

## GaAs Diodes (1)

### \* GaAs Schottky Barrier Diodes Packaged Type

The Sanyo SPD Series are packaged type GaAs Schottky barrier diodes designed for converters, modulators, detectors that can be operated in the X band (8.2 to 12.4GHz) and KU band (12.4 to 18.0GHz).

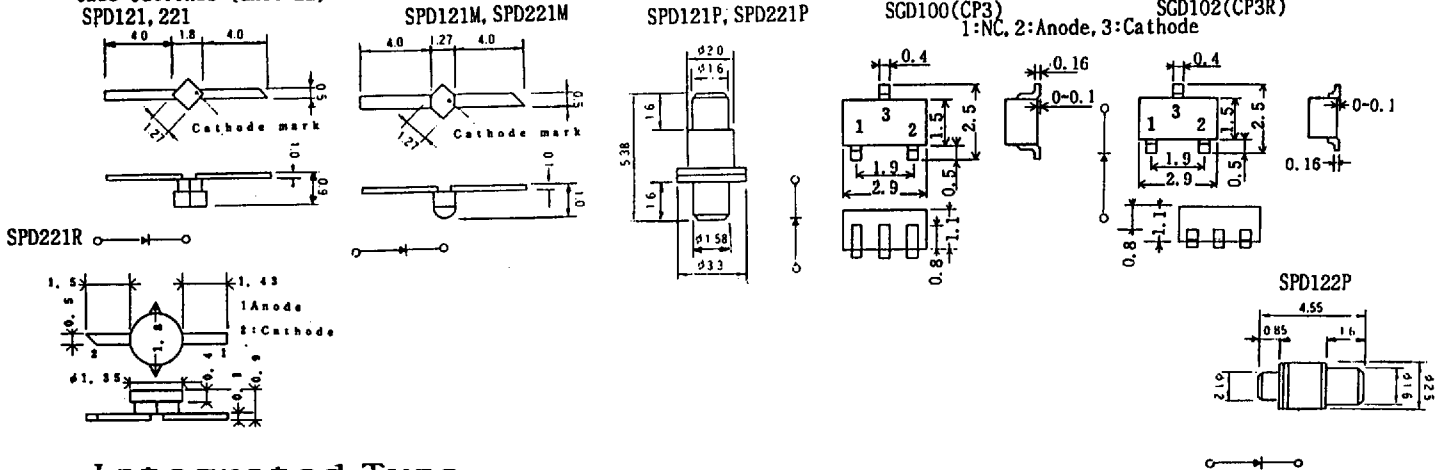
The packages are of the very small-sized hermetic seal structure that is suited for microstrip circuits and keeps the parasitic parameters to a minimum. The new package CP3R(SGD102, SGD102T) has made the S11 phase characteristics greatly improved in comparison with CP3.

- Features**
- \* Very small-sized ceramic package
  - \* Small parasitic components, conversion loss
  - \* Many Type Nos. (single type: 8, integrated type: 12)

### Single Type

Type No. ( ):Marking	Absolute Maximum Ratings /Ta=25°C			Electrical Characteristics/Ta=25°C				Applications			
	Reverse Voltage V <sub>R</sub> (V)	Forward Current I <sub>O</sub> (mA)	Matching Conditions T <sub>m</sub> (°C)	Total Capacitance C <sub>t</sub> (pF) V=0, f=1MHz	Series Resistance R <sub>s</sub> (Ω)max I <sub>F</sub> =20mA	Conversion Loss L <sub>c</sub> (dB) P <sub>LO</sub> =10mW f=10.678GHz	Forward Voltage V <sub>F</sub> (V)max I <sub>F</sub> =20mA				
SGD100(AE) SGD102(CE) SPD121M	4	50	230°C, 10sec (max).	0.4	3.0	4.0	0.9	C to X band use, TVRO, DBS			
0.4				3.0	4.0	0.9					
0.35				3.0	3.8	0.9					
SPD121							0.3	3.0	3.7	0.9	C to X band use, DBS, measuring instruments
SPD121P SPD122P							0.4	3.0	4.0	0.9	C to X band use, Mixers, modulators
0.4				3.0	4.0	0.9					
SPD221 SPD221P SPD221R				0.25	4.0	3.6	0.95	X to Ku band use, communications equipment			
0.3	4.0	3.8	0.95								
0.27	4.0	3.6	0.95								
SPD221M				0.35	3.0	3.8	0.9	X to Ku band use, DBS, measuring instruments			

