

2SB559

2009A

PNP/NPN Epitaxial Planar
Silicon Transistors

T-33-17

2SD439

Low Frequency Power Amp, Medium Speed Switching Applications

©372E

Features

- Large allowable collector dissipation and wide ASO.
- Low saturation voltage and good linearity of h_{FE} .
- Suited for use in output stage of low-voltage high-output ($P_o=2W/V_{CC}=4.5V$) AF amp.

(): 2SB559

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

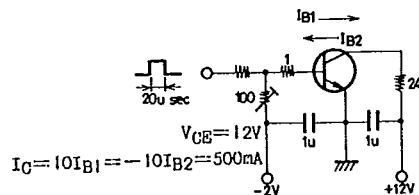
			unit
Collector to Base Voltage	V_{CBO}	(-)20	V
Collector to Emitter Voltage	V_{CEO}	(-)18	V
Emitter to Base Voltage	V_{EBO}	(-)5	V
Collector Current	I_C	(-)1.2	A
Peak Collector Current	i_{cp}	(-)2.0	A
Collector Dissipation	P_C	1	W
		8	W
		150	$^\circ C$
Junction Temperature	T_j		
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

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

			min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)20			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)18			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)15V, I_E=0$			(-)1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			(-)1	μA
DC Current Gain	$h_{FE}(1)$	$V_{CE}=(-)2V, I_C=(-)500mA$		60*	320*	
	$h_{FE}(2)$	$V_{CE}=(-)2V, I_C=(-)1.5A_{(pulse)}$		(40)50		
Gain Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$		150		MHz
Collector Capacitance	c_{ob}	$V_{CB}=(-)10V, f=1MHz$		(30)20		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$	(-0.35)	(-0.7)		V
			0.25	0.5		V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$	(-)0.85	(-)1.2		V
Turn-ON Time	t_{on}	See specified Test Circuit.		50		ns
Storage Time	t_{stg}	"		(60)70		ns
Fall Time	t_f	"		200		ns

* The 2SB559/2SD439 are classified by h_{FE} at 500mA.

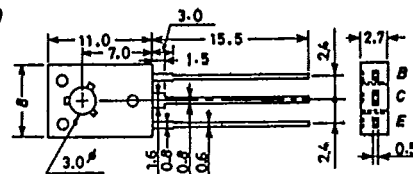
60	D	120	100	E	200	160	F	320
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Switching Time Test Circuit

(For PNP, the polarity is reversed.)

Case Outline 2009A

(unit:mm)



JEDEC: TO-126

B: Base
C: Collector
E: Emitter

For details, refer to the description of the 2SD439.

3267AT/3085MY, TS No. 372-1/4

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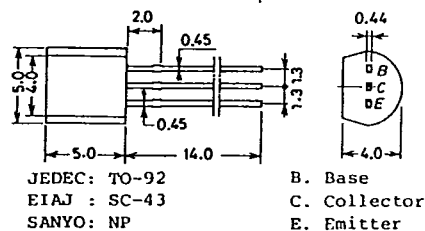
T-91-20

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.

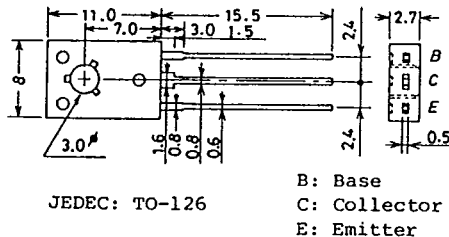
Case Outline—[2003A]

unit:mm



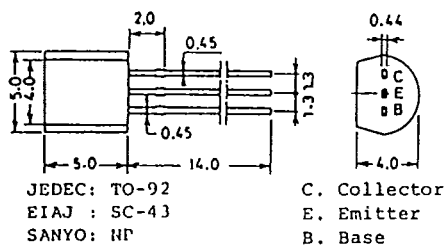
Case Outline—[2009A]

unit:mm



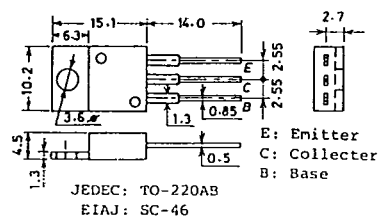
Case Outline—[2004A]

