

2SC2228A, 2228Y



2006A

NPN Triple Diffused Planar
Silicon Transistors

T-31-23

TV Video Output Applications

©665C

The 2SC2228A is designed for color TV chroma output use; and the 2SC2228Y is designed for B/W TV video output use.

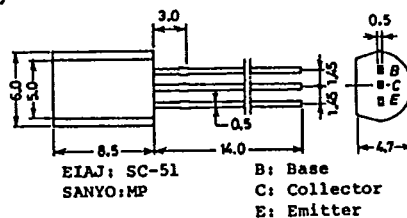
Absolute Maximum Ratings at Ta=25°C		2SC2228A	2SC2228Y	unit
Collector to Base Voltage	V_{CB0}	200	160	V
Collector to Emitter Voltage	V_{CE0}	200	160	V
Emitter to Base Voltage	V_{EB0}		5	V
Collector Current	I_C		50	mA
Peak Collector Current	i_{cp}		100	mA
Collector Dissipation	P_C		900	mW
Junction Temperature	T_j		150	°C
Storage Temperature	T_{stg}	-55 to +150		°C

Electrical Characteristics at Ta=25°C		min	typ	max	unit
Collector Cutoff Current	I_{CB0}	$V_{CB}=200V, I_E=0$ [2SC2228A]		1.0	uA
		$V_{CB}=160V, I_E=0$ [2SC2228Y]		1.0	uA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=5V, I_C=0$		1.0	uA
DC Current Gain	h_{FE}	$V_{CE}=10V, I_C=10mA$		40*	
Gain Bandwidth Product	f_T	$V_{CE}=30V, I_C=10mA$		50	MHz
Output Capacitance	c_{ob}	$V_{CB}=10V, f=1MHz$		4.0	pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.6	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=20mA, I_B=2mA$		1.0	V

*:The 2SC2228A is usable in C, D, E ranks and the 2SC2228Y is usable in C, D, E, F ranks which are classified by 10mA h_{FE} as follows:

