9	32.768K	1,536	80	4	4	4	---	---	○	---	○	---	---	---	---	---	○	1	3	26×4	QFP6-60 Chip
S1C6S2L7 (E0C6SL27)	0.9~1.8	0.6/1.7																					
S1C6S2B7 (E0C6SB27)	0.9~3.6	0.7/1.9																					
S1C6S2A7 (E0C6SA27)	2.2~3.6	60/70	200K																				

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

S1C62N30/6S300(E0C6230/6S30) series

The microcomputer of this series integrates ROM, RAM, LCD driver, timer and stopwatch function. This series is best fit for clocks, timers, and counters.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer				SIO			Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous Clock	Clock synchronous	A/D				External	Internal		
S1C6S3N7 (E0C6S37)	1.8~3.6	1.0/2.5	32.768K	1,024	80	4	4	4	---	---	○	---	○	---	---	---	---	---	○	1	2	26×4	QFP6-60 Chip
S1C6S3L7 (E0C6SL37)	0.9~2.0																						
S1C6S3B7 (E0C6SB37)	0.9~3.6																						
S1C6S3N2 (E0C6S32)	1.8~3.6	0.65/2.0	32.768K	2,048	144	5	8	8	---	1	○	○	○	---	---	○	---	---	○	2	2	38×4	QFP5-80 QFP14-80 Chip
S1C6S3L2 (E0C6SL32)	0.9~1.8																						
S1C6S3B2 (E0C6SB32)	0.9~3.6																						
S1C6S3A2 (E0C6SA32)	1.8~3.6	1.5/4.0 /150(1M)	32.768K/ 1M	3,072	256	5	8	8	---	1	○	○	○	---	1	---	---	---	○	2	3	40×4	QFP5-100 Chip
S1C62N33 (E0C6233)	1.8~3.5	1.5/6.0	32.768K																				
S1C62L33 (E0C62L33)	0.9~1.7	1.0/3.0	32.768K																				
E0C62A33 (E0C62A33)	2.2~3.5	2.0/8.0(32K) 135(500K)	32.768K/ 500K	1,536	96	4	4	4	---	---	○	---	○	---	1	---	---	---	---	2	3	26×4	QFP12-48 QFP5-60 Chip
S1C6N3B0 (E0C623B)	0.8~3.6	2.5/3.0	32.768K																				
S1C6A3B0 (E0C62A3B)	1.7~3.6	80/100(1M) ×2	1M																				

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: At the time of Sleep is 1μA.

2-1 MCUs 4-bit Microcomputers

S1C62400/6S400(E0C6240/6S40) series

The microcomputer of these series integrates ROM, RAM, dot matrix LCD driver, timer and stopwatch function. These series feature many input/output ports and built-in clock synchronous serial ports that provide control of external memory. The microcomputer of these series is best fit for such equipment that requires dot matrix display, including high performance electronic memorandum equipment and dictionary.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer				SIO			Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous	A/D				External	Internal		
S1C62440 (E0C6244)	2.2~5.5	2.5/6.5(32K) 400(1M)	32.768K/ 1M	4,096	384	12	12															40×8/16	QFP5-128 Chip
	3.5~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				
S1C624A0 (E0C624A)	2.2~5.5	2.5/6.5(32K) 400(1M)	32.768K/ 1M	6,144	640																		
	3.5~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				
S1C6S460 ×2 (E0C6S46)	2.2~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				
S1C62480 (E0C6248)	2.2~5.5	2.5/6.5(32K) 400(1M)	32.768K/ 1M	8,192	768	8	20		1	---	○	○	○	---	1	---	---	---	○	2	4		
	3.5~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				
S1C6S480 ×2 (E0C6S48)	2.2~5.5	2.5/6.5(32K) 400(1M)	32.768K/ 1M					16														51×8/16	QFP8-144 Chip
	3.5~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				
S1C624C0 (E0C624C)	2.2~5.5	2.5/6.5(32K) 400(1M)	32.768K/ 1M	5,120	1152																		
	3.5~5.5	2.5/6.5(32K) 1000(2M)	32.768K/ 2M																				

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: No external memory accessing function.

S1C62N50(E0C6250)/S1C62900(E0C6290) series

The microcomputer of these series integrates ROM, RAM, R/F comparator for measuring temperature, LCD driver, and timer. An external thermistor and built-in R/F comparators provide the function of a thermometer. The S1C62900(E0C6290) series also contains clock synchronous serial ports that provide control of external memory.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer				SIO			Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous	A/D				External	Internal		
S1C62N51 (E0C6251)	1.8~3.5	1.0/2.5	32.768K	1,024	80	4	4	4	---	---	---	---		---			1			1	2	26×4	QFP6-64 Chip
S1C62L51 (E0C62L51)	0.9~2.0																						
S1C62560 (E0C6256)	0.9~3.6	0.65/ 2.0(32K) 170(1M)	32.768K/ 1M	6,144	640	8	8	8	1	○	○		○	---	1	---	2		○	2	5	60×5	QFP5-100 QFP5-128 Chip
	2.2~3.6																						
S1C62920 (E0C6292)	2.2~5.5	2.0/5.0(32K) 270(1M)	32.768K/ 1M	2,048	128	4	4		---	---	---						3			1	3	22×4	QFP6-64 QFP13-64 Chip

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

S1C62600(E0C6260) series

The microcomputer of this series integrates ROM, RAM, high current output port, event counter, interval timer, synchronous/start/stop system serial port, comparator, and clock function. This series is best fit for application to the area of telemeter.

Serial port, comparator, and clock function. This series is best fit for application to the area of thermometer.																								
Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port		Timer						SIO		Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous Clock synchronous	A/D					External	Internal			
S1C62660 (E0C6266)	2.2~5.5	1.3/9.0(38.4K) 110(500K)	38.4K/ 500K	6,144	1024	12	16	12	1	1	---	○	○	1	1 ※2	---	2	---	---	○	3	9	---	QFP6-60 Chip

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: The start/stop system can be chosen on a mask option.

S1C62700(E0C6270) series

The microcomputer of this series integrates ROM, RAM, double integral type A/D converter, LCD driver, timer and serial I/O port. This series is best fit for a system that performs analog input control of measuring instruments, etc. and provides LCD display.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer			SIO		Comparator RF Converter Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)					
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock			Asynchronous Clock synchronous	A/D							
S1C62740 (E0C6274)	2.2~5.5	2.0/6.0(32K) 200(1M) ×3	32.768K/ 1M	4,096	512	5	4	12	1	○	○	○	○	---	1	5 ※2	○	---	---	○	2	5	32×4	QFP5-100 QFP15-100 Chip

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Dual slope type.

※3: At the time of Sleep is 0.7μA.

S1C62N80(E0C6280) series

The microcomputer of this series integrates ROM, RAM, melody generator, LCD driver, clock, and stopwatch function. This series is best fit for clocks, watches and timers using melody.

Notes: For customers who will use the S1C62N80(E0C6280) series, they should make applications to our company regardless of the use or non-use of melody ROM, before working on software development.

As regards the copyright in Japan, we will file an application for the number to Japanese Society of Rights of Authors and Composer (JASRAC) and deal with the number involving the copyright.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port			Timer				SIO		A/D	Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous Clock synchronous						External	Internal			
S1C62N81 (E0C6281)	1.8~3.5	1.0/3.0	32.768K	1,024	96	5	7	4	---	---	○	---	○	---	---	---	1	---	---	○	2	3	26×4	QFP6-64 Chip
S1C62L81 (E0C62L81)	0.9~3.5																							
S1C62N82 (E0C6282)	2.2~5.5	1.5/4.0	32.768K	2,048	224	5	8	4	---	---	○	---	○	---	---	---	1	---	---	○	2	3	42×4 38×8	QFP5-80 QFP14-80 Chip
S1C62L82 (E0C62L82)	0.9~3.5																							
S1C62A82 (E0C62A82)	2.2~5.5	1.7/4.0(32K) 150(1M)	32.768K/ 1M																					

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

S1C62M00(E0C62M2) series

The microcomputer of this series integrates ROM, RAM, double integral type A/D converter, LCD driver, timer, and serial I/O port. This series is best fit for portable measuring instruments.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×12bit	RAM ×4bit	Port		Timer					SIO		A/D	Comparator	RF Converter	Infrared output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output	Programmable 8bit	Event	Stopwatch	WDT	Clock	Asynchronous						Clock synchronous	External			Internal
S1C62M20 (E0C62M2)	2.15~3.5	3.0/900 ×2	32.768K	1,536	128	8	4	4	---	---	---	○	○	---	1	3 ×3	---	---	---	○	2	3	16×4	QFP5-80 QFP14-80 Chip

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Consumption current at the time of measuring A/D.

※3: Dual slope type.

-2 High Performance 4-bit Microcomputers

■ High performance 4-bit single-chip microcomputers

S1C63(E0C63)Family:

Application-oriented microcomputer

S1C63(E0C63)Family microcomputers integrate a wide variety of peripheral circuits including ROM, RAM, I/O port, LCD driver into a single chip design with CMOS 4-bit core CPU at their center. High speed operation has been realized owing to a wide range of instructions and the high speed instruction cycle (2-6 CPI). Low voltage and low supply current are, same as S1C62(E0C62) Family, additional features of this CMOS 4-bit microcomputer.

S1C63100(E0C63100) series

A microcomputer being equipped with ROM, RAM, serial I/F, A/D converter, various timer functions, etc. It features built-in A/D converter, wide operating voltage range and low power consumption and is suitable for portable equipment.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD *1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal			
S1C63158 ×4 (E0C63158)	0.9~3.6	2.0/4.0(32K) 900(4M)	32.768K	8,192	512	9	12	20	2 ×2	---	○	○	---	1	4 ×3	○	○	---	---	---	3	8	---	Chip QFP12-48 QFP13-64
	2.2~3.6		32.768K/4M																					

○ : Available

*1: SVD is an abbreviation for Supply Voltage Detector.

*2: Two 8 bits serve as a 16-bit timer.

*3: 8 bits successive-approximation type and serves as general-purpose I/O.

*4: The S1C63P366 also serves as flash microcomputer for evaluating S1C63158.

S1C63200(E0C63200) series

A microcomputer being equipped with ROM, RAM, A/D converter, various timer functions, etc. It features wide operating voltage range and wide working frequency range (0.5~4.5 MHz), suitable for application to the control units of household electric products and portable products which require A/D conversion and LCD indications.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD *1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal			
S1C63256 (E0C63256)	2.7~5.5	740(3V,2M)/ 1200(3V,2M) ×4	500K~4.5M	6,144	256	4	4	8	4 ×2	---	○	○	---	---	4 ×3	○	---	---	---	---	1	5	20×4	Chip QFP13-64

○ : Available

*1: SVD is an abbreviation for Supply Voltage Detector.

*2: Two 8 bits serve as a 16-bit timer.

*3: 8 bits successive-approximation type and serves as general-purpose I/O.

*4: At the time of Sleep is 0.3μA.

S1C63300(E0C63300) series

A microcomputer being equipped with ROM, RAM, LCD driver, A/D converter, various timer functions, etc. It features built-in A/D converter, wide operating voltage range and low power consumption, suitable for application to portable products which require LCD indications.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD *1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal			
S1C63358 (E0C63358)	0.9~3.6	2.0/6.0(32K) 900(4M)	32.768K	8,192	512	9	12	20	2 ※2	---	○	○	---	1	4 ※3	○	○	---	---	---	3	8	32×4	Chip QFP15-100
	2.3~3.6		32.768K/4M																					
S1C6P366 ^{※4} (E0C63P366)	2.7~5.5	2.5/120(32K) 800(4M)	32.768K/4M	16,384 (Flash)	2,560																			

○ : Available

*1: SVD is an abbreviation for Supply Voltage Detector.

*2: Two 8 bits serve as a 16-bit timer.

*3: 8 bits successive-approximation type and serves as general-purpose I/O.

*4: This series also serves as flash microcomputer for evaluating S1C63158.

S1C63400(E0C63400) series

A microcomputer being equipped with ROM, RAM, dot-matrix LCD driver, various timer functions, etc. It features wide operating voltage range and low power consumption and is suitable for portable equipment such as data banks which require dot-matrix indications.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD ×1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal		
S1C63454 (E0C63454)	1.8~6.4	1.0/10(32K) 1000(4M)	32.768K	4,096	1,024	4	4	8	2 ×2	○	○	---	1	---	○	---	---	---	---	1	9	40×8/16/17	Chip QFP15-100
S1C63455 (E0C63455)	2.2~6.4	1.0/10(32K) 1000(4M)	32.768K/4M																				
S1C63458 (E0C63458)	1.8~6.4	1.0/10(32K) 1000(4M)	32.768K	8,192	5,120	8	12	12	2 ×2	○	○	---	1	---	○	---	---	---	---	2	9	60×8/16/17	Chip QFP5-128 QFP8-144 QFP17-144
S1C63466 (E0C63466)	2.2~6.4	1.0/10(32K) 1200(4M)	32.768K/4M																				
S1C6P466 (E0C63P466)	1.8~6.4	1.0/10(32K) 1200(4M)	32.768K	16,384	1,792	8	12	12	2 ×2	○	○	---	1	---	○	○	---	---	---	2	4	60×8/16/17	Chip QFP8-144 QFP17-144
S1C63467	2.2~6.4	1.0/10(32K) 1200(4M)	32.768K/4M																				
S1C6P466 (E0C63P466)	2.7~5.5	2.5/90(32K) 1000(4M)	32.768K/4M	16,384 (Flash)	5,120	8	12	12	2 ×2	○	○	---	1	---	○	○	---	---	---	2	4	60×8/16/17	Chip QFP8-144 QFP17-144
S1C63467	1.2~3.6	1.5/14(45K) 610(1.8M) ×3	32.768K	16,384	2,304	8	14	16	---	---	○	○	---	1	---	○	○	---	---	2	5	60×8/9	Chip QFP5-128
	2.2~3.6		32.768K/1.8M																				

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: At the time of Sleep is 0.5μA.

S1C63500(E0C63500) series

A microcomputer being equipped with ROM, RAM, dot-matrix LCD driver, DTMF/DP generator, FSK demodulator, various timer functions, etc. It features wide operating voltage range and low power consumption and is suitable for communication-equipment and portable-equipment such as data banks and Caller-ID which require dot-matrix indications.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD ×1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal		
S1C63557 (E0C63557)	2.2~5.5	1.5/10(32K) 1000(3.58M)	32.768K/ 3.58M	8,192	5,120	8	12	16	2 ×2	○	○	○	1	---	○	○	○	○	---	2	10	40×8/16/17	Chip QFP15-128
S1C63558 (E0C63558)		1.5/10(32K) 600(3.58M)											2						○ ×4	2	17		
S1C63567 (E0C63567)		1.5/10(32K) 1000(3.58M)		16,384									1						---	2	12	60×8/16/17	Chip QFP8-144
S1C6F567*	2.7~5.5	1.5/10(32K) 1000(3.58M)	32.768K/ 3.58M	16,384 (Flash)	5,120	8	12	16	2 ×2	○	○	○	1	---	○	○	○	○	---	2	12	60×8/16/17	Chip QFP8-144

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: Either start/stop system or clock synchronous system can be selected, depending on software.

※4: It conforms to the ITU-T V.23/Bell 202.

*: Under development

S1C63600(E0C63600) series

The microcomputer of this series integrates ROM, RAM, multiplication and division circuits, LCD driver, R/F converter, and a variety of timer functions. Since this series features a wide range of operating voltage and low power consumption, it is best fit for portable equipment with temperature measuring facility that requires battery-powered operation.

Temperature measuring facility that requires battery powered operation:																								
Products (Previous number)	Supply voltage range (V)	Supply current HALT/ operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD ×1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal			
S1C63666*	1.8~3.6	TBD	32.768K/2M	16,384	5,120	8	8	8	3 ×2	○	○	○	---	1	2 ×3	○	○	---	---	---	1	5	64×8	Chip QFP20-144
	2.4~3.6	TBD	32.768K/4M																					
	2.4~3.6	TBD	32.768K																					
S1C63658*	1.8~3.6	TBD	32.768K/2M	8,192	1,028	8	8	8	3 ×2	○	○	○	---	1	2 ×3	○	○	---	---	---	2	5	56×8	
	2.4~3.6	TBD	32.768K/4M																					
	2.4~3.6	TBD	32.768K																					
S1C63F666*	2.7~3.6	TBD	32.768K/4M	16,384	5,120	8	8	8	3 ×2	○	○	○	---	1	2 ×3	○	○	---	---	---	2	5	64×8	Chip QFP20-144
		TBD																						
		TBD																						

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: R/F converter

*: Under development

-2 High Performance 4-bit Microcomputers

S1C63A/B00(E0C63A/B0) series

A microcomputer being equipped with ROM, RAM, LCD driver, various timer functions, etc. Moreover, it carries built-in gate array for your optional circuit configurations. It features wide operating voltage range and high speed operation and is suitable for portable equipment such as data banks and pagers.

Products (Previous number)	Supply voltage range (V)	Supply current HALT/ operating μA (Typ.)	Clock frequency Low/high Hz (Typ.)	ROM ×13bit	RAM ×4bit	Port		Timer				SIO		A/D	Buzzer	SVD ×1	DTMF output	DP output	FSK demodulation circuit	Interrupts		LCD Driver seg×com	Package (Form of delivery)
						Input	Output	Input / Output Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous	Clock synchronous							External	Internal		
S1C63A08 (E0C63A08)	0.9~3.6	1.5/10(32K)	32.768K	8,192	2,048	8	20	20	2 ×2	○	○	---	1	---	○	○	---	---	---	2	14	72×8/16/17	Chip QFP8-208
S1C63B07 (E0C63B07)	2.2~3.6	300(1M)	32.768K/1M		1,024		8	12													60×4		
S1C63B08 (E0C63B08)	0.9~3.6	1.2/6.0(32K) 85(400K)	32.768K, 76.8K 153.6K/400K				13	32×4														Chip QFP15-100	
S1C63B58* ×3	0.9~3.6	1.2/5.3(32K) 87.5(400K)		8,192	1,024	8	8	12	2 ×2	○	○	---	1	---	○	○	---	---	---	2	5	32×4	Chip QFP15-100

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: It incorporates POCSAG decoder and Use is possible also as logic area of 5K.

Notes: For customers who will use the S1C63A08 and/or S1C63B07, they should make applications to our company regardless of the use or non-use of melody ROM, before working on software development.

As regards the copyright in Japan, we will file an application for the number to Japanese Society of Rights of Authors and Composer (JASRAC) and take care of the number involving the copyright.

*: Under development

2-3 Peripheral

■ FSK receiver

S1C05250(E0C5250) series

Including FSK receiver & CAS tone detector, Especially suitable for Caller-ID application with S1C063557(E0C63557).

Products (Previous number)	Feature	Package
S1C05250 (E0C5250)	<ul style="list-style-type: none"> • ITU V.23 & Bell 202 FSK receiver • Bellcore "CPE Alerting Signal" (CAS) detection • BT "Idle Tone Alert signal" detection. 	SOP-24pin
S1C05251 (E0C5251)	<ul style="list-style-type: none"> • ITU V.23 & Bell 202 FSK receiver • Bellcore "CPE Alerting Signal" (CAS) detection • BT "Idle Tone Alert signal" detection. • FSK Energy detect mode 	SOP2-28pin

2-4 MCUs 8-bit Microcomputers

■ 8-bit single-chip application-oriented microcomputers

S1C88(E0C88)Family:

Application-oriented microcomputer

Built around the S1C88000(E0C88000), SEIKO EPSON's powerful 8-bit core CPU, the S1C88(E0C88) Family lineup integrates a wide choice of ROM and RAM sizes, LCD drivers, serial ports and other high-performance peripheral circuits into a single chip design. All devices are fabricated using power-saving, low voltage (1.5, 3.0 or 5.0V) technology.

