

2SC3465

2017

NPN Triple Diffused Planar
Silicon Transistor

T-33-15

Switching Regulator Applications

©2486

Features

- High breakdown voltage and high reliability.
- Fast switching speed (t_f : 0.1 μ s typ.)
- Wide ASO.
- Adoption of MBIT process.

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

		unit
Collector to Base Voltage	V_{CB0}	1100 V
Collector to Emitter Voltage	V_{CEO}	800 V
Emitter to Base Voltage	V_{EB0}	7 V
Collector Current	I_C	12 A
Peak Collector Current	i_{cp}	30 A
Base Current	I_B	6 A
Collector Dissipation	P_C	160 W
Junction Temperature	T_J	150 $^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150 $^\circ\text{C}$

 $PW \leq 300\mu\text{s}, \text{Duty Cycle} \leq 10\%$ $T_C=25^\circ\text{C}$

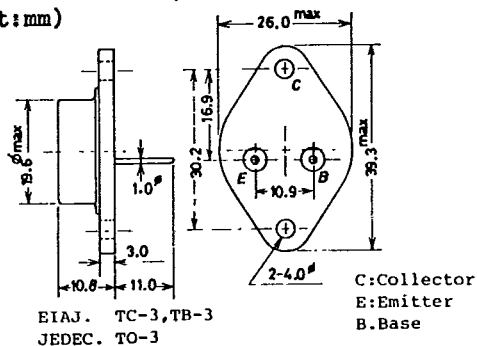
Electrical Characteristics at $T_a=25^\circ\text{C}$

		min	typ	max	unit
Collector Cutoff Current	I_{CBO}			10	μA
Emitter Cutoff Current	I_{EBO}			10	μA
DC Current Gain	$h_{FE}(1)$	10*		40*	
	$h_{FE}(2)$	8			
Gain Bandwidth Product	f_T		15		MHz
Output Capacitance	C_{ob}		240		pF
C-E Saturation Voltage	$V_{CE(sat)}$			2.0	V
B-E Saturation Voltage	$V_{BE(sat)}$			1.5	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	1100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	800			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	7			V
C-E Sustain Voltage	$V_{CEX(sus)}$	800			V

 $I_C=6\text{A}, I_B=1.2\text{A}$ $I_C=5\text{mA}, R_{BE}=\infty$ $I_E=1\text{mA}, I_C=0$ $I_C=6\text{A}, I_{B1}=1.2\text{A}$ $L=1\text{mH}, I_{B2}=-1.2\text{A}, \text{clamped}$

Continued on next page.

Case Outline 2017 (unit:mm)

C:Collector
E:Emitter
B:Base

2SC3465

T-33-15

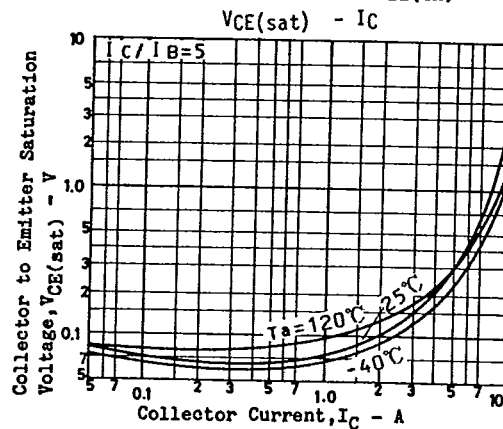
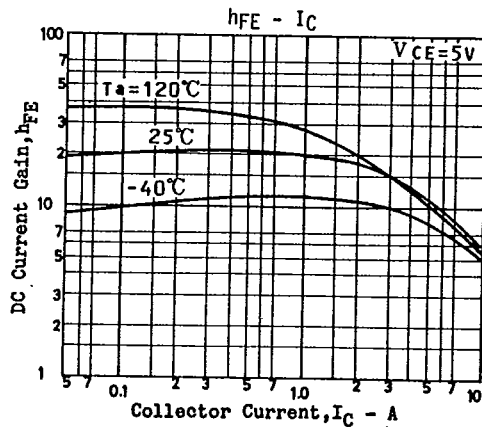
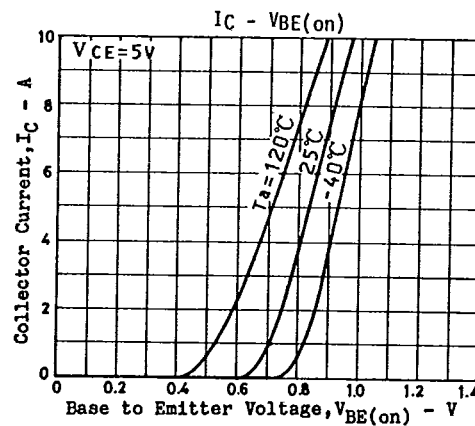
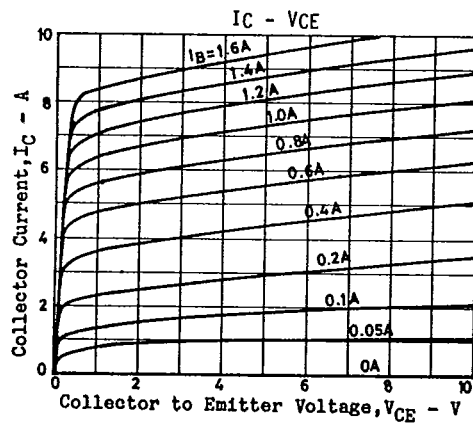
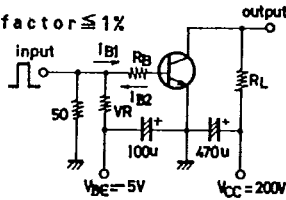
Continued from preceding page.

