

T-33-11

# 2SD1653



2039

NPN Triple Diffused Planar Silicon Transistor

## Color TV Horizontal Deflection Output Applications

©1751B

### 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 $T_a=25^\circ C$

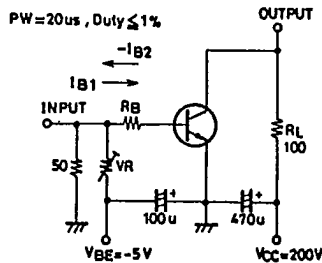
Parameter	Symbol	Value	unit
Collector to Base Voltage	$V_{CBO}$	1500	V
Collector to Emitter Voltage	$V_{CEO}$	800	V
Emitter to Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	2.5	A
Peak Collector Current	$i_{cp}$	10	A
Collector Dissipation	$P_C$	50	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage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

$T_C=25^\circ C$

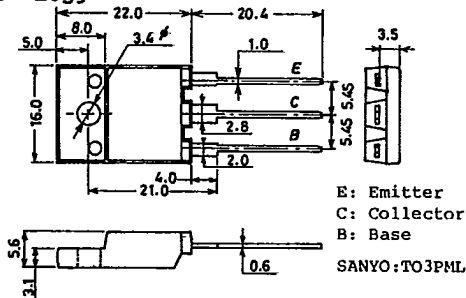
### Electrical Characteristics at $T_a=25^\circ C$

Parameter	Symbol	Conditions	min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=800V, I_E=0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			1	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	$V_{BE(sat)}$	$I_C=2.5A, I_B=0.8A$			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
Fall Time	$t_f$	$I_C=2A, I_{B1}=0.6A, I_{B2}=-1.2A$			0.4	$\mu s$

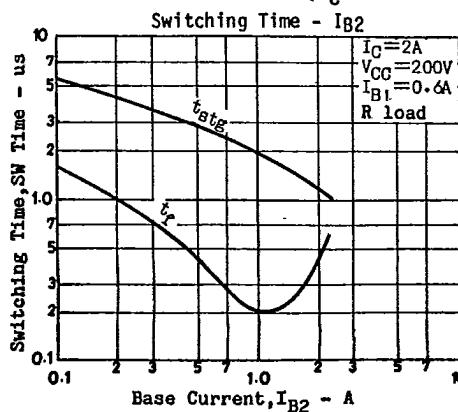
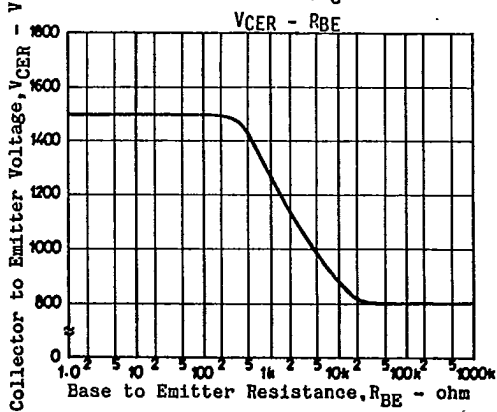
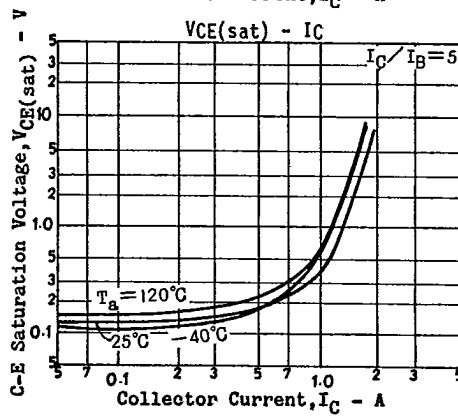
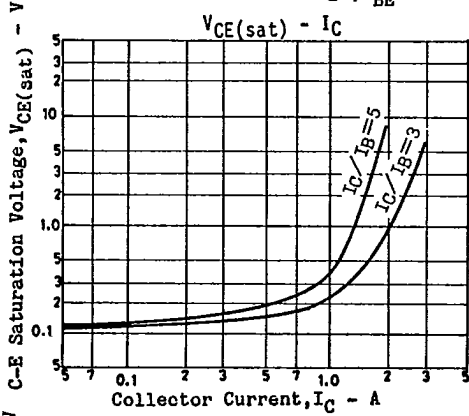
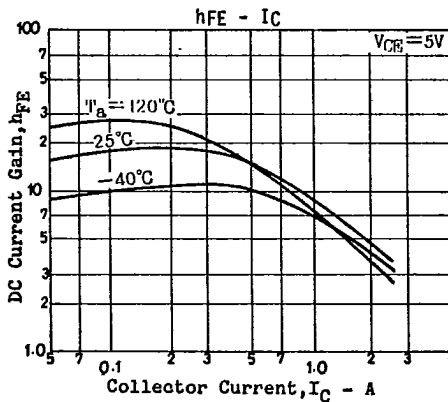
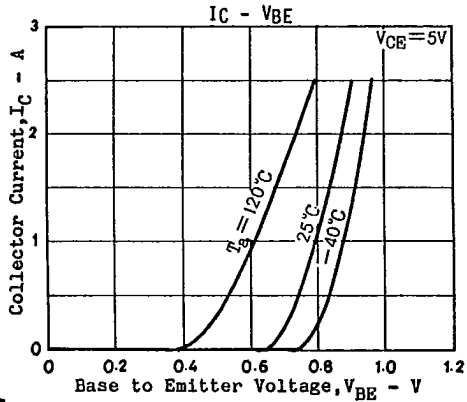
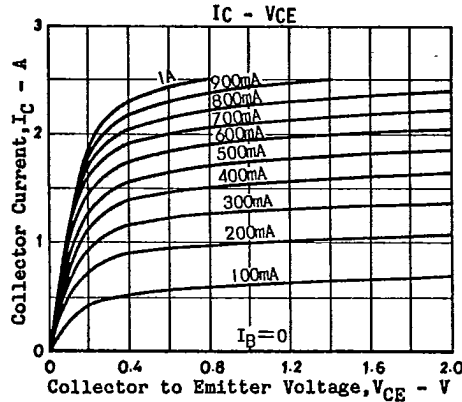
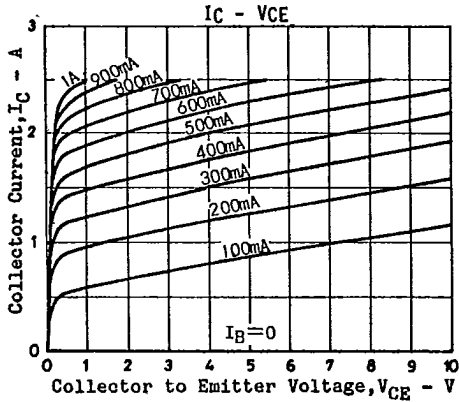
### Switching Time Test Circuit

