

**2SC1570,  
1571,  
1571L**



2003A

NPN Epitaxial Planar Silicon Transistors

T-29-15

## Very Low Noise Amp Applications

©431D

The 2SC1570, 1571, 1571L are developed as very low-noise transistors and are especially suited for use in equalizer first stage of high-grade type stereo sets.

### Absolute Maximum Ratings at Ta=25°C

| Absolute Maximum Ratings at Ta=25°C |                  | 2SC1570 | 2SC1571     | 2SC1571L | unit |
|-------------------------------------|------------------|---------|-------------|----------|------|
| Collector to Base Voltage           | V <sub>CB0</sub> | 55      | 40          | 40       | V    |
| Collector to Emitter Voltage        | V <sub>CEO</sub> | 50      | 35          | 35       | V    |
| Emitter to Base Voltage             | V <sub>EB0</sub> |         | 5           |          | V    |
| Collector Current                   | I <sub>C</sub>   |         | 100         |          | mA   |
| Allowable Power Dissipation         | P <sub>C</sub>   |         | 200         |          | mW   |
| Junction Temperature                | T <sub>J</sub>   |         | 125         |          | °C   |
| Storage Temperature                 | T <sub>stg</sub> |         | -55 to +150 |          | °C   |

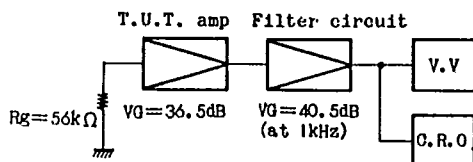
### Electrical Characteristics at Ta=25°C

|                          |                                                                | min  | typ  | max  | unit |
|--------------------------|----------------------------------------------------------------|------|------|------|------|
| Collector Cutoff Current | I <sub>CB0</sub> V <sub>CB</sub> =18V, I <sub>E</sub> =0       |      |      | 0.1  | uA   |
| Emitter Cutoff Current   | I <sub>EB0</sub> V <sub>EB</sub> =3V, I <sub>C</sub> =0        |      |      | 0.1  | uA   |
| DC Current Gain          | h <sub>FE</sub> V <sub>CE</sub> =6V, I <sub>C</sub> =1mA       | 160* |      | 960* |      |
| Gain Bandwidth Product   | f <sub>T</sub> V <sub>CE</sub> =6V, I <sub>C</sub> =1mA        |      | 100  |      | MHz  |
| Output Capacitance       | c <sub>ob</sub> V <sub>CB</sub> =6V, f=1MHz                    |      | 3    |      | pF   |
| C-E Saturation Voltage   | V <sub>CE(sat)</sub> I <sub>C</sub> =50mA, I <sub>B</sub> =5mA |      |      | 0.5  | V    |
| Base to Emitter Voltage  | V <sub>BE</sub> V <sub>CE</sub> =2V, I <sub>C</sub> =1mA       | 0.58 | 0.80 |      | V    |
| C-B Breakdown Voltage    | V <sub>(BR)CBO</sub> I <sub>C</sub> =10uA, I <sub>B</sub> =0   |      |      |      | V    |
|                          | [C1570]                                                        |      |      | 55   | V    |
|                          | [C1571, 1571L]                                                 |      |      | 40   | V    |
| C-E Breakdown Voltage    | V <sub>(BR)CEO</sub> I <sub>C</sub> =1mA, R <sub>BE</sub> =∞   |      |      |      | V    |
|                          | [C1570]                                                        |      |      | 50   | V    |
|                          | [C1571, 1571L]                                                 |      |      | 35   | V    |
| E-B Breakdown Voltage    | V <sub>(BR)EBO</sub> I <sub>E</sub> =10uA, I <sub>C</sub> =0   |      |      | 5    | V    |
| Noise Voltage            | at test circuit [C1570, 1571]                                  |      |      | 40   | mV   |
|                          | V <sub>CC</sub> =30V, I <sub>C</sub> =1mA [C1571L]             |      |      | 65   | mV   |
|                          | R <sub>g</sub> =56kohm, V <sub>G</sub> =77dB                   |      |      |      |      |
|                          | (at 1kHz)                                                      |      |      |      |      |
| Noise Peak Level         | " [C1570, 1571]                                                |      |      | 280  | mV   |
|                          | " [C1571L]                                                     |      |      | 450  | mV   |

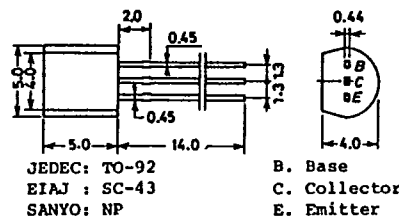
\*:The 2SC1570, 1571, 1571L are classified by 1mA h<sub>FE</sub> as follows:

|     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|
| 160 | F | 320 | 280 | G | 560 | 480 | H | 960 |
|-----|---|-----|-----|---|-----|-----|---|-----|

