

Medium Output Power MOSFETs(1)

SANYO

New Package : TSSOP8 *One size smaller than SOP8. Best suited for higher performance and efficiency of battery-powered equipment and available for high-density surface mount.

SOP8 *Reduced surface mount area by 50% and thickness by 30% over the SC-63(TP). package. Ultra low on-resistance power MOSFETs (2.5V gate-drive voltage) FW series (composed of 2 elements) enables parts count reduction and miniaturization of assembled sets.

CPH3/6 *Small surface mount package with mount height of 0.9mm New-generation low-ON-resistance power MOSFET chips incorporated.

In addition to the below SANYO has a wide variety of package of large signal power MOSFET series. See the tables on other pages.

LD Series (Low Drive) VDSS : 12V~200V

Applications *Li ion battery, notebook PC, AV equipment, personal equipment etc.

Features *Low on-resistance, low-voltage drive. Available for surface mount.

Device marks are indicated in four-digit figures of the type Nos. for SOP8 and figures of the type Nos. for PCP5.

TSSOP8 device marking is an S followed by figures of its type No.

PD(Package:SOP8):Mounted on ceramic board(*:1200mm²,1000mm²X0.8mm). For P-channel, "-" sign is omitted.

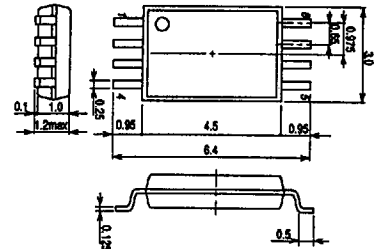
PD ♦sign : Tc=25°C.

PD(Package:CPH3/6):Mounted on ceramic board(900mm²X0.8mm).

SANYO:TSSOP8 Case Outlines (unit:mm)
Single type

1,5,8:Drain, 2,3,6,7:Source
4:Gate

Dual type(Complex)
1,8:Drain, 2,3,6,7:Source
4,5:Gate



SANYO:SOP8

Single type

1,2,3:S, 4:G, 5,6,7,8:D

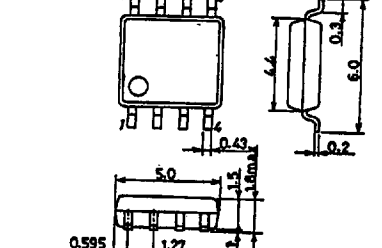
2SK2859, FSS110

1,3:No Contact

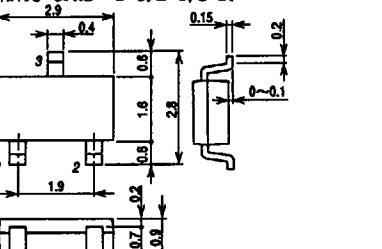
2:S, 4:G, 5,6,7,8:D

Dual type(Complex)

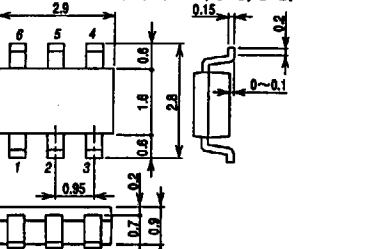
1,3:S, 2,4:G, 5,6,7,8:D



SANYO:CPH3 1:G, 2:S, 3:D.



SANYO:CPH6 1,2,5,6:D, 3:G, 4:S.