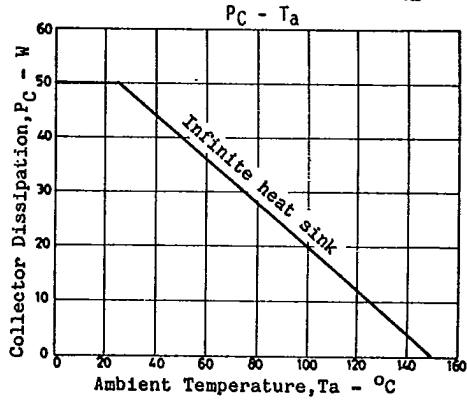
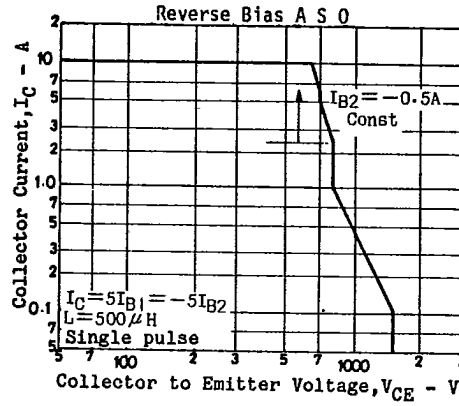
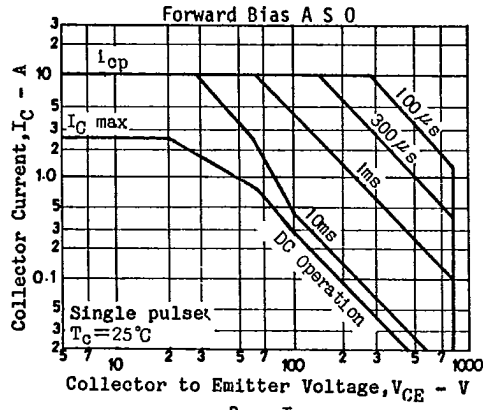


### Case Outline 2039 (unit:mm)



5277KI/D244KI, TS No. 1751-1/3

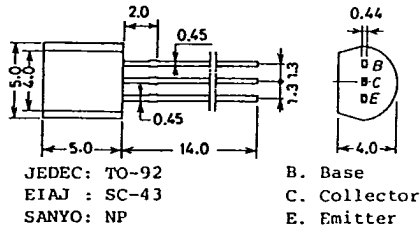




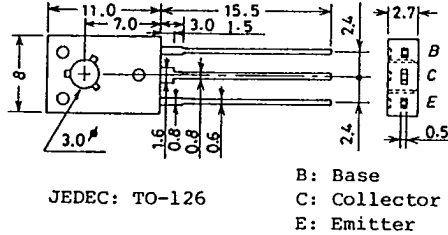
# CASE OUTLINES AND ATTACHMENTS

- 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.

