

2SD1649

2039

NPN Triple Diffused Planar
Silicon Transistor

T-33-11

Color TV Horizontal Deflection Output Applications(with Damper Diode)

©1755B

Applications

- High-voltage, power switching

Features

- Fast speed ($t_{max}=0.4\mu s$).
- High reliability (Adoption of HVP process).
- High breakdown voltage ($V_{CBO}=1500V$).
- Micaless package facilitating mounting operation.

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

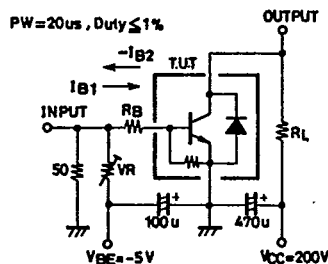
			unit
Collector to Base Voltage	V_{CBO}	1500	V
Collector to Emitter Voltage	V_{CEO}	800	V
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current	I_C	2.5	A
Peak Collector Current	i_{cp}	10	A
Collector Dissipation	P_C	50	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

 $T_C=25^\circ C$

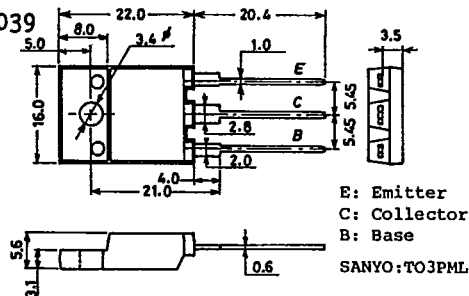
Electrical Characteristics at $T_a=25^\circ C$

		min	typ	max	unit
Collector Cutoff Current	I_{CBO} $V_{CB}=800V, I_E=0$			10	μA
Emitter Cutoff Current	I_{EBO} $V_{EB}=4V, I_C=0$	40		130	mA
DC Current Gain	h_{FE} $V_{CE}=5V, I_C=0.5A$	8			
Gain Bandwidth Product	f_T $V_{CE}=10V, I_C=0.5A$		3		MHz
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$ $I_C=2A, I_B=0.6A$			8	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$ $I_C=2A, I_B=0.6A$			1.5	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$ $I_C=5mA, I_E=0$	1500			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$ $I_C=100mA, R_{BE}=\infty$	800			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$ $I_E=200mA, I_C=0$	7			V
Diode Forward Voltage	V_F $I_{EC}=2.5A$			2	V
Fall Time	t_f $I_C=2A, I_{B1}=0.6A, I_{B2}=-1.2A, V_{CC}=200V, R_L=100\Omega$			0.4	μs