unit:mm



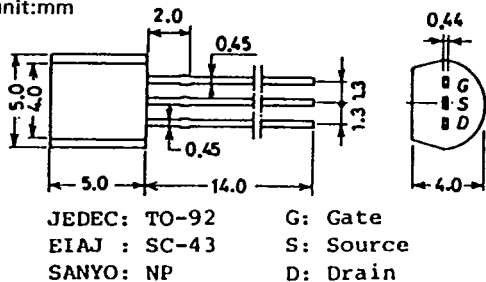
Case Outline—[2010A]

unit:mm



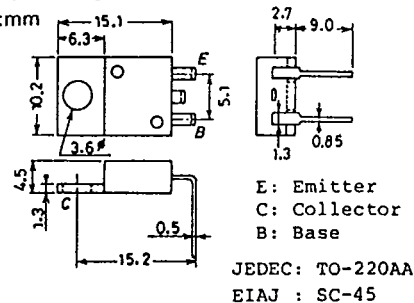
Case Outline—[2005A]

unit:mm



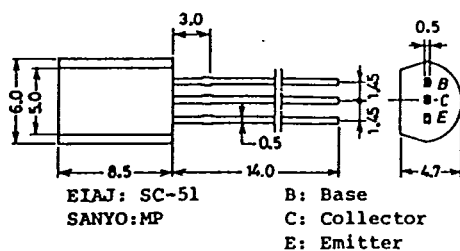
Case Outline—[2012]

unit:mm



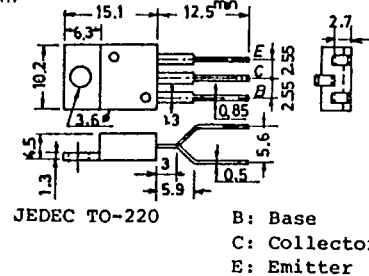
Case Outline—[2006A]

unit:mm



Case Outline—[2013]

unit:mm



EIAI TC-3, TH-3
JEDEC. TO-3

C:Collector
E:Emitter
B:Base

G: Gate
S: Source
D: Drain

G: Gate
D: Drain
S: Source

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

D: Drain
G: Gate
S: Source

SANYO: DP6A

JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

D: Drain
G: Gate
S: Source

D: Drain
G: Gate
S: Source

SANYO: D26B

SANYO: TO3PB

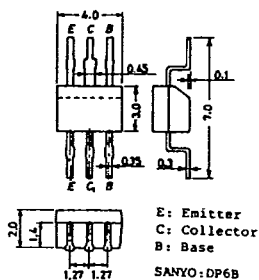
E: Emitter
C: Collector
B: Base
SANYO:DP6A

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

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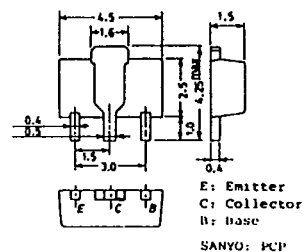
Case Outline—[2030A]

unit:mm



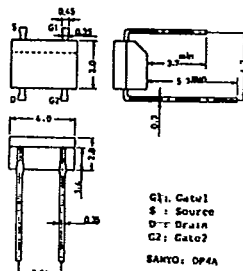
Case Outline—[2038]

unit:mm



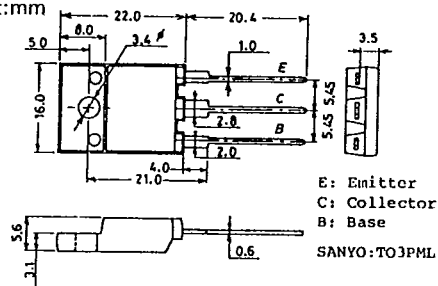
Case Outline—[2031A]

unit:mm



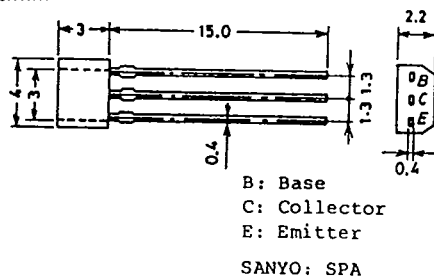
Case Outline—[2039]

unit:mm



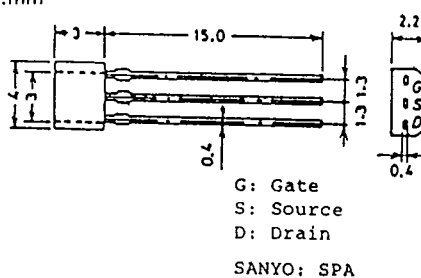
Case Outline—[2033]