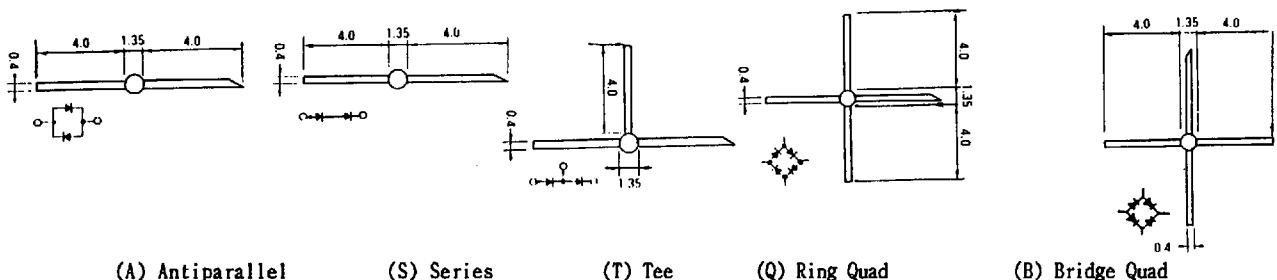
### Case Outlines (unit:mm)



### Integrated Type

Type No. ( ):Marking	Absolute Maximum Ratings /Ta=25°C			Electrical Characteristics/Ta=25°C				Applications
	Reverse Voltage V <sub>R</sub> (V)	Forward Current I <sub>O</sub> (mA)	Matching Conditions T <sub>m</sub> (°C)	Reverse Voltage V <sub>R</sub> (V)min I <sub>R</sub> =10uA	Forward Voltage V <sub>F</sub> (V)max I <sub>F</sub> =20mA	Junction Capacitance(typ) C <sub>J</sub> (pF) V=0V, f=1MHz	Series Resistance R <sub>s</sub> (Ω)max I <sub>F</sub> =20mA	
SPD121A·S·T·Q·B	4	50	230°C, 10sec (max)	4	0.9	0.10	3	C to X band use, DBS, measuring instruments
SPD221A·S·T·Q·B					1.0	0.07	6	

### Case Outlines (unit:mm)



(A) Antiparallel (S) Series (T) Tee (Q) Ring Quad (B) Bridge Quad

These specifications are subject to change without notice.

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## 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

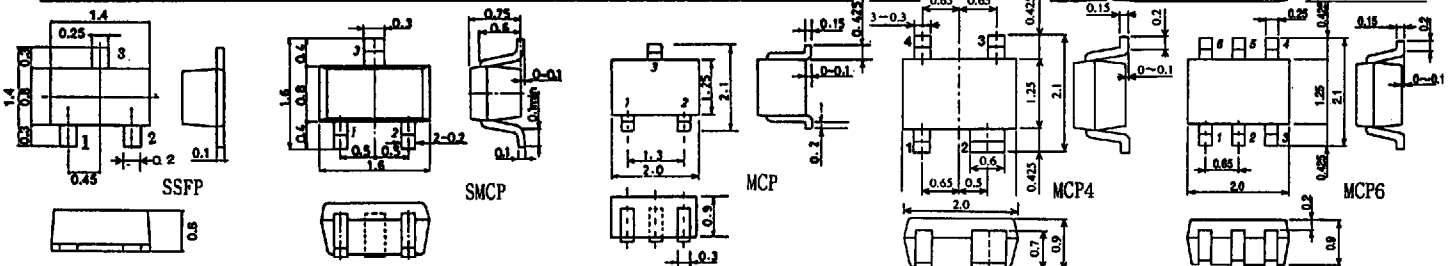
Type Nos. of 1XX or 1XXX are p-channel types.  
 Type Nos. of 2XX or 2XXX are N-channel types.  
 XP package is excluded.