Switching Time Test Circuit

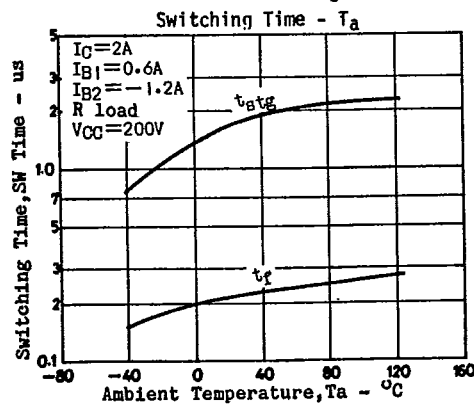
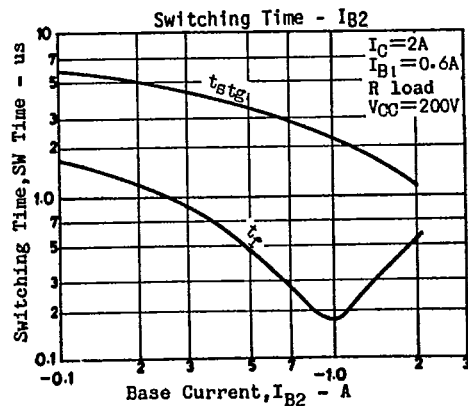
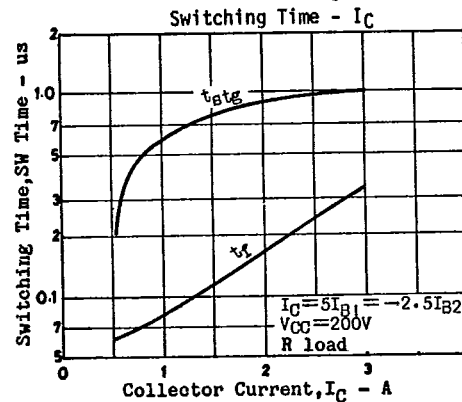
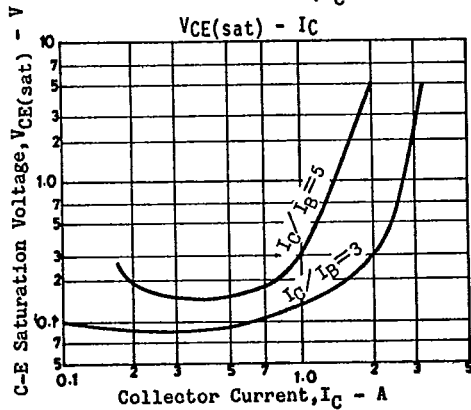
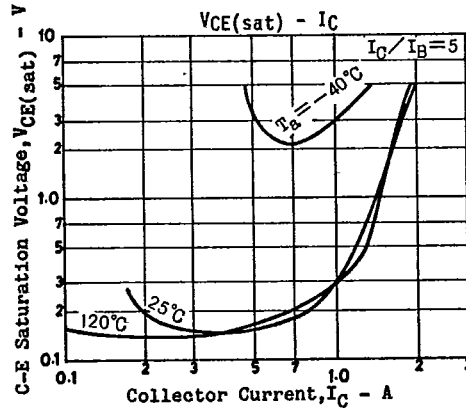
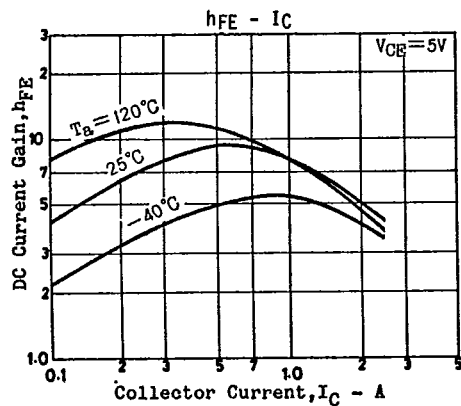
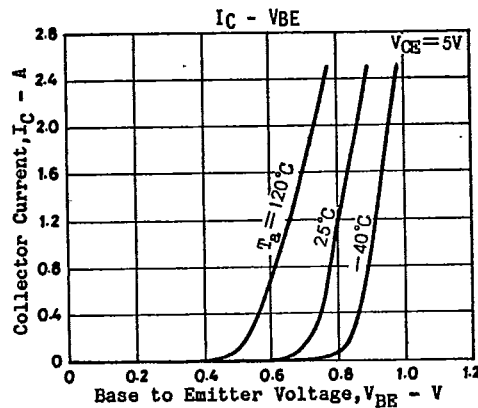
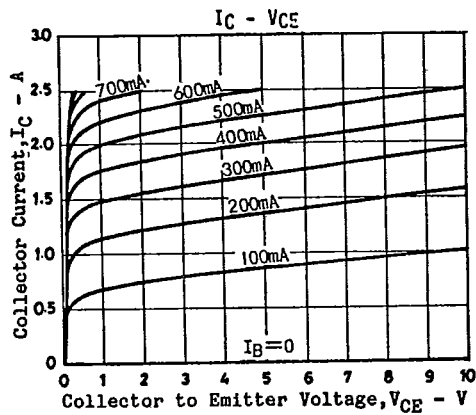


Case Outline 2039 (unit:mm)