S1C88100(E0C88100) series

S1C88100 series microcomputers equipped with a ROM, a RAM, serial I/Os, timers, external bus-line and analog comparators. Easy connection to external ROM, RAM, peripherals and LCD drivers such as S1D15600(SED1560) series. Especially suitable for portable equipments such as high-performance data banks.

Products (Previous number)	Supply voltage range operation mode (V)	Supply current Sleep/Halt/ operating μ A (Typ.)	Clock frequency/ operation mode Hz (Max.)	ROM \times 8bit	RAM \times 8bit	External expansion Max. (Byte)	Port		Timer			SIO		A/D	D/A	Comparator	Buzzer output	SVD \times 1	Interrupts		LCD Driver seg \times com	Package (Form of delivery)		
							Input	Output	Input/output	Programmable 8bit	Stopwatch	WDT	Clock						Asynchronous	Clock synchronous			External	Internal
S1C88104 (E0C88104)	1.8~3.5/ Low speed powers	0.3/ 2.0/14(32K)	32K/ Low powers	4K	256	2M	10	34 \times 2	16 \times 2	2 \times 4	1	○	1	1	↑ \times 3	---	---	2	○	○	3	12	---	Chip QFP14-80 QFP15-100
S1C88112 (E0C88112)	2.4~5.5/ Normal 3.5~5.5/ High speed	2.0/14(32K) 2000(4.2M)	4.2M/ Normal 8.2M/ High speed	12K																				

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: It doubles as external bus terminal.

※3: Either start/stop system or clock synchronous system can be selected, depending on software.

※4: Two 8 bits serve as a 16-bit timer.

S1C88300(E0C88300) series

S1C88300 series microcomputers are equipped with ROM, RAM, LCD driver, serial I/O, timers and external bus line. Easy connection to external ROM, RAM, peripherals and LCD drivers. Especially suitable for portable equipments such as high-performance data banks and pager.

Products (Previous number)	Supply voltage range operation mode (V)	Supply current Sleep/Halt/ operating μ A (Typ.)	Clock frequency/ operation mode Hz (Max.)	ROM \times 8bit	RAM \times 8bit	External expansion Max. (Byte)	Port		Timer				SIO		A/D	D/A	Comparator	Buzzer output	SVD \times 1	Interrupts		LCD Driver seg \times com	Package (Form of delivery)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
							Input	Output	Input/output	Programmable 8bit	Stopwatch	WDT	Clock	Asynchronous						Clock synchronous	External			Internal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
S1C88308 (E0C88308)	1.8~3.5/ Low speed powers 2.4~5.5/ Normal 3.5~5.5/ High speed	0.3/ 2.0/14(32K) 2000(4.9M)	32K/ Low powers 4.2M/ Normal 8.2M/ High speed	8K	256	2M	9	30 \times 2	16 \times 2	2 \times 6	1	○	1	1	↑ \times 3	---	---	2	○	○	3	12	41 \times 32 57 \times 8/16 Expandable \times 5	Chip QFP8-160																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
S1C88317 (E0C88317)		2.4~5.5/ Normal	16K	10	34 \times 2		51 \times 32 67 \times 8/16 Expandable \times 5	Chip QFP8-160 QFP17-160																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
S1C88348 (E0C88348)		3.5~5.5/ High speed	48K																				2K	Chip QFP18-176 QFP21-176																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
S1C88349*		TBD																							4 \times 4	80 \times 18 Expandable \times 5	Chip																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
S1C88365 (E0C88365)	2.2~5.5	0.3/ 2.0/14(32K) 1500(2.5M)	32K/2.5M	64K	3K	42 \times 2			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: It doubles as external bus terminal.

※3: Either start/stop system or clock synchronous system can be selected, depending on software.

※4: 10 bits is used also I/O / general-purpose / a compared type and] one by one. Since S1C88349 differs from A/D accuracy of S1C8F360, it should be careful.

※5: LCD extension is possible using a segment driver.

※6: Two 8 bits serve as a 16-bit timer.

* : Under development

S1C88400(E0C88400) series

S1C88400 Series microcomputers are being equipped with ROM, RAM, LCD controller, serial I/C, timer, etc. Featuring external buses, for easy connection of ROM, RAM and peripherals with outstanding extensibility. As they carry a built-in LCD controller, they are most suitable for applications to panel systems of intermediate capacity levels.

for applications to panel systems or intermediate capacity levels.																								
Products (Previous number)	Supply voltage range operation mode (V)	Supply current Sleep/Halt/ operating μA (Typ.)	Clock frequency/ operation mode Hz (Max.)	ROM ×8bit	RAM ×8bit	External expansion Max. (Byte)	Port		Timer			SIO		A/D	D/A	Comparator	Buzzer output	S/D ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)		
							Input	Output	Input/output	Programmable 8bit	Stopwatch	WDT	Clock						Asynchronous	Clock synchronous			External	Internal
S1C88408 (E0C88408)	1.8~5.5	0.6/ 3.0/15(32K) 2000(4M)	1.1M	8K	3.75K ×7	12M	12	30 ×2	28 ×2	3 ×3	---	○	1	1	↑ ×4	---	---	○	○	5	15	--- (LCDC included)	Chip QFP15-100	
	2.6~5.5		4.4M																					
	3.5~5.5		8.2M																					
S1C88409 (E0C88409)	1.8~5.5	0.6/ 3.0/15(32K) 2000(4M) /9000(8M)	1.1M	8K	3.75K ×7	12M	12	30 ×2	28 ×2	3 ×3	---	○	1	1	↑ ×4	8 ×5	2 ×6	---	○	○	5	18	---	Chip QFP15-100
	2.6~5.5		4.4M																					
	3.5~5.5		6.6M																					
	4.5~5.5		8.8M																					

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: It doubles as external bus terminal.

※3: Two 8 bits serve as a 16-bit timer.

※4: Either start/stop system or clock synchronous system can be selected, depending on software.

※5: It is a 10-bit successive approximation type and doubles as general-purpose I/O.

※6: It doubles as general-purpose I/O.

※7: It doubles as RAM for display (set by mask option.)

S1C88800(E0C88800) series

S1C88800 Series microcomputers are equipped with ROM, RAM, LCD Driver, serial I/O and timers. Cannot access external memory.

Products (Previous number)	Supply voltage range operation mode (V)	Supply current Sleep/Halt/ operating μA (Typ.)	Clock frequency/ operation mode Hz (Max.)	ROM ×8bit	RAM ×8bit	External expansion Max. (Byte)	Port		Timer			SIO		A/D	D/A	Comparator	Buzzer output	SVD ×1	Interrupts		LCD Driver seg×com	Package (Form of delivery)	
							Input	Output	Input/output	Programmable 8bit	Stopwatch	WDT	Clock						Asynchronous	Clock synchronous			External
S1C88832 (E0C88832)	1.8~3.5/ Low power 2.4~5.5/ Normal 3.5~5.5/ High speed	0.3/1.5/ 9(32K)/ 1100(4M)	80K/ Low power 4.2M/ Normal 8.2M/ High speed	32K	1.5K	---	9	5	8	2 ×2	1	○	1	1	↑ ×3	---	---	○	○	3	12	51×32 67×8/16 Non- expand- able 41×32 57×8/16 Non- expand- able	QFP8-128 QFP15-128 Chip
S1C88862 (E0C88862)				60K				4															
S1C88816 (E0C88816)				116K	8K			7	16									4 ×4		○ ×5	3		

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: Either start/stop system or clock synchronous system can be selected, depending on software.

※4: It is a 10-bit successive approximation type and doubles as general-purpose I/O.

※5: A melody generator is included.

S1C88A00(E0C88A00) series

The microcomputer of this series integrates ROM, RAM, LCD driver, and various kinds of timer functions. In addition, it incorporates a gate array, which enables users to freely form circuits. Since this series provides a wide range of operating voltage and fast operation, it is best fit for electronic memorandum equipment and pager.

Products (Previous number)	Supply voltage range operation mode (V)	Supply current Sleep/Halt/ operating μ A (Typ.)	Clock frequency/ operation mode Hz (Max.)	ROM \times 8bit	RAM \times 8bit	External expansion Max. (Byte)	Port		Timer			SIO		A/D	D/A	Comparator	Buzzer output	SVD \times 1	Interrupts		LCD Driver seg \times com	Package (Form of delivery)		
							Input	Output	Input/output	Programmable 8bit	Stopwatch	WDT	Clock						Asynchronous	Clock synchronous			External	Internal
S1C88A32* (E0C88A32) \times 4	1.8~3.6/ Low speed 2.4~3.6/ Normal	TBD	160K/ Low speed 6.0M/ Normal	32K	512	2M	8	29	16	2 \times 2	1	\bigcirc	1	1	\uparrow \times 3	---	---	---	\bigcirc	\bigcirc	2	16	57 \times 32 73 \times 8/16 Expandable	Chip QFP18-176 QFP21-176

○ : Available

※1: SVD is an abbreviation for Supply Voltage Detector.

※2: Two 8 bits serve as a 16-bit timer.

※3: Either start/stop system or clock synchronous system can be selected, depending on software.

※4: Use is possible also as logic area of POCSAG decoder built-in and user gate 5K.

* : Under development

2 MCUs

-5 32-bit Microcomputers

■ 32 bit RISC Microcomputers

S1C33(E0C33) family is SEIKO EPSON's original 32-bit RISC CPU. The product incorporates peripheral functions in abundance, including rapid DMA, multi-channel SIO, programmable timer, PLL, and pre-scaler. Features of fast operation and extremely low power consumption qualify this family for application to OA equipment such as printer and portable equipment, including PDA and TOY. In addition, as this family incorporates A/D converter and PWM timer, its combination with middleware provides digital signal processing such as voice processing.

S1C33200 series

With S1C33209(E0C33209) as the dominant constituent, this is a general-purpose series equipped with MaskROM and flash memory. It features a rich lode of peripheral equipment and low current consumption. Its application has been widespread, including portable terminals and TOY.

Products (Previous number)	Supply voltage range operating section (V)	Supply current Sleep (Typ.) /operating (50MHz, 3.3V)	Clock frequency/ operation mode Hz (Max.)	ROM (Byte)	RAM (Byte)	Port		Timer				SIO		ADC 10bit	DMA	Interrupts		Package (Form of delivery)	Remarks
						Input	Input/output	8bit	16 bit	PWM	WDT	Asynchronous	Clock synchronous			External	Internal		
S1C33209 (E0C33209)	2.7~3.6/ Inside 2.7~5.5/I/O 1.8~2.7/ Inside 1.8~3.6/I/O	4 μ W /215mW	60M/High speed 32.768K/Low speed	---	8K	13	29	6	6	○	1	4 ×1		8ch	4ch 128ch	10	29	Chip QFP5-128 QFP15-128	32 bit RISC ROMLess model
S1C33222* (E0C33264)	2.7~3.6/ Inside 2.7~5.5/I/O	4 μ W /215mW	50M/High speed 32.768K/Low speed	64K	8K	13	29	6	6	○	1	4 ×1		8ch	4ch 128ch	10	29	Chip QFP5/15-128	S1C33209 MaskROM model
S1C33221 (E0C332129)	1.8~2.7/ Inside 1.8~3.6/I/O			128K														QFP5/15-128	
S1C33240* (E0C332129)	2.7~3.6/ Inside 2.7~5.5/I/O	50 μ W /280mW (40MHz,3.3V)	40M/High speed 32.768K/Low speed	128K Flash	8K	13	29	6	6	○	1	4 ×1		8ch	4ch 128ch	10	29	QFP5-128 QFP15-128	S1C33209 FlashROM model

○ : Available
 ×1 : Software setting
 * : Under development

S1C33L00 series

Incorporation of a LCD controller in a 32-bit RISC microcomputer significantly contributes to a decrease in mounting area and a reduction in power consumption in display-centered applications such as portable terminal.

Products (Previous number)	Supply voltage range operating section (V)	Supply current Sleep (Typ.) /operating (50MHz, 3.3V)	Clock frequency/ operation mode Hz (Max.)	ROM (Byte)	RAM (Byte)	Port		Timer				SIO		ADC 10bit	DMA	Interrupts		Package (Form of delivery)	Remarks
						Input	Input/output	8bit	16 bit	PWM	WDT	Asynchronous	Clock synchronous			External	Internal		
S1C33L01 (E0C332L01)	2.7~3.6/ Inside 2.7~5.5/I/O 1.8~2.7/ Inside 1.8~3.6/I/O	4 μ W /230mW	50M/High speed 32.768K/Low speed	128K	8K VRAM: 40K	13	29	4	6	○	1	2 ×1		8ch	4ch 128ch	10	29	QFP18-176	LCDC- integrated model (Monochrome and color)
S1C33L02* (E0C332L02)	2.7~3.6/ Inside 2.7~5.5/I/O 1.8~2.7/ Inside 1.8~3.6/I/O	T.B.D	50M/High speed 32.768K/Low speed	---	8K	13	29	4	6	○	1	2 ×1		8ch	4ch 128ch	10	29	Chip QFP20-144	LCDC- integrated model (Monochrome)

○ : Available
 ×1 : Software setting
 * : Under development

S1C33T00 series

This series feature further enhanced peripheral functions, including I/O ports, built-in timer, 1²C bus, and the number of interruptions.

Products (Previous number)	Supply voltage range operating section (V)	Supply current Sleep (Typ.) /operating (50MHz, 3.3V)	Clock frequency/ operation mode Hz (Max.)	ROM (Byte)	RAM (Byte)	Port		Timer				SIO		ADC 10bit	DMA	Interrupts		Package (Form of delivery)	Remarks
						Input	Input/output	8bit	16 bit	PWM	WDT	Asynchronous	Clock synchronous			External	Internal		
S1C33T01 (E0C332T01)	2.7~3.6/ Inside 2.7~5.5/I/O 1.8~2.7/ Inside 1.8~3.6/I/O	4 μ W /215mW	60M/High speed 32.768K/Low speed	---	8K	13	69	6	10	○	1	4 ×1		8ch	4ch 128ch	18	51	QFP18-176	A 1 ² C-bus compatible, enhanced peripheral functions ×2

○ : Available
 ×1 : Software setting
 ×2 : I2C-bus correspondence is option specification.

S1C33S00 series

Downsizing of a package and low power consumption has been achieved by narrowing down functions on S1C33200 series to specific ones.

Products (Previous number)	Supply voltage range operating section (V)	Supply current Sleep (Typ.) /operating (50MHz, 3.3V)	Clock frequency/ operation mode Hz (Max.)	ROM (Byte)	RAM (Byte)	Port		Timer				SIO		ADC 10bit	DMA	Interrupts		Package (Form of delivery)	Remarks
						Input	Input/output	8bit	16 bit	PWM	WDT	Asynchronous	Clock synchronous			External	Internal		
S1C33S01 (E0C332S08)	1.8~3.6	4 μ W/195mW	50M/High speed 32.768K/Low speed	---	8K	---	29	4	6	○	1	2 ×1		---	---	10	23	Chip QFP15-100	S1C33209 Diet model

○ : Available

×1 : Software setting

S1C33 Special-purpose line-up

As I/F circuit linking to PHS, PDC, and CdmaOne is incorporated into this product line-up, It can be used for data communications etc. between communication terminals by combining with software modem module.

Products (Previous number)	Supply voltage range operating section (V)	Supply current Sleep (Typ.) /operating (50MHz, 3.3V)	Clock frequency/ operation mode Hz (Max.)	ROM (Byte)	RAM (Byte)	Port		Timer				SIO		ADC 10bit	DMA	Interrupts		Package (Form of delivery)	Remarks
						Input	Input/output	8bit	16 bit	PWM	WDT	Asynchronous	Clock synchronous			External	Internal		
S1C33210 (E0C33210)	2.7~3.6	T.B.D	60M/High speed 32.768K/Low speed	---	8K	7	25	6	6	○	1	3 ×1		8ch	4ch 128ch	10	29	QFP15-128	Bridge IC for communication terminal

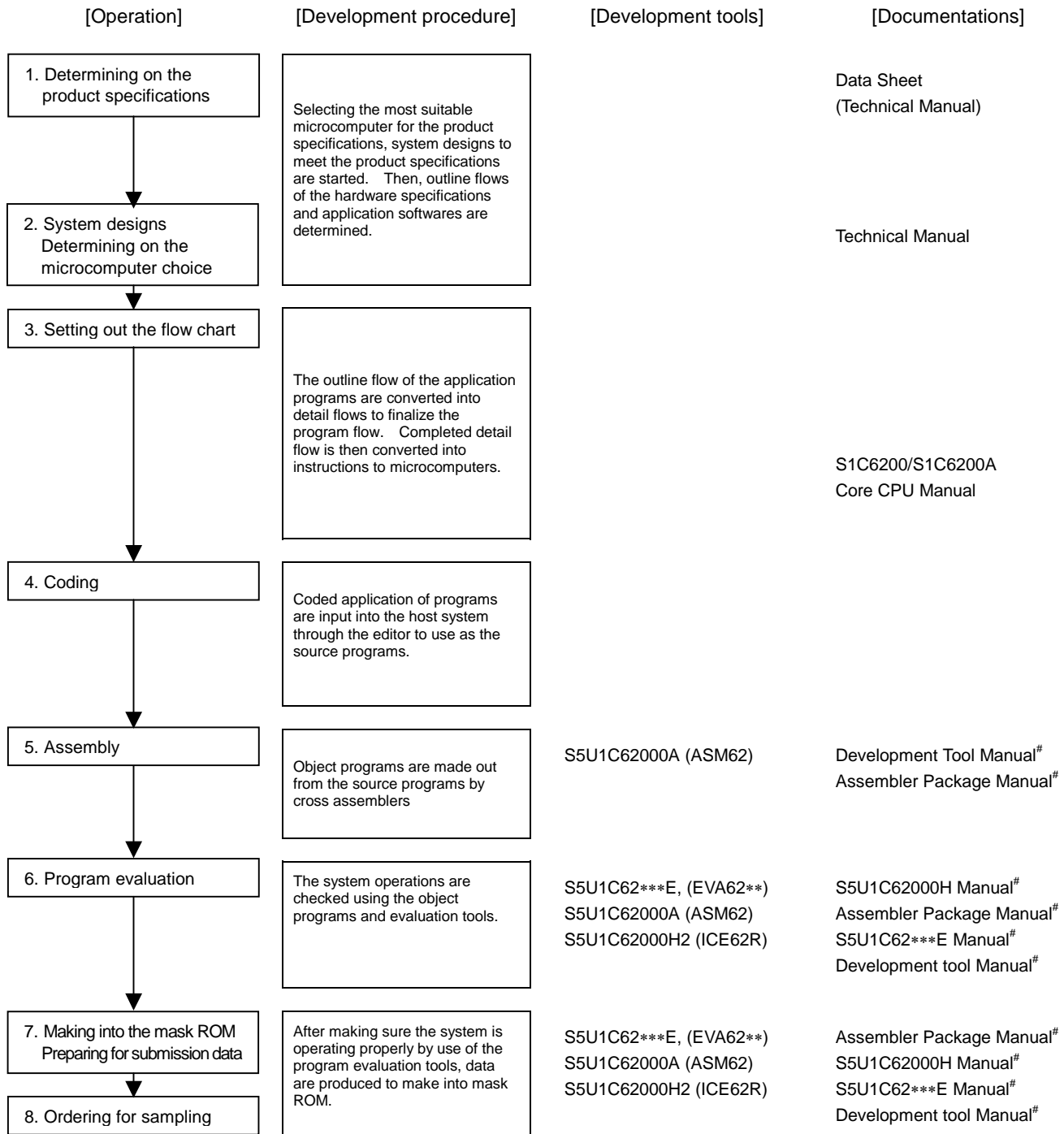
○ : Available

×1 : Software setting

S1C33104(E0C33A104) and S1C33208/204/202(E0C33208/204/202) are not listed because they are old types.
For new development, we recommend you to use a successor to the old version, S1C33209(E0C33209).

■ Program development process (S1C62/60 Family)

The relationship between the S1C62(E0C62) Family program development procedure and development tools is illustrated below.

