

# General-Purpose Transistors



Sanyo general-purpose transistors are designed to meet every high-performance requirement.

They have wide application. They are easy to use because of large current capacity and wide ASO.

## Small-Signal Transistors.

(\*:Tc=25°C). PNP, (-)sign is omitted.

Type No. ( ):Marking	Package	Absolute Maximum Ratings/Ta=25°C				Electrical Characteristics/Ta=25°C								
		V <sub>CBO</sub> (V)	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	P <sub>C</sub> (W)	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	h <sub>FE</sub>	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	f <sub>T</sub> (MHz)	I <sub>C</sub> (mA)	I <sub>B</sub> (mA)	V <sub>CE(sat)</sub> max (V)
2SA1622(M) 2SC4211(L)	MCP	55	50	0.15	0.15	6	1	135 ~ 600	6	10	180 200	50	5	0.4
2SA1781(GS) 2SC4639(VT)	CP	55	50	0.15	0.2			135 ~ 600		10	180 200	50	5	0.4
2SA1782 2SC4640	SPA	55	50	0.15	0.3			140 ~ 560		10	180 200	50	5	0.4
2SA1783 2SC4641	NP	55	50	0.15	0.5			140 ~ 560		10	180 200	50	5	0.4
2SB1142 2SD1682	TO-126 ML	60	50	2.5	1.5 *10	2	100	100 ~ 400 100 ~ 560	10	50	140	1000	50	0.5 0.3

### h F E Rank Classification.

100 R 200	140 S 280	200 T 400	280 U 560	135 5 270	200 6 400	300 7 600
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MCP, CP:外形

Case Outlines(unit:mm)

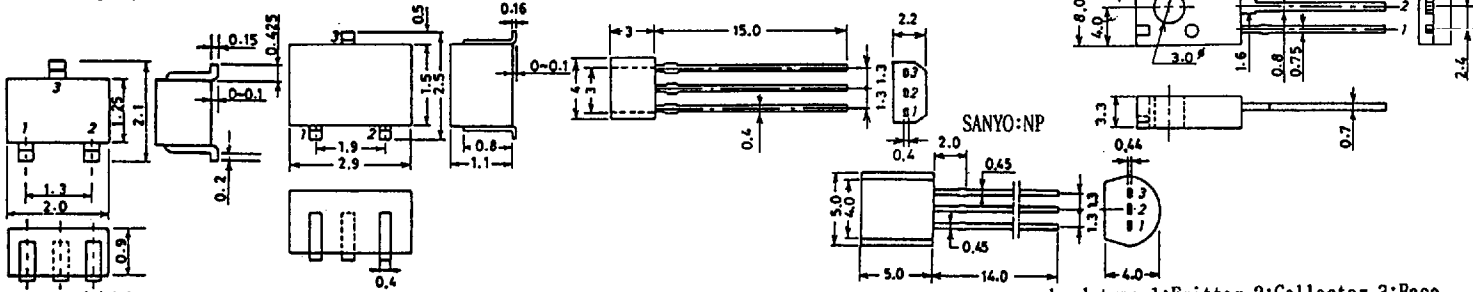
SANYO:MCP

SANYO:CP

SANYO:SPA

SANYO:NP

SANYO:TO-126ML



1:Base, 2:Emitter, 3:Collector

JEDEC :TO-92  
EIAJ :SC-43

lead type 1:Emitter, 2:Collector, 3:Base

For PNP, (-)sign is omitted.

## Large-Signal Transistors

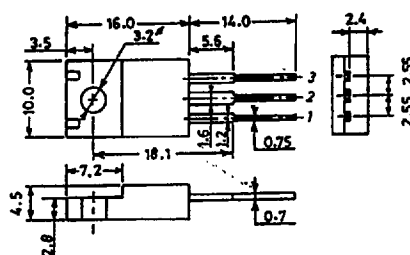
Type No.	Package	Absolute Maximum Ratings/Ta=25°C				Electrical Characteristics/Ta=25°C								
		V <sub>CBO</sub> (V)	V <sub>CEO</sub> (V)	I <sub>C</sub> (A)	P <sub>C</sub> Tc=25°C (W)	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	h <sub>FE</sub>	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	f <sub>T</sub> typ (MHz)	I <sub>C</sub> (A)	I <sub>B</sub> (A)	V <sub>CE(sat)</sub> max (V)
2SB1133 2SD1666	TO-220ML	60	60	3	25	5	0.5	70 ~ 280	5	0.5	40 8	2	0.2	1
2SB1274 2SD1913					20			70 ~ 280			100			

### h F E Rank Classification.

70 Q 140	100 R 200	140 S 280
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Case Outlines(unit:mm) 1:Base, 2:Collector, 3:Emitter

SANYO:TO-220ML



These specifications are subject to change without notice.