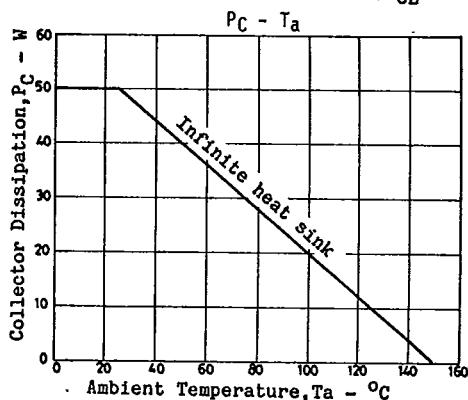
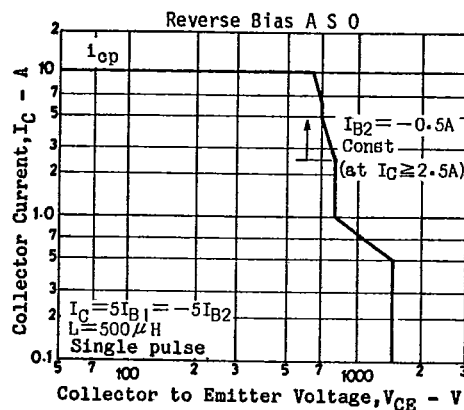
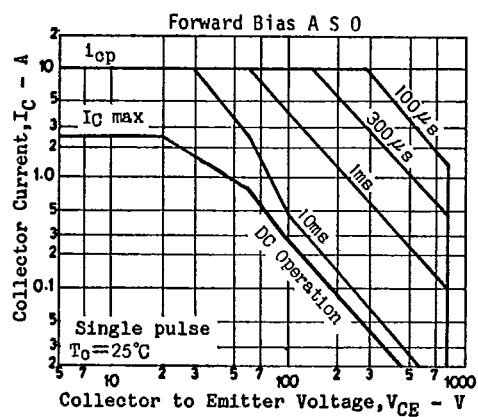
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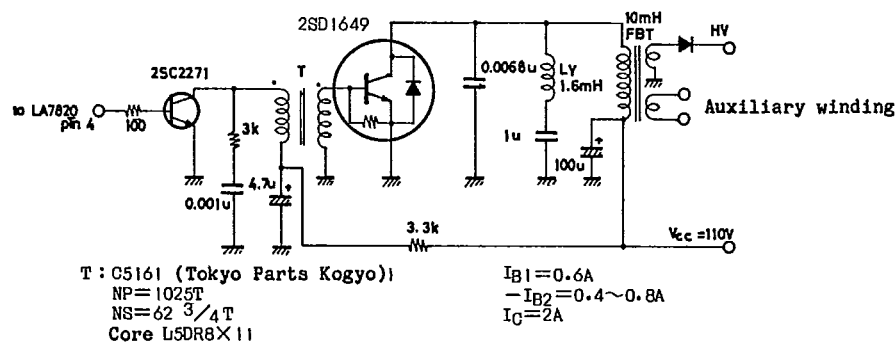


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Sample Application Circuit



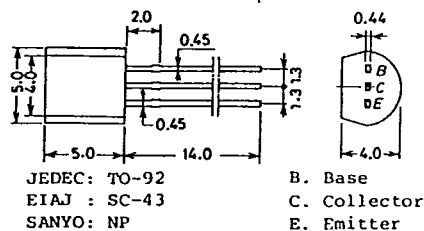
T-91-20

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.

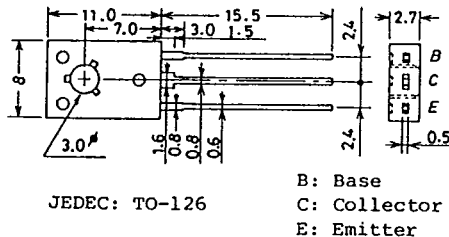
Case Outline—[2003A]

unit:mm



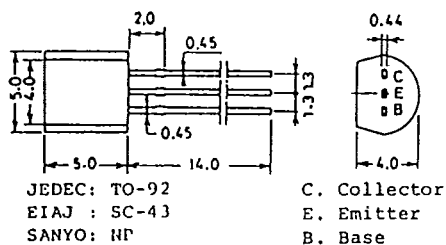
Case Outline—[2009A]

unit:mm



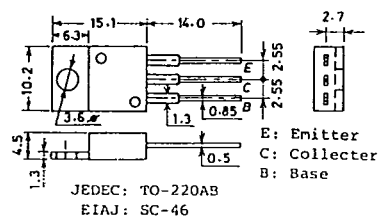
Case Outline—[2004A]