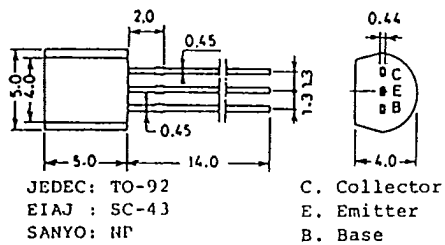
Case Outline-[2003A]  
unit:mm



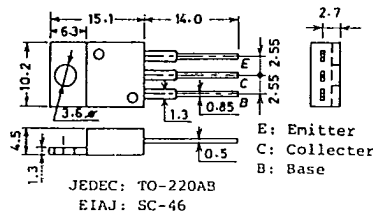
Case Outline-[2009A]  
unit:mm



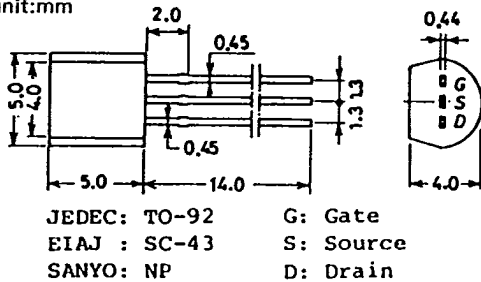
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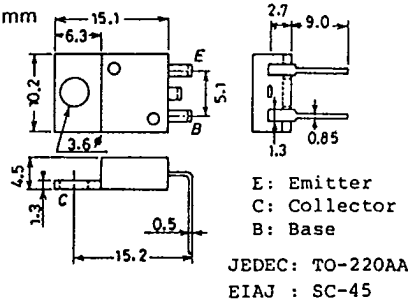
Case Outline-[2010A]  
unit:mm