40	C	80	60	D	120	100	E	200	160	F	320
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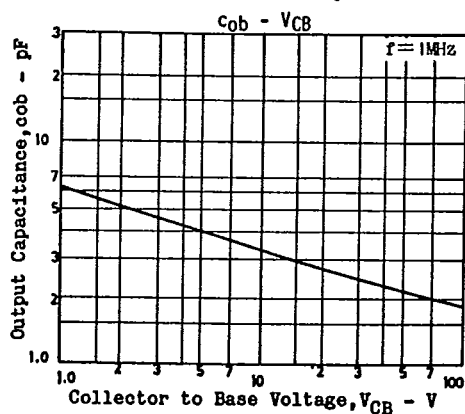
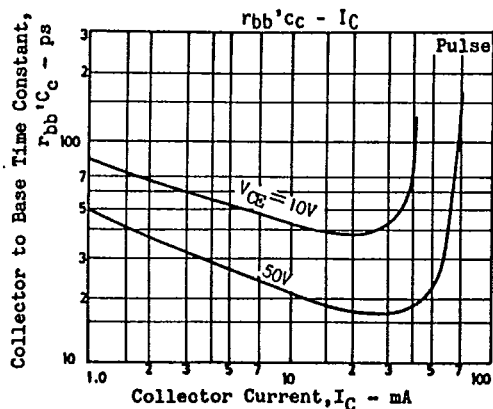
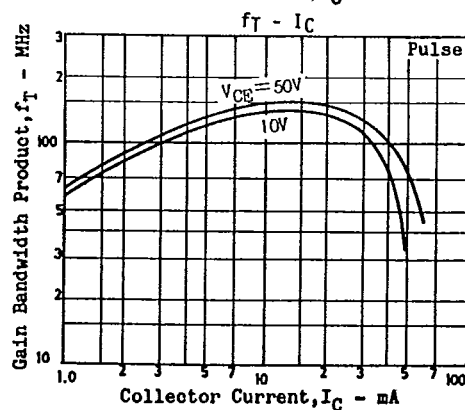
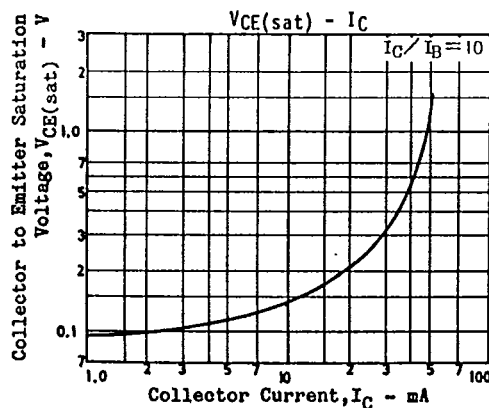
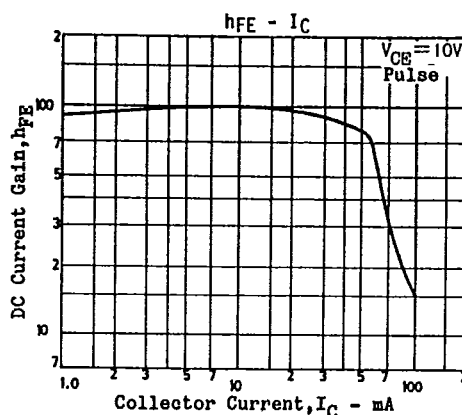
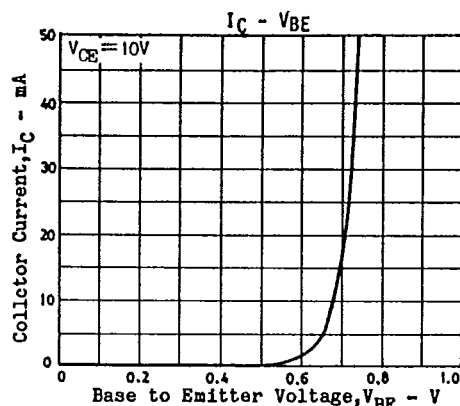
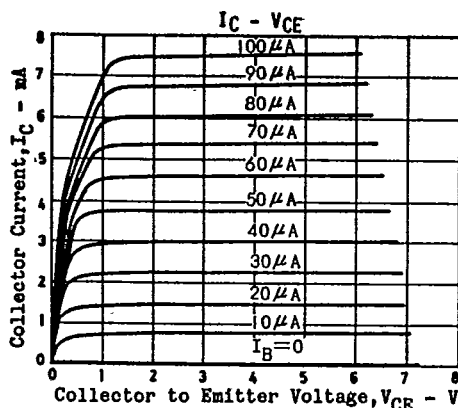
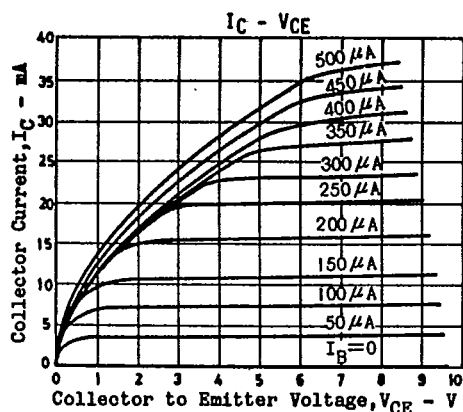
Case Outline 2006A
(unit:mm)



The 2SC2228A, 2228Y are scheduled to be discontinued soon. Use the 2SC3467, instead of the 2SC2228A, 2228Y, in new applications where you are planning to use the 2SC2228A, 2228Y.

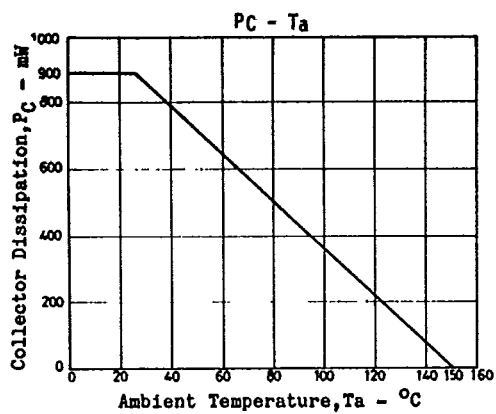
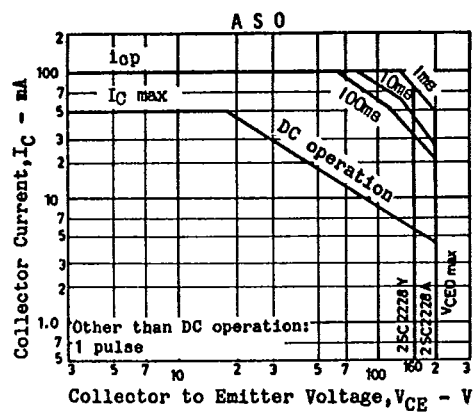
2SC2228A, 2228Y

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2SC2228A, 2228Y

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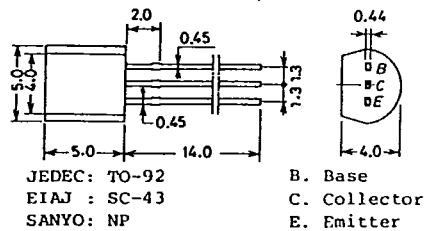
T-91-20

CASE OUTLINES AND ATTACHMENTS

- 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.