## SANYO Discrete Device Package Outlines (unit:mm)

### Small-Signal Transistors

Outlines name SSFP, SMCP, MCP, MCP4/6, CP, CP4/5/6, CPH3/5/6, PCP, PCP4/5, XP5/6, TP, TP-FA, MFP6, TSSOP8, SOP8, SPA, NP, MP, NMP, FLP, TO-126, TO-126ML, TO-126LP

### Large-Signal Transistors

ZP, SMP, SMP-FD, TO-220, TO-220C1, TO-220ML, TO-220FI (LS), TO-220MF, TO-3PB, TO-3PML, TO-3PBL, TO-3JML

### SANYO Transistor Package Name List.

#### Surface Mount Types

SSFP Super Small Flat Package  
 SMCP Super Mini Chip Pack.  
 MCP Mini Chip Pack.  
 MCP4/6 Mini Chip Pack. (FH type)  
 CP Chip Pack.  
 CP5/6 Chip Pack. (FC type)  
 CPH3/5/6 \* Chip Pack high-power  
 PCP Power Chip Pack.  
 PCP4/5 Power Chip Pack. (FP type)  
 XP (FX type)  
 TSSOP8 (FTS, FTD type)  
 SOP8 (FW, FSS type)  
 TP-FA Tiny Package  
 SMP-FD For large signal  
 ZP For large signal

#### Lead Types

NMP New MP  
 FLP Full Mold Large Package  
 TO-126LP Large-Power  
 TO-126ML Micaless  
 TO-220, 220ML ML:Micaless type  
 TO-220C1 CI:Compact Isolation  
 TO-220FI (LS) Full Isolation (leade short type)  
 TO-220MF Mini Fin Short fin type.  
 TO-3PB, 3PML Bushless, ML:Micaless  
 TO-3PBL Micaless  
 TO-3PBL Bushless Large  
 TO-3JML Jumbo Micaless

PB, BL:no insulating needed.

#### Notes

Nomenclature of house Nos.  
 The first several letters of the type Nos. of the FSS, FTD, FW, FTS, FC, FP, FH, series mean:

- 1'st F : Packages for complex type devices. (CP5/6, MCP4/6, PCP4/5, XP5/6, SOP8, TSSOP8)
- 2'nd S: SOP8 package
- 2'nd W: Double chips
- 2'nd T: TSSOP8 package
- 2'nd C: CP5/6 package
- 2'nd P: PCP4/5 package
- 2'nd X: XP5/6 package
- 2'nd D: Dual type
- 2'nd H: Ultra high freq. type
- 3'rd S: Single

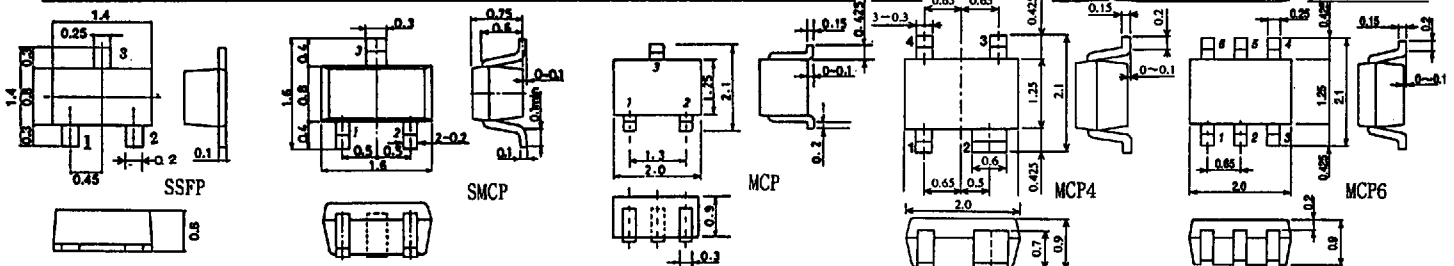
Type Nos. of 1XX or 1XXX are p-channel types.  
 Type Nos. of 2XX or 2XXX are N-channel types.  
 XP package is excluded.