unit:mm



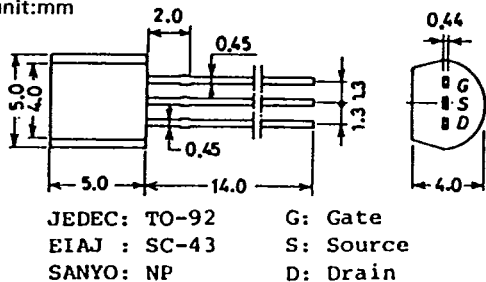
Case Outline—[2010A]

unit:mm



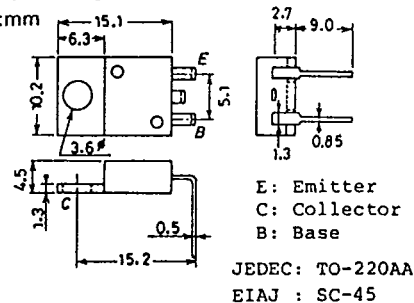
Case Outline—[2005A]

unit:mm



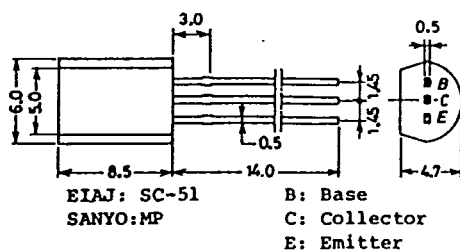
Case Outline—[2012]

unit:mm



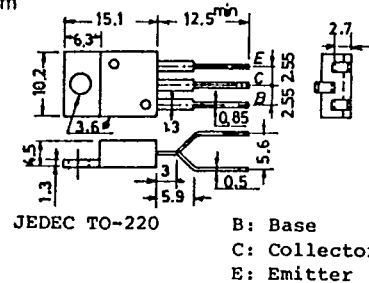
Case Outline—[2006A]

unit:mm



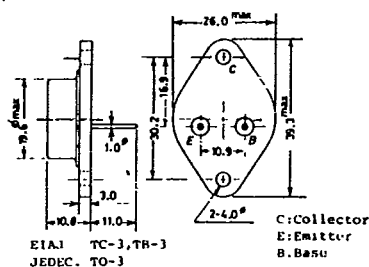
Case Outline—[2013]

unit:mm



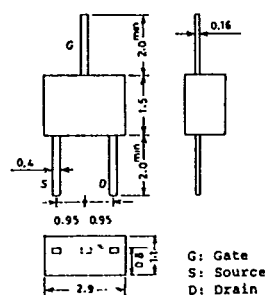
Case Outline—[2017]

unit:mm



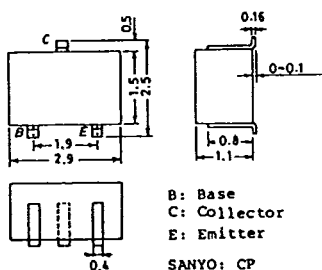
Case Outline—[2025]

unit:mm



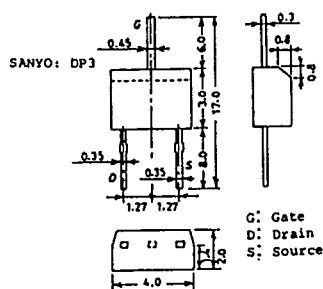
Case Outline—[2018A]

unit:mm



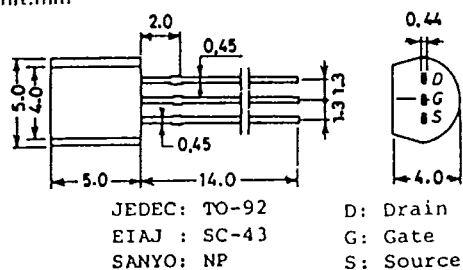
Case Outline—[2026]

unit:mm



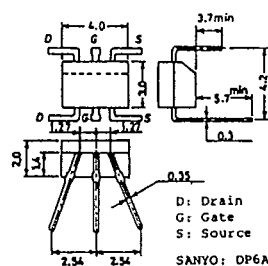
Case Outline—[2019A]

unit:mm



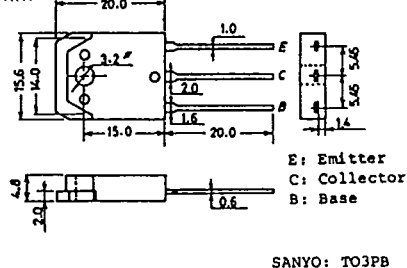
Case Outline—[2027A]