			min	typ	max	unit
Turn-On Time	t_{on}	$I_C=8A, I_{B1}=1.6A, I_{B2}=-3.2A$			0.5	us
Storage Time	t_{stg}	$R_L=50\Omega, V_{CC}=400V$				
Fall Time	t_f	" "			3.0	us
					0.3	us

*: The h_{FE1} of the 2SC3465 is classified as follows. When specifying the h_{FE1} rank, specify two ranks or more in principle.

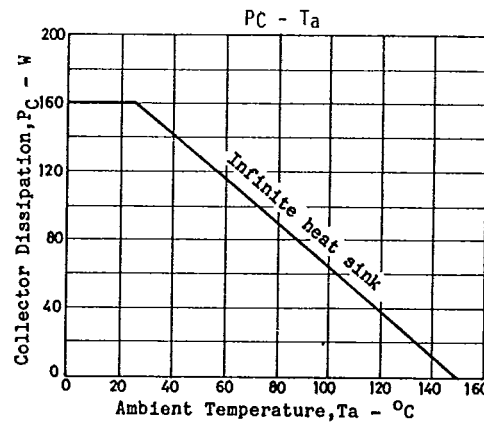
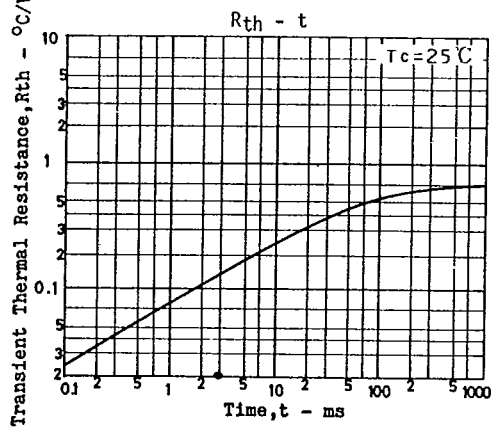
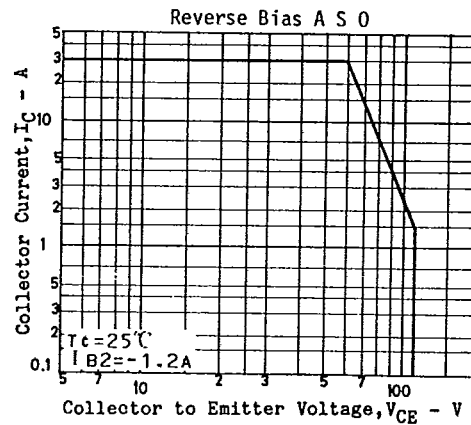
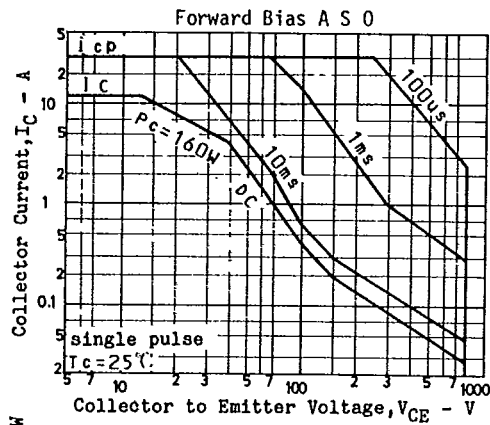
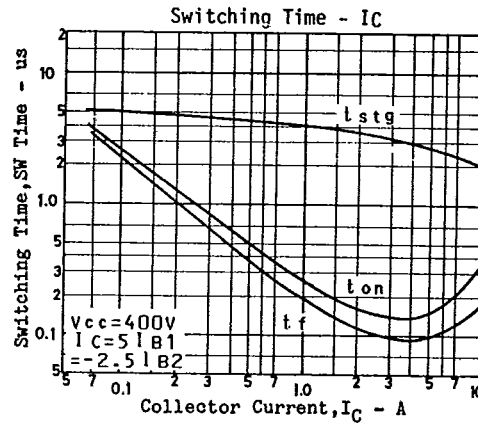
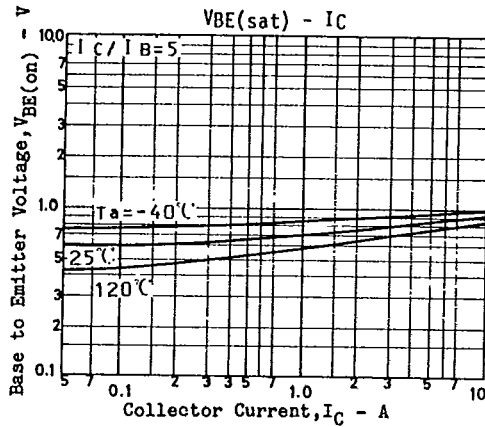
10	K	20	15	L	30	20	M	40
----	---	----	----	---	----	----	---	----