Type No. (): Marking Features	Package	Absolute Maximum Ratings/Ta=25°C				Electrical Characteristics/Ta=25°C						
		V _{DSS}	V _{GSS}	I _D	P _D	V _{GS(off)}	f _{ys}	R _{DS(on)}			C _{iss}	
		(V)	(V)	(A)	(W)	min~max (V)	typ (S)	VGS=2.5V typ/max	VGS=4V typ/max	VGS=10V typ/max	typ (pF)	
2SJ316(JG)	PCP	±15	0.5	◆3.5	1 ~ 2	1.2	-	-	0.45/0.63	0.3/0.42	170	
2SJ335(JH)		±15	0.5	◆3.5	1 ~ 2	1.2	-	-	1.6/2.3	1/1.4	50	
2SJ381(JI)		±10	2	◆3.5	0.5~1.5	2.4	0.4/0.7	0.28/0.4	-	-	170	
2SJ419		±10	4	★2	0.4~1.4	8	90m/144m	65m/82m	-	-	1000	
2SJ420	SOP8	±10	5	2	0.4~1.4	12	70m/108m	50m/63m	-	-	1200	
FW101		±10	3	P _T 2	0.4~1.4	8	115m/165m	85m/115m	-	-	650	
FW104		±10	2	P _T 1.8	0.5~1.5	2.4	0.4/0.7	0.28/0.4	-	-	170	
2SJ382		±10	4	◆20	0.5~1.5	4	185m/0.3	135m/177m	-	-	400	
2SJ383	TP	±10	8	◆30	0.4~1.4	8	90m/144m	65m/82m	-	-	1000	
2SJ501(EM)	CP	±10	0.5	0.25	0.5~1.5	1	0.63/1	0.42/0.6	-	-	100	
2SK2273(XJ)		±15	0.5	0.25	1 ~ 2	0.7	-	0.55/0.75	0.35/0.48	-	50	
2SK2909(DK)		±10	0.8	0.25	0.4~1.3	2	0.3/0.48	0.2/0.3	-	-	90	
CPH3303(JC)		±10	1.6	1	0.4~1.4	2.4	0.34/0.48	245m/315m	-	-	180	
CPH3403(KC)	CPH6	±12	2.2	1	0.4~1.3	3.6	0.16/0.22	115m/150m	-	-	170	
CPH6301(JA)		±10	3	1.6	0.4~1.4	4.8	0.16/0.22	110m/145m	-	-	360	
CPH6401(KA)		±12	4	1.6	0.4~1.3	7.2	75m/105m	55m/75m	-	-	300	
CPH6403(KC)		±10	6	1.6	0.5~1.3	9	35m/48m	25m/33m	-	-	700	
2SJ560(JL)	PCP5	±10	1.5	◆3.5	0.4~1.4	1.6	0.63/1	0.42/0.6	-	-	100	
2SJ562(JN)		±10	2	◆3.5	0.4~1.4	2.6	0.34/0.48	245m/315m	-	-	180	
2SK2151(KI)	PCP	±15	1	◆3.5	1 ~ 2	1	-	0.55/0.75	0.35/0.48	-	50	
2SK2152(KJ)		±15	2	◆3.5	1 ~ 2	2	-	0.17/0.25	0.13/0.18	-	170	
2SK2316(KP)		±10	2	◆3.5	0.5~1.5	2.8	0.2/0.32	0.14/0.2	-	-	170	
2SK3119(KS)		±10	2	◆3.5	0.4~1.3	2.8	0.3/0.48	0.2/0.3	-	-	90	
2SK3121(KU)	PCP5	±10	3	◆3.5	0.4~1.3	4.3	0.16/0.22	115m/150m	-	-	170	
FP402(402)		±15	1	◆2	0.8~2	1	-	0.55/0.75	0.35/0.48	-	50	
FTD1001	TSSOP8	±10	2	0.8	0.4~1.4	5	135m/185m	90m/115m	-	-	450	
FTD2001		±10	3	0.8	0.4~1.3	10	75m/105m	50m/65m	-	-	420	
FTD2011		±10	5	0.8	0.5~1.3	12	30m/40m	22m/28m	-	-	900	
FTS1001		±10	4	1.5	0.4~1.4	10	65m/98m	45m/58m	-	-	980	
FTS1003	SOP8	±10	3	1.3	0.4~1.4	8	105m/144m	70m/90m	-	-	600	
FTS2001		±10	5	1.5	0.4~1.3	15	32m/46m	23m/30m	-	-	750	
FTS2003		±10	4	1.3	0.4~1.3	10	50m/70m	38m/50m	-	-	500	
2SK2440	SOP8	±10	6	★2	0.4~1.4	14	40m/58m	30m/38m	-	-	1000	
2SK2441		±12	7	2	0.4~1.4	18	37m/48m	25m/32m	-	-	1300	
2SK2637		±20	8	2	1 ~ 2.5	15	-	29m/40m	19m/25m	-	1000	
FSS101		±10	5	★1.8	0.4~1.4	16	65m/98m	44m/58m	-	-	980	
FSS107	SOP8	±10	8	2	0.4~1.4	25	26m/37m	18m/23m	-	-	2400	
FSS201		±10	7	★1.8	0.4~1.3	18	35m/46m	26m/34m	-	-	750	
FSS203		±10	8	★2	0.4~1.3	18	27m/37m	18m/24m	-	-	1000	
FSS207		±10	10	2	0.4~1.3	32	15m/21m	10m/13m	-	-	1700	
FSS237	SOP8	±10	14	★2	0.5~1.3	45	9m/12m	6.5m/9m	-	-	5100	
FW111		±10	5	P _T 2	0.4~1.4	12	65m/98m	44m/58m	-	-	980	
FW114		±10	3	★1.7	0.4~1.4	8	92m/130m	70m/90m	-	-	600	
FW201		±12	5	P _T 2	0.4~1.4	10	54m/78m	38m/50m	-	-	650	
FW204	SOP8	±10	2	★1.6	0.5~1.5	2.8	0.2/0.32	0.14/0.2	-	-	170	
FW211		±10	6	P _T 2	0.4~1.3	15	35m/48m	27m/35m	-	-	750	
FW214		±10	5	P _T ★2	0.4~1.3	13	50m/70m	38m/50m	-	-	500	
FW221		±12	7	P _T 2	0.4~1.3	20	30m/40m	21m/28m	-	-	850	
FW231	TP	±10	9	1.7	0.5~1.3	24	20m/27m	15m/20m	-	-	1950	
2SJ520		±10	10	◆20	0.4~1.3	16	70m/0.1	48m/62m	-	-	950	
2SK2154		±18	12	◆30	0.8~2	10	-	45m/58m	30m/42m	-	1000	
2SK2317		±10	4	◆20	0.5~1.5	5	85m/125m	65m/85m	-	-	400	
2SK2318	TP	±10	12	◆30	0.4~1.4	14	40m/58m	30m/38m	-	-	1000	