\*:How to name CPH3/6 devices. Package name followed by 1, 2, 3 or 4 and then tow-digit consecutive Nos. Figures following the package names mean: 1:PNP Tr, 2:NPN Tr, 3:P-ch MOSFET, 4:N-ch MOSFET.

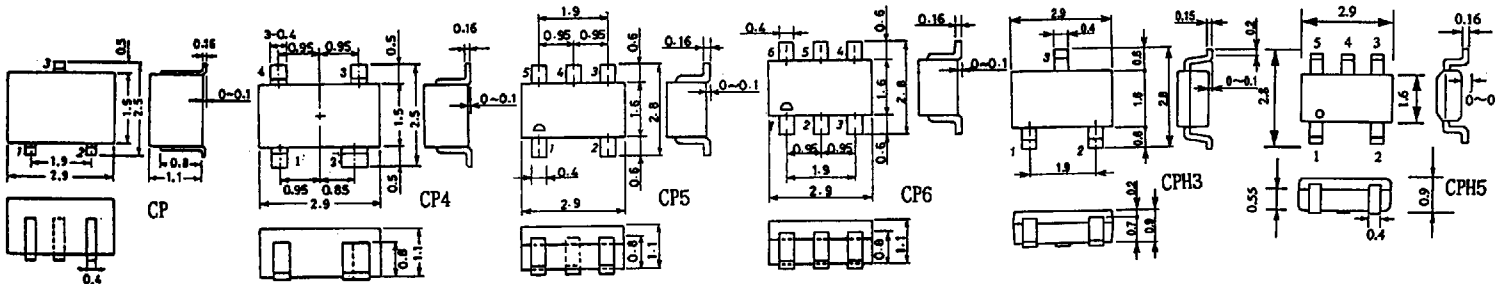
### Surface Mount Type Outlines (JEDEC and EIAJ name are in parentheses.)

Top View Pin Nos. of top view are CAD register Nos. Bottom side : Heat sink side.

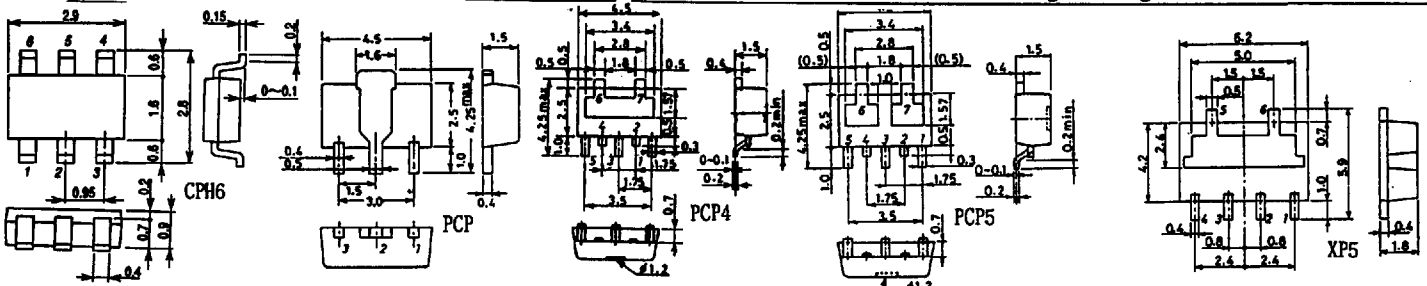
SANYO:SSFP Device weight:0.002g SANYO:SMCP(SC-75A) Device weight:0.003g SANYO:MCP(SC-70), MCP4(SC-82, A), MCP6 Device weight:0.006g, 0.007g, 0.007g



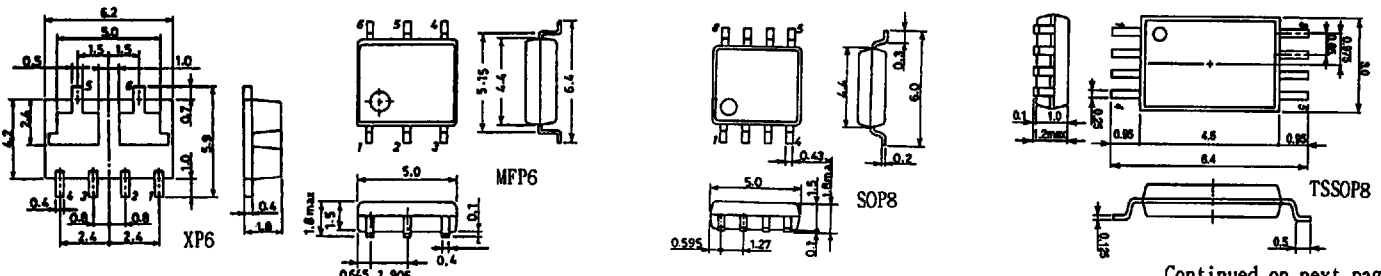
SANYO:CP(SC-59, TO-236) Device weight:0.013g SANYO:CP4, CP5, CP6(SC-61, SC-74A, SC-74, SOT143) Device weight:0.013g, 0.014g, 0.015g SANYO:CPH3, CPH5 Device weight:0.013g, 0.015g