Switching Time Test Circuit

PW=20us, duty factor $\leq 1\%$ 

2SC3465

T-33-15



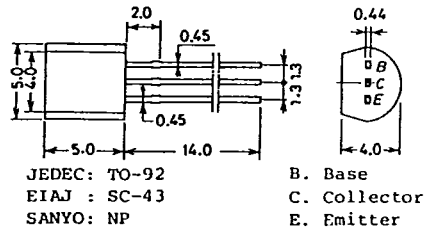
T-91-20

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.

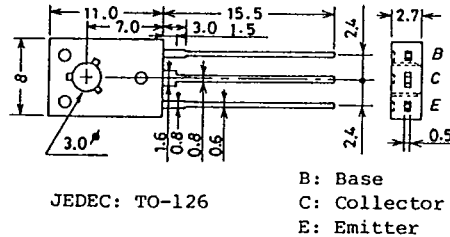
Case Outline—[2003A]

unit:mm



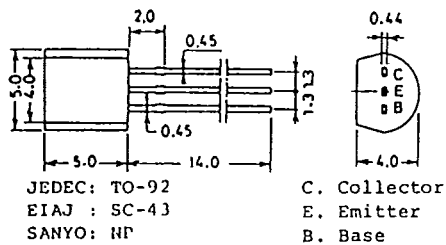
Case Outline—[2009A]

unit:mm



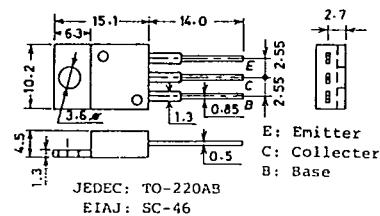
Case Outline—[2004A]

unit:mm



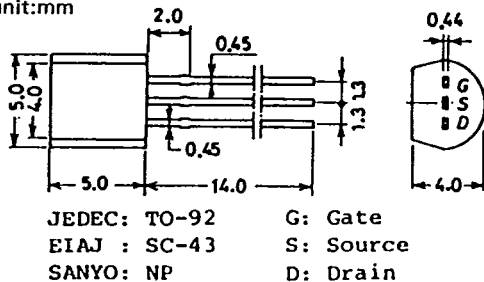
Case Outline—[2010A]

unit:mm



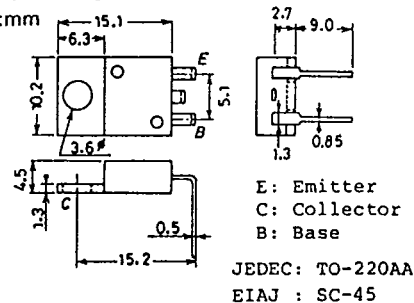
Case Outline—[2005A]