\*: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.

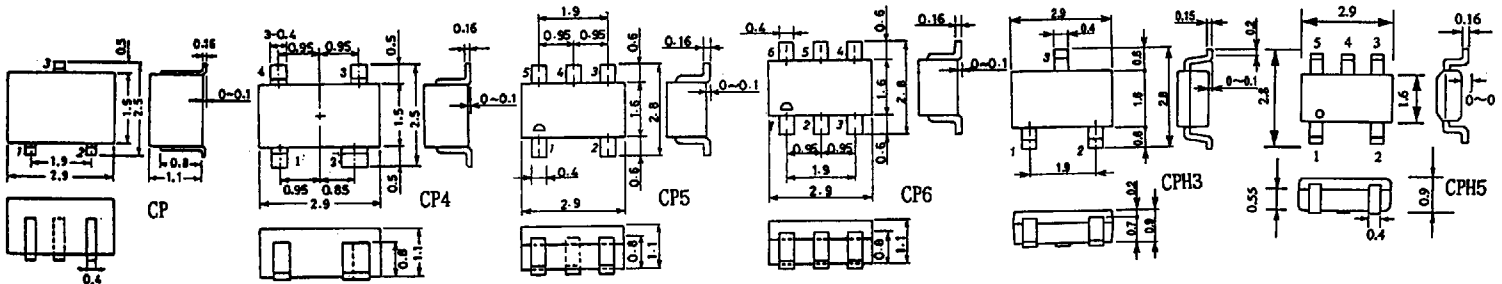
### Surface Mount Type Outlines (JEDEC and EIAJ name are in parentheses.)

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

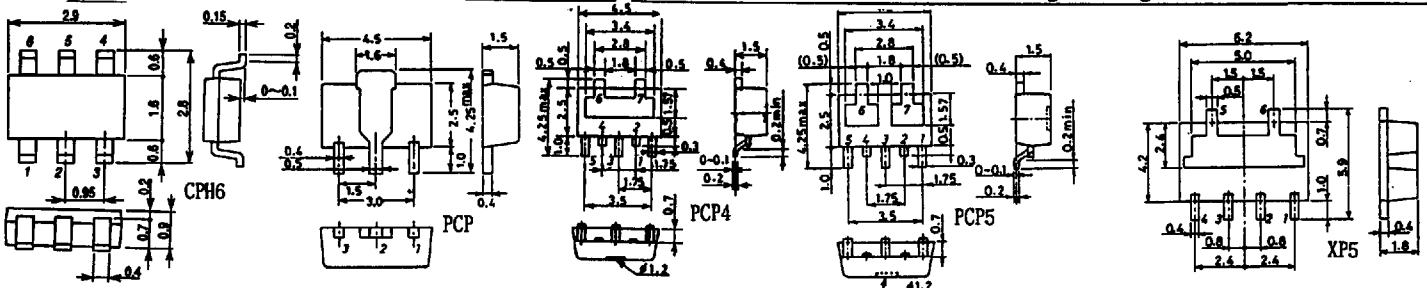
SANYO:SSFP Device weight:0.002g SANYO:SMCP(SC-75A) Device weight:0.003g SANYO:MCP(SC-70), MCP4(SC-82, A), MCP6 Device weight:0.006g, 0.007g, 0.007g