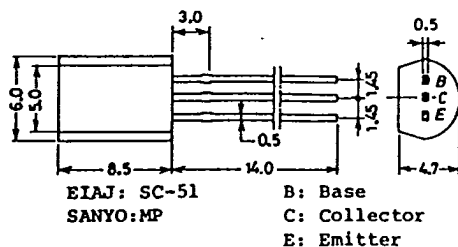
Case Outline-[2005A]  
unit:mm



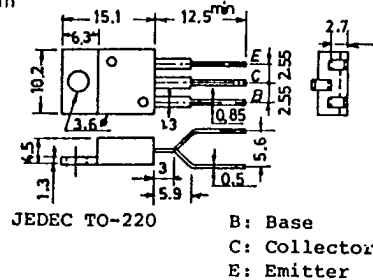
Case Outline-[2012]  
unit:mm

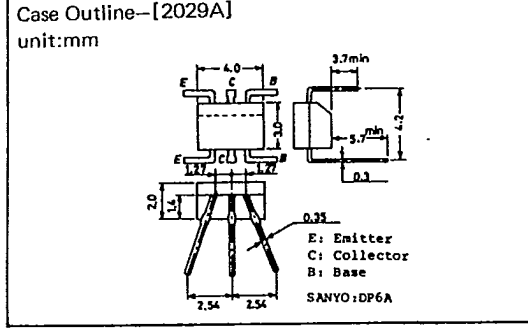
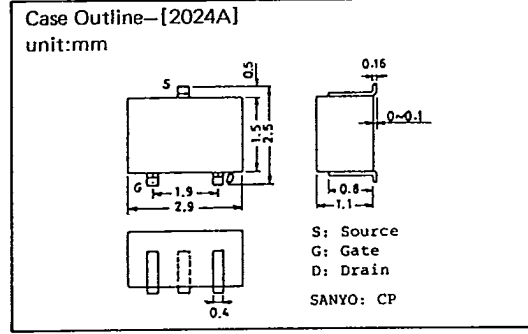
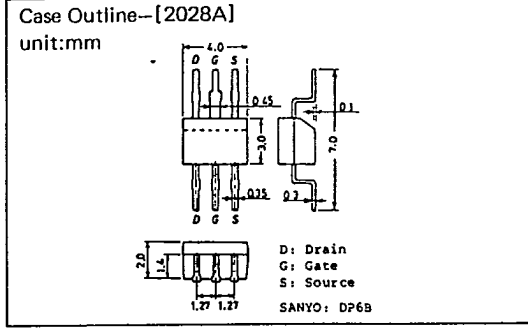
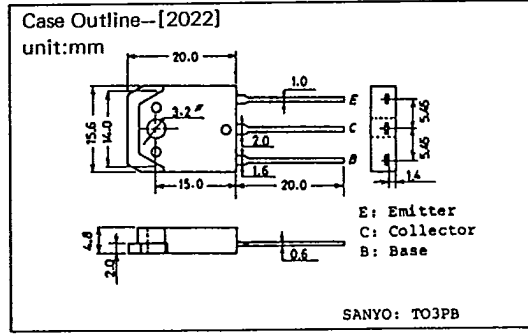
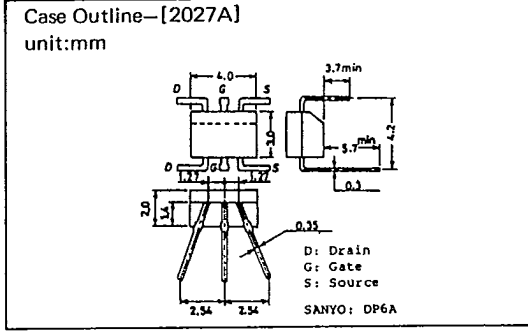
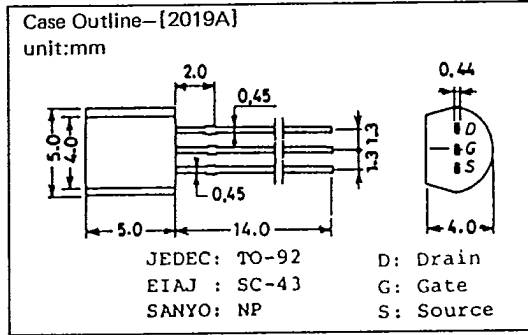
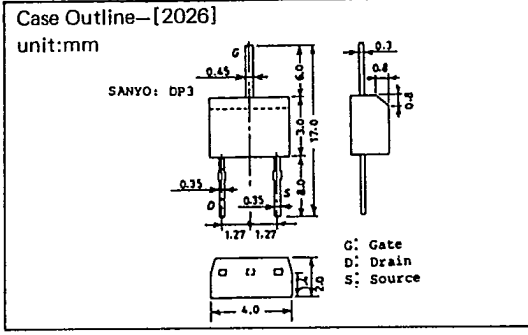
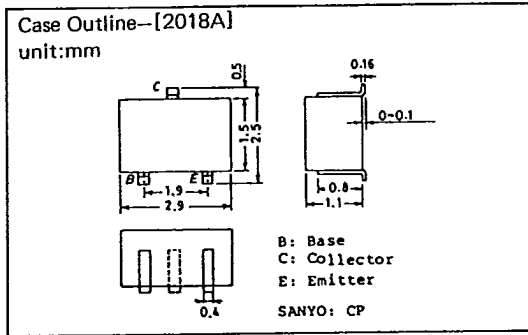
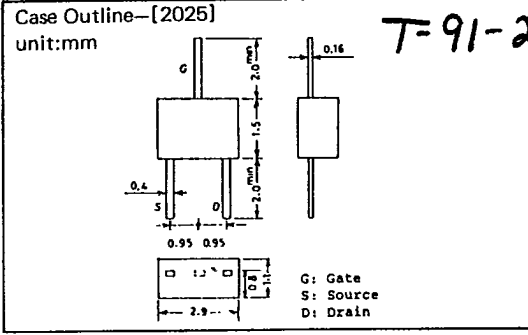
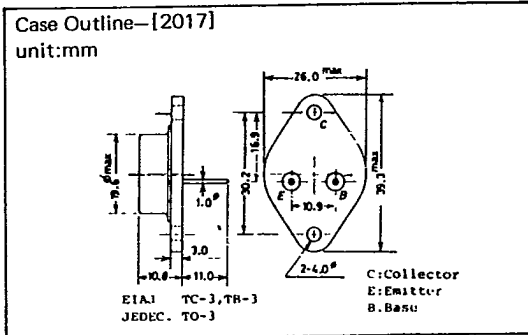


