

NEW PRODUCT

SMCP(Super Mini Chip Pack)Transistor series

The newly developed Sanyo SMCP package can make the sets more compact and slimmer because of a super mini package. We have various products for such applications as shown below. In addition, we can provide you with reel-style packing (TL) to meet automatic surface mounting requirement.

*For muting circuit and driver applications

Features *Built-in bias resistances. *Low on-resistance. *High f_T (gain-bandwidth product).

*Able to make the sets more compact and slimmer because of super mini package. *High h_{FE} .

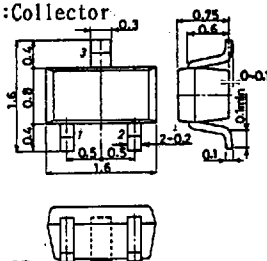
For PNP, (-) sign is omitted.

Type No.	Marking	Absolute Maximum Ratings/ $T_a=25^\circ\text{C}$				Electrical Characteristics/ $T_a=25^\circ\text{C}$									
		V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_C (mW)	V_{CE} (V)	I_C (mA)	h_{FE} min	V_{CE} (V)	I_C (mA)	f_T typ (MHz)	V_{CB} (V)	cob typ (pF)	R_{on} typ (Ω)	Resistan-c R1 (K Ω) R2
2SA1864	A A	15	15	100		2	20	50			600		0.9	5	4.7 4.7
2SA1865	B A	15	15	100		2	10	50			600		0.9	6	10 10
2SA1866	C A	15	15	50	150	2	5	100			600		0.9	10	47 47
2SC4920	E A	25	20	100		2	20	80	5	10	240	10	1.4	2.2	4.7 4.7
2SC4921	F A	25	20	100		2	10	100			240		1.4	2.8	10 10
2SC4922	G A	25	20	100		2	5	200			240		1.4	4	47 47

Case Outline
(unit:mm)
SANYO:SMCP

1:Base, 2:Emitter,

3:Collector.



*FM, RF, MIX, IF amplifier. High-frequency amplifier.

*High power gain. *High cutoff frequency. *Low collector to emitter saturation voltage.

*Able to make the sets more compact and slimmer because of super mini package. *Both PNP and NPN types are available.

For PNP, (-) sign is omitted.

Type No.	Marking	Absolute Maximum Ratings/ $T_a=25^\circ\text{C}$				Electrical Characteristics/ $T_a=25^\circ\text{C}$										Related Type No. Chips used
		V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_C (mW)	V_{CE} (V)	I_C (mA)	h_{FE}	I_C (mA)	I_B (mA)	$V_{CE(sat)}$ typ max (V)	V_{CE} (V)	I_C (mA)	f_T typ (MHz)	PG typ (dB)	
2SA1863	A 1 ~ 3	15	12	50	150	10	5	60~270	10	1	0.1 0.3	10	5	750	25	2SA1857
2SC4918	A 4 ~ 6	40	18	50	150	10	5	60~270	10	1	- 0.2	10	5	750	28	2SC4400

*High Speed Switching Use.

*High switching speed. *Low collector saturation voltage. *High f_T (gain-bandwidth product).

*Low collector capacitance. *Able to make the sets more compact and slimmer.

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Type No.	Marking	Absolute Maximum Ratings/ $T_a=25^\circ\text{C}$				Electrical Characteristics/ $T_a=25^\circ\text{C}$										Related Type No. Chips used
		V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_C (mW)	V_{CE} (V)	I_C (mA)	h_{FE}	I_C (mA)	I_B (mA)	$V_{CE(sat)}$ typ max (V)	V_{CE} (V)	I_C (mA)	f_T typ (MHz)	cob typ (dB)	
2SA1883	H A	15	15	200	150	1	10	50~140	10	1	0.07 0.20	10	10	1000	1.8	2SA1763
2SC4987	B 4 ~ 6	40	15	200	150	1	10	50~200	10	1	0.13 0.25	10	10	750	1.4	2SC4452

*VHF~UHF low noise amplifier.

*Low noise. *High power gain. *High cutoff frequency. *Makes the sets more compact and slimmer because of super mini package.

For PNP, (-) sign is omitted.

Type No.	Marking	Absolute Maximum Ratings/ $T_a=25^\circ\text{C}$				Electrical Characteristics/ $T_a=25^\circ\text{C}$											Related Type No. Chips used	
		V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_C (mW)	V_{CE} (V)	I_C (mA)	h_{FE}	V_{CE} (V)	I_C (mA)	f_T typ (GHz)	V_{CB} (V)	c_{ob} typ (pF)	V_{CE} (V)	I_C (mA)	$ S_{21e} ^*$ typ (dB)		NF typ (dB)
2SC4931	B 1 ~ 3	16	8	50	100	5	15	60~270	5	15	9	10	0.55	5	15	13	1.2	2SC4867
2SC5231	C 7 ~ 9	20	10	70	100	5	20	60~270	5	20	7	10	0.7	5	20	12	1	2SC5226

* h_{FE} classification and indication mark.