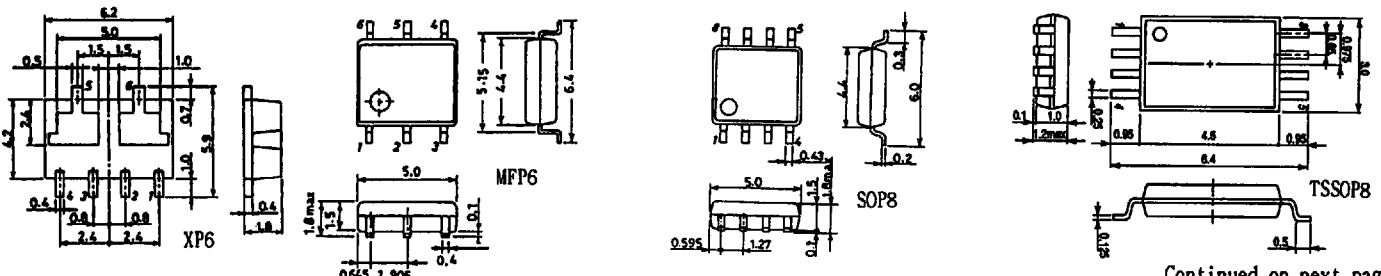
SANYO:CP(SC-59, TO-236) Device weight:0.013g SANYO:CP4, CP5, CP6(SC-61, SC-74A, SC-74, SOT143) Device weight:0.013g, 0.014g, 0.015g SANYO:CPH3, CPH5 Device weight:0.013g, 0.015g



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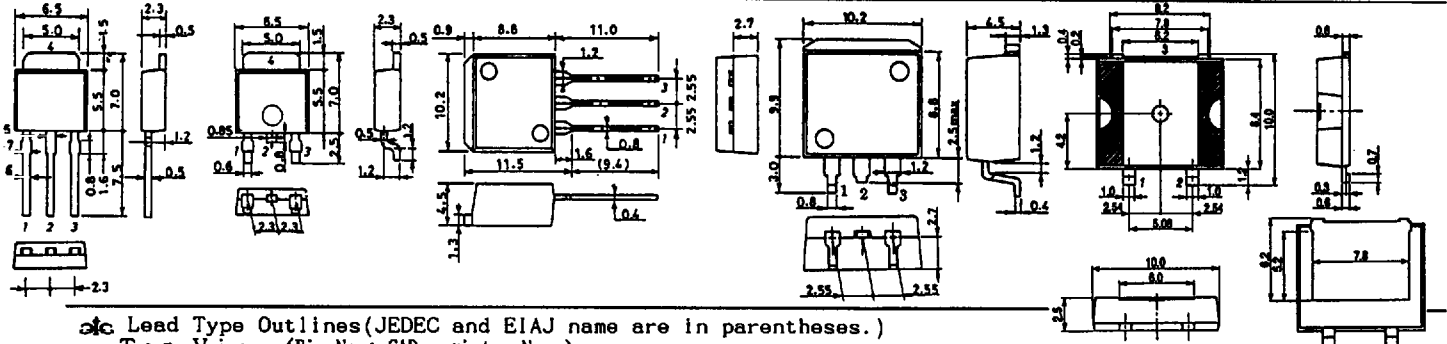
## SANYO Discrete Device Package Outlines (unit:mm)

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.)