### Noise Test Circuit

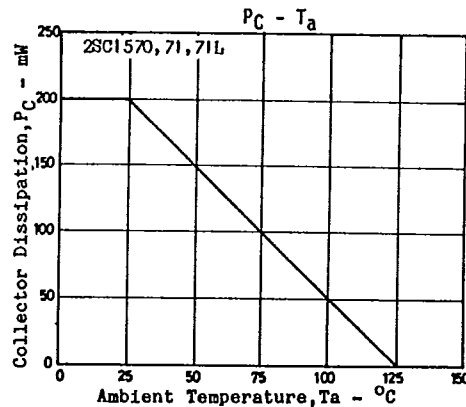
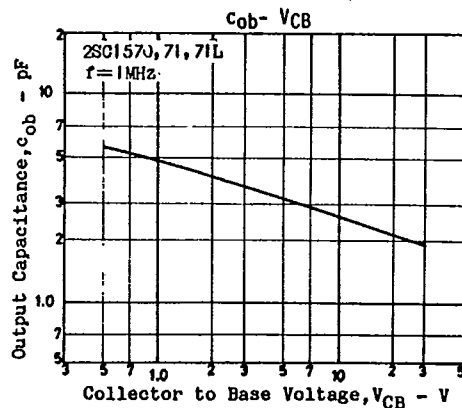
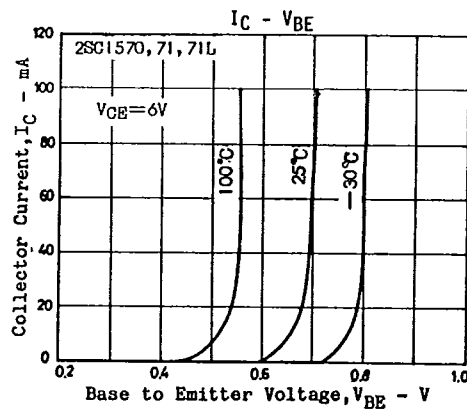
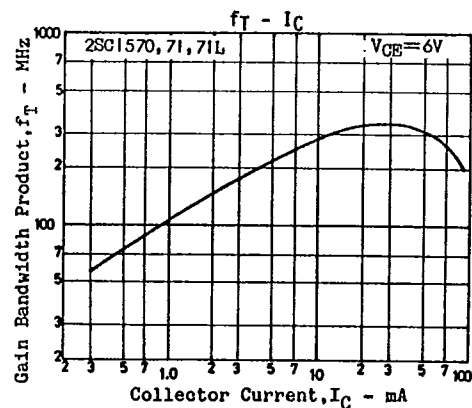
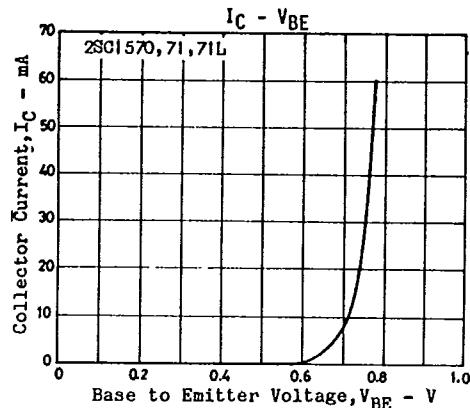
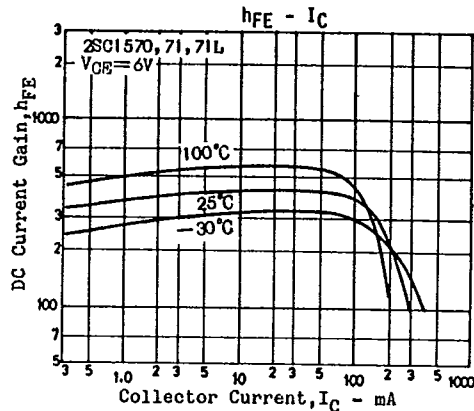
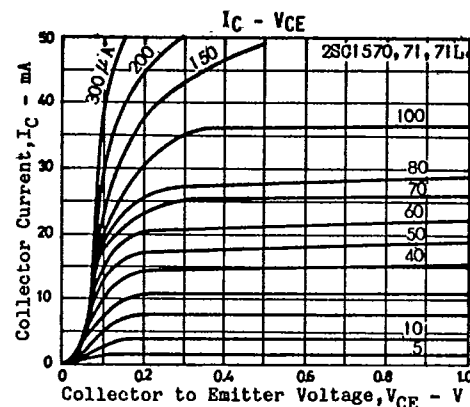
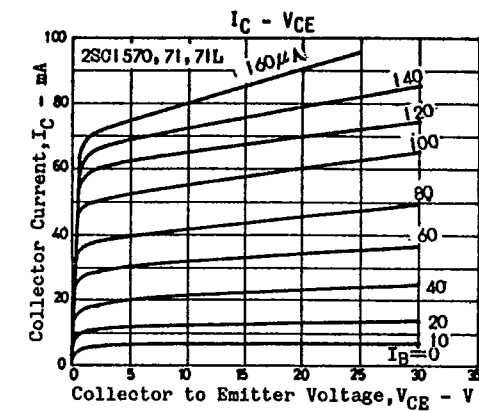