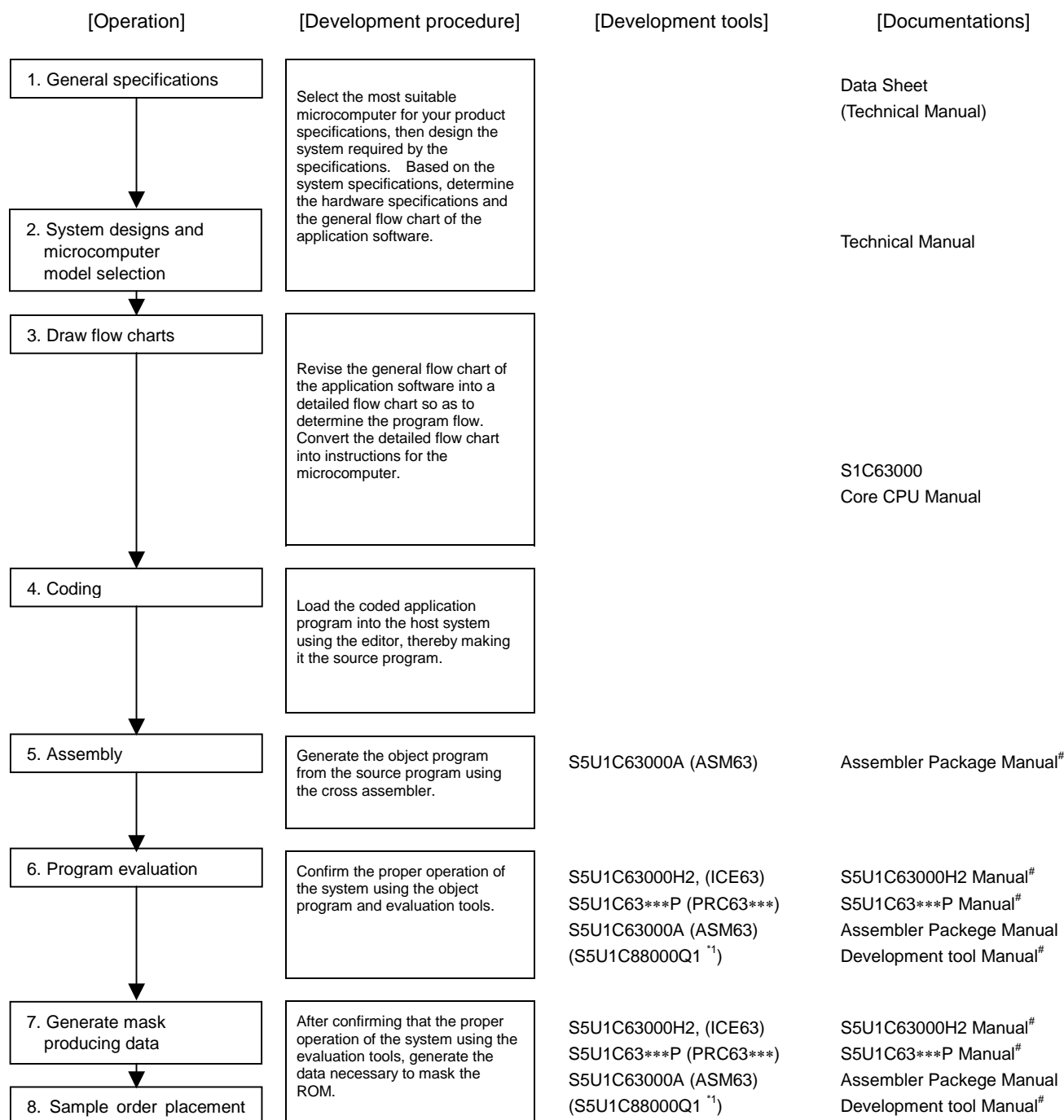


Comment: Development tools and documentations for S1C60(E0C60) Family are common to those for S1C62(E0C62) Family depending on models.

: Included in respective development tool set.

■ Program development process (S1C63 Family)

The relationship between the S1C63(E0C63) Family program development procedure and development tools is illustrated below.

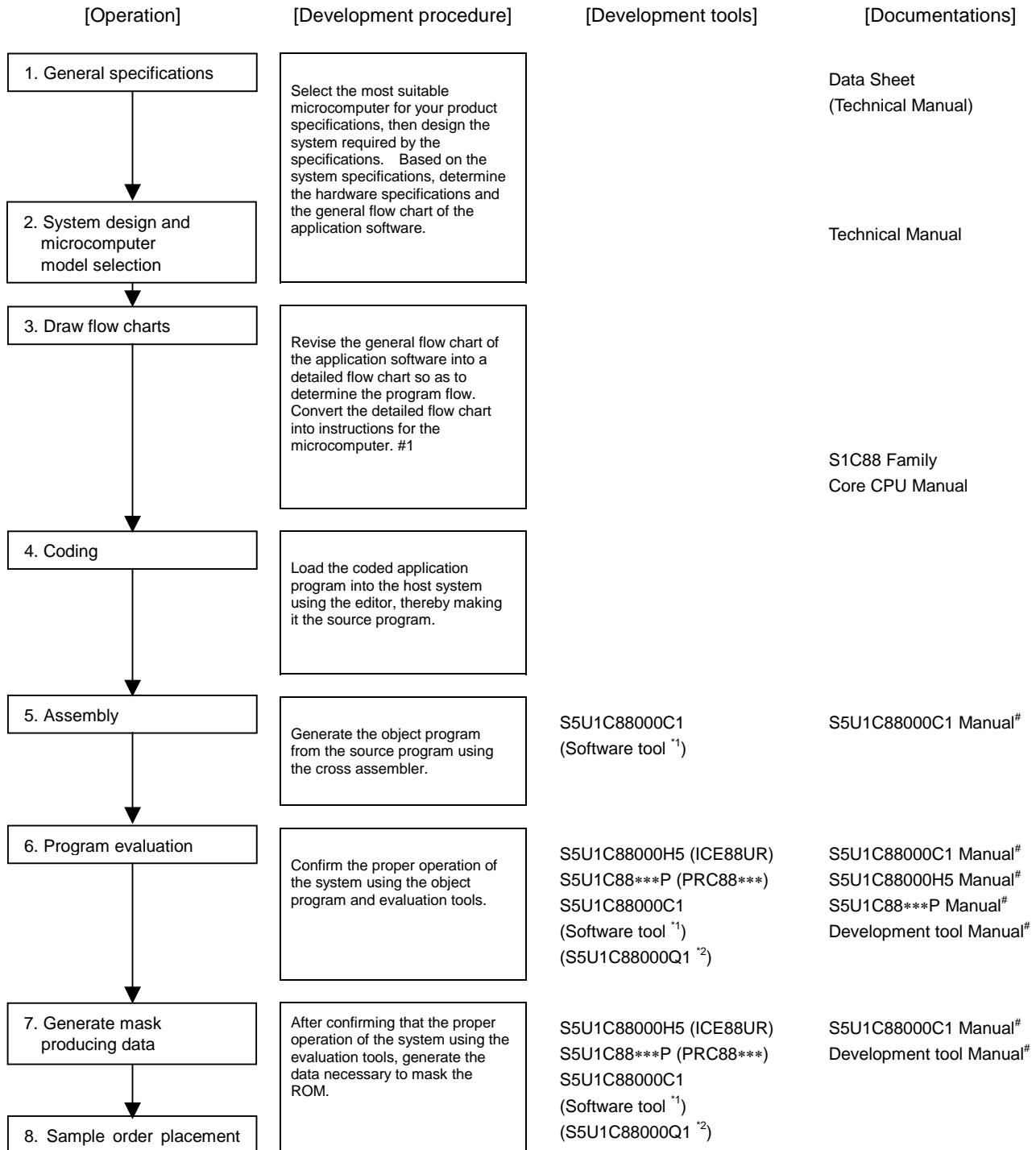


: Included in respective development tool set

*1: S1C63/88(E0C63/88) Family embedded system simulator

■ Program development process (S1C88 Family)

The relationship between the S1C88(E0C88) Family program development procedure and development tools is illustrated below.



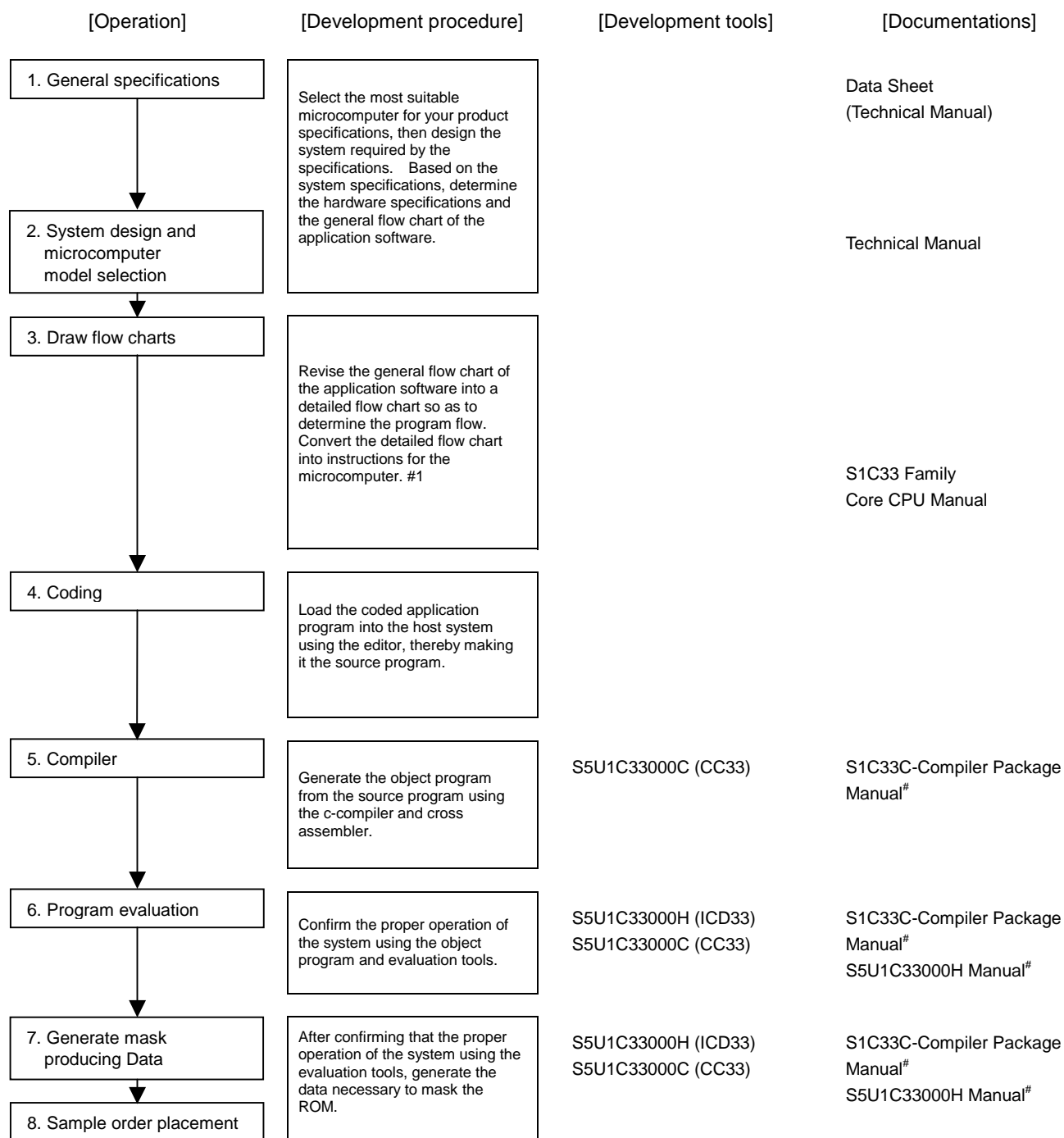
: Included in respective development tool set

*1 : C compiler assembler package for S1C88(E0C88)

*2 : S1C63/88(E0C63/88) Family embedded system simulator

■ Program development process (S1C33 Family)

The relationship between the S1C33(E0C33) Family program development procedure and development tools is illustrated below.



: Included in respective development tool set

■ Development tools

S1C62 Family/S1C60 Family development tools

Hardware

S5U1C62000H2 (ICE62R)	S1C60,62 Family Common In-circuit emulator
S5U1C62***E (EVA62**)	Evaluation board
S5U1C60***K (KIT60**)	S1C60** Individual ROM

Software package

S5U1C62000A (ASM62)	E0C60, 62 Family Common Tool (including model-by-model software tool)
------------------------	--------------------------------------------------------------------------

S1C63 Family development tools

Hardware

S5U1C63000H2 (ICE63)	S1C63 Family Common In-circuit emulator
S5U1C63***P (PRC63**)	Peripheral circuit board

Software package

S5U1C63000A (ASM63)	S1C63 Family Common tool (including model-by-model software tool)
------------------------	----------------------------------------------------------------------

S1C33 Family development tools

Hardware

S5U1C33000H (ICD33)	S1C33 Family Common Omitted pin type On-chip ICE
S5U1C33***E (EPOD33**)	ROM Emulation board
S5U1C33***D (DMT33**)	Demonstration board
S5U1C33***M (MEM33**)	Emulation memory board

Software package

S5U1C33000C (CC33)	S1C33 Family Common C Compiler package
-----------------------	-------------------------------------------

Middleware package

S5U1C330V1S (VOX33)	Voice compression and decompression middleware
S5U1C330J1S (JPEG33)	JPEG decompression middleware
S5U1C330R1S (ROS33)	Realtime OS
S5U1C330M2S (MON33)	Debug monitor
S5U1C330M1S (MELODY33)	Melody
S5U1C330V2S (VRE33)	Voice recognition
S5U1C330S1S (SOUND33)	Sound playback
S5U1C330T1S (TS33)	Text to Speech
S5U1C330C1S (CF33)	CompactFlash Interface
S5U1C330G1S (GRAPHIC33)	Graphic Library
S5U1C330H1S*	Voice recognition, a version with more functionality
S5U1C330P1S*	Handwritten character recognition
S5U1C330S2S*	Smart media card Interface

* : Under development

S1C88 Family development tools

Hardware

S5U1C88000H5 (ICE88UR)	S1C88 Family Common In-circuit emulator (USB interface)
S5U1C88***P (PRC88**)	Peripheral circuit board
S5U1C88348T (DMT88348-DB)	Demonstration board

Software package

S5U1C88000C1	S1C88 Family Common (C compiler assembler package for S1C88)
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Flash writing tool

Hardware

S5U1C88000W1 (URM00002)	ROM Writer
S5U1C88***X1 (ADP88**)	Socket for parallel writing (S1C88**)
S5U1C63***X1 (ADP63**)	Socket for parallel writing (S1C63**)
S5U1C88000X1 (ADS00002)	Socket for serial writing
S5U1C88000W2 (GWH00002)	Gang writer

S1C63/S1C88 Option Soft tool

S5U1C88000Q1	S1C63/S1C88 Family embedded system simulator
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3-1 ASSPs LCD Controllers

■ LCD Controllers

Our LCD controllers feature high performance, low power consumption which was achieved by applying an original architecture based on our own "saving technology". These LCD controllers can be used on a variety of CPUs. Since the product line-up listed below allows to support a wide range of LCD panels, including those from small to large scale and those from monochrome to color, these controllers are best suited to office automation equipment and Windows CE installed equipment.

● For small- and medium-sized displays

S1D13305 series

These controllers are used for displaying characters and graphics on small-to-medium- sized LCD panels. A character generator built in this series enables to overlap character and graphic screens.

Products (Previous number)	Maximum display area	CPU interface	Target LCD panels	Display memory	Package
S1D13305F00A (SED1335F _{0A})	640×256×3	68-series, 80-series	STN	Maximum 64KB	QFP5-60pin
S1D13305F00B (SED1335F _{0B})	(Composition of 3 screens)	(8bit)		SRAM	QFP6-60pin

S1D13503/13700 series

This series features low power consumption and space-saving with a video random access memory (VRAM) incorporated in the controller. This series provides display from monochrome to a maximum of 64K colors.

Products (Previous number)	Maximum display area	CPU interface	Target LCD panels	Target LCD panels	Package	Evaluation board
S1D13503D00A (SED1353D _{0A})	640×200 (256 color)	68-series, 80-series	STN (4/8/16 bits)	Maximum 128KB	Chip	S5U13503P00C (SDU1353# _{0C})
S1D13503F00A (SED1353F _{0A})		(8/16 bit)		SRAM	QFP5-100pin	
S1D13503F01A (SED1353F _{1A})		ISA bus			QFP15-100pin	
S1D13704F00A (SED1374F _{0A})	240×160 (256 color)	SH3/4, Mips-type 68-series, 80-series, ISA bus	STN TFT, D-TFD	40KB Built-in SRAM	QFP14-80pin	S5U13704P00C (SDU1374# _{0C})
S1D13705F00A (SED1375F _{0A})	320×240 (256 color)	SH3/4, Mips-type 68-series, 80-series, ISA bus	STN TFT, D-TFD	80KB Built-in SRAM	QFP14-80pin	S5U13705P00C (SDU1375# _{0C})
S1D13706F00A (SED1376F _{0A})	160×240 (64K color)	SH3/4, Mips-type	STN	80KB	TQFP15-100pin	S5U13706P00C (SDU1376# _{0C})
S1D13706B00A (SED1376B _{0A})		68-series, 80-series	TFT, D-TFD	Built-in SRAM	CFLGA-104pin	
S1D13706D00A* (SED1376D _{0A} *)		No WAIT CPU			Chip	
S1D13708F00A* (SED1378F _{0A} *)	160×240 (64K color)	SH3/4, Mips-type	STN	80KB	TQFP15-100pin	S5U13708P00C* (SDU1378# _{0C} *)
S1D13708B00B* (SED1378B _{0B} *)		68-series, 80-series	TFT, D-TFD	Built-in SRAM	PFBGA-121pin	
S1D13708D00A* (SED1378D _{0A} *)		No WAIT CPU			Chip	

* : Under development

S1D13A00 series

This series not only offer display memory (VRAM), but also more functionality by incorporating USB client and 2D accelerator. In addition, it provides low power consumption and saves space.

Products (Previous number)	Maximum display area	CPU interface	Target LCD panels	Target LCD panels	Package	Evaluation board
S1D13A03F00A* (SED13A3F _{0A} *)	320×160 (64K color)	SH3/4, Mips-type 68-series, 80-series No WAIT CPU	STN TFT, D-TFD	112KB Built-in SRAM	TQFP15-100pin	S5U13A03P00C* (SDU13A3# _{0C} *)
S1D13A03B00B* (SED13A3B _{0B} *)					PFBGA-121pin	
S1D13A04B00B* (SED13A4B _{0B} *)	320×240 (64K color)	SH3/4, Mips-type 68-series, 80-series No WAIT CPU	STN TFT, D-TFD	160KB Built-in SRAM	PFBGA-121pin	S5U13A04P00C* (SDU13A4# _{0C} *)
S1D13A05B00B* (SED13A5B _{0B} *)	320×320 (64K color)	SH3/4, Mips-type 68-series, 80-series No WAIT CPU	STN TFT, D-TFD	200KB Built-in SRAM	PFBGA-121pin	S5U13A05P00C* (SDU13A5# _{0C} *)

* : Under development

● For large-sized displays

S1D13500/13800 series

This series consists of LCD and CRT controllers that can be widely used on various types of CPU and LCD panels. Full evaluation environment of this series allows to easily evaluate the controller.