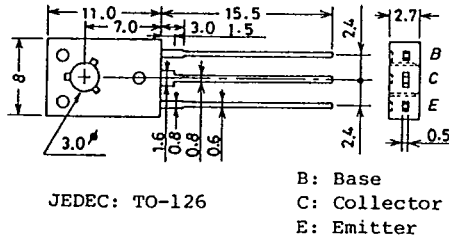
Case Outline—[2003A]

unit:mm



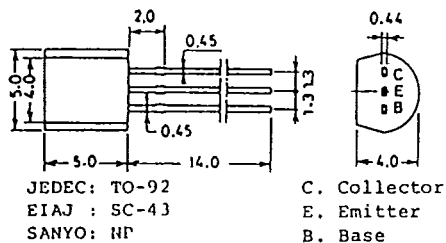
Case Outline—[2009A]

unit:mm



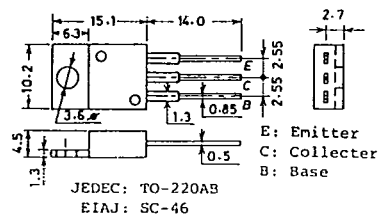
Case Outline—[2004A]

unit:mm



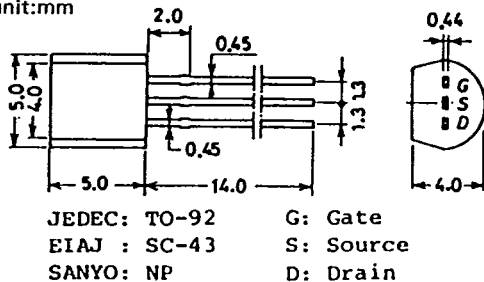
Case Outline—[2010A]

unit:mm



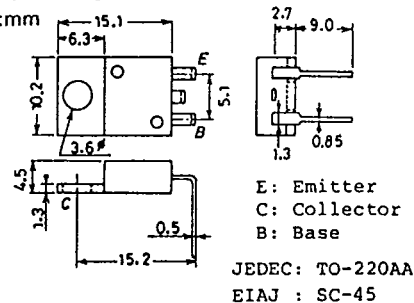
Case Outline—[2005A]

unit:mm



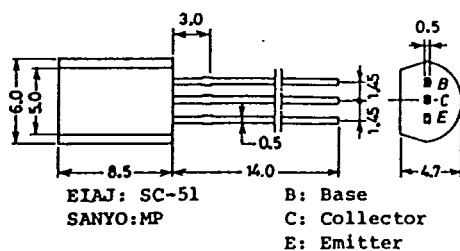
Case Outline—[2012]

unit:mm



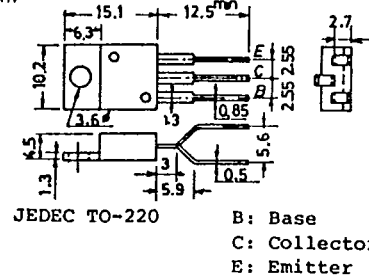
Case Outline—[2006A]

unit:mm

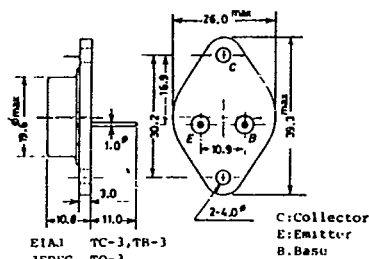


Case Outline—[2013]