SANYO:CPH6 Device weight:0.015g SANYO:PCP, PCP4/5(SC-62, SOT89) Bottom View Device weight:0.058g, 0.052g SANYO:XP5 Bottom View Device weight:0.062g



SANYO:XP6 Bottom View Device weight:0.062g SANYO:MFP6 Device weight:0.089g SANYO:SOP8 Device weight:0.093g SANYO:TSSOP8 Device weight:0.04g



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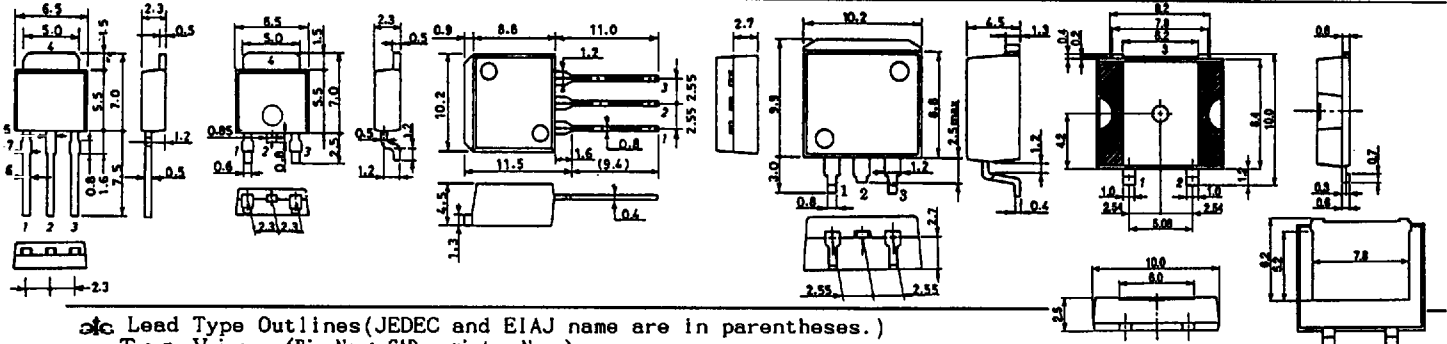
## SANYO Discrete Device Package Outlines (unit:mm)

Surface Mount Type Outlines (JEDEC and EIAJ name are in parentheses.)  
 Top View Pin Nos. of top view are CAD register Nos. Bottom side: Heat sink side.

SANYO:TP, TP-FA(SC-64, SC-63, TO-251)  
 Device weight:0.315g, 0.282g

SANYO:SMP, SMP-FD(forming type)(SC-83)  
 Device weight:1.4g

SANYO:ZP  
 Device weight:0.62g



Lead Type Outlines (JEDEC and EIAJ name are in parentheses.)  
 Top View (Pin No.: CAD register Nos.)

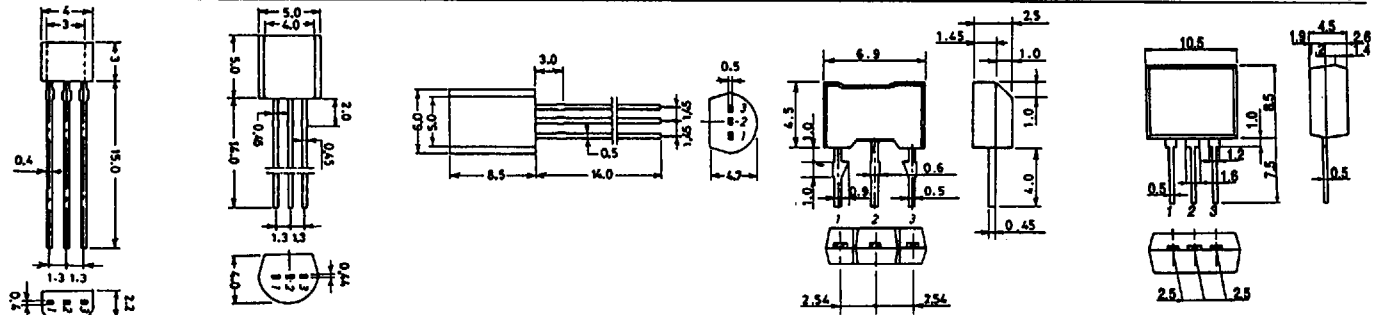
SANYO:SPA(TO-18, TO-39)  
 Device weight:0.098g