Marking (A1863)	A 1	A 2	A 3
(C4918)	A 4	A 5	A 6
(C4931)	B 1	B 2	B 3
(C5231)	C 7	C 8	C 9
h_{FE}	60 ~ 120	90 ~ 180	135 ~ 270

Marking (C4987)	B 4	B 5	B 6
h_{FE}	50 ~ 100	70 ~ 140	100 ~ 200

*Muting circuit (High h_{FE})

*Low output capacitance. *Low collector to emitter saturation voltage. *Low on-resistance.

*Makes the sets more compact and slimmer because of super mini package.

For PNP, (-) sign is omitted.

Type No.		Absolute Maximum Ratings/ $T_a=25^{\circ}\text{C}$				Electrical Characteristics/ $T_a=25^{\circ}\text{C}$										Related	
		V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_C (mW)	V_{CE} (V)	I_C (mA)	h_{FE}	I_C (mA)	I_B (mA)	$V_{CE(sat)}$ typ max (mV)	V_{CB} (V)	C_{ob} typ (pF)	R_{on} typ (Ω)	Type No. Chips used		
2SA1965	K A	15	10	100	150	2	5	200~600	10	1	16	35	10	5	1.2	-	
2SC4919	D A	25	15	100	150	2	5	800~3200	10	1	14	30	10	1.4	0.9	2SC4851	

Because of new products, please contact Product Planning Department before you require the samples of these transistors. Underlined type Nos. are before mass production.

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 Pin Short fin type.
TO-3PB, 3PML Bushless, ML:Micaless
TO-3PML 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

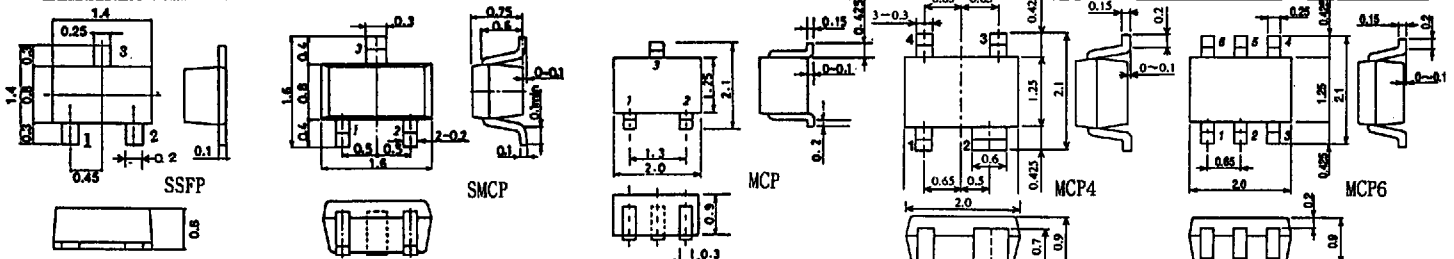
consecutive Nos. Figures following the package names mean: 1:PNP Tr, 2:NPN Tr, 3:P-ch MOSFET, 4:N-ch MOSFET.