Products (Previous number)	Maximum display area	CPU interface	Target LCD panels	Display memory	Package	Evaluation board
S1D13504F00A (SED1354F _{0A})	800×600 (64K color)	SH3, Mips-type 68-series, 80-series, ISA bus	STN (4/8/16 bits) TFP (16 bits) CRT	Maximum 2MB DRAM (FPM/EDO)	QFP15-128pin	S5U13504P00C (SDU1354# _{0C})
S1D13504F01A (SED1354F _{1A})					TQFP15-128pin	
S1D13504F02A (SED1354F _{2A})					QFP20-144pin	
S1D13505F00A (SED1355F _{0A})	800×600 (64K color)	SH3, Mips-type 68-series, 80-series, ARM-type, ISA bus	STN (4/8/16 bits) TFT (16 bits) CRT	Maximum 2MB DRAM (FPM/EDO)	QFP15-128pin	S5U13505P00C (SDU1355# _{0C})
S1D13506F00A (SED1356F _{0A})	800×600 (64K color)	SH3/4, Mips-type 68-series, 80-series, ARM-type, ISA bus	STN, TFT CRT TV (NTSC, PAL)	Maximum 2MB DRAM (FPM/EDO)	QFP15-128pin	S5U13506P00C (SDU1356# _{0C})
S1D13806F00A (SED1386F _{0A})	800×600 (64K color) 1024×768 (256 color)	SH3/4, Mips-type 68-series, 80-series, ARM-type, ISA bus	STN, TFT CRT TV (NTSC, PAL)	10Mbit Built-in SDRAM	QFP20-144pin	S5U13806P00C (SDU1386# _{0C})

* : Under development

■ LCD controller-drivers for small-sized displays

Built-in character generators together with segment and common drivers simplify the task of displaying microprocessor messages on small LCDs.

S1D12000 series

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Segment	Common	Display RAM (characters)	Micropro- cessor interface	Package	Comment
S1D12200D (SED1220D)	2.4~3.6	4.0~7.0	1/26	64	26	40	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12200T (SED1220T)								TCP	
S1D12201D (SED1221D)	2.4~3.6	4.0~7.0	1/18	64	18	40	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12201T (SED1221T)								TCP	
S1D12210D** (SED122AD)	2.4~3.6	4.0~7.0	1/18	64	18	40	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12202D (SED1222D)	2.4~3.6	4.0~7.0	1/18	60	18	40	4 or 8-bit serial	Al pad chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12205D (SED1225D)	1.8~3.6	4.0~6.0	1/18,1/26	60	26	40	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12205T (SED1225T)								TCP	
S1D12300D (SED1230D)	2.4~3.6	4.0~12.0	1/30	65	30	48	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12300T (SED1230T)								TCP	
S1D12301D (SED1231D)	2.4~3.6	4.0~12.0	1/23	65	23	48	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12301T (SED1231T)								TCP	
S1D12302D (SED1232D)	2.4~3.6	4.0~12.0	1/16	65	16	48	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12302T (SED1232T)								TCP	
S1D12303D (SED1233D)	2.4~3.6	4.0~12.0	1/16	80	16	48	4 or 8-bit serial	Au bump chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD static drive allowed
S1D12303T (SED1233T)								TCP	
S1D12304D (SED1234D)	2.4~3.6	4.0~12.0	1/30	62	30	48	4 or 8-bit serial	Al pad chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD dynamic drive only.
S1D12305D (SED1235D)	2.4~3.6	4.0~12.0	1/16	62	16	48	4 or 8-bit serial	Al pad chip	Built-in power circuit for LCD Three standard characters (JIS,ASCII) LCD dynamic drive only.
S1D12400D (SED1240D)	1.8~3.6	4.0~10.0	1/18,1/34	80	34	80	4 or 8-bit serial	Au bump chip	Line Blink, Vertical Scroll
S1D12400T (SED1240T)								TCP	

■ LCD drivers with RAM for small and medium-sized displays

Ultra-low power consumption and on-chip RAM make this series ideal for compact LCD-based equipment.

S1D15000 series

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Segment	Common	Display RAM (bits)	Micropro- cessor interface	Frequency (kHz)	Package	Comment
S1D15100D00C* (SED1510D ₀₀)	0.9~6.0	1.8~6.0	1/4	32	4	128 bits	Serial	18 (internal)	Al pad chip	Small segment-type LCD display.
S1D15100F00C* (SED1510F ₀₀)									QFP12-48pin	
S1D15206D**A* (SED1526D _A)	2.4~6.0	3.5~ Supply voltage×3	1/8, 1/9, 1/16, 1/17	80	17	80×33 bits	8-bit parallel or serial	20	Al pad chip	(DC/DC×3) (S1D15206*00**, V _{REG}) (S1D15206*14**, no V _{REG})
S1D15206D**B* (SED1526D _B)									Au bump chip	
S1D15206F**A* (SED1526F _A)									QFP5-128pin	
S1D15206T**A* (SED1526T _A)									TCP	
S1D15208D**A* (SED1528D _A)	2.4~6.0	3.5~ Supply voltage×3	1/32, 1/33	64	33	80×33 bits	8-bit parallel or serial	20	Al pad chip	(DC/DC×3) (S1D15208*00**, V _{REG}) (S1D15208*14**, no V _{REG})
S1D15208D**B* (SED1528D _B)									Au bump chip	
S1D15208F**A* (SED1528F _A)									QFP5-128pin	
S1D15208T**A* (SED1528T _A)									TCP	
S1D15300D00A* (SED1530D _{0A})	2.4~6.0	4.5~16	1/32, 1/33	100	33	132×65 bits	8-bit parallel or serial	---	Al pad chip	Built-in power circuit for LCD (DC/DC×4) (S1D15300*00**, Common: Right side) (S1D15300*10**, Common: Both side) (S1D15300*10**, Common: Left side)
S1D15300D10A* (SED1530D _{1A})									Al pad chip	
S1D15300D00B* (SED1530D _{0B})									Au bump chip	
S1D15300D10B* (SED1530D _{1B})									Au bump chip	
S1D15300T10A* (SED1530T _{1A})									TCP	
S1D15301D00A* (SED1531D _{0A})	2.4~6.0	4.5~16	1/64, 1/65	132	---	132×65 bits	8-bit parallel or serial	---	Al pad chip	Built-in power circuit for LCD (DC/DC×4) (S1D15301*00**, Common: Right side)
S1D15301D00B* (SED1531D _{0B})									Au bump chip	
S1D15301T00A* (SED1531T _{0A})									TCP	
S1D15302D00A* (SED1532D _{0A})	2.4~6.0	4.5~16	1/64, 1/65	100	33	132×65 bits	8-bit parallel or serial	---	Al pad chip	Built-in power circuit for LCD (DC/DC×4) (S1D15302*00**, Common: Right side) (S1D15302*10**, Common: Both side) (S1D15302***10**, Common: Left side)
S1D15302D11A* (SED1532D _{1A})									Al pad chip	
S1D15302D00B* (SED1532D _{0B})									Au bump chip	
S1D15302D11B* (SED1532D _{1B})									Au bump chip	
S1D15302T00A* (SED1532T _{0A})									TCP	
S1D15302T11A* (SED1532T _{1A})									TCP	
S1D15303D15B* (SED1533D _{15B})	2.4~6.0	4.5~16	1/17	116	17	132×65 bits	8-bit parallel or serial	---	Au bump chip	Built-in power circuit for LCD (DC/DC×4) (S1D15303*15**, no V _{REG})
S1D15400D00A* (SED1540D _{0A})	2.4~7.0	3.5~11	1/3, 1/4	73	3, 4	2,560 bits	8-bit parallel	18 (internal) 4 (external)	Al pad chip	Small segment-type LCD display.
S1D15400D00B* (SED1540D _{0B})									Au bump chip	
S1D15400F00A* (SED1540F _{0A})									QFP5-100pin	
S1D15600D00A* (SED1560D _{0A})	2.4~6.0	6.0~16	1/48, 1/49, 1/64, 1/65	102	65	166×65 bits	8-bit parallel or serial	18	Al pad chip	Built-in power circuit for LCD (DC/DC×3) (S1D15600*00B*, 1/9 bias) (S1D15600*10B*, 1/7 bias)
S1D15600D10A* (SED1560D _{1A})									Al pad chip	
S1D15600D00B* (SED1560D _{0B})									Au bump chip	
S1D15600D10B* (SED1560D _{1B})									Au bump chip	
S1D15600T00B* (SED1560T _{0B})									TCP	
S1D15600T26A* (SED1560T _{26A})									QTCP	

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Segment	Common	Display RAM	Micropro- cessor interface	Frequency (kHz)	Package	Comment
S1D15601D00A* (SED1561D _{0A})	2.4~6.0	6.0~16	1/24, 1/25, 1/32, 1/33	134	33	166×65 bits	8-bit parallel or serial	18	Al pad chip	Built-in power circuit for LCD (DC/DC×3) (S1D15601*00B*, 1/9 bias) (S1D15601*10B*, 1/7 bias)
S1D15601D00B* (SED1561D _{0B})									Au bump chip	
S1D15601D10B* (SED1561D _{1B})									Au bump chip	
S1D15601T00B* (SED1561T _{0B})									TCP	
S1D15601T10B* (SED1561T _{1B})									TCP	
S1D15601T26A* (SED1561T _{2A})									QTCP	
S1D15602D00A* (SED1562D _{0A})	2.4~6.0	6.0~16	1/16, 1/17 (1/5 bias)	150	17	166×65 bits	8-bit parallel or serial	18	Al pad chip	Built-in power circuit for LCD (DC/DC×3)
S1D15602D00B* (SED1562D _{0B})									Au bump chip	
S1D15602T00B* (SED1562T _{0B})									TCP	
S1D15602T26A* (SED1562T _{2A})									QTCP	
S1D10605D00B* (SED1065D _{0B})	1.8~3.6	4.5~14	1/65 (1/7, 1/9 bias)	132	65	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D10605T00A* (SED1065T _{0A})									TCP	
S1D10606D00A* (SED1066D _{0A})	1.8~3.6	4.5~14	1/49 (1/6, 1/8 bias)	132	49	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D10607D00B (SED1067D _{0B})	1.8~3.6	4.5~14	1/33 (1/5, 1/6 bias)	132	33	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D10608D00B* (SED1068D _{0B})	1.8~3.6	4.5~14	1/55 (1/6, 1/8 bias)	132	55	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D10609D00B* (SED1069D _{0B})	1.8~3.6	4.5~14	1/53 (1/6, 1/8 bias)	132	53	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15610D0B* (Under development)	1.7~3.6	5~16	1/65 (1/7, 1/9 bias)	132	53	132×65 bits	8-bit parallel or serial	TBD	Au bump chip	Built-in power circuit for LCD (DC/DC×5)
S1D15605D11B* (SED1565D _{1B})	1.8~5.5	4.5~16	1/65 (1/7, 1/9 bias)	132	65	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15605D00B* (SED1565D _{0B})									Au bump chip	
S1D15605D01B* (SED1565D _{1B})									Au bump chip	
S1D15605D02B* (SED1565D _{2B})									Au bump chip	
S1D15605T00A* (SED1565T _{0A})									TCP	
S1D15605T00B* (SED1565T _{0B})									TCP	
S1D15605T00C* (SED1565T _{0C})									TCP	
S1D15606D11B* (SED1566D _{1B})	1.8~5.5	4.5~16	1/49 (1/6, 1/8 bias)	132	49	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15606D00B* (SED1566D _{0B})									Au bump chip	
S1D15606D01B* (SED1566D _{1B})									Au bump chip	
S1D15606D02B* (SED1566D _{2B})									Au bump chip	
S1D15606T00A* (SED1566T _{0A})									TCP	
S1D15607D11B* (SED1567D _{1B})	1.8~5.5	4.5~16	1/33 (1/5, 1/6 bias)	132	33	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15607D00B* (SED1567D _{0B})									Au bump chip	
S1D15607D01B* (SED1567D _{1B})									Au bump chip	
S1D15607D02B* (SED1567D _{2B})									Au bump chip	
S1D15607T00B* (SED1567T _{0B})									TCP	
S1D15607T00C* (SED1567T _{0C})									TCP	
S1D15608D11B* (SED1568D _{1B})									Au bump chip	
S1D15608D00B* (SED1568D _{0B})	1.8~5.5	4.5~16	1/55 (1/6, 1/8 bias)	132	55	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15609D11B* (SED1569D _{1B})	1.8~5.5	4.5~16	1/53 (1/6, 1/8 bias)	132	53	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15609D00B* (SED1569D _{0B})									Au bump chip	
S1D15609T**** (SED1569T****)									TCP	

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Segment	Common	Display RAM	Micropro- cessor interface	Frequency (kHz)	Package	Comment
S1D15A06D00B* (SED15A6D _{0B})	1.8~5.5	4.5~16	1/55	102	55	102×65 bits	8-bit parallel or serial	33	Au bump chip	Reduced ext. parts
S1D15B01D00B* (SED15B1D _{0B})	1.8~5.5	4.5~16	1/65	132	65	132×65 bits	8-bit parallel or serial	33	Au bump chip	Built-in self-refreshing function
S1D15B01T00A* (SED15B1T _{0A})									TCP	
S1D15E00D00B* (SED15E0D _{0B})	1.8~3.6	3.2~10	1/100	132	100	132×100 bits	serial	TBD	Au bump chip	4-line MLS X-driver
S1D15E00T00A* (SED15E0T _{0A})									TCP	
S1D15705D00B* (SED1575D _{0B})	3.6~5.5	4.5~16	1/65	168	65	200×65 bits	8-bit parallel or serial	22	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15705D03B* (SED1575D _{3B})	2.4~3.6									
S1D15705T00A* (SED1575T _{0A})	3.6~5.5	4.5~16	1/65	168	65	200×65 bits	8-bit parallel or serial	22	TCP	Built-in power circuit for LCD (DC/DC×4)
S1D15705T03A* (SED1575T _{3A})	2.4~3.6									
S1D15707D00B* (SED1577D _{0B})	3.6~5.5	4.5~16	1/33	200	33	200×65 bits	8-bit parallel or serial	22	Au bump chip	Built-in power circuit for LCD (DC/DC×4)
S1D15707D03B* (SED1577D _{3B})	2.4~3.6									
S1D15707T00A* (SED1577T _{0A})	3.6~5.5	4.5~16	1/33	200	33	200×65 bits	8-bit parallel or serial	22	TCP	Built-in power circuit for LCD (DC/DC×4)
S1D15707T03A* (SED1577T _{3A})	2.4~3.6									
S1D15710D00B* (SED157AD _{0B})	1.8~5.5	4.5~18	1/65	224	65	224×65 bits	8-bit parallel or serial	22	Au bump chip	Built-in power circuit for LCD
S1D15710T00A* (SED157AT _{0A})									TCP	

■ MLS drivers for medium sized displays

MLS driving method means simultaneous and selective driving of multiple common lines and, with the MLS driving method, the response speed, contrast ratio and power consumption can be drastically improved. For MLS driving, use combinations of a segment driver and a common driver among what are listed below.

MLS driver lineup

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Segment	Common	Display RAM	MPU interface	Package	Remarks
S1D15800D00B* (SED1580D _{0B})	3.0~3.6	6.0~7.2	160	---	160×240 bits	4 bits / 8 bits	Au bump chip	4-line MLS X-driver (segment)
S1D15800T00A* (SED1580T _{0A})							TCP	
S1D15900D00B* (SED1590D _{0B})	2.7~3.6	5.4~7.2	160	---	160×240 bits	8 bits	Au bump chip	Built-in control function 4-line MLS X-driver (segment)
S1D15900T00A* (SED1590T _{0A})							TCP	
S1D15904D00B* (SED1594D _{0B})	2.4~3.6	4.8~7.2	160	---	160×120×2 (4 colors tone)	8 bits	Au bump chip	4-line MLS X-driver (segment)
S1D15904T00A* (SED1594T _{0A})							TCP	
S1D17501D00B* (SED1751D _{0B})	2.7~5.5	14~42	---	120	---	---	Au bump chip	4-line MLS X-driver (common)
S1D17501T00A* (SED1751T _{0A})							TCP	
S1D17500D00B* (SED1750D _{0B})	2.7~5.5	14~42	---	160	---	---	Au bump chip	4-line MLS X-driver (common)
S1D17500T00A* (SED1750T _{0A})							TCP	
S1D17C00D00B* (SED17C0D _{0B})	1.7~3.7	16(Max.)	---	120	---	---	Au bump chip	4-line MLS X-driver (common)
S1D17C00T00A* (SED17C0T _{0A})							TCP	

■ LCD drivers for large-sized displays

High-speed drivers for large-sized dot-matrix displays that complement SEIKO EPSON's dedicated LCD controllers.

S1D16000 series

● Segment drivers

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Outputs	Data bus	Package
S1D16006D00A* (SED1606D _{0A})	2.7~5.5	8~28	1/100~1/300	80	4-bit parallel	Al pad chip (for COB)
S1D16006D00B* (SED1606D _{0B})						Au bump chip
S1D16006F00A* (SED1606F _{0A})						QFP5-100pin
S1D16006D01A* (SED1606D _{1A})						Al pad chip (DOFF type)
S1D16006D01B* (SED1606D _{1B})						Au bump chip (DOFF type)
S1D16400D00B* (SED1640D _{0B})						Au bump chip (slim TCP)

● Common drivers

Products (Previous number)	Supply voltage Range (V)	LCD voltage range (V)	Duty	Outputs	Package
S1D16501D00A* (SED1651D _{0A})	2.7~5.5	8~28	1/64~1/300	100	Al pad chip (zigzag positioning)
S1D16700D00A* (SED1670D _{0A})	2.7~5.5	8~28	1/64~1/300	100	Al pad chip (INH type)
S1D16700D01A* (SED1670D _{1A})					Al pad chip (DOFF type)
S1D16700D00B* (SED1670D _{0B})					Au bump chip (INH type)
S1D16700D01B* (SED1670D _{1B})					Au bump chip (DOFF type)
S1D16702D00A* (SED1672D _{0A})	2.7~5.5	8~28	1/64~1/300	68	Al pad chip (INH type)
S1D16702D01A* (SED1672D _{1A})					Al pad chip (DOFF type)
S1D16702D00B* (SED1672D _{0B})					Au bump chip (INH type)
S1D16702D01B* (SED1672D _{1B})					Au bump chip (DOFF type)
S1D16702F00A* (SED1672F _{0A})*					QFP5-80pin (INH type)

S1D17000 series

● Segment drivers

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Outputs	Data bus	Package	Application
S1D17508D00B* (SED1758D _{0B})	2.7~5.5	14~42	1/100~1/500	160	8-bit parallel	Au bump chip	Used with the S1D17403 or S1D17503
S1D17508T00A* (SED1758T _{0A})						Slim TCP (Outer lead pitch 0.092 mm)	
S1D17508T00B* (SED1758T _{0B})						Flex TCP (Outer lead pitch 0.092 mm)	
S1D17508T00G* (SED1758T _{0G})						Slim TCP (Outer lead pitch 0.080 mm)	
S1D17502T00A* (SED1752T _{0A})	2.7~5.5	14~42	1/100~1/500	240	8-bit parallel	Ultra slim TCP (Outer lead pitch 0.070 mm)	Used with the S1D17403 or S1D17503
S1D17502T00B* (SED1752T _{0B})						Flex TCP (Outer lead pitch 0.070 mm)	
S1D17A02T00A* (SED17A2T _{0A})	2.7~5.5	14~42	1/100~1/500	240	8-bit parallel	Ultra slim TCP (Outer lead pitch 0.070 mm)	Used with the S1D17403 or S1D17503
S1D17A02T00B* (SED17A2T _{0B})						Bent ultra-slim TCP (OLB pitch 0.070 mm)	
S1D17A02T00E* (SED17A2T _{0E})						Ultra-slim TCP (OLB pitch 0.074 mm)	

● Common drivers

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Outputs	Package	Application
S1D17403D01B* (SED1743D _{1B})	2.7~5.5	14~40	1/100~1/500	160	Au bump chip	
S1D17503D00B* (SED1753D _{0B})	2.7~5.5	14~42	1/100~1/500	120	Au bump chip	
S1D17503T00A* (SED1753T _{0A})					TCP (OLB pitch 0.19 mm)	

■ LCD drivers for grayscale displays

Controlling the lighting time, they avail gray-scale displays in 16 or 64 levels on the LCD panel. The applicable type of panel differs depending on the speed, withstanding voltage and driving method.