### Case Outline 2003A (unit:mm)



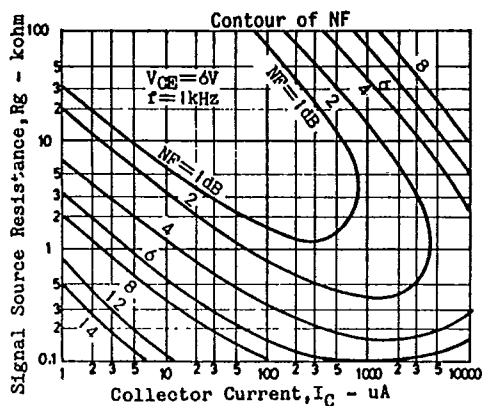
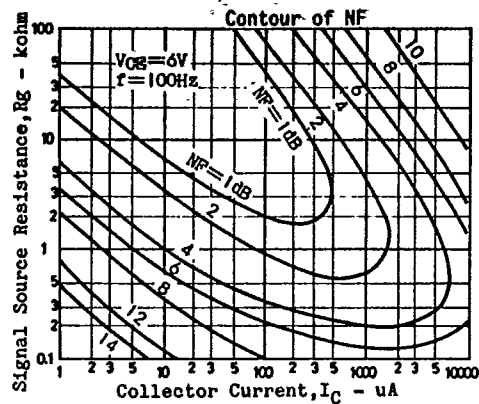
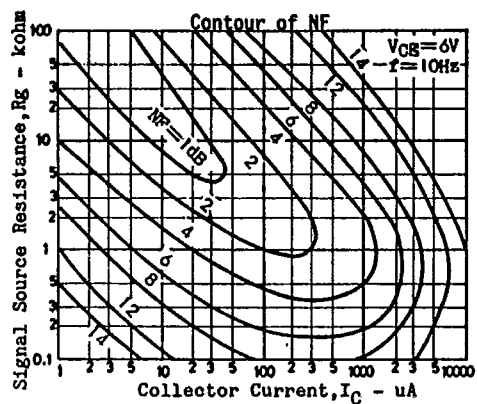
2SC1570, 1571, 1571L

(T-29-15)



2SC1570, 1571, 1571L

(T-29-15)



- All of Sanyo Transistor case outlines are illustrated below.
- All dimensions are in mm, and dimensions which are not followed by min. or max. are represented by typical values.
- No marking is indicated.

The diagram shows a mechanical drawing of the JEDEC TO-126 package. It includes the following dimensions and features:

- Overall Dimensions:**
  - Length: 11.0 (total), 7.0 (to first pin), 3.0 (between pins), 15.5 (to end of lead)
  - Width: 8.0 (total), 2.7 (lead thickness)
  - Lead Length: 2.4
- Pin Layout:**
  - Pin 1 is marked with a circle and a cross.
  - Pin 2 is marked with a circle.
  - Pin 3 is marked with a circle.
  - Pin 4 is marked with a circle.
  - Pin 5 is marked with a circle.
  - Pin 6 is marked with a circle.
  - Pin 7 is marked with a circle.
  - Pin 8 is marked with a circle.
  - Pin 9 is marked with a circle.
  - Pin 10 is marked with a circle.
  - Pin 11 is marked with a circle.
  - Pin 12 is marked with a circle.
  - Pin 13 is marked with a circle.
  - Pin 14 is marked with a circle.
  - Pin 15 is marked with a circle.
  - Pin 16 is marked with a circle.
  - Pin 17 is marked with a circle.
  - Pin 18 is marked with a circle.
  - Pin 19 is marked with a circle.
  - Pin 20 is marked with a circle.
  - Pin 21 is marked with a circle.
  - Pin 22 is marked with a circle.
  - Pin 23 is marked with a circle.
  - Pin 24 is marked with a circle.
  - Pin 25 is marked with a circle.
  - Pin 26 is marked with a circle.
  - Pin 27 is marked with a circle.
  - Pin 28 is marked with a circle.
  - Pin 29 is marked with a circle.
  - Pin 30 is marked with a circle.
  - Pin 31 is marked with a circle.
  - Pin 32 is marked with a circle.
  - Pin 33 is marked with a circle.
  - Pin 34 is marked with a circle.
  - Pin 35 is marked with a circle.
  - Pin 36 is marked with a circle.
  - Pin 37 is marked with a circle.
  - Pin 38 is marked with a circle.
  - Pin 39 is marked with a circle.
  - Pin 40 is marked with a circle.
  - Pin 41 is marked with a circle.
  - Pin 42 is marked with a circle.
  - Pin 43 is marked with a circle.
  - Pin 44 is marked with a circle.
  - Pin 45 is marked with a circle.
  - Pin 46 is marked with a circle.
  - Pin 47 is marked with a circle.
  - Pin 48 is marked with a circle.
  - Pin 49 is marked with a circle.
  - Pin 50 is marked with a circle.
  - Pin 51 is marked with a circle.
  - Pin 52 is marked with a circle.
  - Pin 53 is marked with a circle.
  - Pin 54 is marked with a circle.
  - Pin 55 is marked with a circle.
  - Pin 56 is marked with a circle.
  - Pin 57 is marked with a circle.
  - Pin 58 is marked with a circle.
  - Pin 59 is marked with a circle.
  - Pin 60 is marked with a circle.
  - Pin 61 is marked with a circle.
  - Pin 62 is marked with a circle.
  - Pin 63 is marked with a circle.
  - Pin 64 is marked with a circle.
  - Pin 65 is marked with a circle.
  - Pin 66 is marked with a circle.
  - Pin 67 is marked with a circle.
  - Pin 68 is marked with a circle.
  - Pin 69 is marked with a circle.
  - Pin 70 is marked with a circle.
  - Pin 71 is marked with a circle.
  - Pin 72 is marked with a circle.
  - Pin 73 is marked with a circle.
  - Pin 74 is marked with a circle.
  - Pin 75 is marked with a circle.
  - Pin 76 is marked with a circle.
  - Pin 77 is marked with a circle.
  - Pin 78 is marked with a circle.
  - Pin 79 is marked with a circle.
  - Pin 80 is marked with a circle.
  - Pin 81 is marked with a circle.
  - Pin 82 is marked with a circle.
  - Pin 83 is marked with a circle.
  - Pin 84 is marked with a circle.
  - Pin 85 is marked with a circle.
  - Pin 86 is marked with a circle.
  - Pin 87 is marked with a circle.
  - Pin 88 is marked with a circle.
  - Pin 89 is marked with a circle.
  - Pin 90 is marked with a circle.
  - Pin 91 is marked with a circle.
  - Pin 92 is marked with a circle.
  - Pin 93 is marked with a circle.
  - Pin 94 is marked with a circle.
  - Pin 95 is marked with a circle.
  - Pin 96 is marked with a circle.
  - Pin 97 is marked with a circle.
  - Pin 98 is marked with a circle.
  - Pin 99 is marked with a circle.
  - Pin 100 is marked with a circle.
- JEDEC TO-126**
- B: Base**
- C: Collector**
- E: Emitter**

15.1  
 14.0  
 6.3  
 10.2  
 3.6  
 1.3  
 0.85  
 1.1  
 0.5  
 2.55  
 2.55  
 2.7  
 E: Emitter  
 C: Collector  
 B: Base  
 JEDEC: TO-220AB  
 EIAJ: SC-46

