

<b>SANYO</b>	No.1857B	2SA1438
		PNP Epitaxial Planar Silicon Transistor High $h_{FE}$ , Low-Frequency General-Purpose Amp Applications

**Applications**

- . Voltage regulators, relay drivers, lamp drivers, electrical equipment

**Features**

- . Adoption of MBIT process
- . High DC current gain ( $h_{FE}=500$  to 1200)
- . Large current capacity
- . Low collector-to-emitter saturation voltage ( $V_{CE(sat)} \leq 0.5V$  max)
- . High  $V_{EBO}$  ( $V_{EBO} \geq 15V$ )

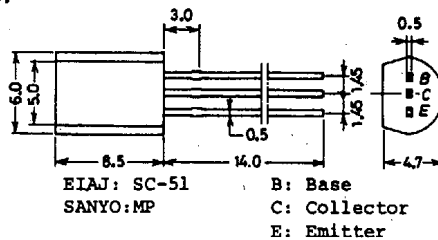
**Absolute Maximum Ratings at  $T_a=25^\circ C$**

			unit
Collector to Base Voltage	$V_{CB0}$	-30	V
Collector to Emitter Voltage	$V_{CEO}$	-25	V
Emitter to Base Voltage	$V_{EBO}$	-15	V
Collector Current	$I_C$	-1.2	A
Collector Current(Pulse)	$I_{CP}$	-2	A
Collector Dissipation	$P_C$	1	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to 150	$^\circ C$