● S1D18000 series

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Duty	Segment	Common	Package	Application
S1D18000D00B* (SED1800D _{0B})	2.7~5.5	4.0~6.0	---	160	---	Au bump chip	PWM technology 64-level gray (6 bit×1)
S1D18001D00B* (SED1801D _{0B})	2.7~5.5	4.0~6.0	---	162	---	Au bump chip	PWM technology 64-level gray (6 bit×3)
S1D18A01D00B* (SED18A1D _{0B})	2.7~5.5	4.0~6.0	---	240	---	Au bump chip	PWM technology 64-level gray (6 bit×3)

● TFT LCD Drivers

S1D17900 series

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Source	Gate	Package	Application
S1D17909T00A* (SED1790T _{0A})	2.7~5.5	10.0~40.0	---	120 (two value)	TCP	
S1D17903T00B* (SED1793T _{0B})	2.7~5.5	10.0~40.0	---	120 (two value)	Bend TCP	
S1D17904T00A* (SED1794T _{0A})	2.7~5.5	10.0~40.0	---	190/200 (two value)	TCP	
S1D17906D00B* (SED1796D _{0B})	1.8~5.5	15.0~40.0	---	150/154 (four value)	Au bump chip	for COG
S1D17907D00B* (SED1797D _{0B})	1.8~5.5	15.0~40.0	---	240 (two value)	Au bump chip	for COG
S1D17909T00A* (SED1799T _{0A})	1.8~5.5	15.0~40.0	---	256 (two value)	TCP	

S1D19000 series

Products (Previous number)	Supply voltage range (V)	LCD voltage range (V)	Range Source	Data inputs	Package	Application
S1D19006T00A* (SED1906T _{0A})	3.0~3.6	6.0~9.0	312	6 bit digital	TCP	For driving of a dot reversed

3-3 Other Drivers

■ Thermal-head drivers

Products (Previous number)	Logic supply voltage range V	Output withstand voltage V (Max.)	Output current mA (Max.)	Clock frequency MHz (Max.) [#]	Number of driver outputs	Description	Package
S1D50350D0A0 (SED5035D _{0A})	5±10%	32	150	7 [5]	16	Both sides outputs	Chip
S1D50360D0A0 (SED5036D _{0A})			70		32		QFP12-48pin
S1D50360F0A0 (SED5036F _{0A})			60	64	Both sides outputs		
S1D50680D0A0 (SED5068D _{0A})			22				7 [5]
S1D53000D0A0 (SED5300D _{0A})			12	10 [8]	Both sides outputs 600dpi		
S1D53010D0A0 (SED5301D _{0A})				8 [8]	128	One side output 400dpi	
S1D53100D0A0 (SED5310D _{0A})			15	16 [16]		64	One side output 200dpi
S1D53160D0A0 (SED5316D _{0A})			20	7 [5]	One side output		
S1D56150D0A0 (SED5615D _{0A})			70	7 [6]	One side output 200dpi low voltage		
S1D56200D0A0 (SED5620D _{0A})			5±10%	32	35	10 [8]	64
S1D56240D0A0 (SED5624D _{0A})	50						
S1D56250D0A0 (SED5625D _{0A})	2.7~5.5	10	60	10 [8] /5V	96	One side output 300dpi	
S1D56260D0A0 (SED5626D _{0A})	5±10%	32	100	7 [6] /5V			
S1D56280D0A0 (SED5628D _{0A})			5±10%	32	60	7 [5]	96
S1D56680D0A0 (SED5668D _{0A})	30						
S1D56800D0A0 (SED5680D _{0A})	20						
S1D56820D0A0 (SED5682D _{0A})	50	10 [8]			96	One side output 300dpi	
S1D56840D0A0 (SED5684D _{0A})	20						
S1D56850D0A0 (SED5685D _{0A})	10	7 [5]					
S1D56860D0A0 (SED5686D _{0A})	60	10 [10]			64	One side output 300dpi (for 12 dot)	

: In case of cascade connection

■ LED Printer-head drivers

Products (Previous number)	Supply voltage V	Output current mA (Max.)	Clock frequency MHz (Max.) [#]	Number of driver outputs	Features	Package
S1D41000 (SED4100)	5±5%	7	8	64	Provided with constant current regulation terminal, both sides output	Chip
S1D41010 (SED4101)		4.5	10		Provided with constant current regulation terminal, both sides output 300dpi	
S1D41800 (SED4180)		4	20	128	One side output 600dpi	

: In case of cascade connection

3 ASSPs

-4 Interface ICs

The IEEE1394/USB2.0 controller is SEIKO EPSON's proprietary technique that serves as IC for high-speed serial interface.

This product is best suited to rapid transmission linking PC to peripheral equipment such as storage drive.

For those customers who desire to make the most of the past technological assets, the line-up of SCSI controller is also available.

■ IEEE1394 controller

Products (Previous number)	Supply voltage (V)	Additional features	Package
S1R72801F00A (SPC7281F _{0A})	5.0/3.3	<ul style="list-style-type: none"> ●Conformity to the IEEE1394-1995, 1394a Draft 2 ●LINK controller ●SBP-2 protocol support ●Built-in CPU flash ●IDE interface (Ultra ATA/33) 	QFP20-184
S1R72803F00A * (SPC7283F _{0A})	5.0/3.3	<ul style="list-style-type: none"> ●Conformity to the IEEE1394-1995, 1394a Draft 2 ●LINK controller ●SBP-2 protocol support ●Built-in CPU flash ●IDE interface (Ultra ATA/66) 	QFP20-184
S1R72900F00A * (SPC7290F _{0A})	3.3	<ul style="list-style-type: none"> ●Conformity to the IEEE1394a-2000 ●Physical layer (PHY) IC ●Two 1394 ports ●Compatibility with transfer rates of 400/200/100 Mbps 	QFP13-64
S1R72901F00A * (SPC7291F _{0A})	3.3	<ul style="list-style-type: none"> ●Conformity to the IEEE1394a-2000 ●Integration of LINK, PHY, CPU and Flash ●Achievement of rapid transfer at 1394 via one chip ●Two at 1394 port ●Ultra ATA/66-compatible IDE interface 	QFP15-100

*: Under development

■ USB2.0 device controller

Products (Previous number)	Supply voltage (V)	Additional features	Package
S1R72003F00A *	3.3	<ul style="list-style-type: none"> ●Conformity to the USB2.0 ●High-speed, full-speed mode-ready ●Compatibility with control, bulk, and interrupt transmission mode ●4 end points 	QFP15-100

*: Under development

■ SCSI controller

Products (Previous number)	Supply voltage (V)	Additional features	Package
S1R72103F00A (SPC7213F _{0A})	5.0/3.3	<ul style="list-style-type: none"> ●Compatibility with SCSI-2 ●Transfer rate: 10 Mbyte/second (at synchronization), 5 Mbyte/second (at asynchronization) ●SCSI-3 Fast20-ready ●Transfer rate: 20 Mbyte/second (at synchronization) ●Built-in IDE interface (Ultra ATA/33) 	QFP15-128
S1R72104F00B (SPC7214F _{0B})	5.0/3.3	<ul style="list-style-type: none"> ●Compatibility with SCSI-2 ●Transfer rate: 10 Mbyte/second (at synchronization), 5 Mbyte/second (at asynchronization) ●SCSI-3 Fast20-ready ●Transfer rate: 20 Mbyte/second (at synchronization) ●Built-in port interface 	QFP15-100
S1R72105F00A (SPC7215F _{0A})	5.0/3.3	<ul style="list-style-type: none"> ●Compatibility with SCSI-2 ●SCSI-3 Fast20-ready ●Built-in DMA interface ●Built-in USB1.1 interface ●USB full speed mode-ready 	QFP15-100

3-5 Power Supply ICs

■ Power supply ICs for logic

Products (Previous number)	Supply voltage (V)	Output voltage	Consumption current	Power-off current	Package
S1F785200* (SCI7852)	2.8~5.5	3.3V series/1.8V series	80μA	1.0μA	SSOP3-24pin
S1F76650* (SCI7665)	1.6~5.5	3.3V/3.0V/2.5V	T.B.D	1.0μA	SSOP3-24pin
S1F71100M0A0 (SCI7110M _{0A})	3.3~12	3.3V	800μA	1.0μA	SOP4-8pin
S1F71200M0A0 (SCI7120M _{0A})	2.5~12	5.0V	150 μA (at pressure rise) 15 μA (at pressure fall)	1.0μA	SSOP2-16pin
S1F71200M0B0 (SCI7120M _{0B})	2.5~12	3.3V			

*: Under development

■ Power supply ICs for liquid crystal

Products (Previous number)	Supply voltage (V)	Output voltage	Consumption current	Features	Package
S1F75510* (SCI7551)	~3.6	Double/triple in the positive direction Triple in the negative direction	300μA	• Conversion efficiency 90% • Built-in stabilization circuit	SSOP3-24pin
S1F75300M0A0* (SCI7530M _{0A})	2.7~5.5	- 30V (Possible to set freely)	200μA (no-load)	• Built-in voltage follower • Built-in electronic volume	SSOP1-20pin

*: Under development

■ DC to DC converters

Products (Previous number)	Features	Package
S1F76600D0B0 (SCI7660D _{0B})	• Power supply voltage conversion IC • Easy voltage conversions from input voltage to positive/negative potential (two conversion types; one-fold for reverse polarity and two-fold for the same polarity)	Chip
S1F76600C0B0 (SCI7660C _{0B})		DIP-8pin
S1F76600M0B0 (SCI7660M _{0B})	• Power conversion efficiency: 95% typical	SOP4-8pin
S1F76620M0A0 (SCI7662M _{0A})	• Possible to double pressure rise to positive potential	SOP4-8pin
S1F76620D0A0 (SCI7662D _{0A})	• Power conversion efficiency: 95% typical	Chip

■ DC to DC converters and voltage regulators

Products (Previous number)	Features	Package
S1F76610D0B0 (SCI7661D _{0B})	• Power supply voltage conversion IC • Easy voltage conversions from input voltage to positive negative potential (two conversion types; one- and two-fold for reverse polarity and two- and three-fold for the same polarity)	Chip
S1F76610C0B0 (SCI7661C _{0B})		DIP-14pin
S1F76610M0B0 (SCI7661M _{0B})	• Power conversion efficiency: 95% typical	SOP5-14pin
S1F76610M2B0 (SCI7661M _{2B})	• Built-in circuit for voltage stabilization • Four temperature coefficients suitable for LCD power supplies	SSOP2-16pin
S1F76540C0A0 (SCI7654C _{0A})	• Power supply voltage conversion IC • Generation of 4/3/2 times output voltage in the negative direction • Power conversion efficiency: 95% (Max.) • Built-in voltage stabilization circuit • Possible to select temperature gradient for LCD power supply	DIP-16pin
S1F76540M0A0 (SCI7654M _{0A})		SSOP2-16pin
S1F76640M0A0 (SCI7664M _{0A})	• Power supply voltage conversion IC • Possible to 2/3/4 times pressure rise output to the positive potential • Built-in stabilization circuit	SSOP2-16pin
S1F76640D0A0 (SCI7664D _{0A})		Chip

■ Switching regulators

Products (Previous number)	Supply voltage range (V)	Output voltage (V)	Oscillator	Voltage detection	Power-on clear	Battery backup	Ripple noise suppression input	Output voltage temperature (mV/°C)	Package
S1F76310M1L0 (SCI7631M _{1A})	1.5 (Min. : 0.9)	2.4	Built-in CR	Provided	Provided	Provided	Provided	---	SOP3-8pin
S1F76310M1B0 (SCI7631M _{1BA})		3.0							
S1F76310M1K0 (SCI7631M _{1KA})		3.5							
S1F76310M1A0 (SCI7631M _{1AA})		5.0							
S1F76330M1B0 (SCI7633M _{1BA})		3.0	Crystal	Not Provided	Not Provided	Not Provided	Not Provided		
S1F76380M1H0 (SCI7638M _{1HA})		2.2	Built-in CR	Provided	Provided	Not Provided	Provided	-4.5	
S1F76380M1L0 (SCI7638M _{1A})		2.4						-4	

3 ASSPs

-5 Power Supply ICs

■ High precision voltage regulators

Products (Previous number)	Input voltage (V-max.)	Output voltage (V)	Output current (mA-Typ.)	Current consumption (μ A-typ.)	Package
S1F78100Y2H0 (SCI7810Y _{HB})	15	1.5	10 (V _I =3V)	1.5	SOT89-3pin
S1F78100Y2G0 (SCI7810Y _{GB})		1.8			
S1F78100Y2F0 (SCI7810Y _{FB})		2.2			
S1F78100Y2L0 (SCI7810Y _{LB})		2.6			
S1F78100Y2R0 (SCI7810Y _{RB})		2.8			
S1F78100Y2D0 (SCI7810Y _{DB})		3.0	30 (V _I =5V)		
S1F78100Y2C0 (SCI7810Y _{CB})		3.2			
S1F78100Y2T0 (SCI7810Y _{TB})		3.3			
S1F78100Y2N0 (SCI7810Y _{NB})		3.5			
S1F78100Y2K0 (SCI7810Y _{KB})		3.9			
S1F78100Y2P0 (SCI7810Y _{PB})		4.0	40 (V _I =6V)		
S1F78100Y2M0 (SCI7810Y _{MB})		4.5			
S1F78100Y2B0 (SCI7810Y _{BB})		5.0	50 (V _I =7V)		
S1F78100Y2A0 (SCI7810Y _{AB})		6.0	50 (V _I =8V)		
S1F79100Y2H0 (SCI7910Y _{HA})	-5V	-1.5	100	4.0	
S1F79100Y2G0 (SCI7910Y _{GA})		-1.8			
S1F79100Y2D0 (SCI7910Y _{DA})		-3.0			
S1F79100Y2P0 (SCI7910Y _{PA})		-4.0			
S1F79100Y2B0 (SCI7910Y _{BA})		-5.0			

Note) Temperatures during reflow soldering must remain within the limits set out under LSI Device Precautions in this catalog. Do not immerse QFP and SOT89 packages during soldering, as the rapid temperature gradient during dipping can cause damage.

■ High precision voltage detectors

Products (Previous number)	Output level (V)	Detection voltage level (V)			Operating voltage range (V)	Operating current (μ A-Typ.)	Package
		Min.	Typ.	Max.			
S1F77200Y1V0 (SCI7720Y _{VA})	N-channel open drain	0.9	0.95	1	0.8~10.0	1.5 (V _{DD} =1.5V)	SOT89-3pin
S1F77200Y1A0 (SCI7720Y _{AA})		1	1.05	1.1			
S1F77200Y1Y0 (SCI7720Y _{YA})		1.05	1.1	1.15			
S1F77200Y1B0 (SCI7720Y _{BA})		1.1	1.15	1.2			
S1F77200Y1N0 (SCI7720Y _{NA})		1.85	1.9	1.95		2.0 (V _{DD} =3.0V)	
S1F77200Y1C0 (SCI7720Y _{CA})		2.1	2.15	2.2			
S1F77200Y1F0 (SCI7720Y _{FA})		2.6	2.65	2.7		2.0 (V _{DD} =3.0V)	
S1F77200Y1T0 (SCI7720Y _{TA})		3.9	4	4.1		2.0 (V _{DD} =5.0V)	
S1F77210Y1C0 (SCI7721Y _{CA})	CMOS	2.1	2.15	2.2	1.5~15.0	2.0 (V _{DD} =3.0V)	
S1F77210Y2C0 (SCI7721Y _{CBA})		2.1	2.15	2.2			
S1F77210Y1P0 (SCI7721Y _{PA})		2.2	2.25	2.3			
S1F77210Y1S0 (SCI7721Y _{SA})		2.3	2.35	2.4			
S1F77210Y1E0 (SCI7721Y _{EA})		2.5	2.55	2.5			
S1F77210Y1F0 (SCI7721Y _{FA})		2.6	2.65	2.7			
S1F77210Y2F0 (SCI7721Y _{FBA})		2.6	2.65	2.7			
S1F77210Y1R0 (SCI7721Y _{RA})		2.73	2.8	2.87		2.0 (V _{DD} =4.0V)	
S1F77210Y1G0 (SCI7721Y _{GA})		2.93	3	3.07			
S1F77210Y1H0 (SCI7721Y _{HA})		3.13	3.2	3.27		2.0 (V _{DD} =5.0V)	
S1F77210Y130 (SCI7721Y _{3A})		3.43	3.5	3.57			
S1F77210Y1T0 (SCI7721Y _{TA})		3.9	4	4.1			
S1F77210Y1M0 (SCI7721Y _{MA})		4.1	4.2	4.3			
S1F77210Y1J0 (SCI7721Y _{JA})		4.3	4.4	4.5			
S1F77210Y120 (SCI7721Y _{2A})		4.5	4.6	4.7			
S1F77210Y1K0 (SCI7721Y _{KA})		4.7	4.8	4.9		2.0 (V _{DD} =6.0V)	
S1F77210Y1L0 (SCI7721Y _{LA})		4.9	5	5.1			
S1F77220Y1D0 (SCI7722Y _{DA})	P-channel open drain	1.2	1.25	1.3		1.5 (V _{DD} =1.5V)	

#: Output Polarity reversed version

Note) Temperatures during reflow soldering must remain within the limits set out under LSI Device Precautions in this catalog. Do not immerse QFP and SOT89 packages during soldering, as the rapid temperature gradient during dipping can cause damage.

■ Melody ICs

SEIKO EPSON's melody ICs offers wide range of features and melodies to suit all applications. Custom melodies are easily implemented with the built-in programmable mask ROMs.

Products (Previous number)	Melodies (notes)	Transducer		Melody selection		Accom pani- ment	Envelope	Oscillator		Play mode		Abort play	Power supply voltage (V-typ.)			Package	Additional features
		Dynamic speaker	Piezo- buzzer	Binary code	Serial trigger			CR oscillation (Both C and Roscillators are built in.)	External clock	Level hold	One- shot		1.5V	3V	5V		
S1V75600M00A (SVM7560M _{0A}) S1V75600M00B/C00B (SVM7560M _{0B} /C _{0B})	2(128)	○	---	○	---	○	○	○	---	○	---	---	○			M** : SOP3A-8pin C** : DIP-8pin D** : chip	
S1V75600D00K (SVM7560D _{0K})	2(128)	○	---	○	---	○	○	○	---	---	(One- shot C)	---	○				
S1V75600M00M/C00M/ D00M (SVM7560M _{0M} /C _{0M} /D _{0M}) S1V75600M00V (SVM7560M _{0V})	2(128)	○	---	○	---	○	○	○	---	---	○ (One- shot A)	---	○				
S1V75601M00B/C00B/ D00B (SVM7561M _{0B} /C _{0B} /D _{0B})	16(512)	○	---	---	○	○	○	○	---	○	---	---	○				
S1V75601M00C/C00C/ D00C (SVM7561M _{0C} /C _{0C} /D _{0C})	16(512)	○	---	---	○	○	○	○	---	---	(One- shot A)	---	○				
S1V71000M00J (SVM7100M _{0J})	16(495)	---	○	○	---	---	---	○	○	☆		---	○	---	SSOP-20pin	☆ : Selectable by the terminal	

■ Music generators

Music generators are high-quality custom melody ICs capable of reproducing preprogrammed music by synthesizing the sounds of several musical and percussion instruments, as well as alarm signals.