unit:mm



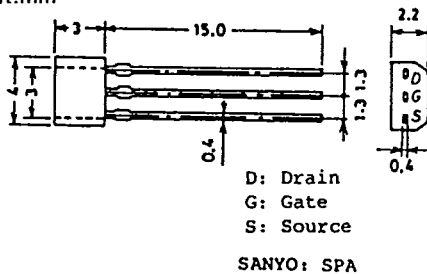
Case Outline—[2040]

unit:mm



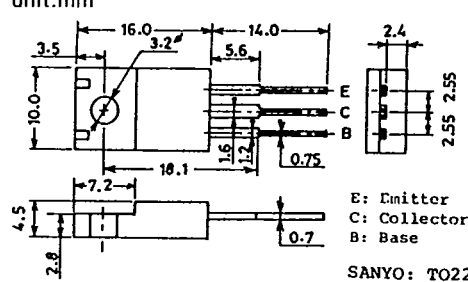
Case Outline—[2034]

unit:mm



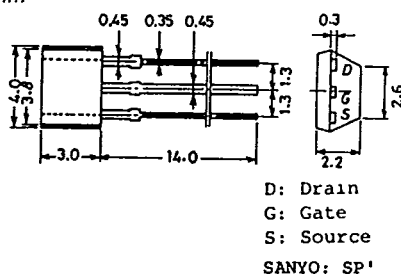
Case Outline—[2041]

unit:mm

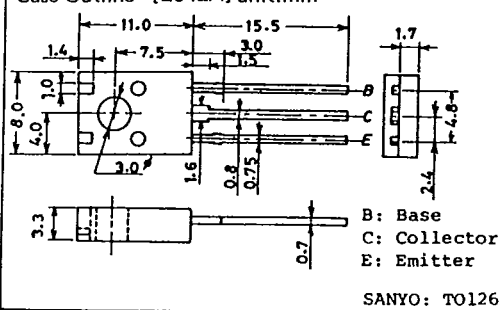


Case Outline—[2037]

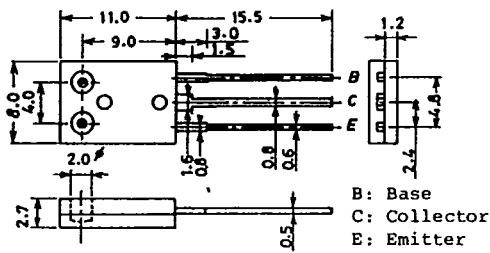
unit:mm



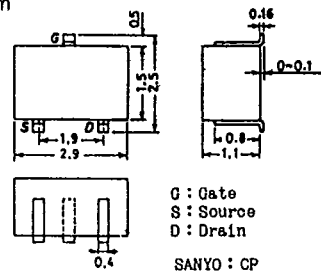
Case Outline—[2042A] unit:mm



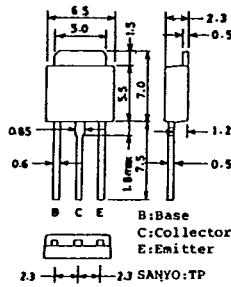
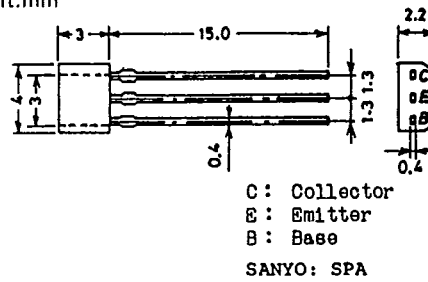
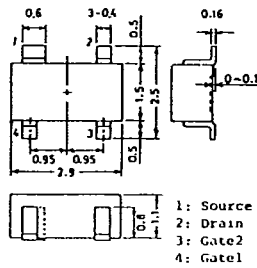
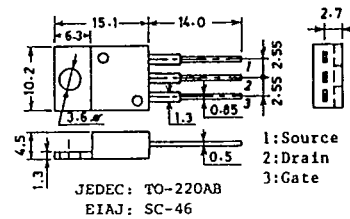
Case Outline—[2043A] unit:mm



