

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} ($V_{EBO} \geq 15V$)

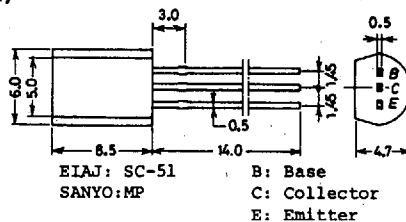
Absolute Maximum Ratings at $T_a=25^\circ C$

			unit
Collector to Base Voltage	V_{CBO}	-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 $T_a=25^\circ C$

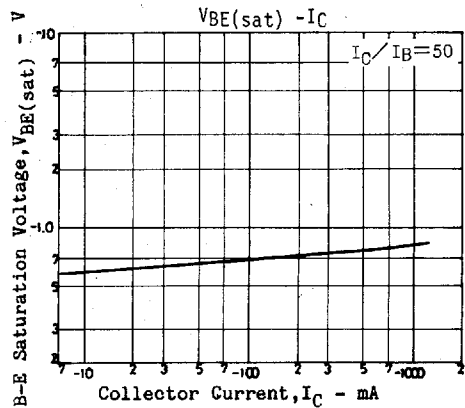
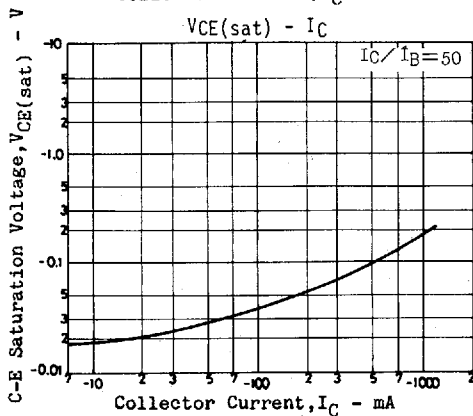
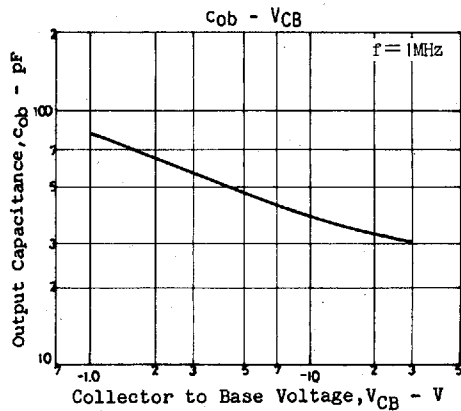
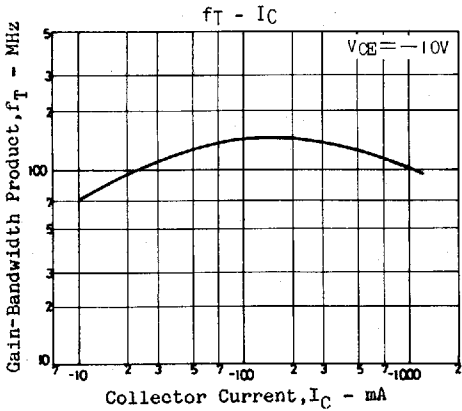
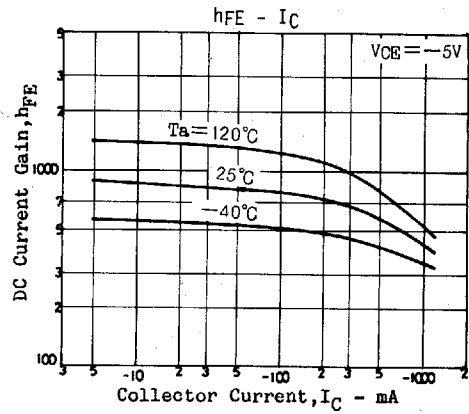
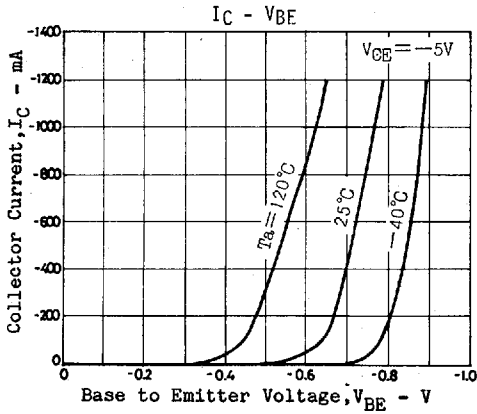
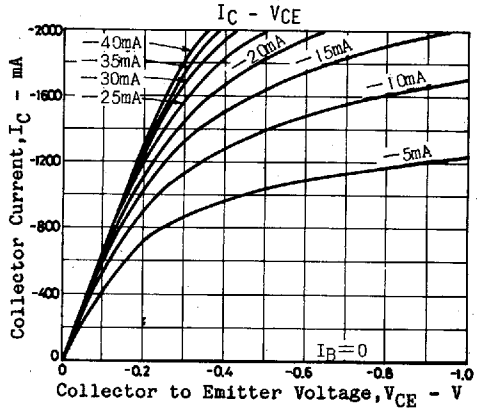
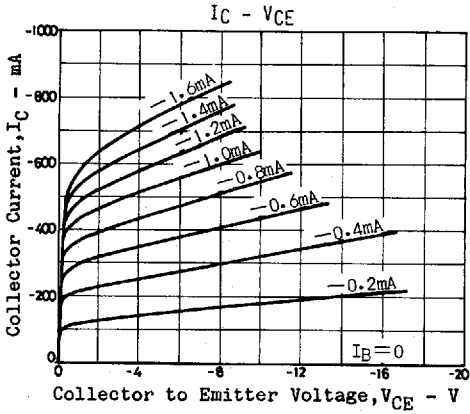
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB}=-20V, I_E=0$			-1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-10V, I_C=0$			-1	μA
DC Current Gain	$h_{FE}(1)$	$V_{CE}=-5V, I_C=-100mA$	500	800	1200	
	$h_{FE}(2)$	$V_{CE}=-5V, I_C=-10mA$	350			
Gain-Bandwidth Product	f_T	$V_{CE}=-10V, I_C=-50mA$		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		V
			-0.78	-1.1		
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