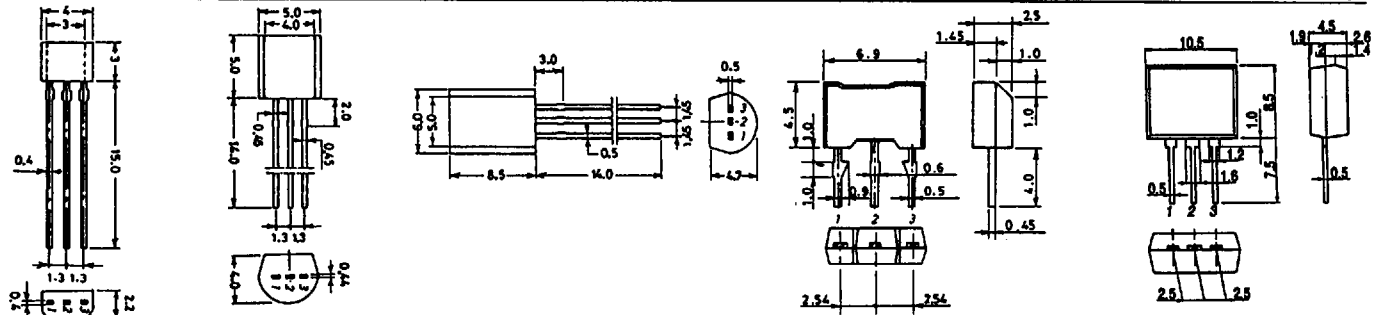
SANYO:SPA(TO-18, TO-39)  
 Device weight:0.098g

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

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

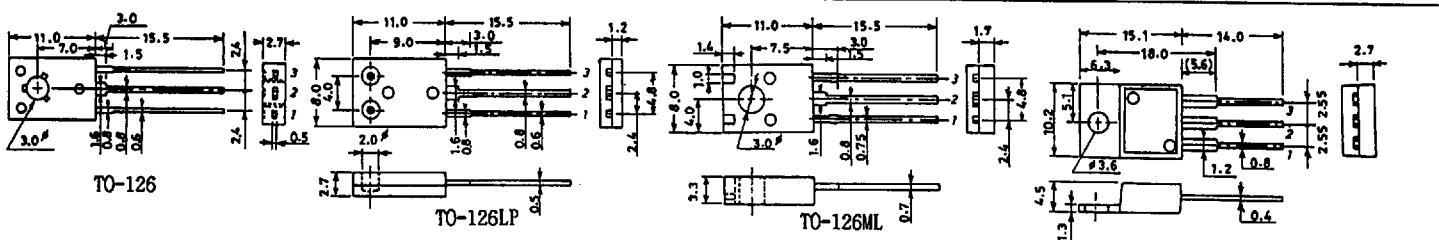
SANYO:NMP(SC-71)  
 Device weight:0.21g, AN use:0.275g

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

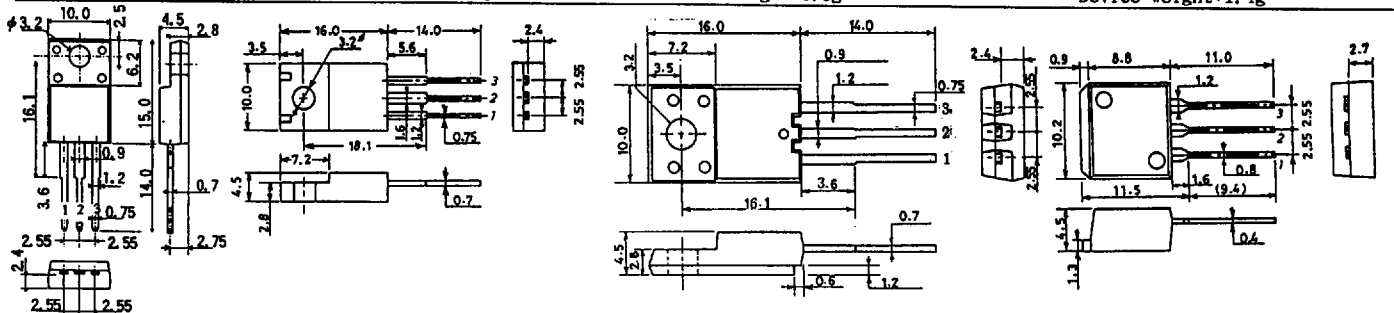


SANYO:TO-220CI  
 Device weight:1.75g

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