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

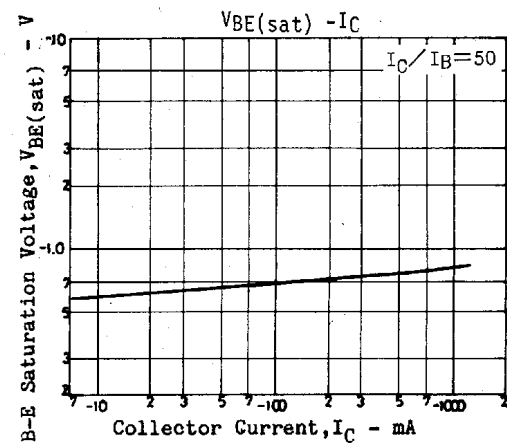
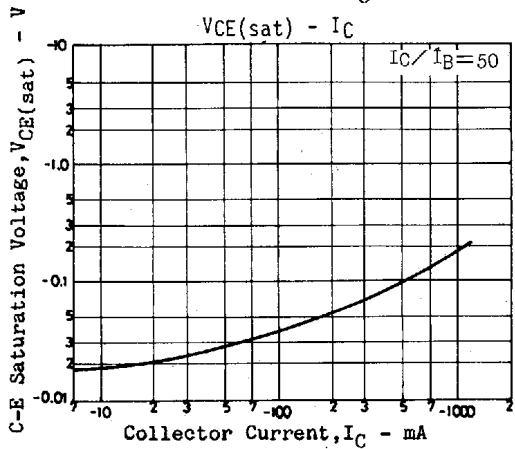
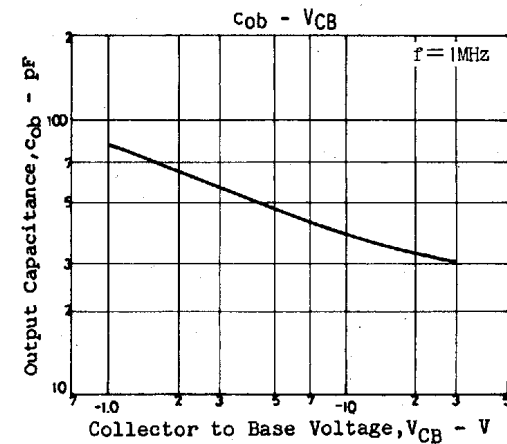
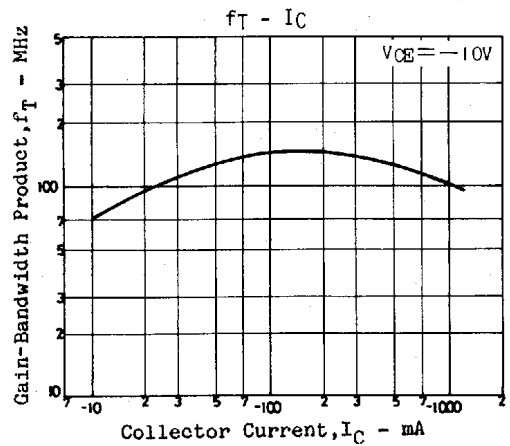
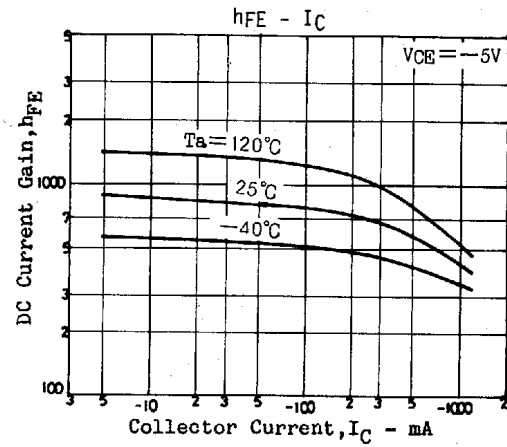
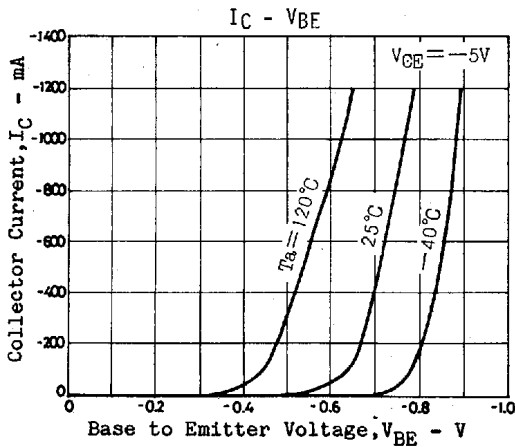
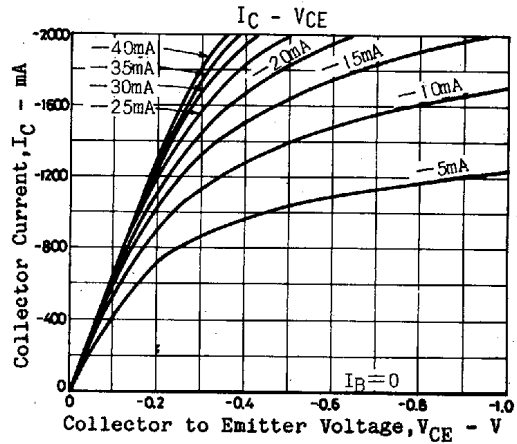
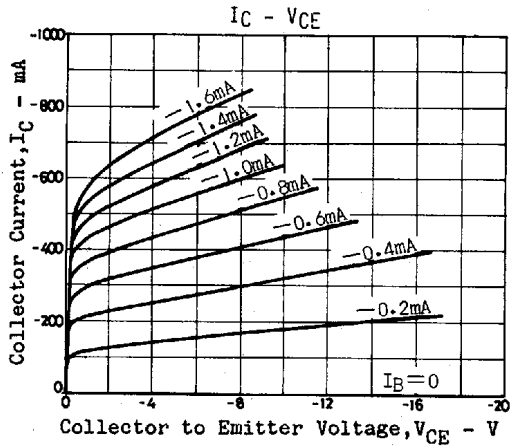
			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-20V, I_E=0$			-1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-10V, I_C=0$			-1	$\mu A$
DC Current Gain	$h_{FE}(1)$	$V_{CE}=-5V, I_C=-100mA$	500	800	1200	
	$h_{FE}(2)$	$V_{CE}=-5V, I_C=-10mA$	350			
Gain-Bandwidth Product	$f_T$	$V_{CE}=-10V, I_C=-50mA$		130		MHz
Output Capacitance	$c_{ob}$	$V_{CB}=-10V, f=1MHz$		40		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-500mA, I_B=-10mA$	-0.1	-0.5	-1.1	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-500mA, I_B=-10mA$				V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-30			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1mA, R_{BE}=\infty$	-25			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-15			V