Underlined type Nos. are before mass production.

(To be continued next page for VDSS 30V series)

In addition to the above, complex type packages such as PCP4/5(MOSFET X 2, MOSFET + SBD) are available. See the tables.

Precaution :Take care to prevent device breakage from static electricity because MOSFETs cannot withstand much static electricity. These specifications are subject to change without notice.

MOSFETs Continued on next Page.

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-3PBL Micaless
TO-3JML Bushless Large
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

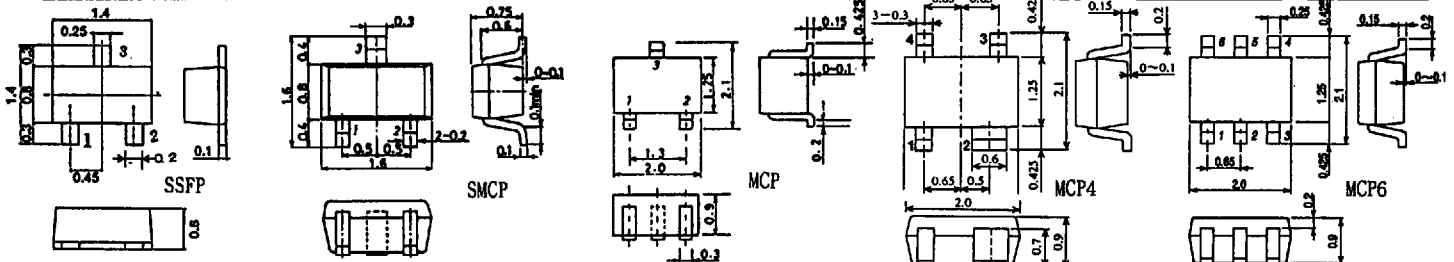
consecutive Nos. Figures following the package names mean: 1:PNP Tr, 2:NPN Tr, 3:P-ch MOSFET, 4:N-ch MOSFET.