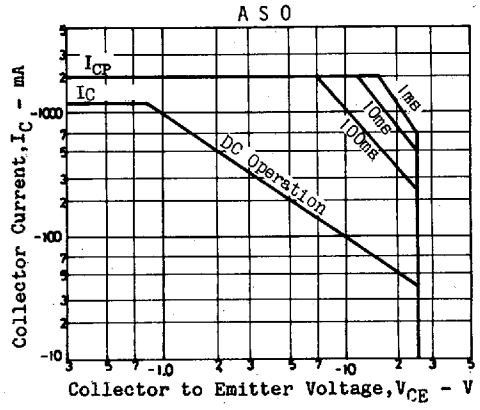
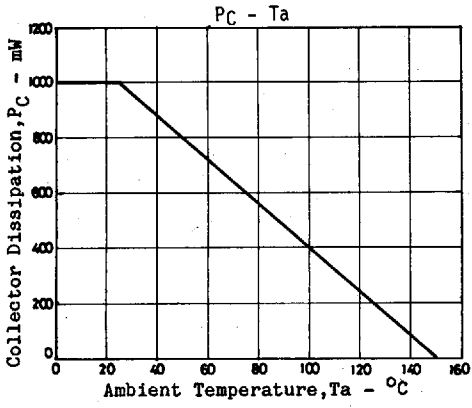
Case Outline 2006A
(unit:mm)



Specifications and information herein are subject to change without notice.

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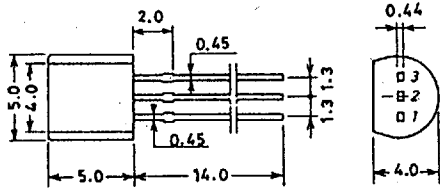




CASE OUTLINES OF LEAD FORMED SMALL SIGNAL TRANSISTORS

- 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.