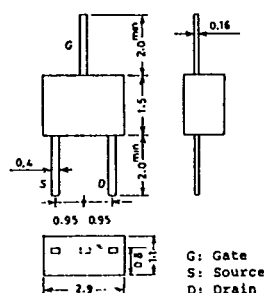
unit:mm



unit:mm

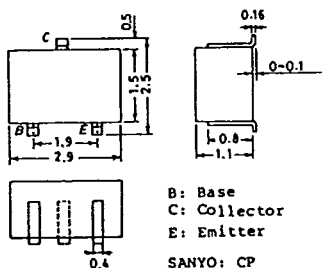


unit:mm

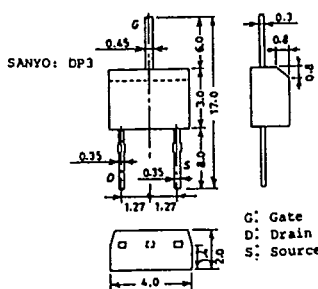


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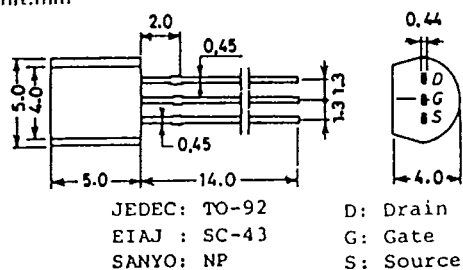
unit:mm



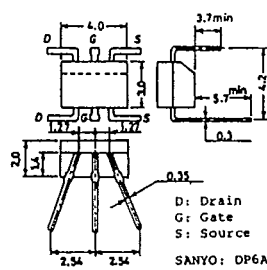
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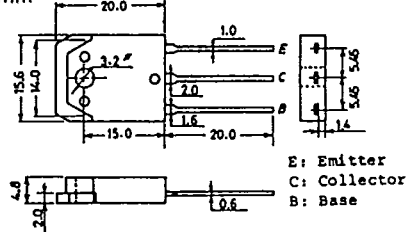
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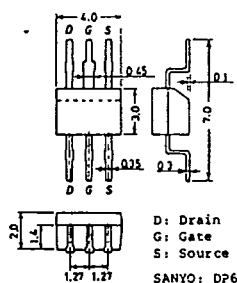
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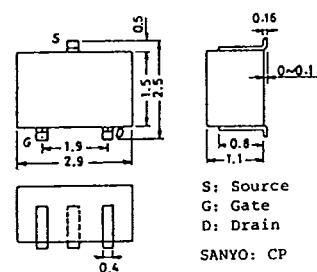
unit:mm



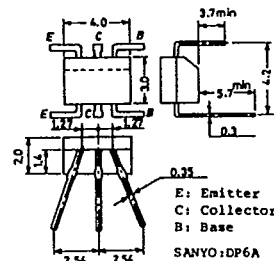
unit:mm



unit:mm



unit:mm



E: Emitter
C: Collector
B: Base

SANYO:DP6B

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

G1: Cat1
S : Source
D : Drain
G2: Gate2
SANYO: OP4A

E: Emitter
C: Collector
B: Base

SANYO:TO3PML

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

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

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

SANYO: TO220ML

D: Drain
G: Gate
S: Source
SANYO: SP'

SANYO: TO126ML

T-91-20

unit:mm

The drawing shows three views of the SANYO CP package. The top view is a rectangle with a width of 2.9 mm and a height of 2.5 mm. It features a gate (G) at the top center with a width of 0.5 mm, and source (S) and drain (D) contacts at the bottom. The source contact is 1.9 mm from the left edge, and the drain contact is 0.5 mm from the right edge. The side view shows a height of 0.16 mm and a width of 0.8 mm. The bottom view shows a width of 1.1 mm and a distance of 0.4 mm between the source and drain contacts. A dimension of 0-0.1 mm is indicated for the distance from the right edge to the drain contact.

G : Gate
S : Source
D : Drain

SANYO : CP

SANYO: TO126LP

SANYO : CP

Case Outline—[2051]

unit:mm

The drawing shows a transistor package with a base, emitter, and collector. Dimensions are given in millimeters. The base width is 3mm, the emitter width is 3mm, and the collector width is 3mm. The total length of the package is 15.0mm. The distance between the emitter and collector is 13.1mm. The distance between the base and emitter is 0.4mm. The distance between the base and collector is 0.4mm. The distance between the emitter and collector is 2.2mm. The pin configuration is shown on the right: C (Collector), E (Emitter), and B (Base).