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

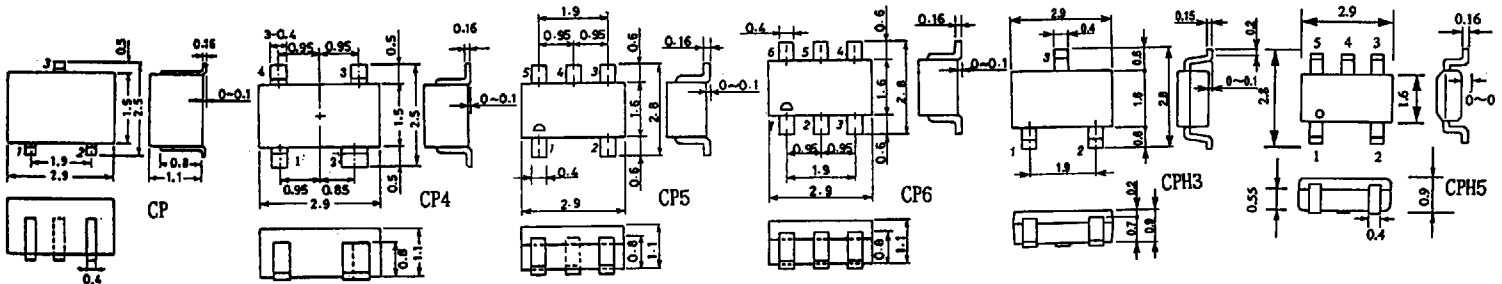
Top View

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

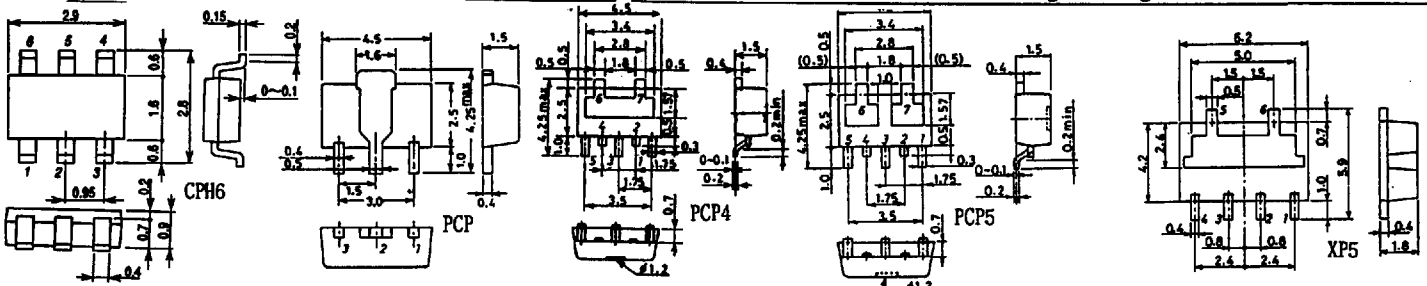
SANYO:SSFP SANYO:SMCP(SC-75A) SANYO:MCP(SC-70), MCP4(SC-82, A), MCP6
Device weight:0.002g Device weight:0.003g Device weight:0.006g, 0.007g, 0.007g



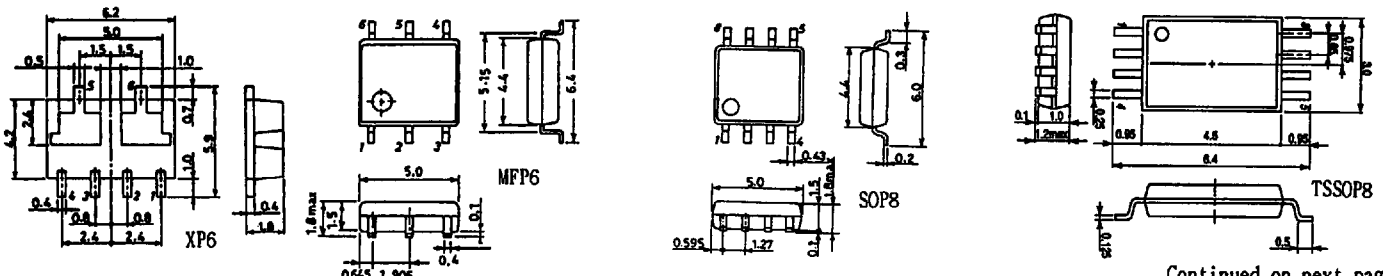
SANYO:CP(SC-59, TO-236) SANYO:CP4, CP5, CP6(SC-61, SC-74A, SC-74, SOT143) SANYO:CPH3, CPH5
Device weight:0.013g Device weight:0.013g, 0.014g, 0.015g Device weight:0.013g, 0.015g



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



Continued on next page

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)

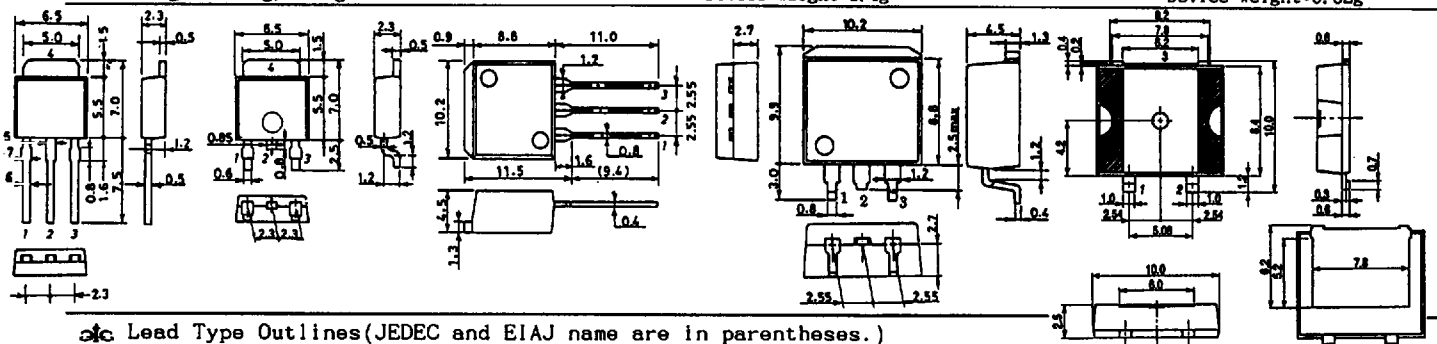
Device weight:0.315g, 0.282g

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)