mm

15.1  
6.3  
0.2  
3.6  
5.1  
2.7  
9.0  
0.85  
1.3  
4.5  
1.3  
0.5  
15.2

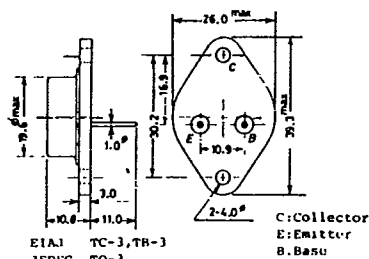
E: Emitter  
C: Collector  
B: Base

JEDEC: TO-220AA  
EIAJ : SC-45

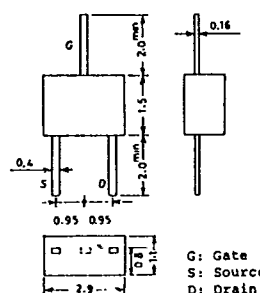
JEDEC TO-220

B: Base  
C: Collector  
E: Emitter

unit:mm

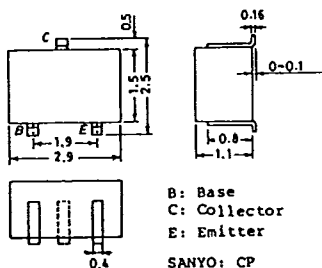


unit:mm

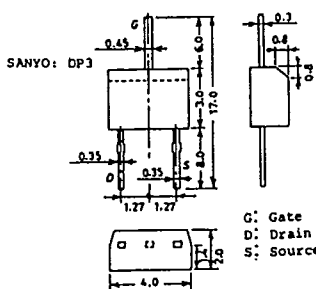


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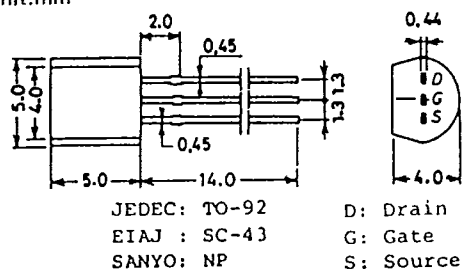
unit:mm



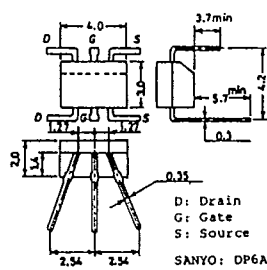
unit:mm



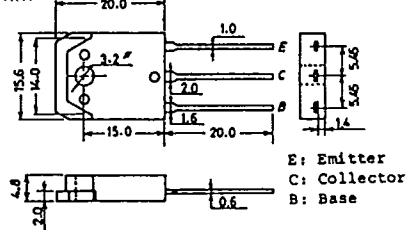
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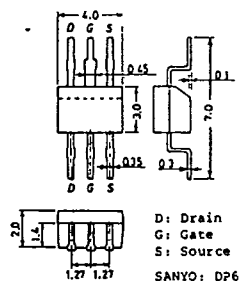
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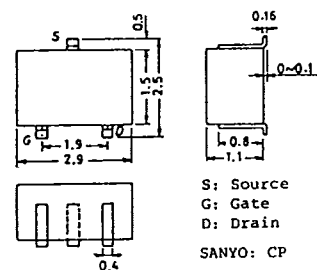
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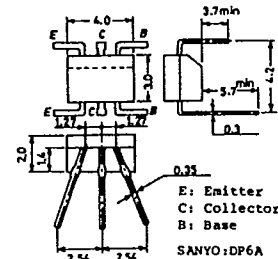
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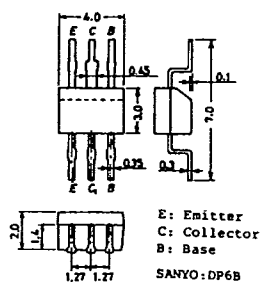
unit:mm



unit:mm

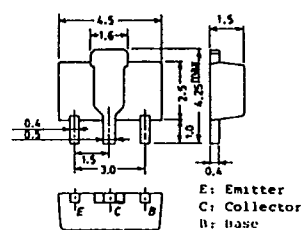


unit:mm



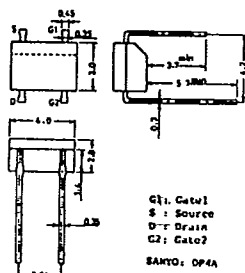
E: Emitter  
C: Collector  
B: Base  
SANYO: DP6B