C : Collector
E : Emitter
B : Base

SANYO: SPA

C : Collector
E : Emitter
B : Base

SANYO: SPA

Case Outline—[2052A]

unit:mm

The drawing shows a TO-220AB transistor package with the following dimensions (in mm):

- Overall length: 15.1
- Distance from mounting hole to first pin: 6.3
- Distance between pins: 14.0
- Overall width: 10.2
- Distance from mounting hole to center of pins: 3.5
- Pin diameter: 1.3
- Pin pitch: 0.85
- Distance from mounting hole to base of package: 4.5
- Base width: 1.3
- Base thickness: 0.5

Pinout (JEDEC TO-220AB, EIAJ SC-46):

- 1: Source
- 2: Drain
- 3: Gate

JEDEC: TO-220AB
EIAJ: SC-46

Case Outline—[2053]

unit:mm

The drawing shows a 4-layer PCB with the following dimensions:
- Top view: 1.27mm and 1.27mm for the top layer width; 2mm for the top layer thickness; 6.0mm for the top layer length; 3.0mm for the middle layer length; 8.0mm for the bottom layer length; 0.35mm for the bottom layer thickness.
- Side view: 1.27mm for the top layer thickness; 6.0mm for the top layer length; 3.0mm for the middle layer length; 8.0mm for the bottom layer length; 0.35mm for the bottom layer thickness.
- Bottom view: 6.0mm for the bottom layer width; 2.0mm for the bottom layer thickness.

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

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

Case Outline—[2054]

unit:mm

The drawing shows three views of the SANYO CP transistor package:

- Top View:** A rectangular package with overall dimensions of 2.9 mm (width) and 5.2 mm (length). The emitter (E) is a small rectangle at the top center, 0.3 mm wide. The collector (C) and base (B) are located at the bottom, with a center-to-center distance of 1.9 mm and a total width of 2.9 mm.
- Side View:** Shows the package height as 2.5 mm. The emitter (E) is a lead that is 0.16 mm high and has a width of 0.1 mm.
- Bottom View:** Shows the mounting pads with a center-to-center distance of 0.4 mm.