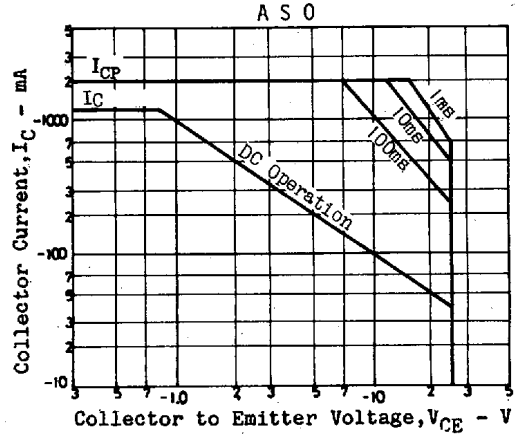
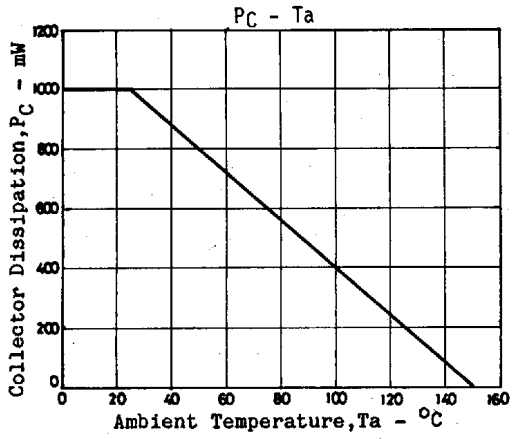
**Case Outline 2006A**  
(unit:mm)



Specifications and information herein are subject to change without notice.

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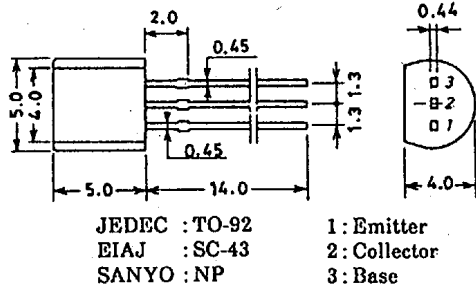




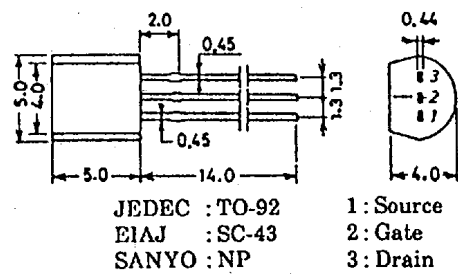
# CASE OUTLINES OF LEAD FORMED SMALL SIGNAL TRANSISTORS

- All of Sanyo lead formed small signal 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.