Products (Previous number)	Melodies (notes)	Transducer		Melody selection		Accom pani- ment	Envelope	Oscillator		Play mode		Abort play	Power supply voltage (V-typ.)			Package	Additional features
		Dynamic speaker	Piezo- buzzer	Binary code	Serial trigger			CR oscillation (Both C and Roscillators are built in.)	External clock	Level hold	One- shot		1.5V	3V	5V		
S1V75700M05P (SVM7570M _{05P})	15(620)	○	---	○	---	4	○	---	○	○		○	---	---	○	SOP1-24pin	Mode play: Level Hold + One Shot B and C
S1V75700M06F (SVM7570M _{06F})																	
S1V75701C05N (SVM7571C _{05N})	15(620)	○	---	○	---	4	○ (possible)	○	---	○	○	○	---	---	○	DIP-16pin*	
S1V75701C06G (SVM7571C _{06G})																	
S1V75701C06H (SVM7571C _{06H})																	
S1V75701C06J (SVM7571C _{06J})																	
S1V75701C06K (SVM7571C _{06K})																	
S1V75701C06N (SVM7571C _{06N})																	
S1V75701C06P (SVM7571C _{06P})																	

*: Selectable 8 melodies (Max.) in DIP-16pin

■ Standard melodies

Products (Previous number)	Melody	Composer
S1V75701C05N (SVM7571C _{5N}) (5.0V spec.)	1 Goodbye Song 2 Minuet 3 Symphony No. 40 4 Fur Elise 5 The Entertainer 6 Mary Had a Little Lamb 7 CHIME 8 ALARM	F. Chopin J. S. Bach W. A. Mozart L. v. Beethoven American Folk Song American Folk Song --- ---
S1V75701C06G (SVM7571C _{6G}) (5.0V spec.)	1 Runner 2 I Want to Take Care of You 3 Oribia wo Kikinagara 4 September 5 Saturday Lovers 6 Autumn 7 Surf heaven, Ski Heavey 8 Color/White Blend	New Funky Suekichi Yumi Matsutohya Ami Ozaki Mariya Takeuchi Tatsuroh Yamashita Kazumasa Oda Yumi Matsutohya Mariya Takeuchi
S1V75701C06H (SVM7571C _{6H}) (5.0V spec.)	1 Happy Birthday 2 Mickey Mouse club march 3 It's a small world 4 Forest Bear 5 Cha Cha Cha Toy 6 Who Needs a Kid Like This? 7 Lullaby 8 Rudolph the Red-Nosed Reindeer	M. J. Hill Jimmie Dodd Richard M. Sherman American Folk Song Nobuyoshi Koshibe Takeshi Shibuya F. Schubert Johnny Marks
S1V75700M05P/ S1V75701C06J (SVM7570M _{05P} / SVM7571C _{6J}) (5.0V spec.)	1 Twinkle Twinkle Little Star 2 Old Macdonald had a Farm 3 One sunny day 4 London bridge is falling down 5 Mary Had a Little Lamb 6 Rock-A-Bye Baby 7 Lullaby 8 We Wish You a Merry Christmas	French Folk Song American Folk Song American Folk Song English Folk Song American Folk Song American Folk Song J. Brahms English Folk Song
S1V75701C06K (SVM7571C _{6K}) (5.0V spec.)	1 Ampanman Theme 2 Electric Parade 3 New Year's Day 4 Ureshii Hinamatsuri 5 Carp Run 6 Lonesome Journey 7 Snow 8 Jingle bells	Takashi Miki J. Perrey & G. Kingsley Sanetsura Ue Kohyoh Kawamura Unknown Ordway J. P. Unknown J. Pierpont
S1V75701C06N (SVM7571C _{6N}) (5.0V spec.)	1 Rocky (theme) 2 Star Wars (theme) 3 James Bond (theme) 4 Axel Foley (theme) 5 Batman (theme) 6 Indiana Jones (theme) 7 Superman (theme) 8 Popeye (theme)	Bill Conti John Williams Manty Norman Harold Faltermeier Prince R. Nelso J. Williams J. Williams Lean Flatow

Products (Previous number)	Melody	Composer
S1V75701C06P (SVM7571C _{6P}) (5.0V spec.)	1 She wore a yellow ribbon 2 My darling Clementine 3 The yellow rose of Texas 4 Yankee Doodle 5 When the saints go marchin' in 6 Londonderry air 7 Havah Nagilah 8 Jamaica farewell	American Folk Song American Folk Song American Folk Song American Folk Song American Folk Song Old Irish Melody Judaic Folk Song Jamaican Folk Song
S1V75700M06F (SVM7570M _{6F}) (5.0V spec.)	1 Yellow Submarine 2 Yesterday 3 Penny Lane 4 Let It Be 5 Ob-La-Di, Ob-La-Da 6 Hey Jude 7 All My Loving 8 Here Comes the Sun	J. Lennon J. Lennon J. Lennon J. Lennon & P. McCartney J. Lennon J. Lennon J. Lennon George Harrison
S1V71000M00J (SVM7100M _{0J})	1 It's a small world 2 Love me tender 3 Old macdonald had a farm 4 March of the Toy Soldiers 5 Yankee doodle dandy 6 Rudolph the Red-Nosed Reindeer/ Santa Claus is Coming to Town 7 Wedding March 8 The Entertainer 9 Two Minutes 10 Landler Tanz 11 CHIME 12 Mickey Mouse club march	Richard M. Sherman Elvis Presley American Folk Song Leon Jessel American Folk Song Johnny Marks J. Fred Coots R. Wagner American Folk Song J. S. Bach W. A. Mozart --- Jimmie Dodd
S1V75600M00A (SVM7560M _{0A})	1 Je Te Veux 2 Minuet	E. Statie L. Boccherini
S1V75600M00B/ C00B (SVM7560M _{0B} /C _{0B})	1 Beauty and the beast 2 A whole new world	A. Menken A. Menken
S1V75600D00K (SVM7560D _{0K})	1 Happy Birthday To You	M. J. Hill
S1V75600M00M/ C00M/D00M (SVM7560M _{0M} /C _{0M} / D _{0M})	1 CHIME 2 BUZZER	--- ---
S1V75600M00V (SVM7560M _{0V})	1 Calling sound (upper line) 2 Calling sound (lower line)	--- ---
S1V75601M00B/ C00B/D00B (SVM7561M _{0B} /C _{0B} / D _{0B})	1 Aria 2 Jimnopedi No.1 3 Spring song 4 Green Sleeves 5 Home on the Range 6 Minuet 7 The Entertainer 8 Jingle bells 9 Magnificent Waltz 10 Heaven and Hell 11 Bright Spring Flower 12 Westminster 13 CHIME 14 BUZZER 15 Calling sound(upper line) 16 Calling sound(lower line)	Pasael E. Statie F. Mendelson English folk Song American Folk Song J. S. Bach American Folk Song J. Pierpont F. Chopin Offenbach M. Lock J. E. Zartor --- --- ---

All the part numbers without voltage indication are for 1.5V.

■ Melody ICs development

Melody ICs are customized by programming the ROM data with the customer's melody.

● Custom IC ordering information

Minimum order		30,000 ICs over six months
Medium		Music score or magnetic tape
Delivery schedule (standard)	Simulation tape	Ten days after receipt of the medium
	Test samples (5 units of ceramic packages)	Six weeks after approval of the simulation tape
	Volume production	Ten weeks after receipt of the order
	Simulation tape	¥60,000 for the S1V75600 series (SVM7560 series), ¥120,000 for the S1V75601(SVM7560)/S1V71000(SVM7100) series
Mask charge		¥500,000 standard; Test samples are included.
Exclusiveness	Period	Six months from the start of volume delivery, or three months after the delivery of test samples, if no order is placed.
	Applicability	A melody IC is an object of exclusiveness in its original form as defined in the customer's original specification. A melody IC with any amendments in form or function is not considered to be an object of exclusiveness.
Other		<ul style="list-style-type: none"> • Copyrighting will be handled by SEIKO EPSON • When selling our melody ICs or products using them to countries other than your own, dealing again with copyright matters may exceptionally become necessary depending on the regulations of the country to sell to. • Special options are not included in the mask charge. • Since the delivery schedule is based on that of a standard product, actual delivery dates may vary.

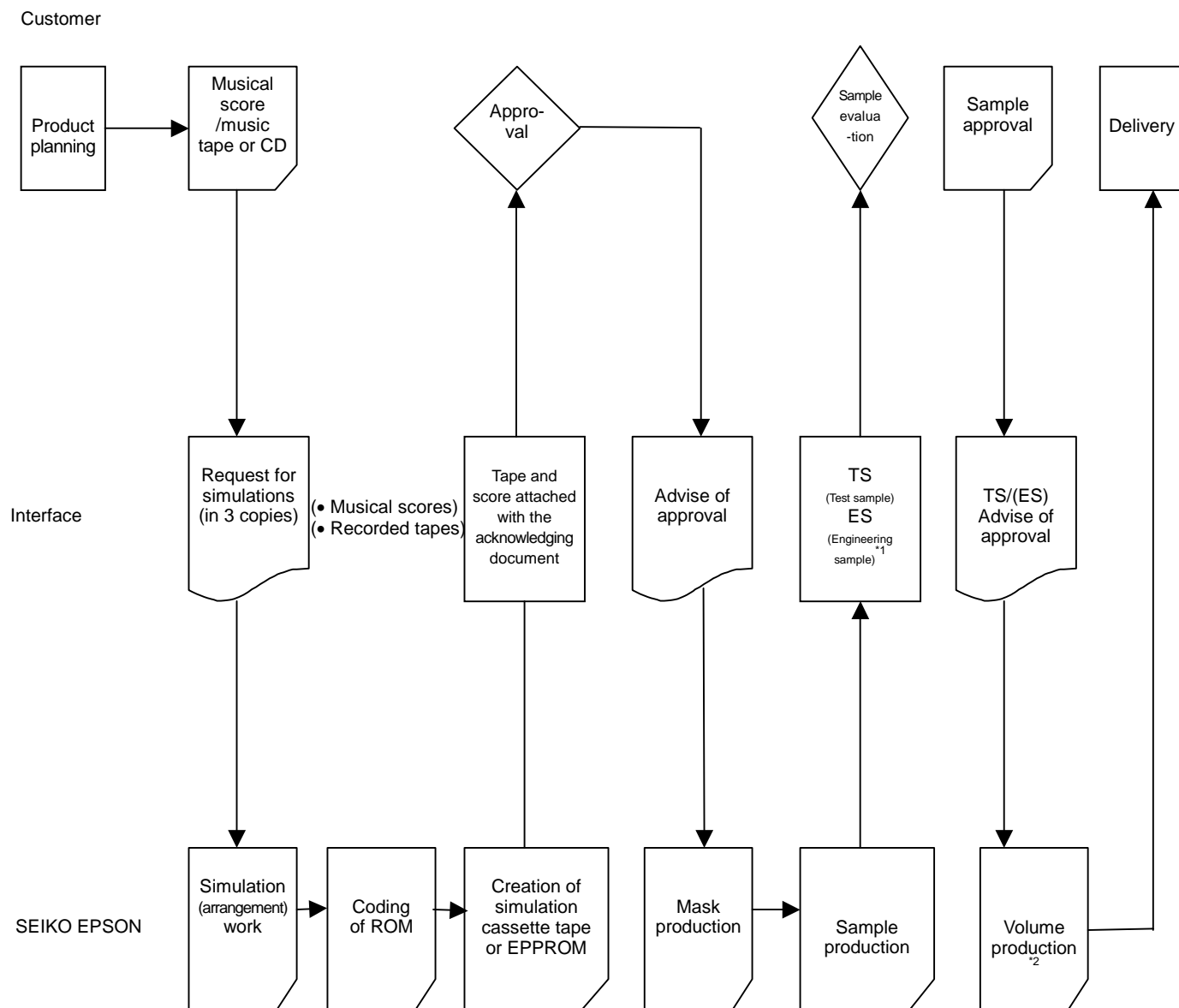
■ Music generator ICs development

Music generators are customized by programming the ROM data with the customer's music arrangement.

● Custom IC ordering information

Minimum order		10,000 ICs over six months
Medium		Music score or magnetic tape
Delivery schedule (standard)	Simulation tape	Fourteen days after receipt of the medium, plus two days per extra tune for more than five tunes
	Test samples (5 units of ceramic packages)	Six weeks after approval of the simulation tape
	Volume production	Ten weeks after receipt of the order
	Simulation tape	¥120,000 plus ¥5,000 per extra tune for more than five tunes
Mask charge		¥500,000, including test samples
Exclusiveness	Period	Six months from the start of volume delivery, or three months after the delivery of the test samples, if no order is placed.
	Applicability	A music generator is an object of exclusiveness in its original form as defined in the customer's original specification. A music generator with any amendments in form or function is not considered to be an object of exclusiveness.
Other		<ul style="list-style-type: none"> • Copyrighting will be handled by SEIKO EPSON. • When selling our melody ICs or products using them to countries other than your own, dealing again with copyright matters may exceptionally become necessary depending on the regulations of the country to sell to. • Special options are not included in the mask charge. • Since the delivery schedule is based on that of a standard product, actual delivery dates may vary.

● Development flow



*1 : Engineering samples are provided for the S1V75700(SVM7570).

*2 : Shipping specifications will be issued, if required.

Memories

	Capacity (bits)	Organization (bits)	Products	Access time (ns)	Page
Static RAM	2M	128K×16	S1M0W026B0J	100/70	80
			S1M0V023B0J	85	80
	4M	256K×16	S1M0W046B0J	100/70	80
			S1M0V043B0J	85	80
			S1M1W043B0J*	70	80
		512K×8	S1M0V040B0J*	85	80
	6M	384K×16	S1M0V063B0J*	85	80
	8M	512K×16	S1M1V083B0J	100/70	80

* : Under development

4 Memories

4-1 Static RAMs

Products (Previous number)	Density (bits)	Bit organization (bits)	Supply voltage (V)	Power dissipation		Operating temperature (°C)	Access time ns (Max.)	Package
				Operating mA (Max.)	Standby μA (Max.)			
S1M0W026B0J1 (SRM2AW216LLBT ₁)	2M	128K×16	1.8~2.2	30	15	-40~85	100	CSP-48 pin
S1M0W026B0J7 (SRM2AW216LLBT ₇)		128K×16	2.2~3.0	35	20	-40~85	70	CSP-48 pin
S1M0V023B0J8 (SRM2AV213LLBT ₈)		128K×16	2.4~3.3	35	15	-40~85	85	CSP-48 pin
S1M0W046B0J1 (SRM2AW416LLBT ₁)	4M	256K×16	1.8~2.2	30	15	-40~85	100	CSP-48 pin
S1M0W046B0J7 (SRM2AW416LLBT ₇)		256K×16	2.2~3.0	35	20	-40~85	70	CSP-48 pin
S1M0V043B0J8 (SRM2AV413LLBT ₈)		256K×16	2.4~3.3	35	15	-40~85	85	CSP-48 pin
S1M0V040B0J8* (SRM2AV400LLBT ₈)		512K×8	2.4~3.3	35	15	-40~85	85	CSP-48 pin
S1M1W043B0J7* (SRM2BW413LLBT ₇)		256K×16	1.65~2.2	25	10	-40~85	70	PCSP-48 pin
S1M0V063B0J8* (SRM2AV613LLBT ₈)	6M	384K×16	2.4~3.3	35	30	-40~85	85	PCSP-72 pin
S1M1V083B0J7 (SRM2BV813LLBT ₇)	8M	512K×16	2.4~3.0	35	15	-40~85	70	CSP-48 pin

* : Under development

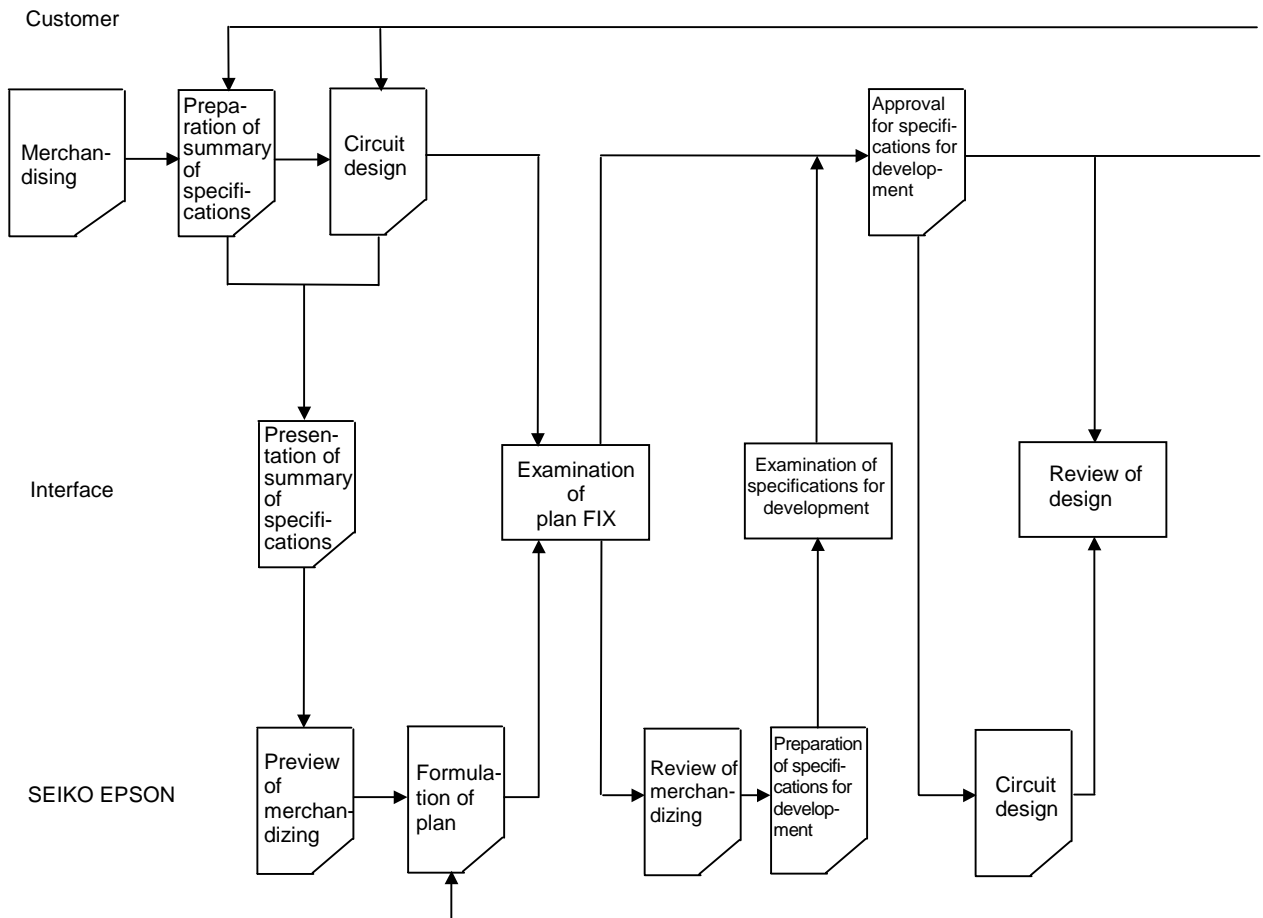
Section 5

Custom IC

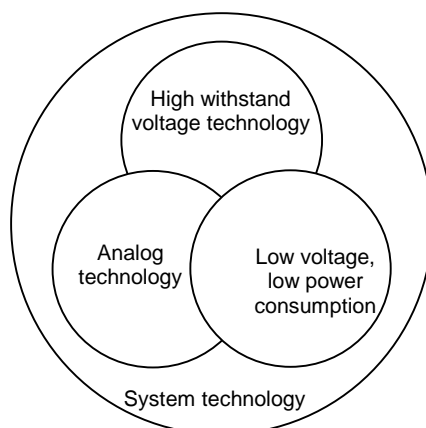
-1 Development of Custom IC

SEIKO EPSON always places itself in customers' shoes to offer ideal products.

Customers also get involved in processes from examination of specifications at the stage of development, design to mass production. Custom ICs are developed by SEIKO EPSON jointly with the customers. All steps from examination of specifications including functions and features, review of the results of evaluation to mass production, including contracts, are taken in collaboration with our customers. For information on integration of your circuit with the existing products, contact SEIKO EPSON.