unit:mm



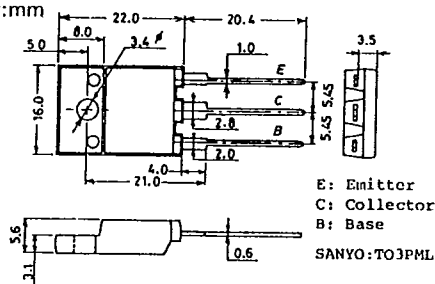
E: Emitter  
C: Collector  
B: Base

unit:mm



G1: Catw1  
\$ : Source  
D-r Drain  
G2: Gate2  
SANYO: Osaka

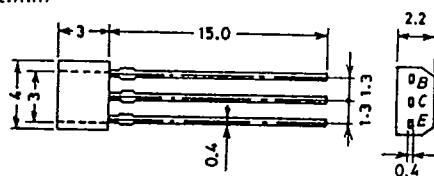
unit:mm



E: Emitter  
C: Collector  
B: Base

SANYO:TO3PML

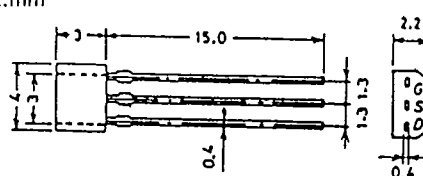
unit:mm



B: Base  
C: Collector  
E: Emitter

SANYO: SPA

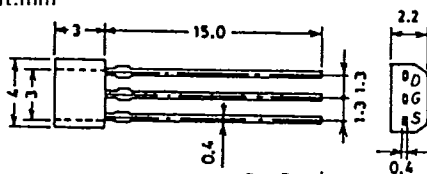
unit:mm



G: Gate  
S: Source  
D: Drain

SANYO: SPA

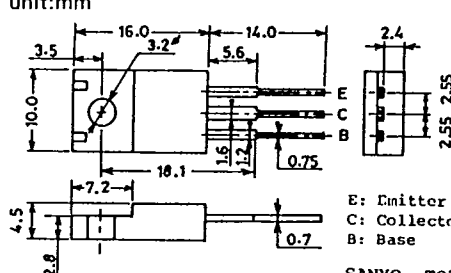
unit:mm



D: Drain  
G: Gate  
S: Source

**SANYO: SPA**

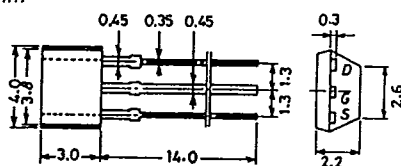
unit:mm



E: Emitter  
C: Collector  
B: Base

SANYO: TO220ML

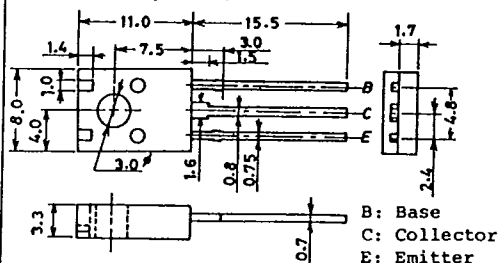
unit:mm



D: Drain  
G: Gate  
S: Source

SANYO: SP'

11.0

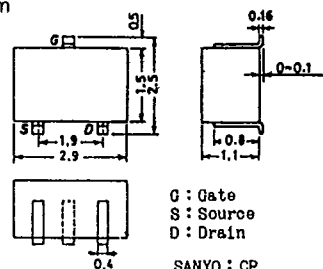


B: Base  
C: Collector  
E: Emitter

SANYO: TO126ML

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G : Gate  
S : Source  
D : Drain  
SANYO : CP



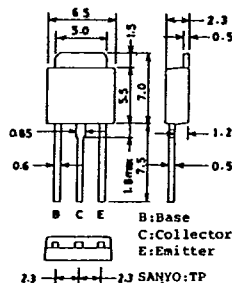
SANYO: TO126LP

G : Gate  
S : Source  
D : Drain

SANYO : CP

C: Collector  
E: Emitter  
B: Base  
SANYO: SPA

unit:mm

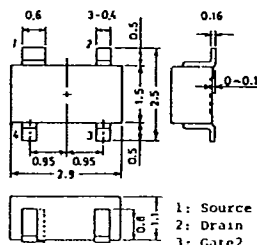


B:Base  
C:Collector  
E:Emitter

C: Collector  
E: Emitter  
B: Base  
SANYO: SPA

JEDEC: TO-220AB  
EIAJ: SC-46

unit:mm



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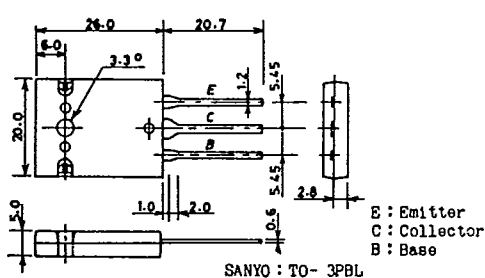
1: Source
2: Drain
3: Gate2
4: Gate1

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JEDEC: TO-220AB  
EIAJ: SC-46

1: Drain  
2: Source  
3: Gate 1  
4: Gate 2

unit:mm

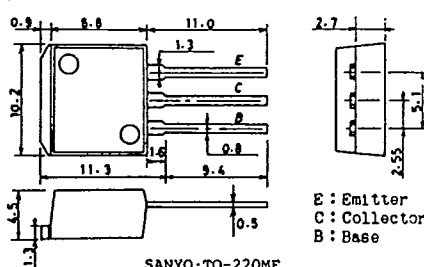


SANYO : TO- 3PBL

1: Drain  
2: Source  
3: Gate 1  
4: Gate 2

Figure 1 shows the dimensions of the Sanyo CP transistor package. The package is rectangular with a total width of 2.9 and a distance of 1.9 between the pins. The pin dimensions are 0.16 (width) and 0.01 (thickness). The side view shows a total height of 0.8 and a base height of 1.1. The bottom view shows a base width of 0.6. The legend defines E: Emitter, C: Collector, B: Base, and SANYO: CP.