unit:mm



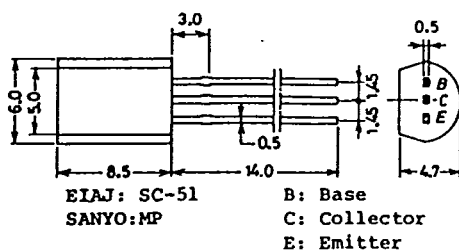
Case Outline—[2012]

unit:mm



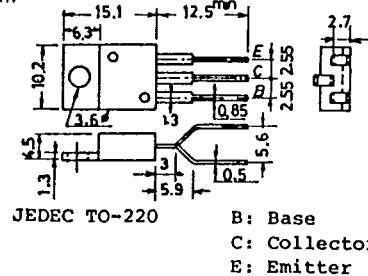
Case Outline—[2006A]

unit:mm

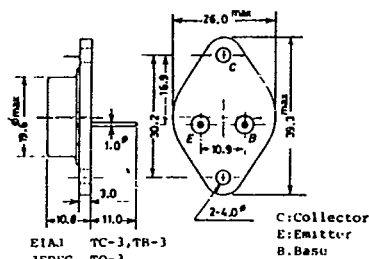


Case Outline—[2013]

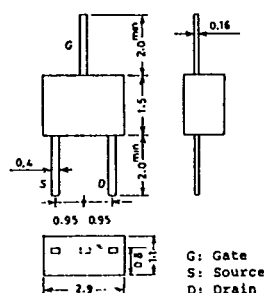
unit:mm



unit:mm

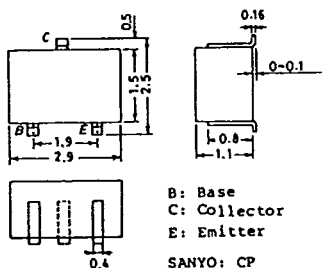


unit:mm

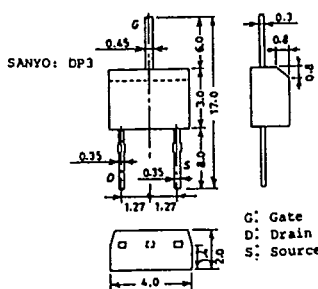


T-91-20

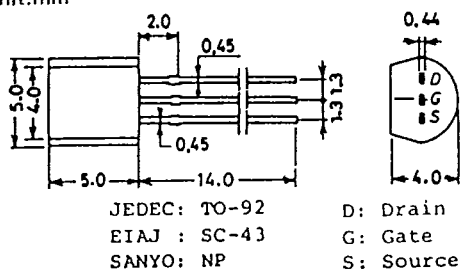
unit:mm



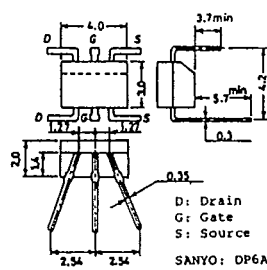
unit:mm



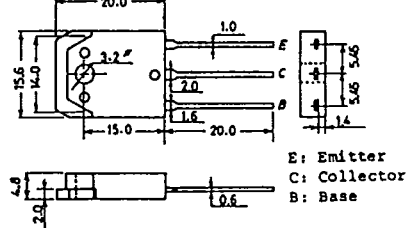
unit:mm



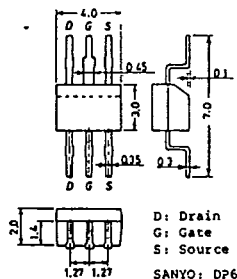
unit:mm



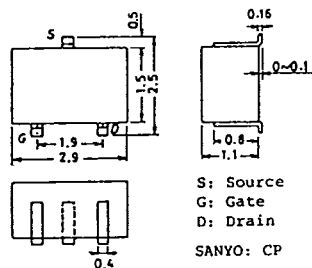
unit:mm



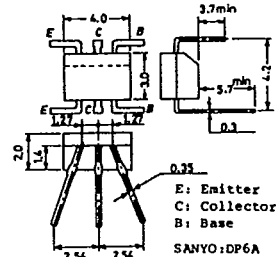
unit:mm



unit:mm



unit:mm



E: Emitter
C: Collector
B: Base

SANYO:DP6B

E: Emitter
C: Collector
B: Base

G1: Catw1
\$: Source
D-r 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

Figure 1 shows the dimensions of the Sanyo CP package. The package is rectangular with a width of 2.9 and a length of 5.2. It has a central square area with a side length of 1.9. The package is shown from three perspectives: top, side, and bottom. The top view shows the central square and four small squares at the corners. The side view shows the package's height of 0.16 and its width of 0.8. The bottom view shows the package's width of 1.1 and its height of 0.4. A legend indicates: G: Gate, S: Source, D: Drain. The text 'SANYO CP' is also present.