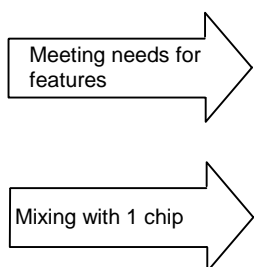


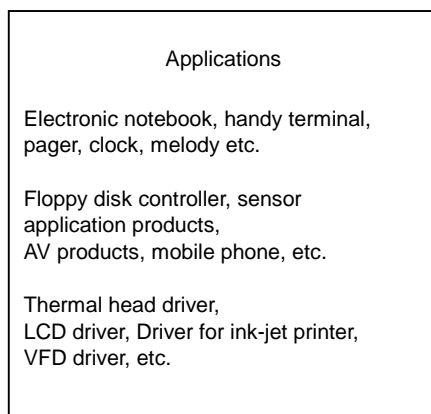
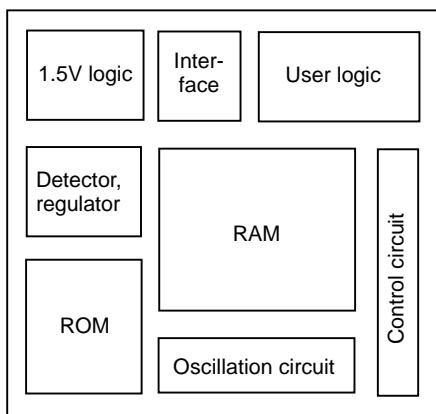
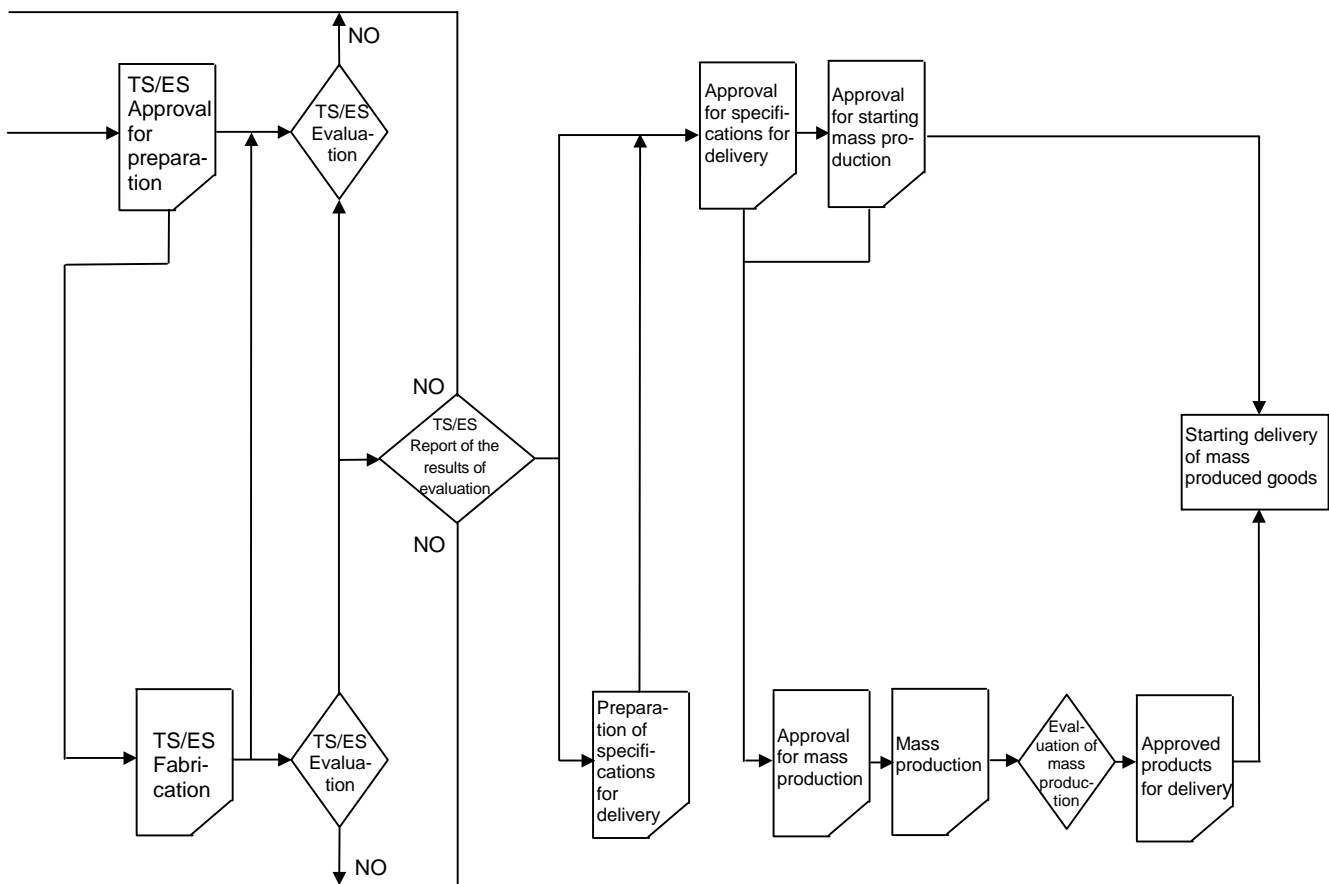
- Crystal, CR oscillation
- Analog switch
- A/D, D/A conversion
- PLL VCO
- Op-Amp
- Comparator
- Filter



Seiko Epson's advanced technology

- Power control
- 0.9V operation





Sub-system Assembly Technology

Chip-on-FPC

Chip-on-board

Tape automated bonding

Hybrid modules

6 Sub-system Assembly Technology

6-1 Application Products of Sub-system Assembly Technology

SEIKO EPSON supports customer products creation of miniaturization using super-low power CMOS LSI that is a key device and high density assembly that is a key technology.

Today, miniaturization of electronics products continues to evolve as well as higher values are increasingly added to products such as the advent of products with enhanced performance and varied functions. Meanwhile, environment-friendly products have been given priority. In implementing miniaturized, high value-added, improved quality products, the high-density packaging technology plays an important role.

SEIKO EPSON pursues assembly technology originally by fusion of super-fine technology and low-power consumption technologies such as CMOS LSI technology, that are cultivated with watch manufacturing. SEIKO EPSON meets every possible need of customers by using advanced assembly technologies such as COB to realize a super-small-sized assembly, COF to realize a super-light and thin assembly, and SMT to be a base of high density assembly, etc.

■ Application Products

Assembly technology	Application products
Chip-on-Flexible printed circuit (COF)	LCD modules, microcomputer-applied products, multi-chip modules
Chip-on-board (COB) assembly	LCD modules, microcomputer-applied products, multi-chip modules
Tape automated bonding (TAB) assembly	LCD modules, tape carrier packages (TCP)
Surface-mount technology (SMT) assembly	Microcomputer-applied products, Interface module
Complete OEM	CARD-PC, remote control unit, custom PC card, GPS card

■ Applications

- Cellular phone
- Pager
- Portable LCD game
- Databank, electronic calculator
- Personal digital assistant (PDA), handy terminal
- Remote control unit for portable audio system
- Remote control unit for air conditioner

● Example of Applied Products

LCD Module (COF)
(Display module for the handheld products)



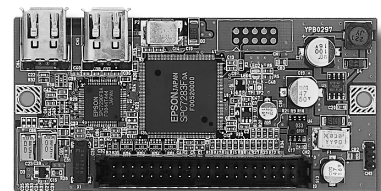
L54120010010000
(SEK2001B_{0A})

CARD-PCI/GX
(CARD size PC)



S4E28720C series
(SCE8720C series)

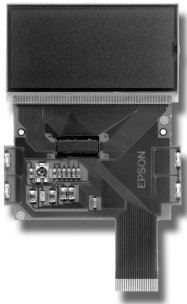
Interface Module
(IDE-IEEE1394 data exchange module)



S4E106600010000
(SEK0660B_{0A})

● Sub-system Assembly Technologies

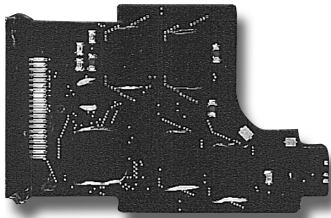
■ Chip-on-FPC (COF)



Flip chips are assembled on a flexible printed circuit (FPC) with their face down. Since the board is made of film, its shape is flexible, and it can be easily folded. Three-dimensional module is also possible, depending on the shape. The COF technology provides not only very thin board configurations, but also light, highly free, small, and high-density board configurations.

- Possible to assemble ICs with pad pitches up to 50 μ m (40 μ m:under development)
- Thickness of base film : 40 μ m (25 μ m:Under development)
- Possible to mount SMT devices on FPC and to shape key pad

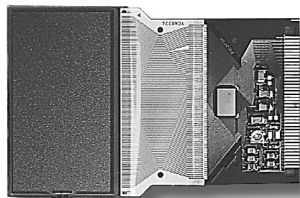
■ Chip-on-board (COB)



Bare chips are directly mounted on the board to reduce assembled area. The COB technology provides thin, high-density board configurations, and realizes miniaturization of customer products.

- Custom configuration is possible.
- Multi-chip assembly is possible.
- Possible to use on multi-layer wiring board with 4 or more layers

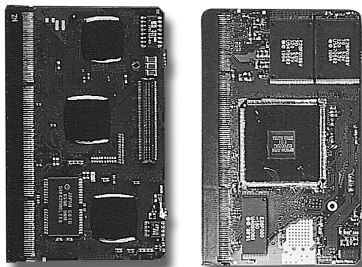
■ Tape automated bonding (TAB)



The TAB assembly is a bonding technology used in tape carrier packages (TCP) for VLSIs containing many pins and LCD driver ICs. This technology is extremely effective as low impedance bonding without loss of performance of device, and realize thin, high-density assembly.

- Thin, small assembly down to approximately 1 mm in thickness is possible.
- Easy to adapt to applications with many pins
- B-TAB (Bumped-TAB) technology provides TAB production of bump-less ICs
- Assembly of surface mount devices (SMD) on a tape is possible.

■ Hybrid modules



Combination of SMT, TAB and COB assembly technologies provides very small, thin modules.

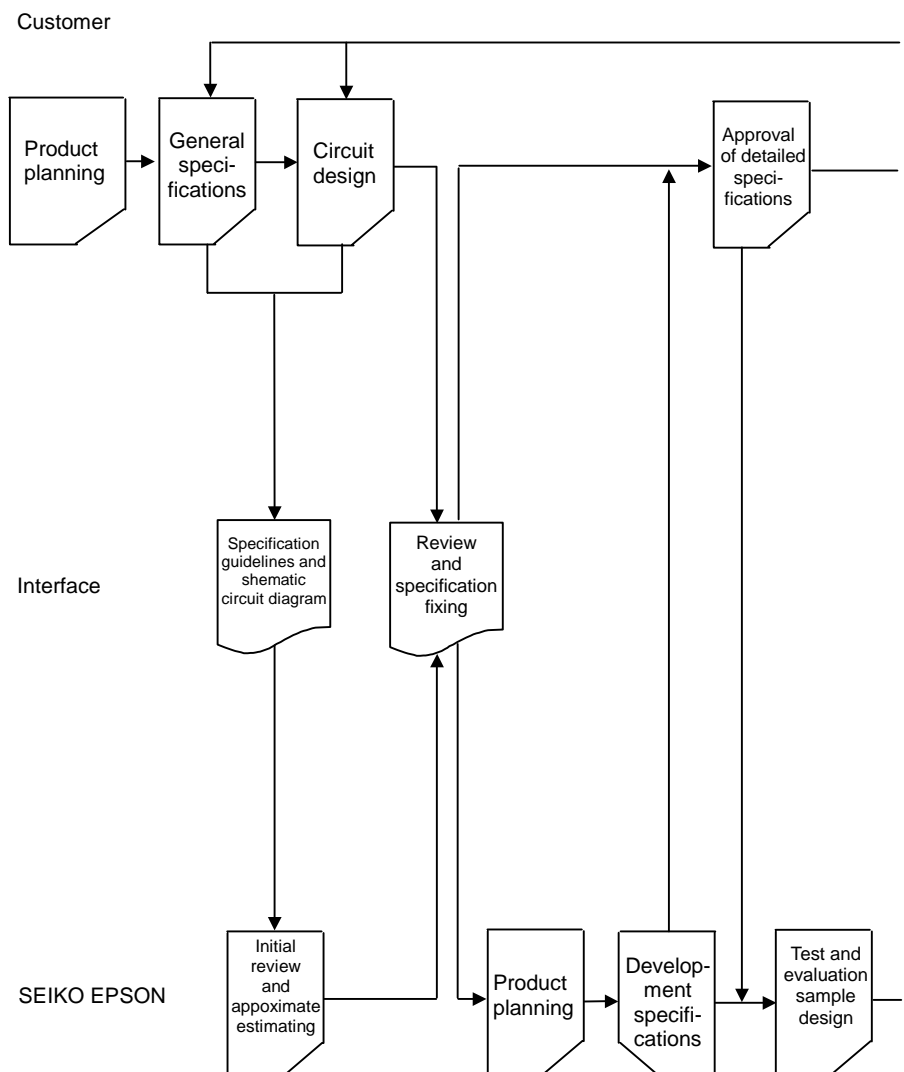
- Possible to use optimal assembly technology and configuration from wide selection.
- Possible to assemble liquid crystal display
- Assembly technology matched with the shape of device and products can be chosen.

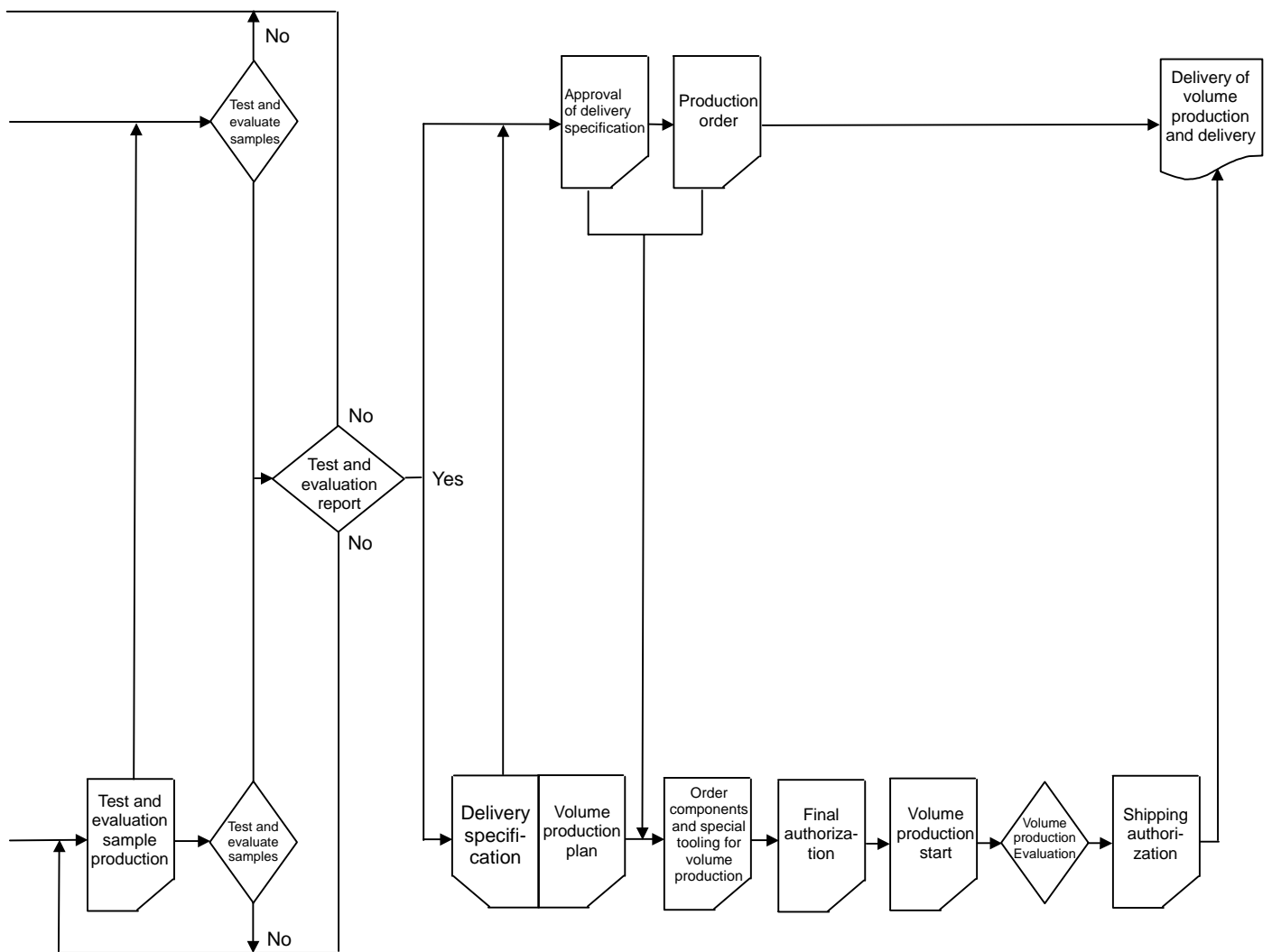
SEIKO EPSON for a module product development with customer, wholly supplies the most suitable technology for a product specification. It is possible to support design of not only circuit but also board and packing.

To realize high value-added products with becoming high-density and thin, SEIKO EPSON participates from a specification examination of customer for high-density assemble technology. SEIKO EPSON handle from circuit design to board and packing design as request of customer.

For mass production, doing the general design to be the most suitable for a product specification, pass for a trial production and evaluation. Of course, all production processes pursue high quality under consistent quality control. Due to short lead times and cost down, SEIKO EPSON is provided with the exclusive manufacturing line for various assemble technology.

●Development flow





LSI Device Precautions

Handling and operating precautions

SEIKO EPSON's plastic-molded LSIs are designed and manufactured for trouble-free operation when used under normal operating conditions. All products are subjected to stringent electrical and mechanical testing to ensure reliability.

When working with our products, you should take the following precautions.

- Use ICs within the rated operating voltage, operating temperature, operating input/output voltage and input/output current ranges. If ICs are used outside the rated ranges, you may experience high failure rates.
- Excessive electrical noise applied to a power or input pin can cause ICs to latch up, resulting in device malfunction or damage. If this occurs, turn off the power, isolate the problem, then supply power again.
- Do not expose ICs to excessive mechanical vibration, repetitive shock stress, or rapid temperature changes. These factors can cause the plastic package resin to crack and/or the bonding wires to break.
- Although all pins have electrostatic discharge protection circuits, excessive electrostatic stress can damage ICs. Use anti-static tubes or foam, conductive containers or aluminum foil for packaging and transportation. Do not use untreated plastic containers. Use grounded soldering tools and test equipment. Also ensure that all personnel which handle ICs wear appropriate anti-static overalls and grounding wriststraps.
- Electromagnetic interference can cause ICs to operate erratically. Shield all interference sources in equipment that uses ICs.
- Dust, liquids, acidic and other corrosive gases cause oxidation and package degradation that can result in shorting. Apply a sealing coat to ICs exposed to hazardous environments.
- Store ICs in a dry environment within the rated storage temperature range. Large temperature fluctuations can cause corrosion as the result of dewing.
- Do not place heavy objects directly on ICs.
- Handle ICs carefully at all times so as not to deform package leads.

Mounting precautions for surface mount devices

Recommended storage conditions

• The resin used in plastic packages absorbs moisture. Consequently, certain storage conditions should be maintained prior to reflow soldering. The table below shows the allowable storage conditions for plastic packages.

Always store packages in an environment that satisfies these conditions. The allowable storage duration under sealed moisture proof bag is one year.