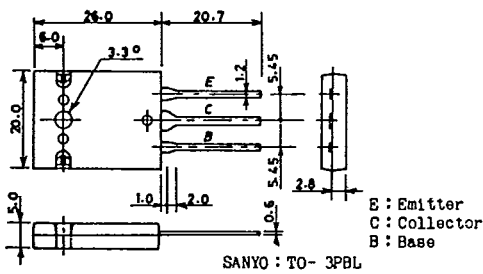
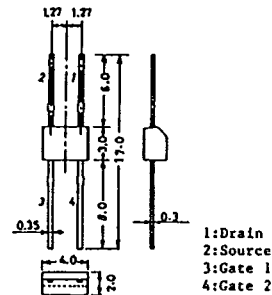
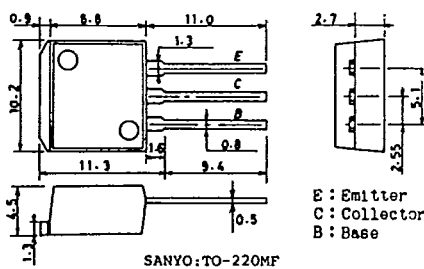
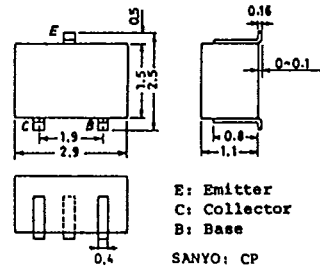
SANYO: TO126LP

Case Outline—[2050]
unit:mm

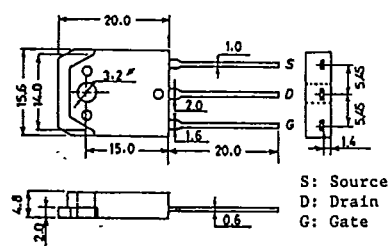
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Case Outline—[2045]
unit:mmCase Outline—[2051]
unit:mmCase Outline—[2046]
unit:mmCase Outline—[2052A]
unit:mm

Case Outline—[2048] unit:mm

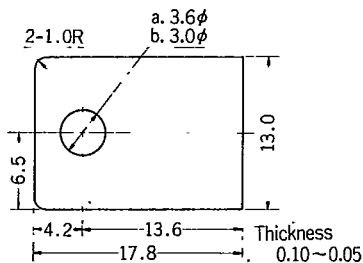
Case Outline—[2053]
unit:mmCase Outline—[2049]
unit:mmCase Outline—[2054]
unit:mm