unit:mm



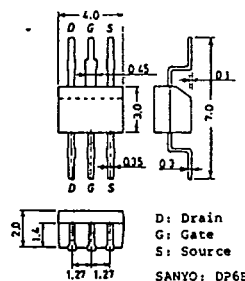
Case Outline—[2022]

unit:mm



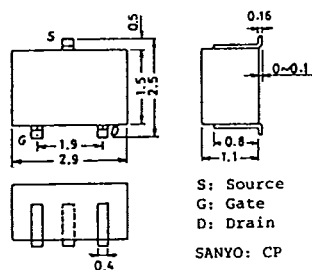
Case Outline—[2028A]

unit:mm



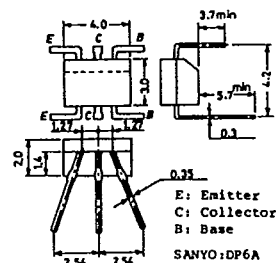
Case Outline—[2024A]

unit:mm



Case Outline—[2029A]

unit:mm



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

E: Emitter
C: Collector
B: Base

G1: Cat1
\$: Source
D-r Drain
G2: Gate2
SANYO: Osaka

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

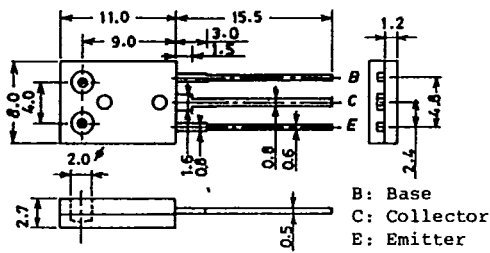
SANYO: SPA

SANYO: TO220ML

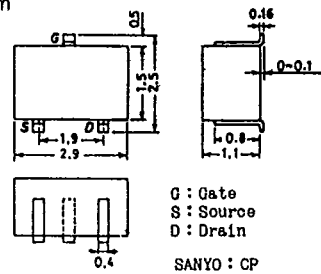
D: Drain
G: Gate
S: Source
SANYO: SP'

SANYO: TO126ML

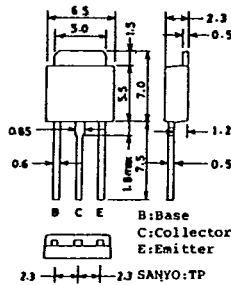
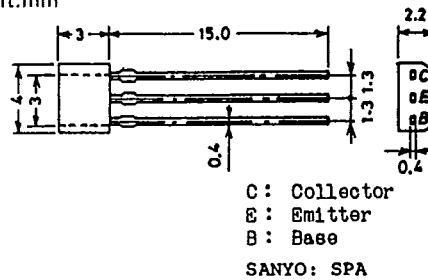
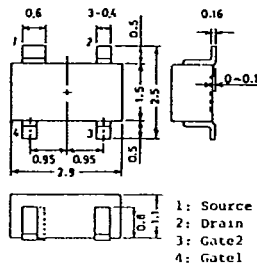
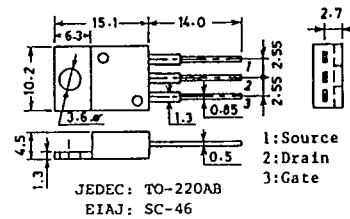
Case Outline—[2043A] unit:mm



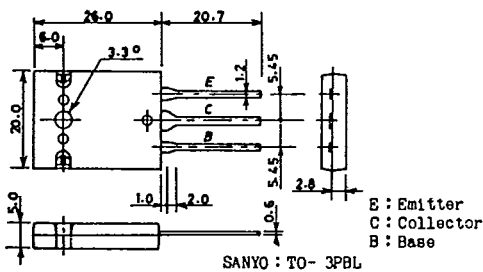
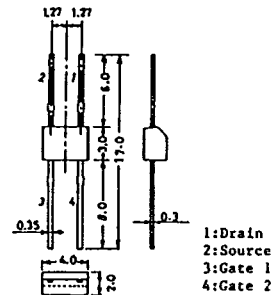
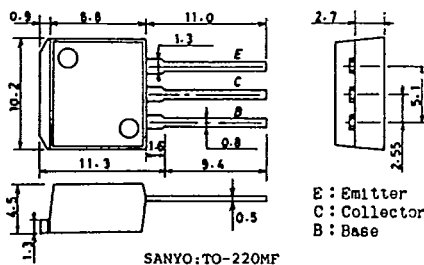
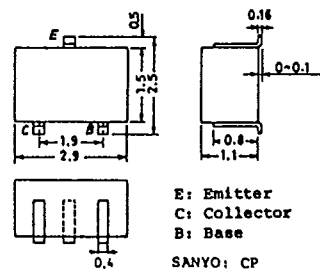
SANYO: TO126LP