Storage conditions and storage time of standard surface mounting type ICs Package products

< Standard Surface Mount Device (SMD) ... QFP, SOP, PLCC, etc. >			
Storage condition	25°C · 60%RH	30°C · 80%RH	<ul style="list-style-type: none"> • Allowable storage duration before opening the package (sealed moisture proof bag): <u>12 months</u> • When reflow is done twice, be sure to carry it out within the storage duration of each package rank. • When the storage time after opening the package has been exceeded or it has become unknown, carry out mounting after re-baking.
Storage rank			
S	1.5 months (6 weeks)	12 days (288 hours)	
I-1	10 days (240 hours)	7 days (168 hours)	
I-2	7 days (168 hours)	5 days (120 hours)	
I-3	5 days (120 hours)	1 day (24 hours)	
I-4	1 day (24 hours)	12 hours	
B	Make sure to assemble within 48 hours from the time when the baking has been done after opening the sealed moisture proof bag.		

< Certain Standard Mount Device ... BGA >		
Storage atmosphere	25°C · 60%RH	<ul style="list-style-type: none"> • The allowable storage duration prior to opening the package (moisture proof bag): <u>12 months</u> • When reflow is done twice, be sure to carry it out within the storage duration of each package rank. • When the storage duration after opening the package has been exceeded or it has become unknown, carry out mounting after re-baking.
Storage time after opening	3 days (72 hours)	

< Standard THD ... DIP etc. >		
Storage atmosphere	25°C · 60%RH	<ul style="list-style-type: none"> • Allowable storage duration before opening the package (sealed moisture proof bag): <u>12 months</u>
Storage time after opening	1.5 months (6 weeks)	

For details on storage rank, please contact the nearest Sales Office.

TAB products

Storage condition	Allowable storage time
Before opening moisture proof bag	12 months
After opening 25°C, 60%RH	3 weeks
30°C, 80%RH	1 week

Package baking conditions

Packages which exceed the recommended storage conditions should be baked before reflow soldering. This baking process will prevent the resin from cracking or losing adherence during soldering.

Meanwhile, baking should be done up to 2-times under the following conditions.

Baking conditions for standard surface mounting type ICs

Baking temperature	125°C
Package thickness	
t<2mm	5 hours
t≥2mm	24 hours

• The above conditions are typical specification. So please ask Seiko Epson about the storage conditions, storage limits and baking condition for each package, because the humidity condition depends on the thickness of package.

Soldering precautions

When soldering surface mounting packages (QFP, SOP, PLCC, etc.) under methods wherein the whole packages get heated such as infrared reflow and vapor phase reflow, observe the following conditions. Such reflowing may be carried out upto 2-times only. Meanwhile, pay extra attention to the storage conditions since humid plastic packages more tend to cause non-conformities such as occurrence of cracks.

During reflow soldering, plastic packages are exposed to high temperatures. Consequently, the following precautions should be taken.

- Infrared reflow soldering

The infrared reflow soldering temperatures shown in Fig. A must not be exceeded; and the maximum allowable package resin temperature, of 235 °C should not be maintained for more than ten seconds.

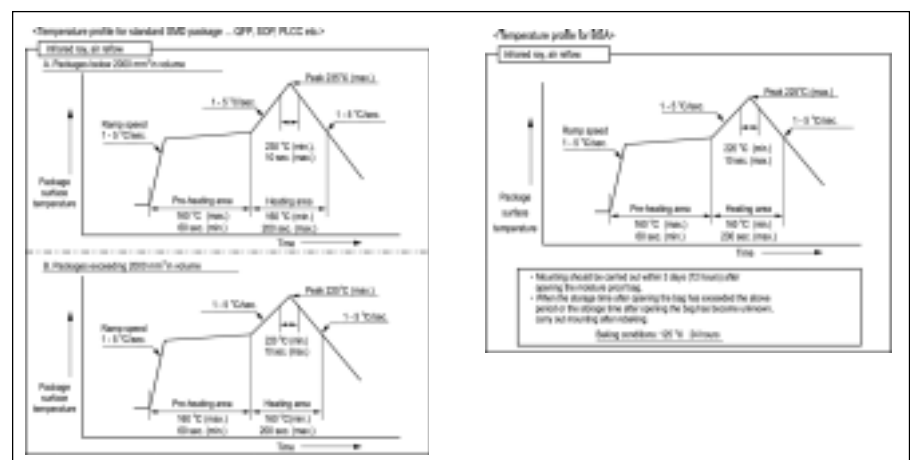


Fig. A Infrared reflow soldering

- Vapor-phase reflow soldering

The vapor-phase reflow soldering temperatures shown in Fig. B should not be exceeded, and temperature gradient must be held below 1 to 5 °C/sec.

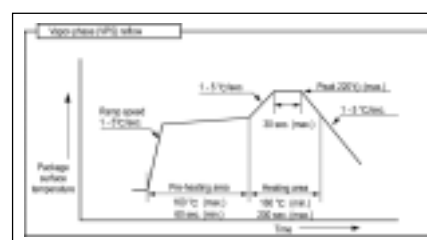


Fig. B Vapor-phase reflow soldering

- Wave soldering

Do not use wave soldering for QFP or SOT89 packages, since the steep temperature gradient during dipping can cause device damage.

Handling precautions for surface mount packages

With surface mount packages, the patterns of the P.C.B. and the leads of the packages are soldered at direct contacts. Seiko Epson is therefore shipping them out guaranteeing flatness of the leads good enough for such soldering. Consequently, it is suggested to handle them with sufficient care to keep them from stress which may cause deformation of the leads.

Sales Information

■ Information about discontinued products

The following products will be discontinued and could you consider the alternative product for the new development. But we can accept the only repeat purchase order of current mass production.

ASICs	SLA40000 series, SSL40000 series
MCUs	E0C33A104, E0C33202, E0C33204, E0C33208, E0C6215, E0C623A, E0C62L3A, E0C623E, E0C62A3E, E0C62L3E, E0C6235, E0C62A35, E0C62L35, E0C6247, E0C6262, E0C62A62, E0C62L62, E0C62T3, E0C63404
LCD controllers	SED13A0*
LCD drivers	SED1765*, SED1766*, SED17B0
Plasma display drivers	SED2710*
DVD chip set	SPC7451*, SPC7425*
CD-ROM decoders	SPC7221*, SPC7223*

■ Information of Contract IC Assembly Business

The Contract IC Assembly Business is also available. Please contact the following department.

IC Business Planning & Sales Department
Semiconductor Operations Division
TEL(+81)48-286-7702 FAX(+81)48-286-7829

■ EPSON Products Information

Seiko Epson also produces the following electronic devices.

Category	Products
System products	CARD-PC, GPS card, Interface module
LCDs	Passive-matrix LCD module D-TFD active-matrix LCD module TFT ultra-compact liquid crystal module
Crystal devices	Crystal unit, Crystal oscillator, Real time clock module Temperature sensor, SAW device



ENERGY SAVING EPSON

Epson offers effective savings to its customers through a wide range of electronic devices, such as semiconductors, liquid crystal display (LCD) modules, and crystal devices. These savings are achieved through a sophisticated melding of three different efficiency technologies.

Power saving technology provides low power consumption at low voltages.

Space saving technology provides further reductions in product size and weight through super-precise processing and high-density assembly technology.

Time saving technology shortens the time required for design and development on the customer side and shortens delivery times.



Our concept of Energy Saving technology conserves resources by blending the essence of these three efficiency technologies. The essence of these technologies is represented in each of the products that we provide to our customers.

In the industrial sector, leading priorities include measures to counter the greenhouse effect by reducing CO₂, measures to preserve the global environment, and the development of energy-efficient products. Environmental problems are of global concern, and although the contribution of energy-saving technology developed by Epson may appear insignificant, we seek to contribute to the development of energy-saving products by our customers through the utilization of our electronic devices. Epson is committed to the conservation of energy, both for the sake of people and of the planet on which we live.

WORKING WITH ENVIRONMENTAL ISSUES

In 1988, Epson led in working to abolish CFCs, and perfect abolition of those ozone layer-destroying substances was achieved in 1992. In 1998, the 10th year of start of the CFC-free activity, Epson set this year as the "Second Environmental Benchmark Year" and established a new corporate General Environmental Policy. Epson is tackling with environmental issues comprehensively.

At the end of Fiscal 1988, Epson succeeded in abolishing chloric solvents doubted to be harmful to human body. In fiscal 1999, Epson started the activity with a goal of abolishing lead solder pointed out possibility of environmental pollutant.



Co-existence Mark

The environmental mark symbolizing Epson's basic stance of Co-existence with Nature.

The design incorporates a fish, flower, and water, representing mutually supportive co-existence.



ISO14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

Epson quickly began working to acquire company-wide ISO certification. The Semiconductor Operations Division has acquired ISO9000 certification with its IC, IC card/module and their application products.



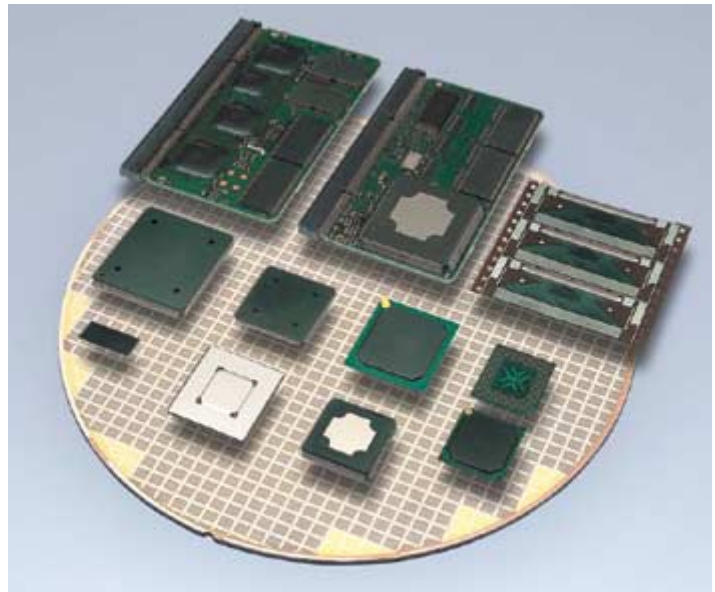
ISO9000 is an international standard for a product quality system that prescribes demands to the manufacturers on a standpoint of customers.

A RICH LINEUP OF LOW-VOLTAGE-OPERATION AND LOW-POWER-CONSUMPTION CMOS LSIs BASED UPON “ENERGY SAVING EPSON”

Epson's CMOS LSIs feature “power saving”, “space saving” and “time saving” characteristics according to “Energy Saving Epson”, the electronic devices business concept.

In power saving, we are seeking after low-voltage-operation and low-power-consumption technology for battery driven products. In space saving, we are cultivating high-integration technology and high-density assembly technology for portable equipments. In time saving, we are creating IP (Intellectual Property) and development environment to achieve shorter development time. As result of all these pursuits, we are leading the industry in many application fields.

Incorporated into gate arrays, microcomputers, controllers, drivers and memories, these frontier technologies are offered to you as our CMOS LSI products featuring not only low-voltage-operation and low-power-consumption but also high performance and high quality. From a rich lineup of our products, you can select the product ideal for your application.



■ Information on Changes to Product Codes

The product codes in this document are scheduled for change as of 1 April, 2001. This catalog will therefore remain valid until the end of March, 2001. For purchasing products after this date, please request the latest version of this document with the new product codes from your nearest sales office.



Fujimi Plant /
Fujimi-machi, Suwa-gun, Nagano-ken

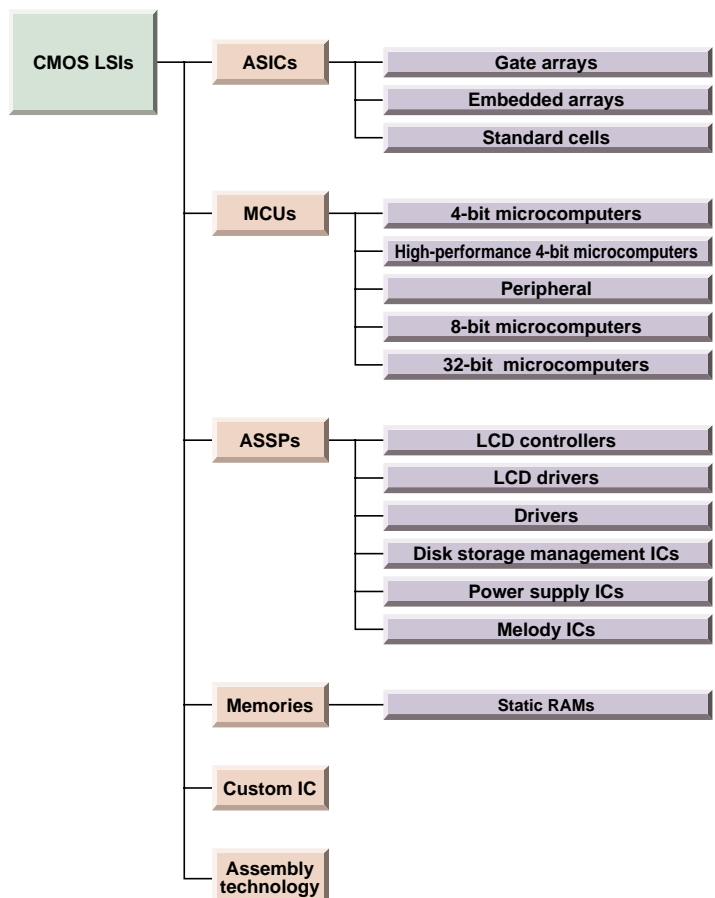


Sakata Plant & Tohoku Epson Corporation /
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Epson Hatogaya Corp. /
Hatogaya-shi, Saitama-ken

Epson's LSI lineup



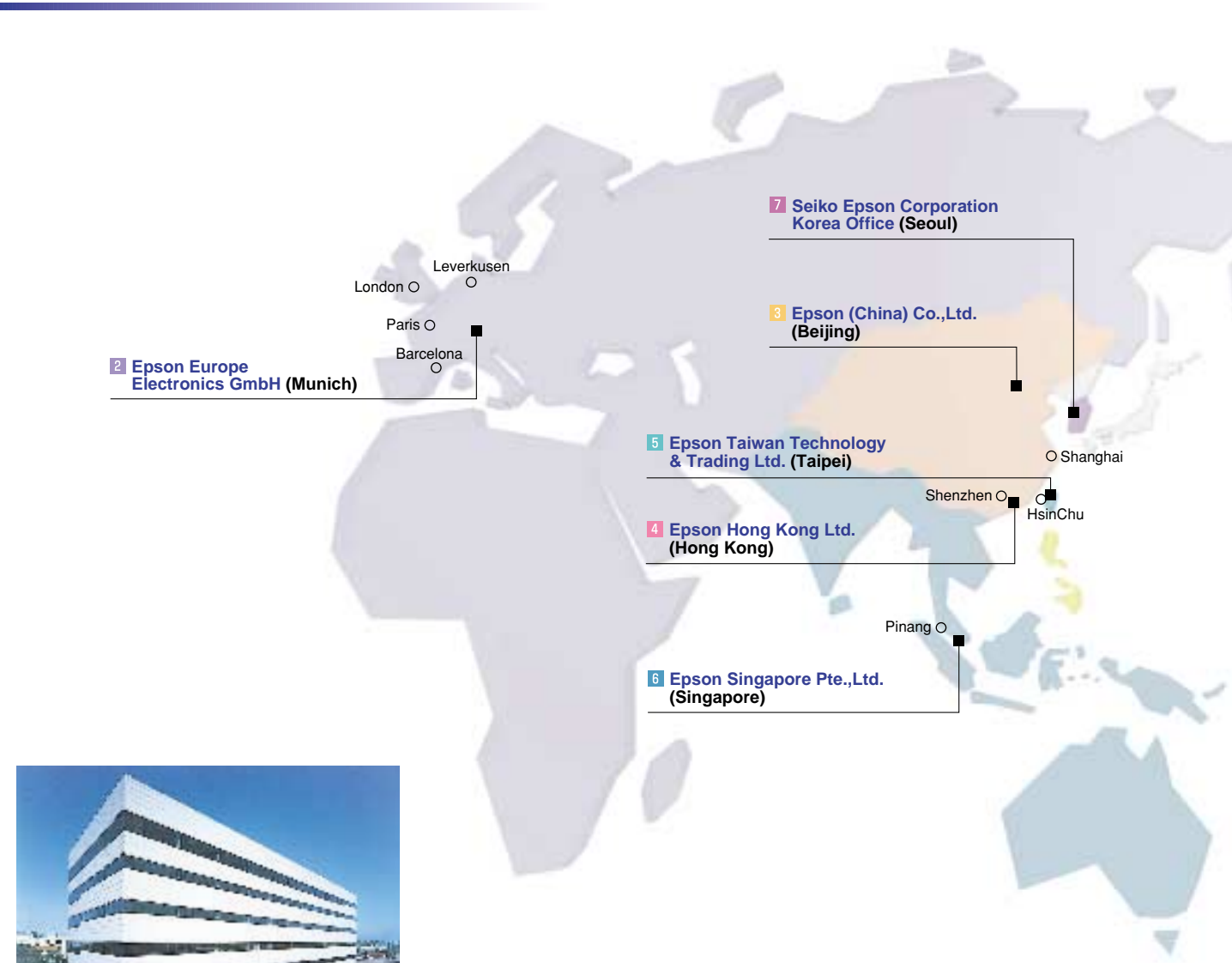
Epson's application-specific LSIs

■ Application-Specific integrated circuits (ASICs)

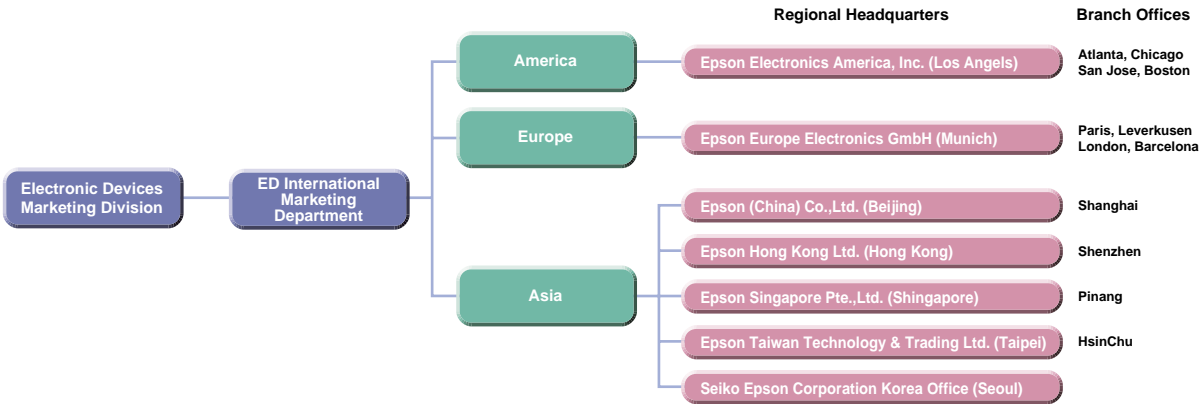
■ Application-Specific standard Products (ASSPs)

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INTERNATIONAL SALES NETWORK



Electronic Devices Marketing Division
(Hino Office) / Hino-shi Tokyo





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1 **Epson Electronics America, Inc. / Los Angeles**



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○ **Branch Offices**



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4 **Epson Hong Kong Ltd. / Hong Kong**



5 **Epson Taiwan Technology & Trading Ltd. / Taipei**



6 **Epson Singapore Pte.,Ltd. / Shingapore**



7 **Seiko Epson Corporation Korea Office / Seoul**

Trademark & Company Name

Design Compiler, Design Power, Test Gen: Synopsys Inc. in U.S.A.

Verilog-XL: Cadence Design Systems Inc. in U.S.A.

Windows : Microsoft Corp. in U.S.A.

Model Sim : Model Technology Inc. in U.S.A.

Leonardo : Exemplar Logic Inc. U.S.A.

I²C Bus : Philips Electronics Corp.

SH3 : HITACHI Limited

ARM7TDMI : ARM Limited in U.K.

All other product names mentioned herein are trademarks and/or registered trademarks of their respective owners.

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ELECTRONIC DEVICES MARKETING DIVISION

Electronic devices information on WWW server

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