Case Outline—[2056] unit:mm



SANYO: TO3PB

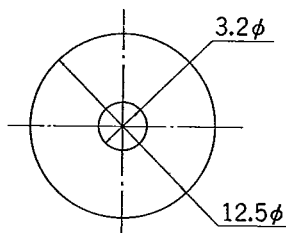
Case Outline—[0008] unit:mm

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

SANYO

Case Outline—[0004] unit:mm

unit:mm

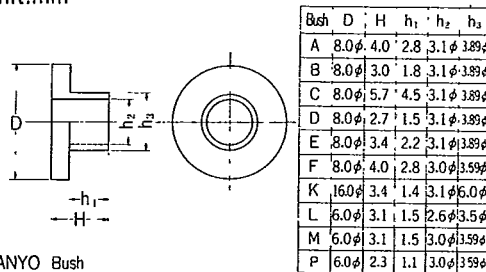


SANYO IS-126

Thickness : 0.075

Case Outline—[0009] unit:mm

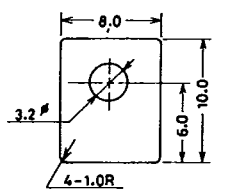
unit:mm



SANYO Bush

Case Outline—[0005] unit:mm

unit:mm

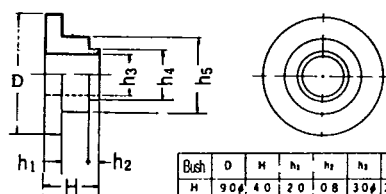


Thickness : 0.075

SANYO IS-126A Mica

Case Outline—[0010] unit:mm

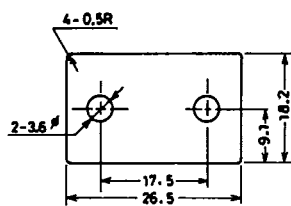
unit:mm



SANYO Bush

Case Outline—[0006] unit:mm

unit:mm

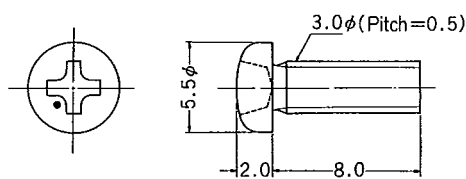


Thickness : 0.05~0.1

SANYO IS-20MA Mica

Case Outline—[0011] unit:mm

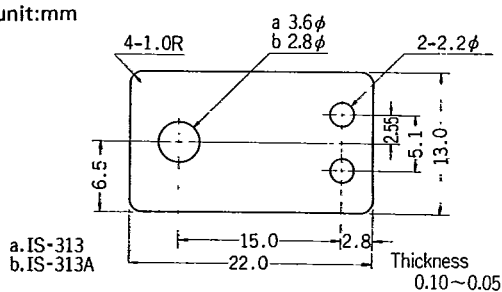
unit:mm



JIS No. B1111 M3×0.5

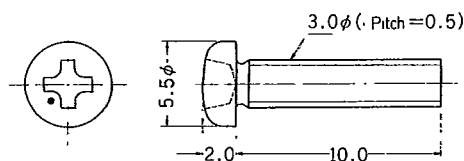
Case Outline—[0007] unit:mm

unit:mm



Case Outline—[0012] unit:mm

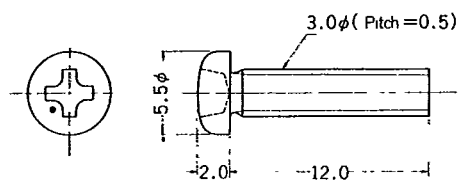
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JIS No. B1111 M3×0.5

Case Outline—[0013]

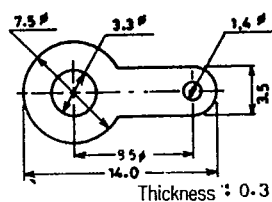
unit:mm



JIS No. B1111 M3×0.5

Case Outline—[0018]

unit:mm

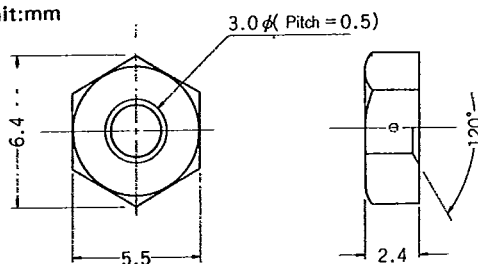


SANYO Lug 1.4

T=91-20

Case Outline—[0014]

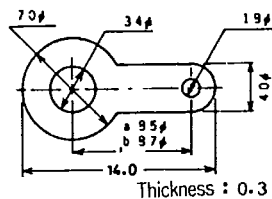
unit:mm



JIS No. B1181 M3×0.5

Case Outline—[0019]

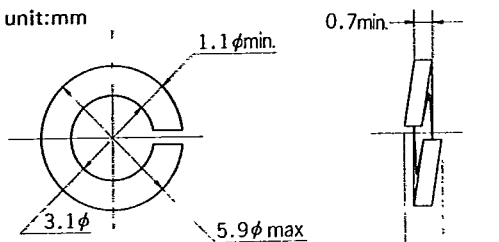
unit:mm



SANYO Lug 1.8φ

Case Outline—[0015]

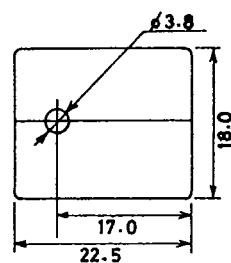
unit:mm



JIS No. B 1251 Spring washer (M3)

Case Outline—[0020]

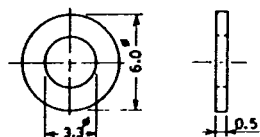
unit:mm



SANYO IS-3MP Mica

Case Outline—[0016]

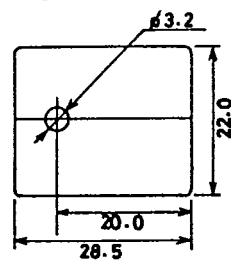
unit:mm



JIS No. B1252 Flat washer

Case Outline—[0021]

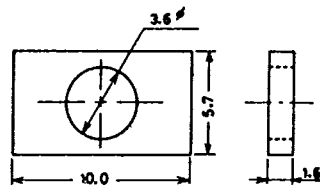
unit:mm



SANYO IS-MPC Mica

Case Outline—[0017]

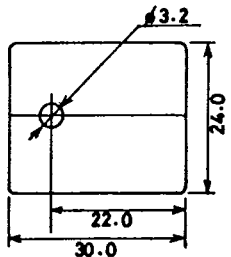
unit:mm



JIS No. G3141 Rectangular washer

Case Outline—[0022]

unit:mm



SANYO IS-3PBL Mica