Case Outline-[2006A]  
unit:mm

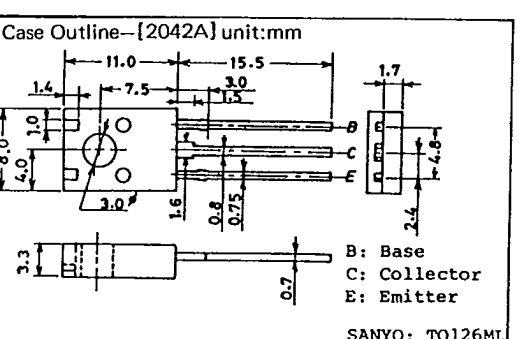
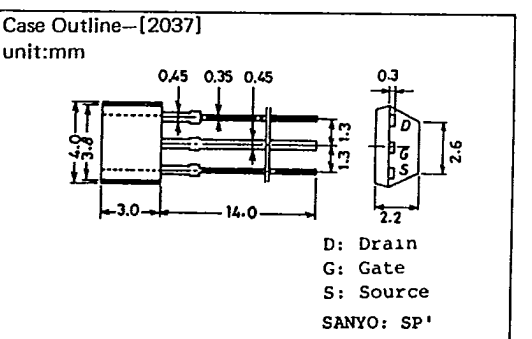
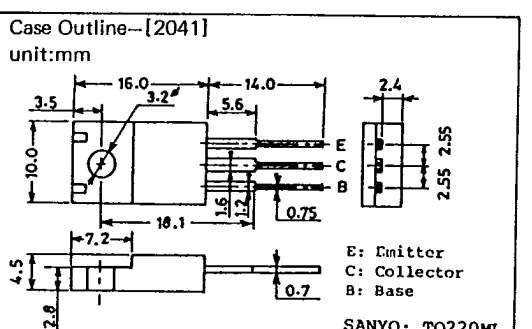
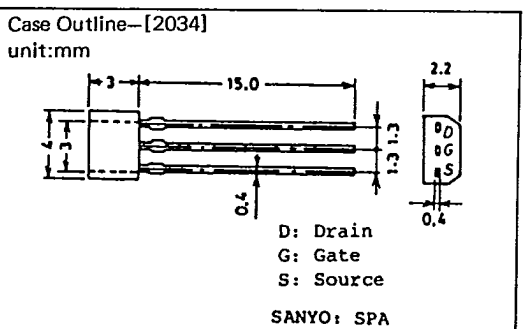
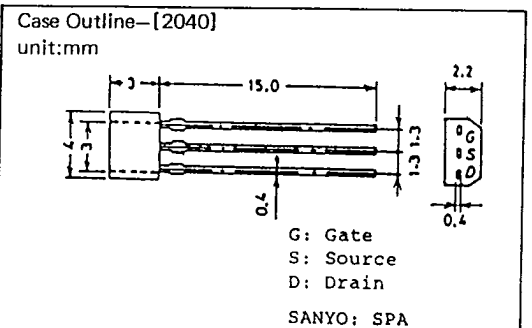
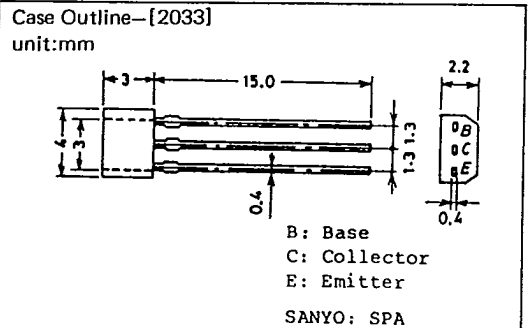
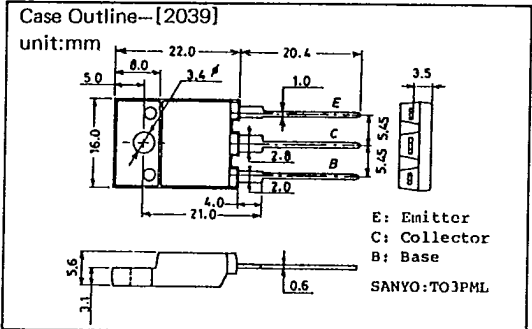
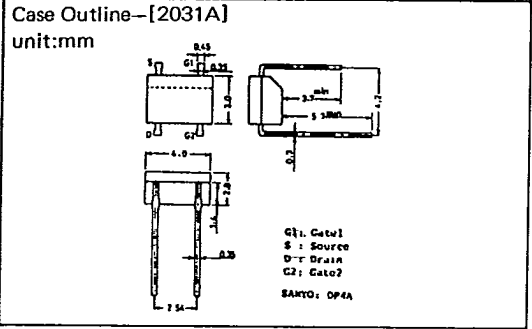
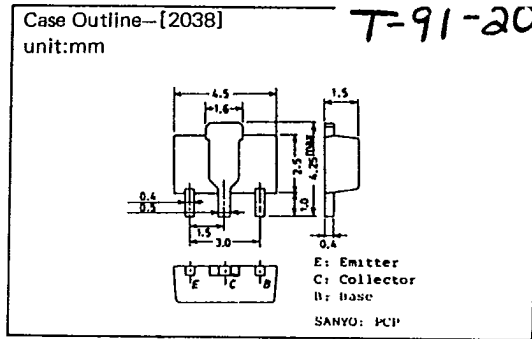
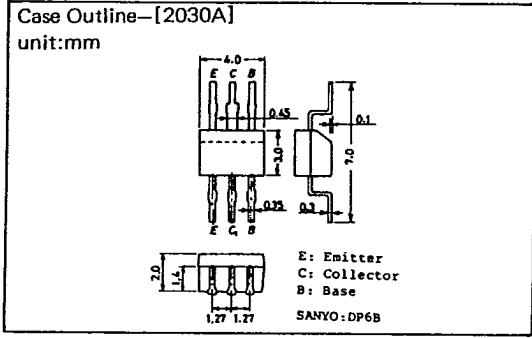