G : Gate
S : Source
D : Drain

SANYO : CP

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

2.7

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

1:Source
2:Drain
3:Gate

JEDEC: TO-220AB
EIAJ: SC-46

The drawing shows a TO-3PBL transistor package with the following dimensions and features:

- Top View:**
 - Overall width: 20.0
 - Distance from left edge to first pin center: 6.0
 - Pin pitch (distance between adjacent pin centers): 3.0
 - Distance from first pin center to last pin center: 20.7
 - Pin diameter: $\phi 1.2$
 - Pin length: 5.45
 - Pin thickness: 1.0
 - Pin spacing from package edge: 2.0
 - Pin diameter: $\phi 0.5$
- Side View:**
 - Package height: 2.8
- Pin Connections:**
 - E: Emitter
 - C: Collector
 - B: Base
- Label:** SANYO : TO- 3PBL

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

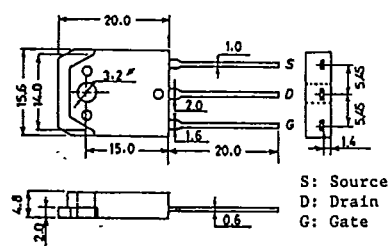
0.16

0.9
 8.8
 11.0
 1.3
 E
 C
 B
 0.8
 1.6
 11.3
 9.4
 10.7
 4.5
 1.3
 0.5
 2.7
 2.55
 5
 E: Emitter
 C: Collector
 B: Base
 SANYO TO-220MF

E: Emitter
C: Collector
B: Base

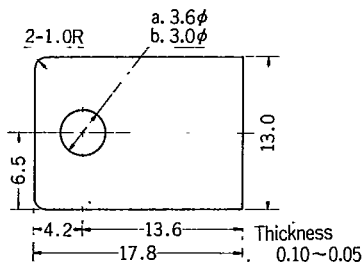
SANYO: CP

Case Outline—[2056] unit:mm



SANYO: TO3PB

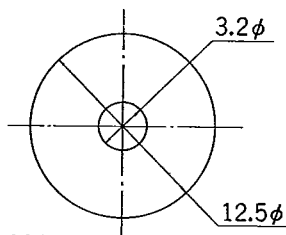
Case Outline—[0008] unit:mm

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

SANYO

Case Outline—[0004] unit:mm

unit:mm

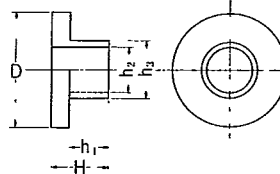


SANYO IS-126

Thickness : 0.075

Case Outline—[0009] unit:mm

unit:mm

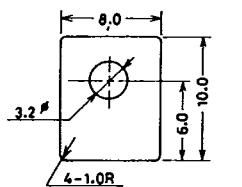


SANYO Bush

Bush	D	H	h ₁	h ₂	h ₃
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

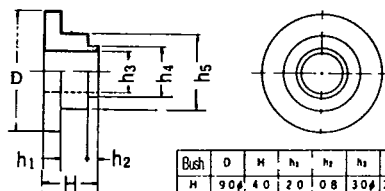


Thickness : 0.075

SANYO IS-126A Mica

Case Outline—[0010] unit:mm

unit:mm

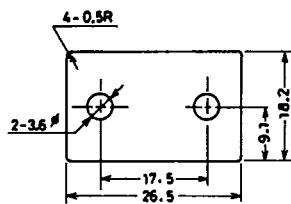


SANYO Bush

Bush	D	H	h ₁	h ₂	h ₃	h ₄	h ₅
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