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

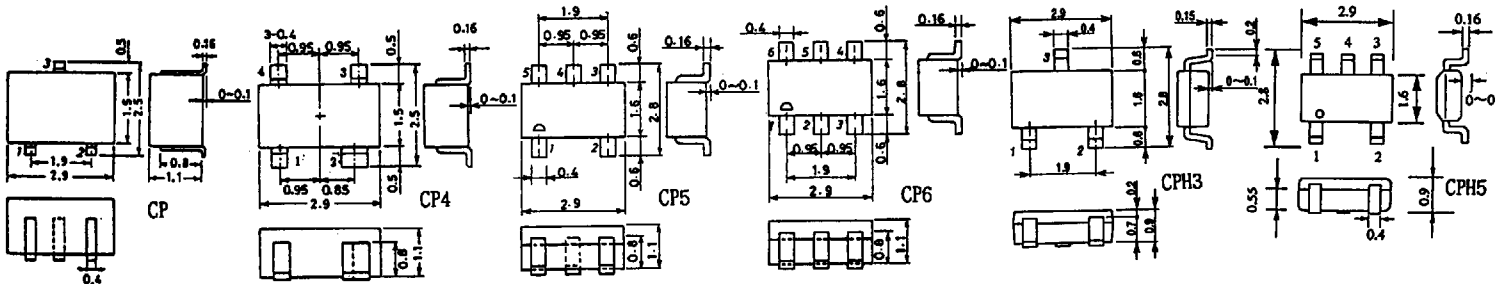
Top View

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

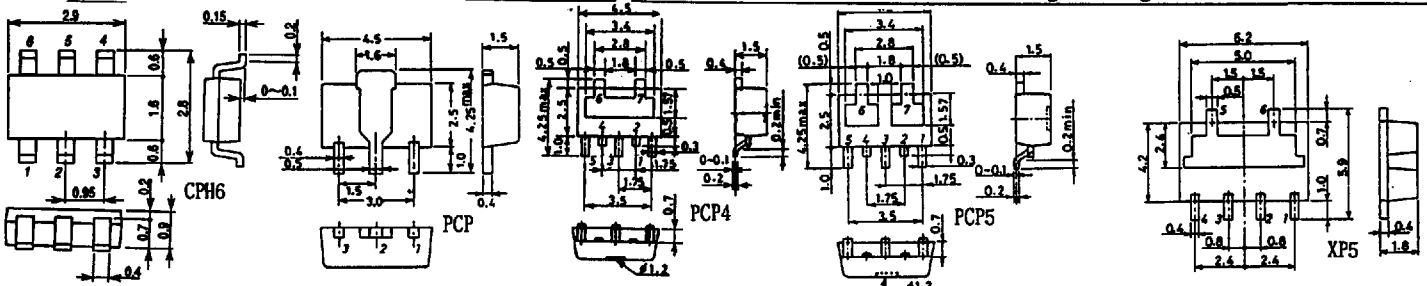
SANYO:SSFP SANYO:SMCP(SC-75A) SANYO:MCP(SC-70), MCP4(SC-82, A), MCP6
Device weight:0.002g Device weight:0.003g Device weight:0.006g, 0.007g, 0.007g



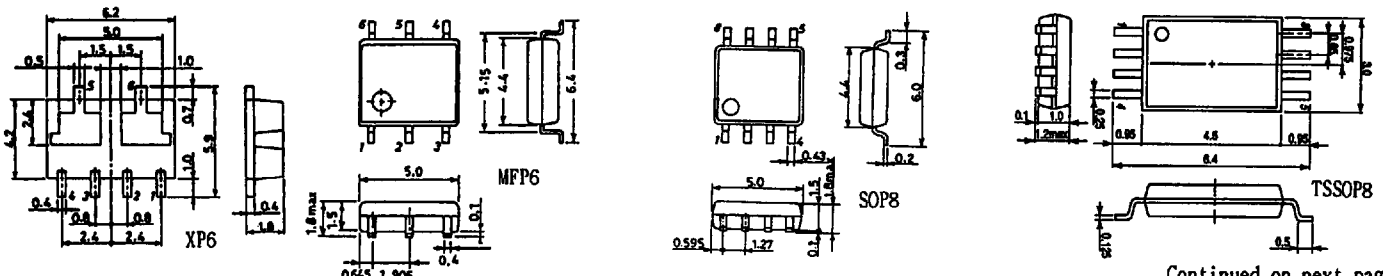
SANYO:CP(SC-59, TO-236) SANYO:CP4, CP5, CP6(SC-61, SC-74A, SC-74, SOT143) SANYO:CPH3, CPH5
Device weight:0.013g Device weight:0.013g, 0.014g, 0.015g Device weight:0.013g, 0.015g



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



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

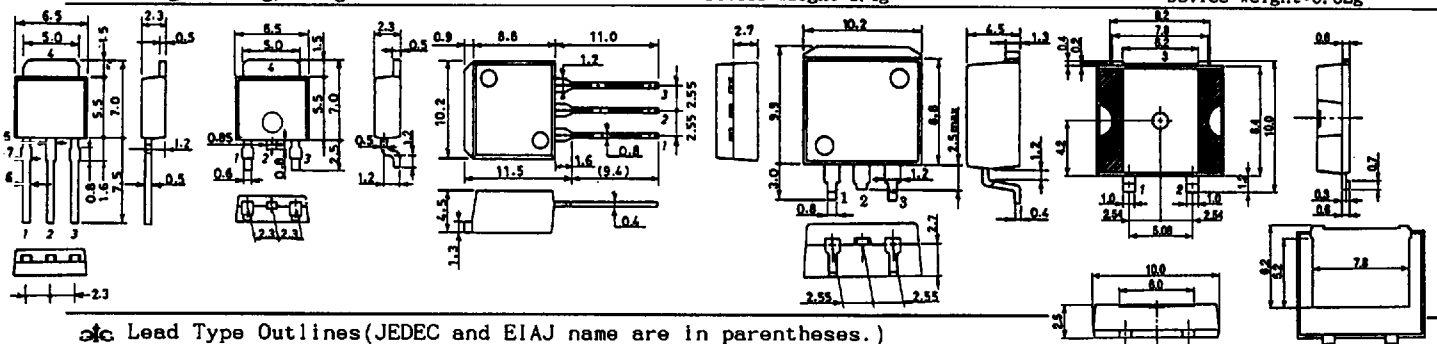
Device weight:0.315g, 0.282g

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)