Case Outline-[2013]  
unit:mm

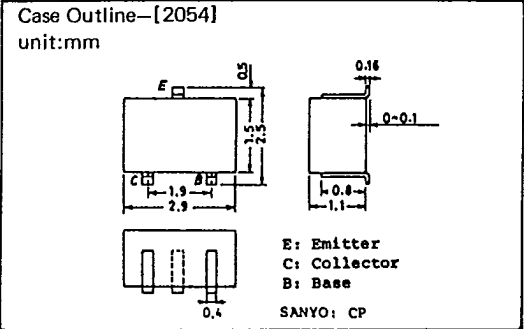
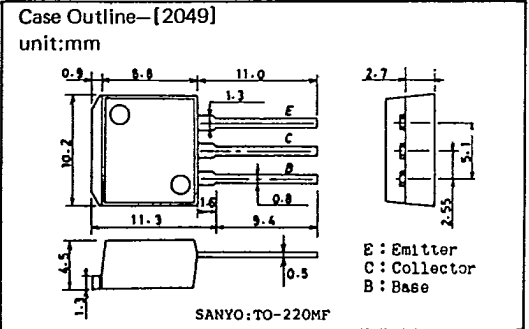
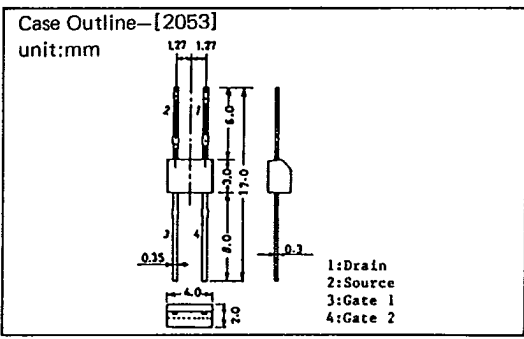
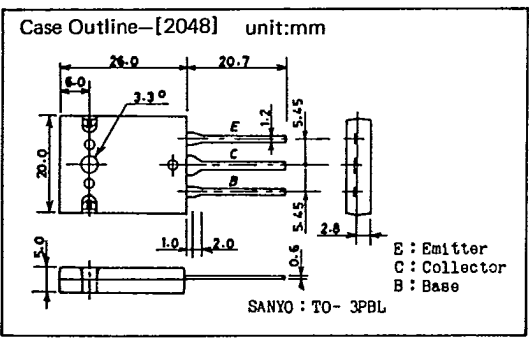
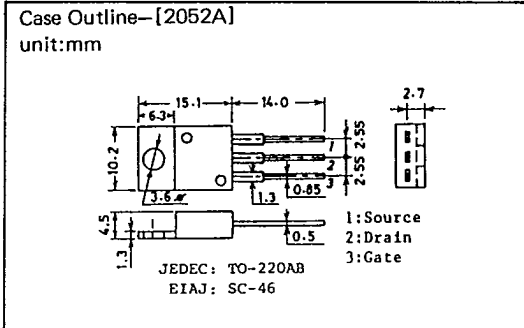
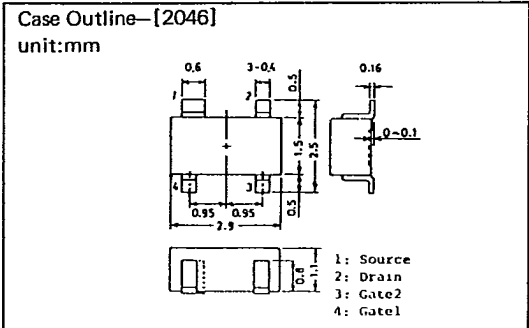
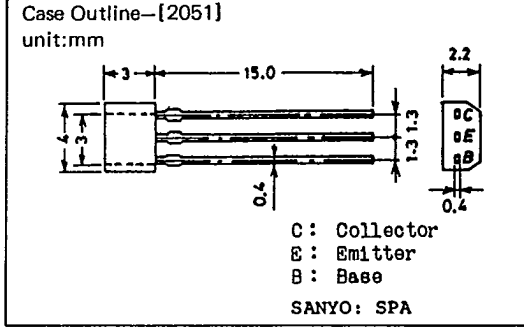
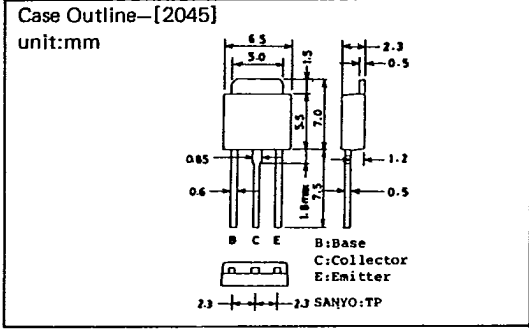
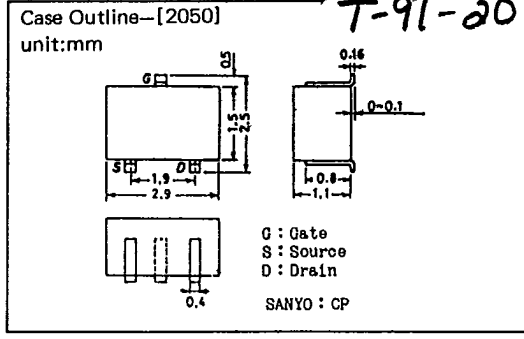
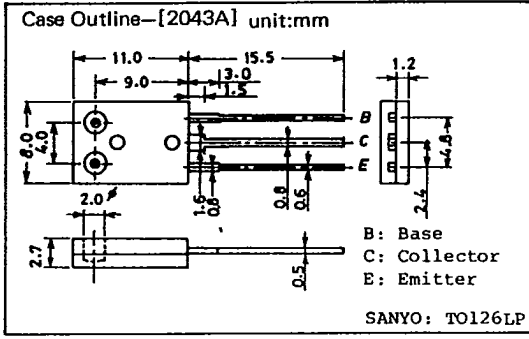