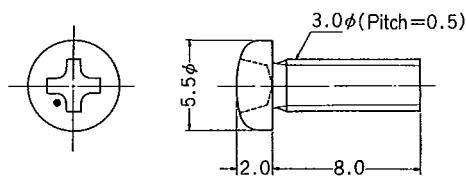


Thickness : 0.05~0.1

SANYO IS-20MA Mica

Case Outline—[0011] unit:mm

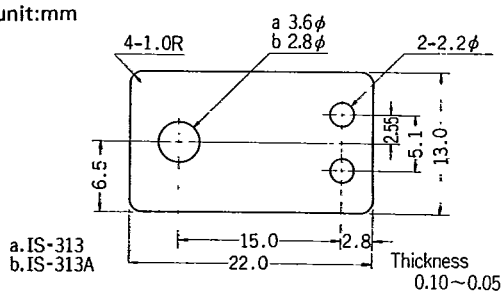
unit:mm



JIS No. B1111 M3×0.5

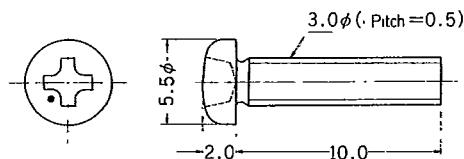
Case Outline—[0007] unit:mm

unit:mm



Case Outline—[0012] unit:mm

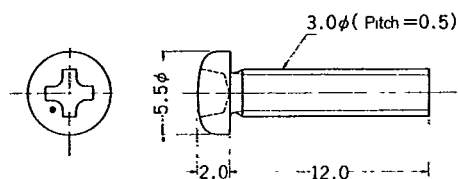
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0013]

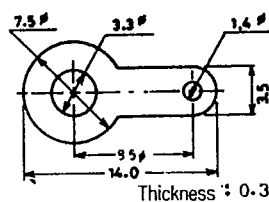
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0018]

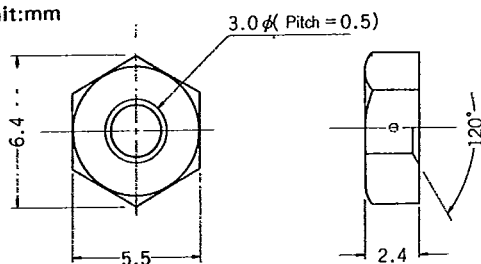
unit:mm



SANYO Lug 1.4

Case Outline—[0014]

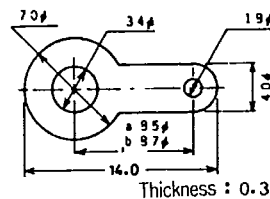
unit:mm



JIS No. B1181 M3×0.5

Case Outline—[0019]

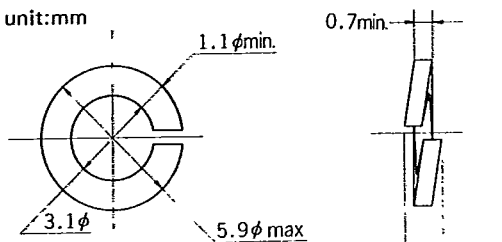
unit:mm



SANYO Lug 1.8φ

Case Outline—[0015]

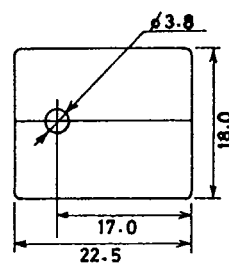
unit:mm



JIS No. B 1251 Spring washer (M3)

Case Outline—[0020]

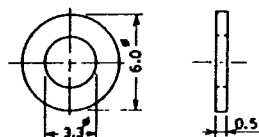
unit:mm



SANYO IS-3MP Mica

Case Outline—[0016]

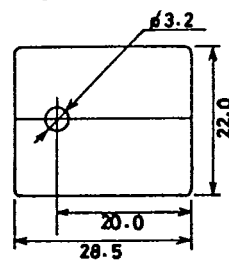
unit:mm



JIS No. B1252 Flat washer

Case Outline—[0021]

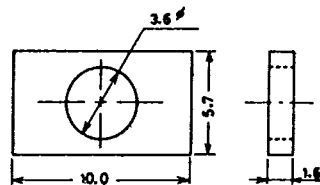
unit:mm



SANYO IS-MPC Mica

Case Outline—[0017]

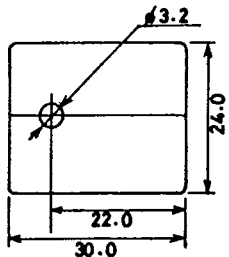
unit:mm



JIS No. G3141 Rectangular washer

Case Outline—[0022]

unit:mm



SANYO IS-3PBL Mica