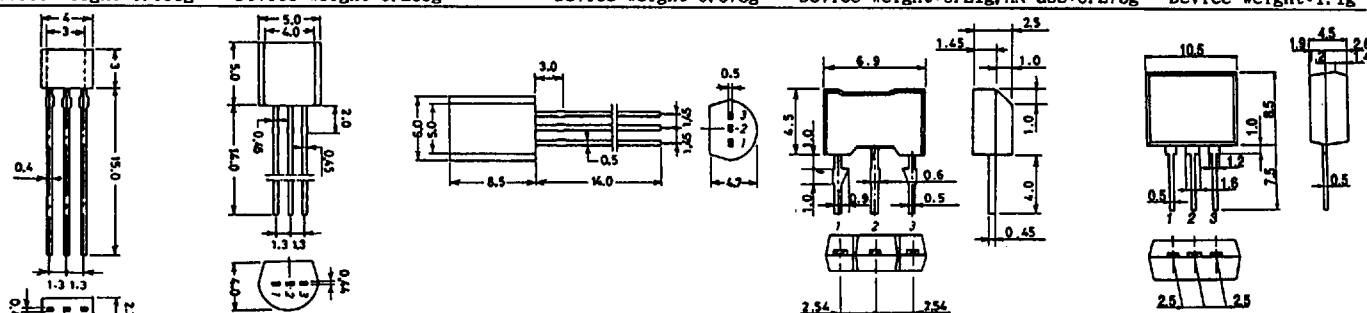
Device weight:0.578g

SANYO:NMP(SC-71)

Device weight:0.21g, AN use:0.275g

SANYO:FLP

Device weight:1.1g

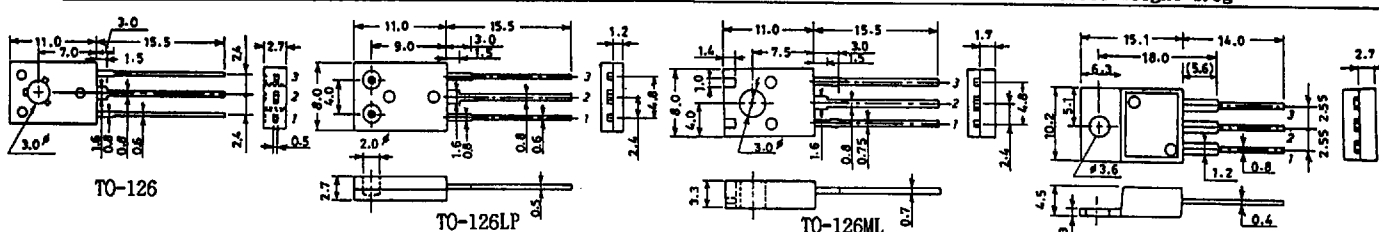


SANYO:TO-126(TO-126, TO-225, SOT-32), TO-126LP, TO-126ML(SOT-82)

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)

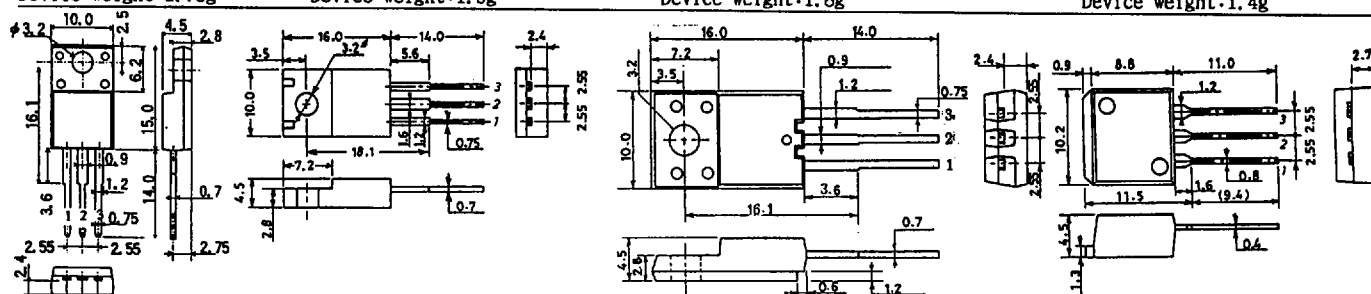
Device weight:1.9g

SANYO:TO-220FI(1S)(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