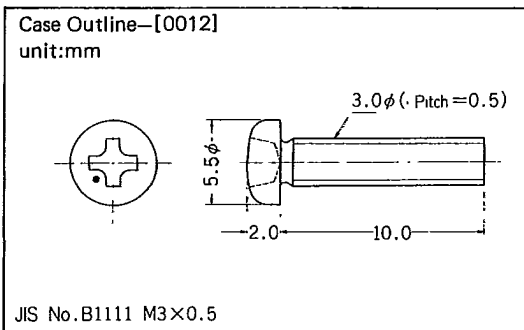
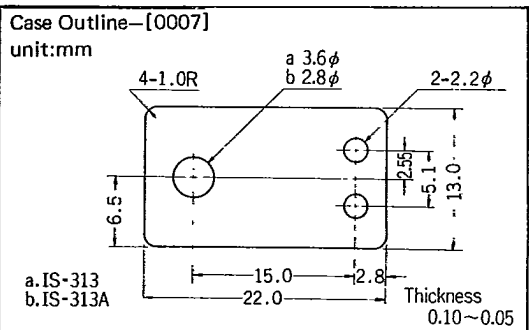
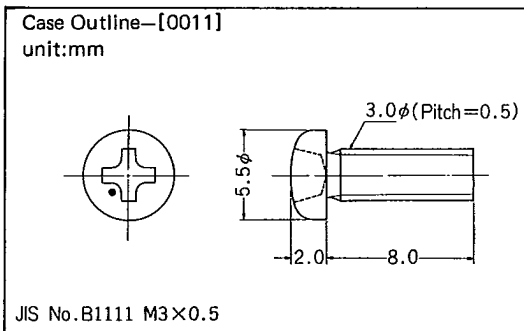
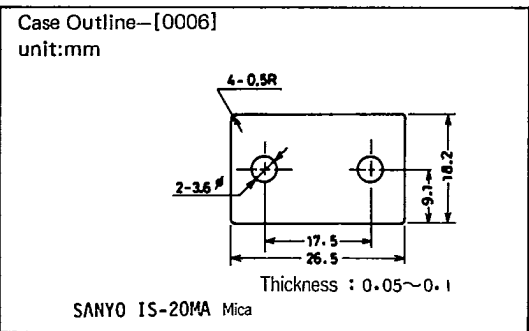
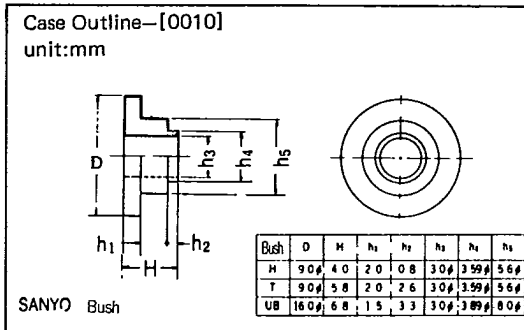
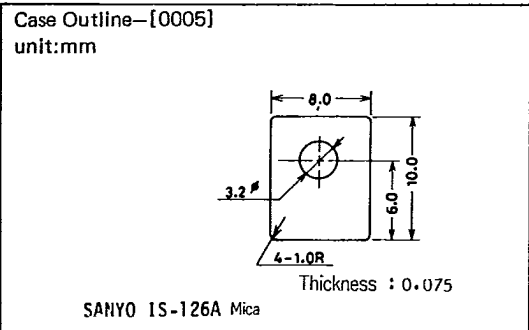
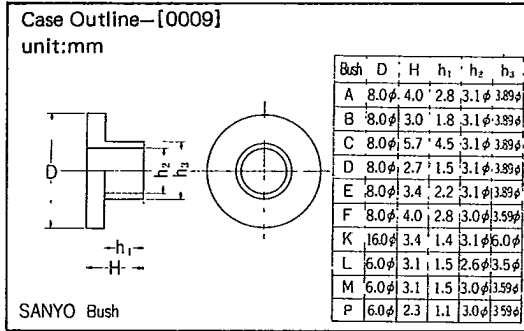
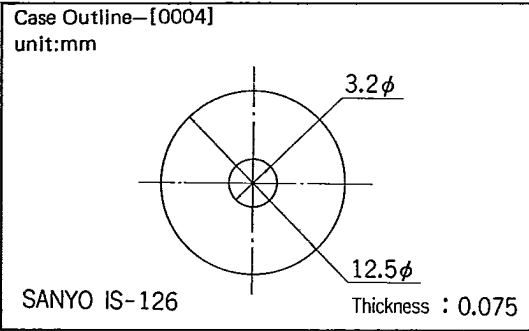
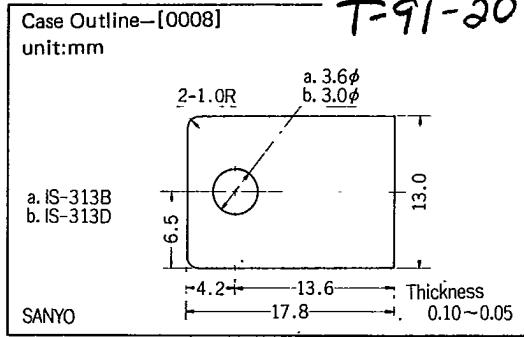
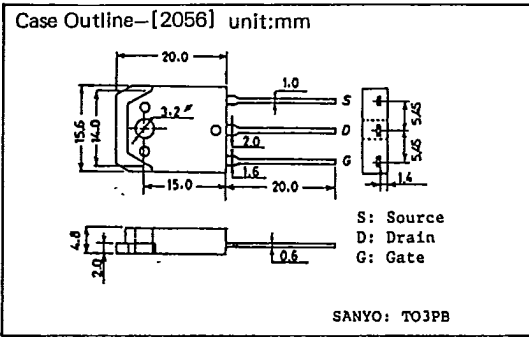