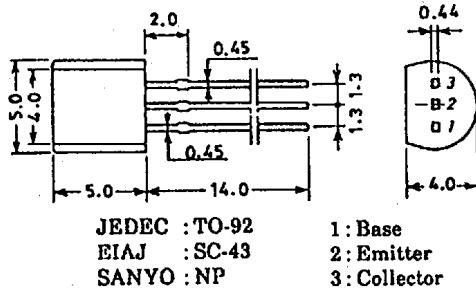
Case Outline 2003A/2003B (unit : mm)



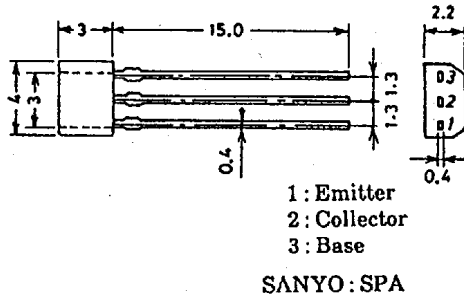
Case Outline 2019A/2019B (unit : mm)



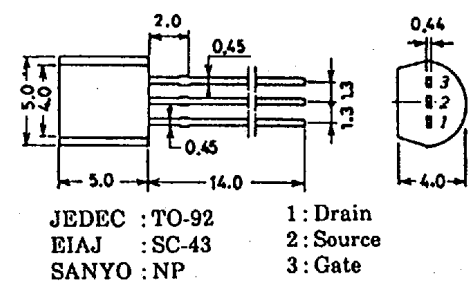
Case Outline 2004A (unit : mm)



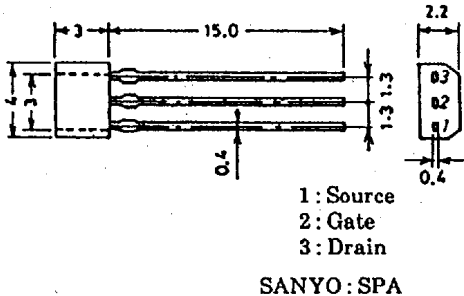
Case Outline 2033 (unit : mm)



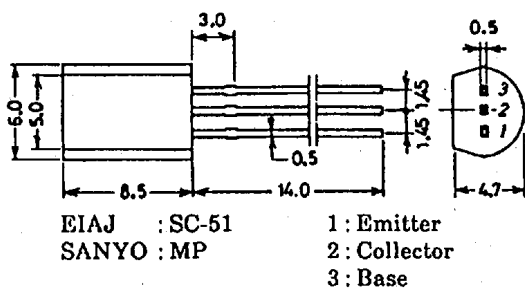
Case Outline 2005A (unit : mm)



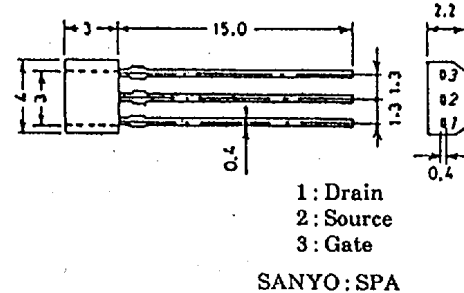
Case Outline 2034/2034A (unit : mm)



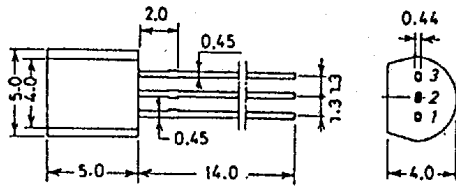
Case Outline 2006A (unit : mm)



Case Outline 2040 (unit : mm)



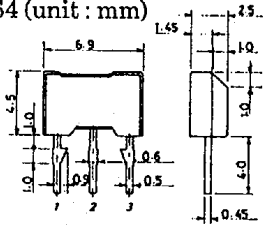
Case Outline 2061 (unit : mm)



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

1 : Emitter  
 2 : Base  
 3 : Collector

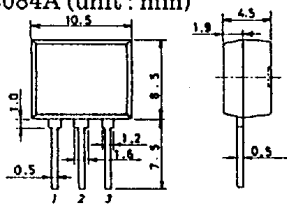
Case Outline 2064 (unit : mm)



1 : Emitter  
 2 : Collector  
 3 : Base

SANYO : NMP

Case Outline 2084A (unit : mm)



1 : Emitter  
 2 : Collector  
 3 : Base

SANYO : FLP