Case Outline—[2050]
unit:mm

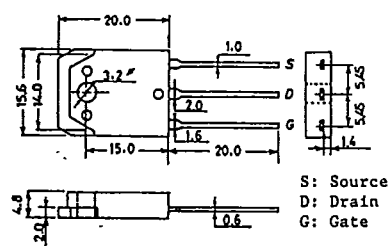
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Case Outline—[2045]
unit:mmCase Outline—[2051]
unit:mmCase Outline—[2046]
unit:mmCase Outline—[2052A]
unit:mm

Case Outline—[2048] unit:mm

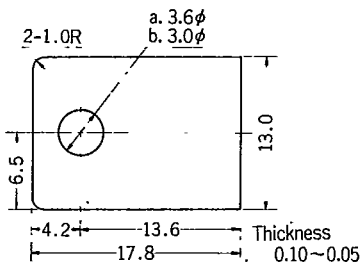
Case Outline—[2053]
unit:mmCase Outline—[2049]
unit:mmCase Outline—[2054]
unit:mm

Case Outline—[2056] unit:mm



SANYO: TO3PB

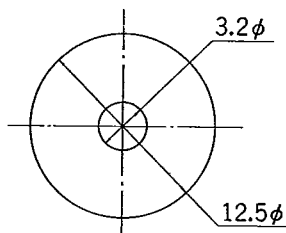
Case Outline—[0008] unit:mm

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

SANYO

Case Outline—[0004] unit:mm

unit:mm

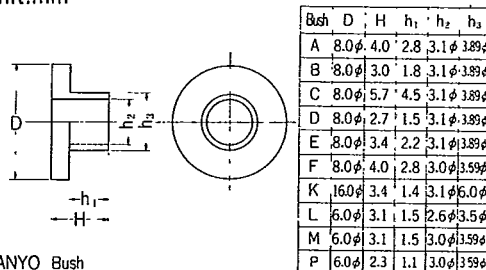


SANYO IS-126

Thickness : 0.075

Case Outline—[0009] unit:mm

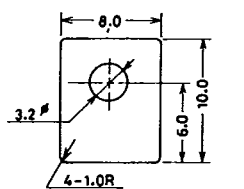
unit:mm



SANYO Bush

Case Outline—[0005] unit:mm

unit:mm

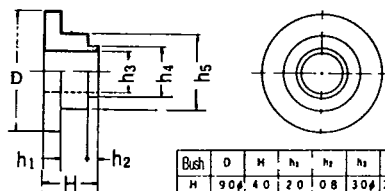


Thickness : 0.075

SANYO IS-126A Mica

Case Outline—[0010] unit:mm

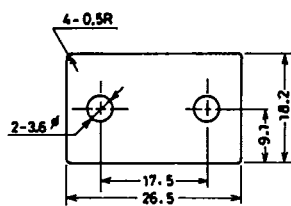
unit:mm



SANYO Bush

Case Outline—[0006] unit:mm

unit:mm

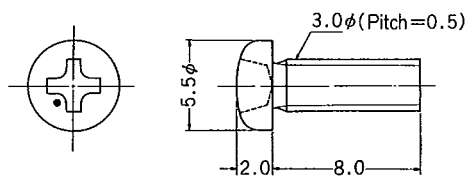


Thickness : 0.05~0.1

SANYO IS-20MA Mica

Case Outline—[0011] unit:mm

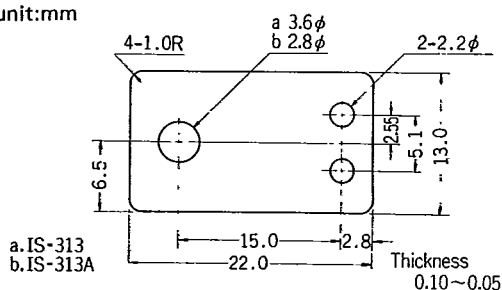
unit:mm



JIS No. B1111 M3×0.5