unit:mm



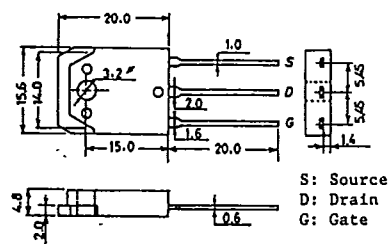
E : Emitter  
C : Collector  
B : Base

Figure 1 shows the dimensions of the Sanyo CP transistor. The top view indicates a total width of 2.9 and a distance of 1.9 between the pins. The pin width is 0.16 and the thickness is 0.01. The side view shows a total height of 0.8 and a base height of 1.1. The bottom view shows a base width of 0.6. The legend defines E as Emitter, C as Collector, B as Base, and SANYO as CP.

E: Emitter  
C: Collector  
B: Base

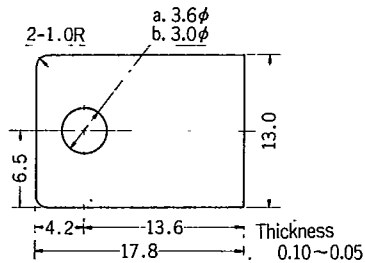
SANYO: CP

Case Outline—[2056] unit:mm



SANYO: TO3PB

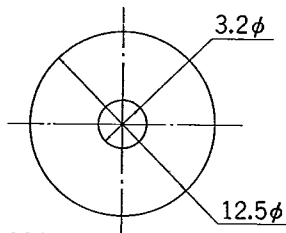
Case Outline—[0008] unit:mm

a. IS-313B  
b. IS-313D

SANYO

Case Outline—[0004] unit:mm

unit:mm

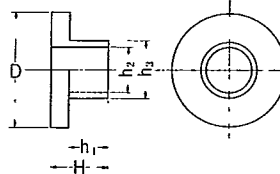


SANYO IS-126

Thickness : 0.075

Case Outline—[0009] unit:mm

unit:mm

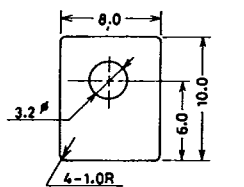


SANYO Bush

| Bush | D     | H   | h <sub>1</sub> | h <sub>2</sub> | h <sub>3</sub> |
|------|-------|-----|----------------|----------------|----------------|
| A    | 8.0φ  | 4.0 | 2.8            | 3.1φ           | 3.89φ          |
| B    | 8.0φ  | 3.0 | 1.8            | 3.1φ           | 3.89φ          |
| C    | 8.0φ  | 5.7 | 4.5            | 3.1φ           | 3.89φ          |
| D    | 8.0φ  | 2.7 | 1.5            | 3.1φ           | 3.89φ          |
| E    | 8.0φ  | 3.4 | 2.2            | 3.1φ           | 3.89φ          |
| F    | 8.0φ  | 4.0 | 2.8            | 3.0φ           | 3.59φ          |
| K    | 16.0φ | 3.4 | 1.4            | 3.1φ           | 6.0φ           |
| L    | 6.0φ  | 3.1 | 1.5            | 2.6φ           | 3.5φ           |
| M    | 6.0φ  | 3.1 | 1.5            | 3.0φ           | 3.59φ          |
| P    | 6.0φ  | 2.3 | 1.1            | 3.0φ           | 3.59φ          |

Case Outline—[0005] unit:mm

unit:mm

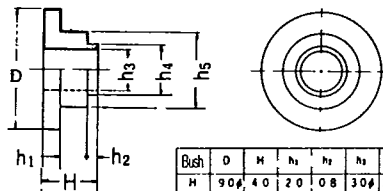


Thickness : 0.075

SANYO IS-126A Mica

Case Outline—[0010] unit:mm

unit:mm

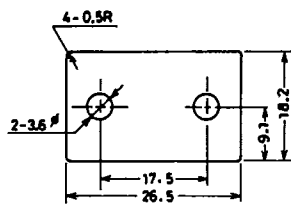


SANYO Bush

| Bush | D     | H   | h <sub>1</sub> | h <sub>2</sub> | h <sub>3</sub> | h <sub>4</sub> | h <sub>5</sub> |
|------|-------|-----|----------------|----------------|----------------|----------------|----------------|
| H    | 9.0φ  | 4.0 | 2.0            | 0.8            | 3.0φ           | 3.59φ          | 5.6φ           |
| T    | 9.0φ  | 5.8 | 2.0            | 2.6            | 3.0φ           | 3.59φ          | 5.6φ           |
| UB   | 16.0φ | 6.8 | 1.5            | 3.3            | 3.0φ           | 3.89φ          | 8.0φ           |