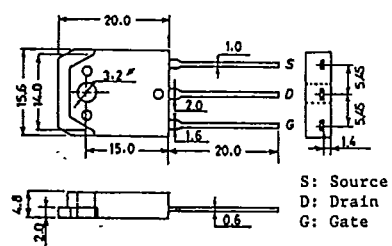
E: Emitter
C: Collector
B: Base

SANYO: CP

E: Emitter
C: Collector
B: Base

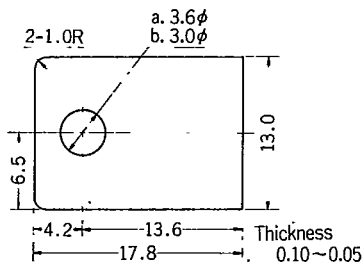
SANYO: CP

Case Outline—[2056] unit:mm



SANYO: TO3PB

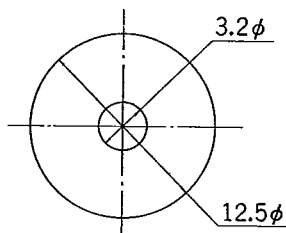
Case Outline—[0008] unit:mm

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

SANYO

Case Outline—[0004] unit:mm

unit:mm

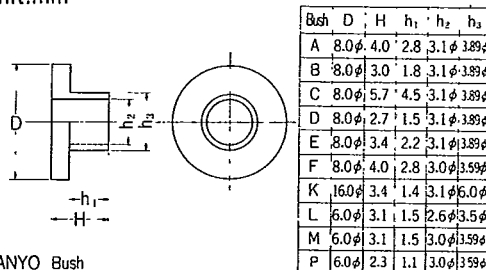


SANYO IS-126

Thickness : 0.075

Case Outline—[0009] unit:mm

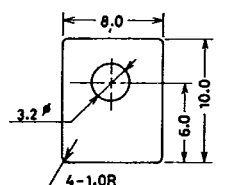
unit:mm



SANYO Bush

Case Outline—[0005] unit:mm

unit:mm

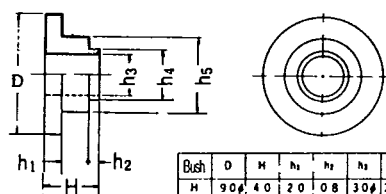


Thickness : 0.075

SANYO IS-126A Mica

Case Outline—[0010] unit:mm

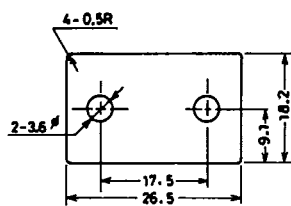
unit:mm



SANYO Bush

Case Outline—[0006] unit:mm

unit:mm

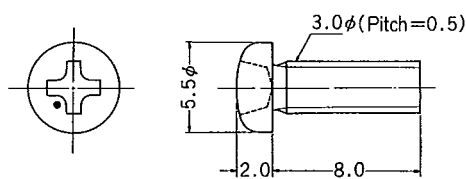


Thickness : 0.05~0.1

SANYO IS-20MA Mica

Case Outline—[0011] unit:mm

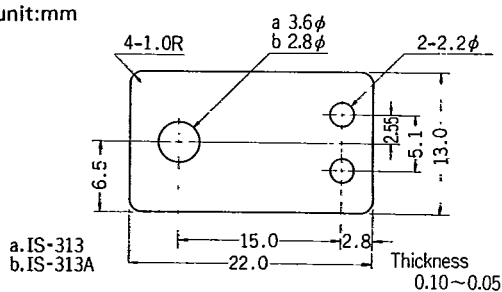
unit:mm



JIS No. B1111 M3×0.5

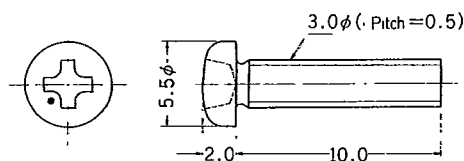
Case Outline—[0007] unit:mm

unit:mm



Case Outline—[0012] unit:mm

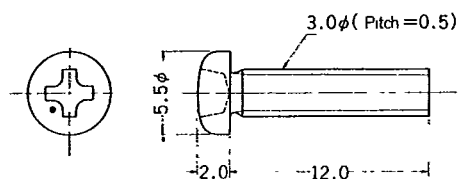
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0013]

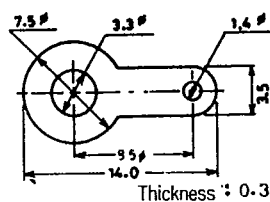
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0018]

unit:mm

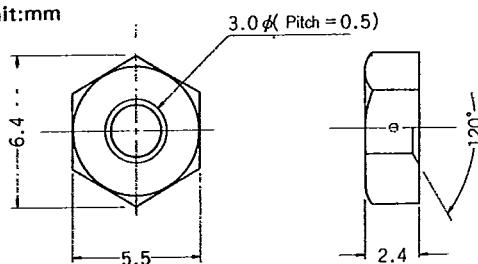


SANYO Lug 1.4

T=91-20

Case Outline—[0014]

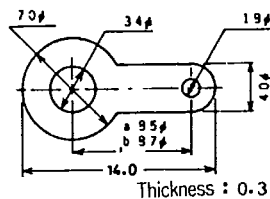
unit:mm



JIS No. B1181 M3×0.5

Case Outline—[0019]

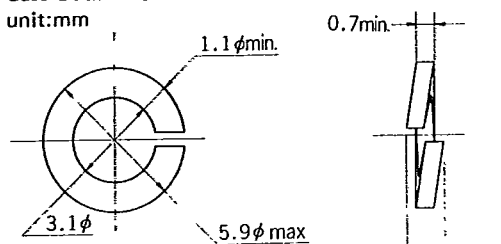
unit:mm



SANYO Lug 1.8φ

Case Outline—[0015]

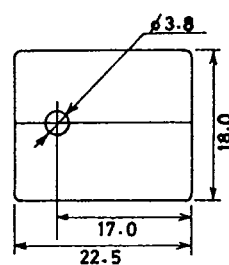
unit:mm



JIS No. B 1251 Spring washer (M3)

Case Outline—[0020]

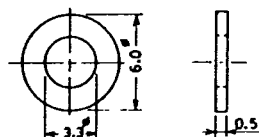
unit:mm



SANYO IS-3MP Mica

Case Outline—[0016]

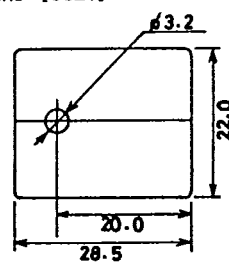
unit:mm



JIS No. B1252 Flat washer

Case Outline—[0021]

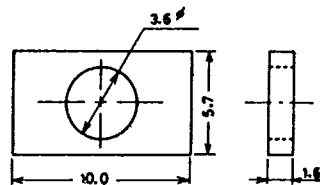
unit:mm



SANYO IS-MPC Mica

Case Outline—[0017]

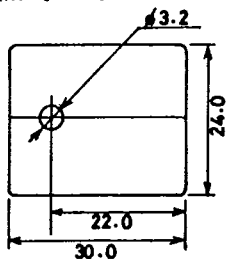
unit:mm



JIS No. G3141 Rectangular washer

Case Outline—[0022]

unit:mm



SANYO IS-3PBL Mica