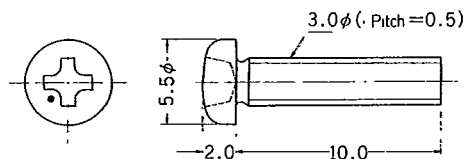
Case Outline—[0007] unit:mm

unit:mm



Case Outline—[0012] unit:mm

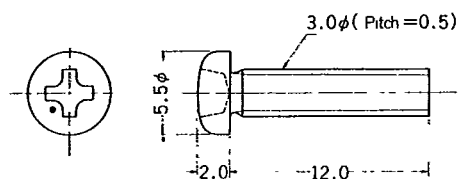
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JIS No. B1111 M3×0.5

Case Outline—[0013]

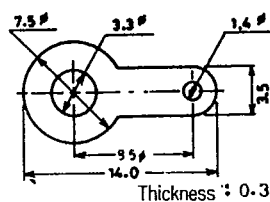
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0018]

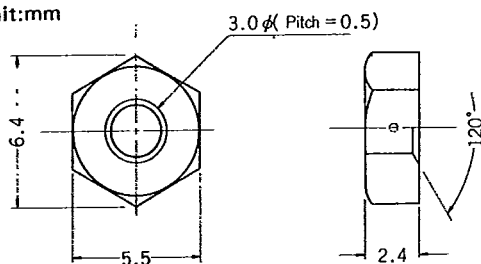
unit:mm



SANYO Lug 1.4

Case Outline—[0014]

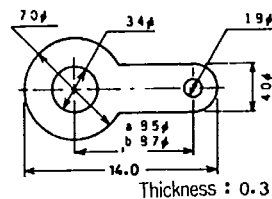
unit:mm



JIS No. B1181 M3×0.5

Case Outline—[0019]

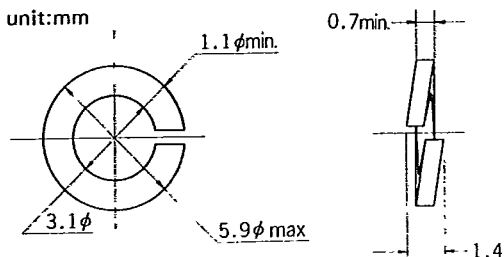
unit:mm



SANYO Lug 1.8φ

Case Outline—[0015]

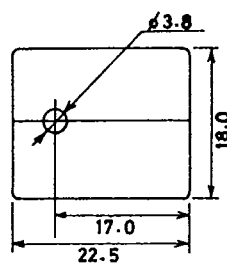
unit:mm



JIS No. B 1251 Spring washer (M3)

Case Outline—[0020]

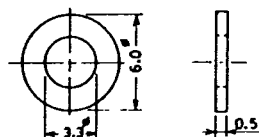
unit:mm



SANYO IS-3MP Mica

Case Outline—[0016]

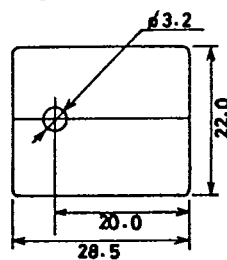
unit:mm



JIS No. B1252 Flat washer

Case Outline—[0021]

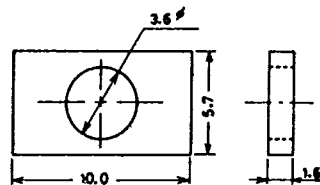
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SANYO IS-MPC Mica

Case Outline—[0017]

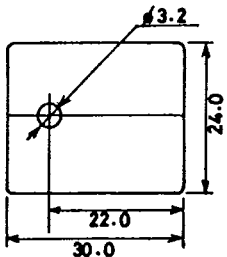
unit:mm



JIS No. G3141 Rectangular washer

Case Outline—[0022]

unit:mm



SANYO IS-3PBL Mica