T-91-20



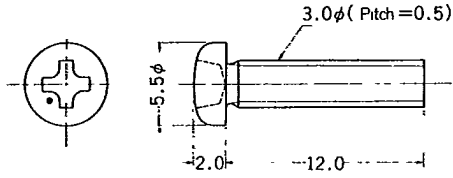
T-91-20





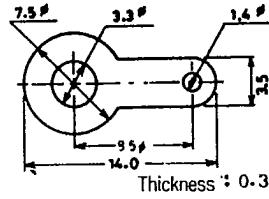


Case Outline-[0013]  
unit:mm



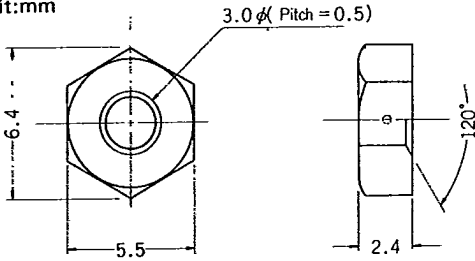
JIS No. B1111 M3×0.5

Case Outline-[0018]  
unit:mm



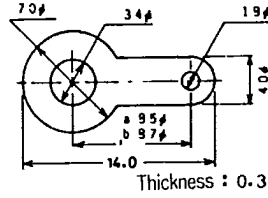
SANYO Lug 1.4

Case Outline-[0014]  
unit:mm



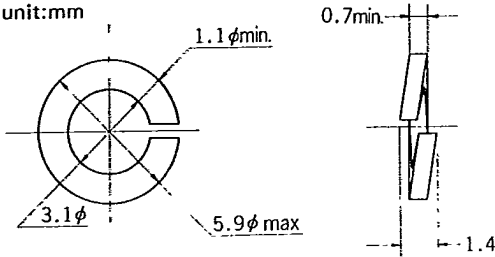
JIS No. B1181 M3×0.5

Case Outline-[0019]  
unit:mm



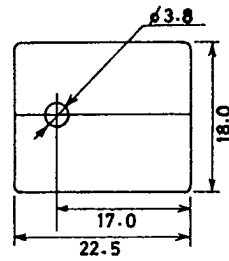
SANYO Lug 1.8φ

Case Outline-[0015]  
unit:mm



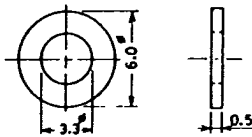
JIS No. B 1251 Spring washer (M3)

Case Outline-[0020]  
unit:mm



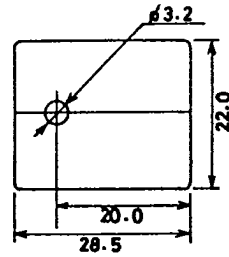
SANYO IS-3MP Mica

Case Outline-[0016]  
unit:mm



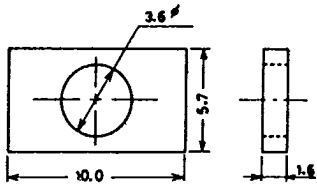
JIS No. B1252 Flat washer

Case Outline-[0021]  
unit:mm



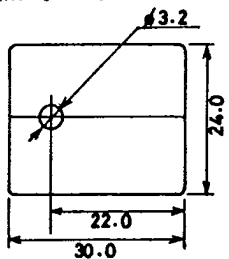
SANYO IS-MPC Mica

Case Outline-[0017]  
unit:mm



JIS No. G3141 Rectangular washer

Case Outline-[0022]  
unit:mm



SANYO IS-3PBL Mica