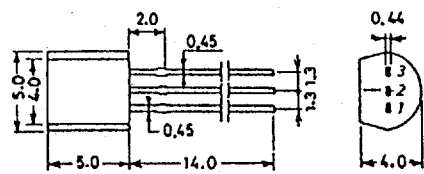
Case Outline 2003A/2003B (unit : mm)



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

1 : Emitter
2 : Collector
3 : Base

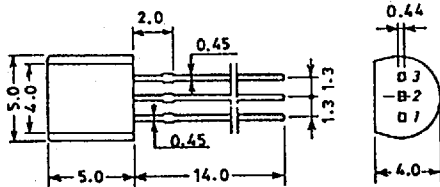
Case Outline 2019A/2019B (unit : mm)



JEDEC : TO-92
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SANYO : NP

1 : Source
2 : Gate
3 : Drain

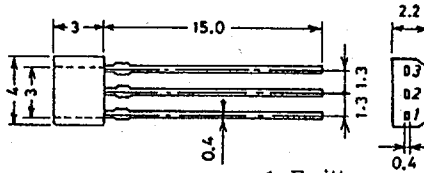
Case Outline 2004A (unit : mm)



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

1 : Base
2 : Emitter
3 : Collector

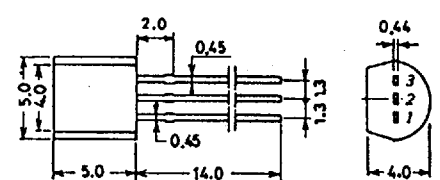
Case Outline 2033 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : SPA

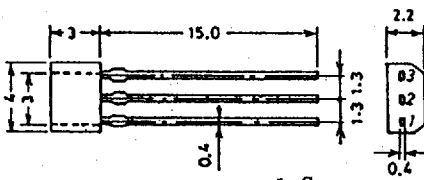
Case Outline 2005A (unit : mm)



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

1 : Drain
2 : Source
3 : Gate

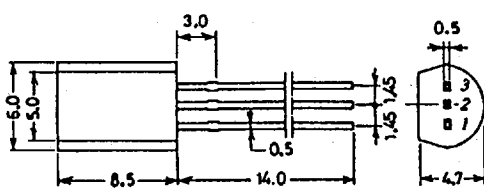
Case Outline 2034/2034A (unit : mm)



1 : Source
2 : Gate
3 : Drain

SANYO : SPA

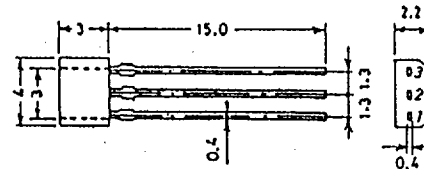
Case Outline 2006A (unit : mm)



EIAJ : SC-51
SANYO : MP

1 : Emitter
2 : Collector
3 : Base

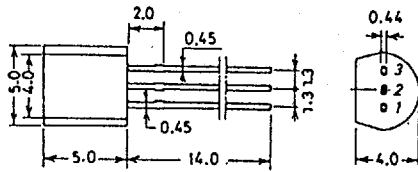
Case Outline 2040 (unit : mm)



1 : Drain
2 : Source
3 : Gate

SANYO : SPA

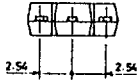
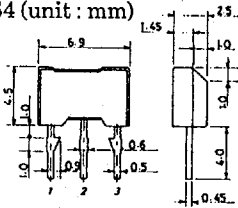
Case Outline 2061 (unit : mm)



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

1 : Emitter
2 : Base
3 : Collector

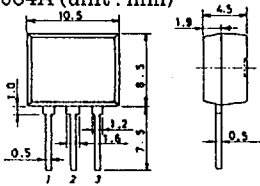
Case Outline 2064 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : NMP

Case Outline 2084A (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : FLP