Case Outline—[0006] unit:mm

unit:mm

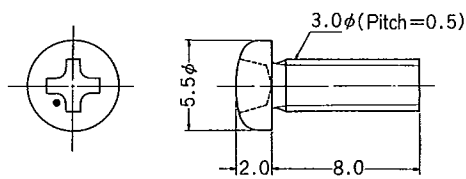


Thickness : 0.05~0.1

SANYO IS-20MA Mica

Case Outline—[0011] unit:mm

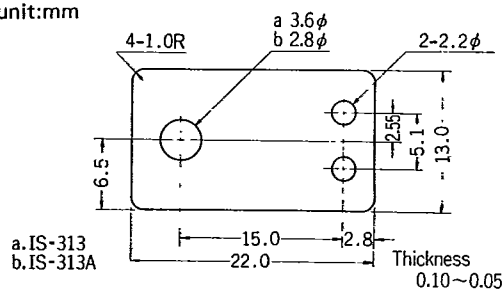
unit:mm



JIS No. B1111 M3×0.5

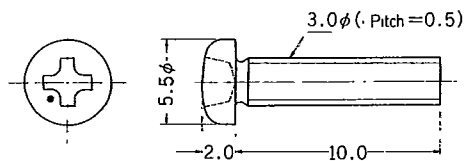
Case Outline—[0007] unit:mm

unit:mm



Case Outline—[0012] unit:mm

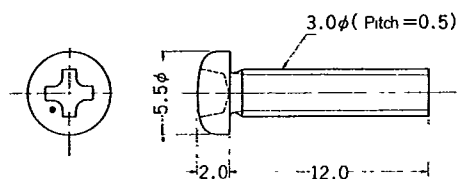
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0013]

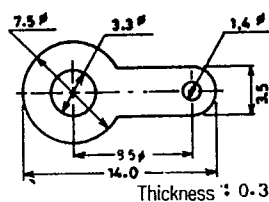
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0018]

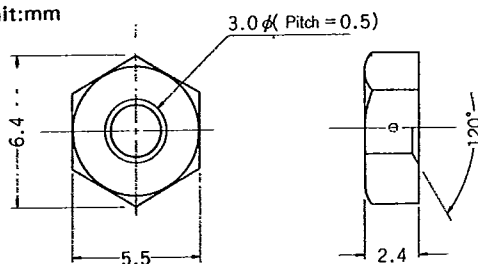
unit:mm



SANYO Lug 1.4

Case Outline—[0014]

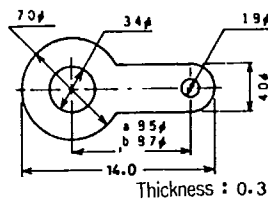
unit:mm



JIS No. B1181 M3×0.5

Case Outline—[0019]

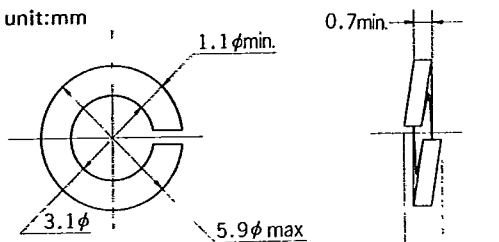
unit:mm



SANYO Lug 1.8φ

Case Outline—[0015]

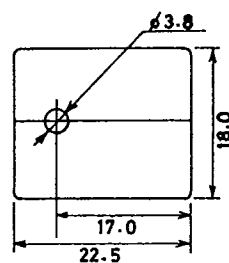
unit:mm



JIS No. B 1251 Spring washer (M3)

Case Outline—[0020]

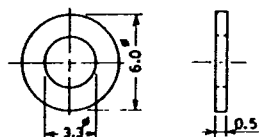
unit:mm



SANYO IS-3MP Mica

Case Outline—[0016]

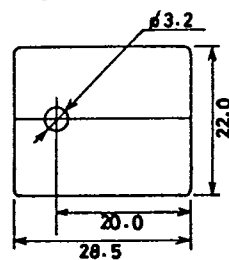
unit:mm



JIS No. B1252 Flat washer

Case Outline—[0021]

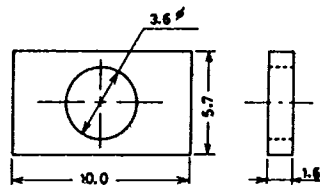
unit:mm



SANYO IS-MPC Mica

Case Outline—[0017]

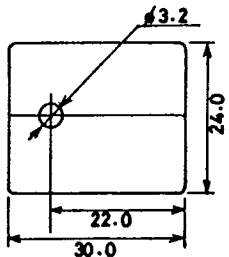
unit:mm



JIS No. G3141 Rectangular washer

Case Outline—[0022]

unit:mm



SANYO IS-3PBL Mica