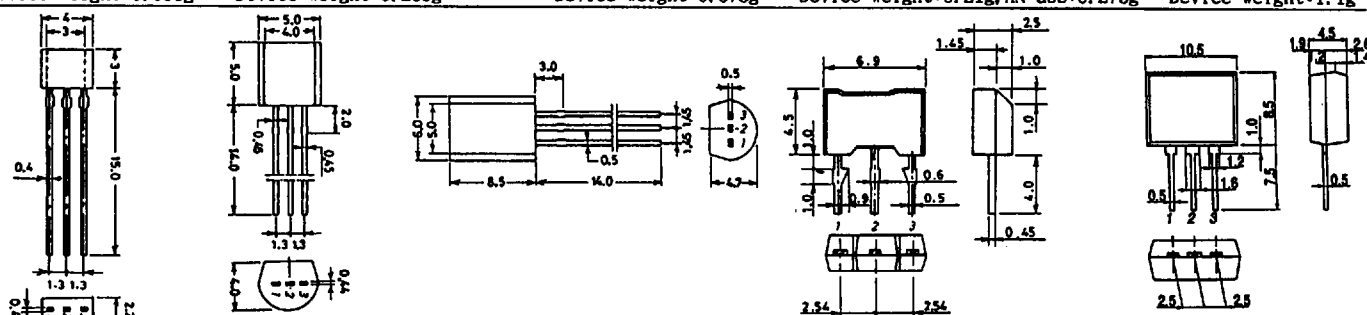
Device weight:0.578g

SANYO:NMP(SC-71)

Device weight:0.21g, AN use:0.275g

SANYO:FLP

Device weight:1.1g

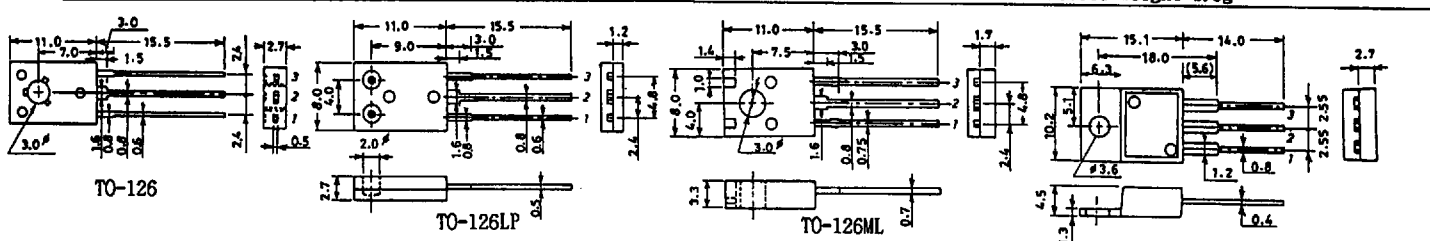


SANYO:TO-126(TO-126, TO-225, SOT-32), TO-126LP, TO-126ML(SOT-82)

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)

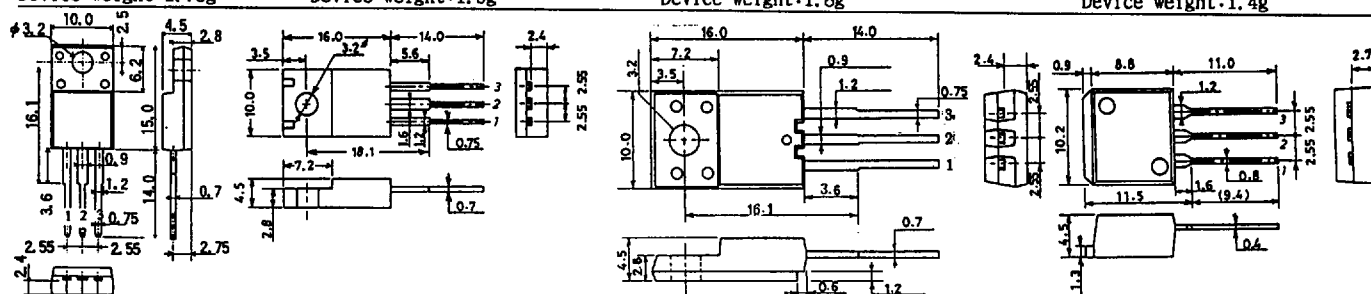
Device weight:1.9g

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