SANYO:NP(SC-43A, TO-92, SOT-54)  
 Device weight:0.269g

SANYO:MP(SC-51, TO-226)  
 Device weight:0.578g

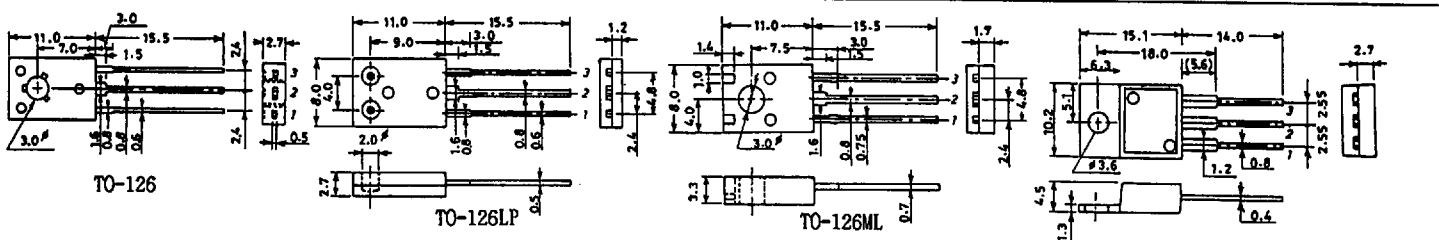
SANYO:NMP(SC-71)  
 Device weight:0.21g, AN use:0.275g

SANYO:FLP  
 Device weight:1.1g



SANYO:TO-126(TO-126, TO-225, SOT-32), TO-126LP, TO-126ML(SOT-82)  
 Device weight:0.675g, 0.7g, 0.97g

SANYO:TO-220AB, AB(SC-45, 46, TO-220AA)  
 Device weight:1.9g

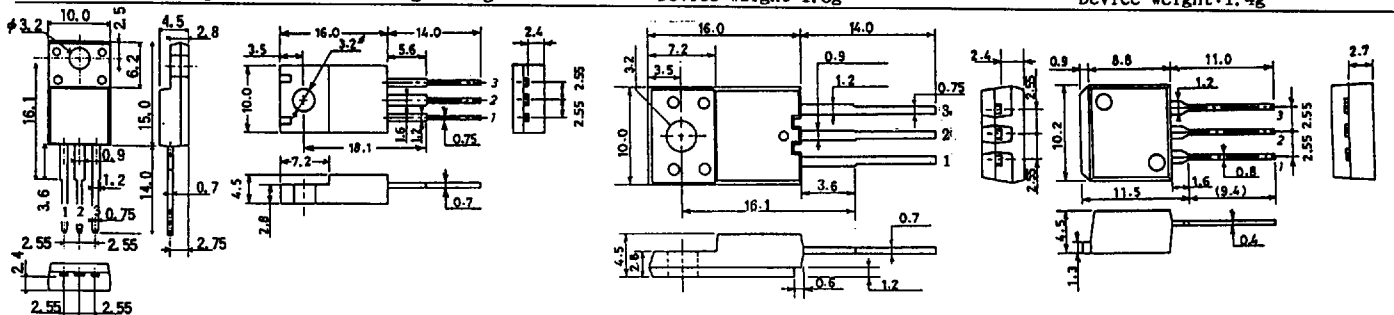


SANYO:TO-220CI  
 Device weight:1.75g

SANYO:TO-220ML(SC-67, SOT-186)  
 Device weight:1.9g

SANYO:TO-220FI(LS)(SC-67, SOT-189)  
 Device weight:1.8g

SANYO:TO-220MF  
 Device weight:1.4g



SANYO:TO-3PB(SC-65, TO-218)  
 Device weight:5.8g

SANYO:TO-3PML(1SOWATT218)  
 Device weight:5.3g

SANYO:TO-3PBL(TO-247)  
 Device weight:9.2g

SANYO:TO-3JML  
 Device weight:9.2g

