Ordering number: EN 199J

No.199J

# 2SB544/2SD400

PNP/NPN Epitaxial Planar Silicon Transistors

## Low-Frequency Power Amp, Electronic Governor Applications

( ) : 2SB544

**Absolute Maximum Ratings** at Ta = 25°C

| | | | unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | (−)25 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | (−)25 | V |
| Emitter to Base Voltage | $V_{EBO}$ | (−)5 | V |
| Collector Current | $I_C$ | (−)1 | A |
| Collector Current(Pulse) | $I_{CP}$ | (−)2 | A |
| Collector Dissipation | $P_C$ | 900 | mW |
| Junction Temperature | Tj | 150 | °C |
| Storage Temperature | Tstg | −55 to +150 | °C |

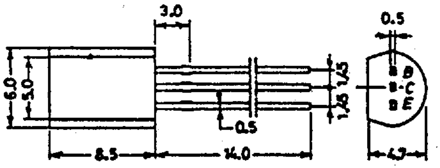
**Electrical Characteristics** at Ta = 25°C

| | | | min | typ | max | unit |
|---|---|---|---|---|---|---|
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=(−)20V,$I_E$=0 | | | (−)1.0 | µA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=(−)4V,$I_C$=0 | | | (−)1.0 | µA |
| DC Current Gain | $h_{FE}(1)$ | $V_{CE}$=(−)2V,$I_C$=(−)50mA | 60※ | | 560※ | |
| | $h_{FE}(2)$ | $V_{CE}$=(−)2V,$I_C$=(−)1A | 30 | | | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=(−)10V,$I_C$=(−)50mA | | 180 | | MHz |
| Output Capacitance | $c_{ob}$ | $V_{CB}$=(−)10V,f=1MHz | | (25)<br>15 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C$=(−)500mA,$I_B$=(−)50mA | | (−0.15)<br>0.1 | (−0.7)<br>0.3 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C$=(−)500mA,$I_B$=(−)50mA | | (−)0.85 | (−)1.2 | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=(−)10µA,$I_E$=0 | (−)25 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=(−)1mA,$R_{BE}$=∞ | (−)25 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$=(−)10µA,$I_C$=0 | (−)5 | | | V |

※ : The 2SB544/2SD400 are classified by 50mA $h_{FE}$ as follows :

| | | | |
|---|---|---|---|
| 60 D 120 | 100 E 200 | 160 F 320 | 280 G 560 |

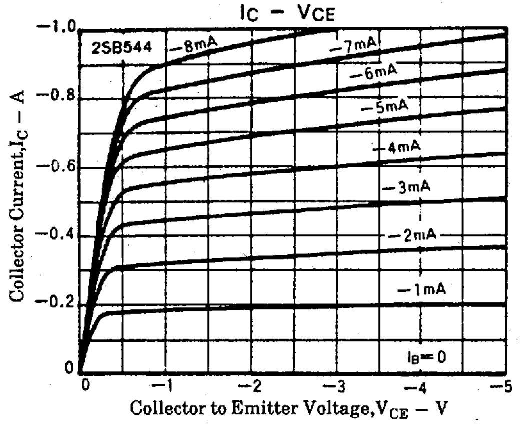
**Case Outline** 2006A
(unit : mm)

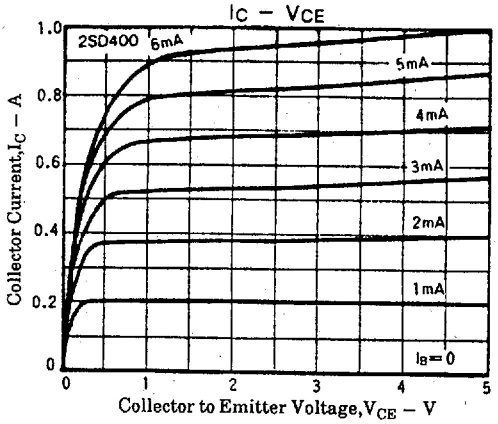


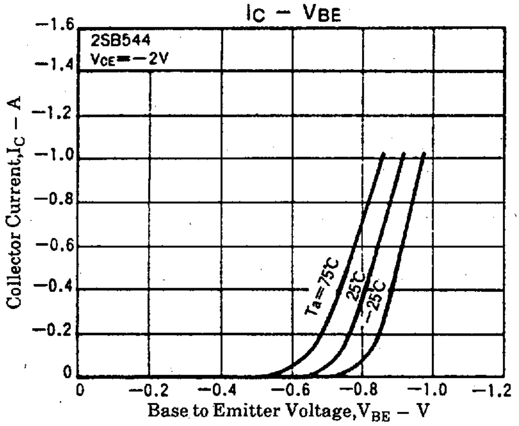
EIAJ : SC-51
SANYO : MP

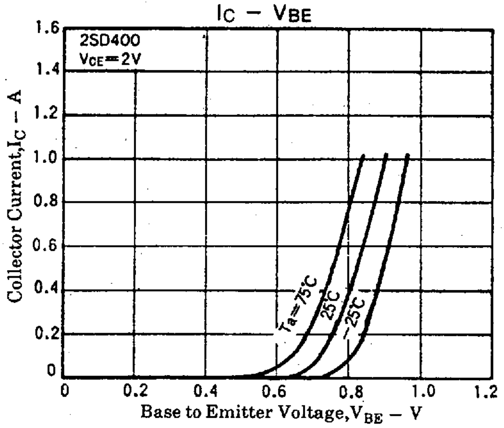
B : Base
C : Collector
E : Emitter

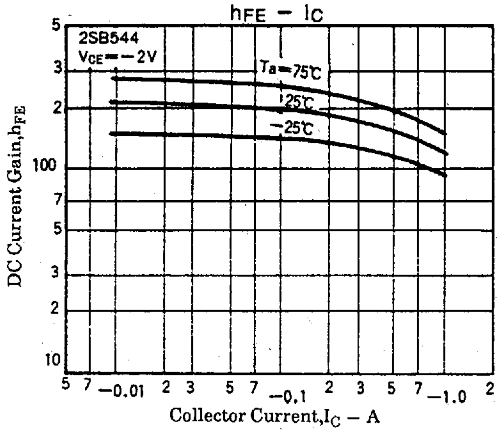
SANYO Electric Co.,Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

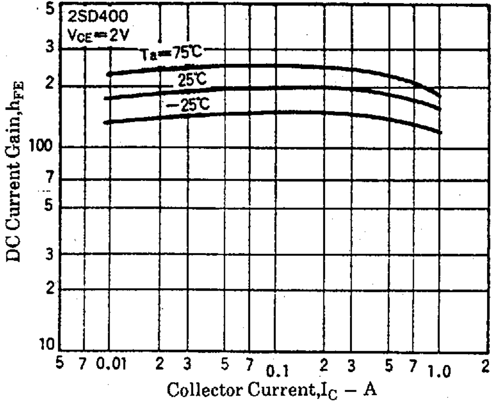

IC − VCE

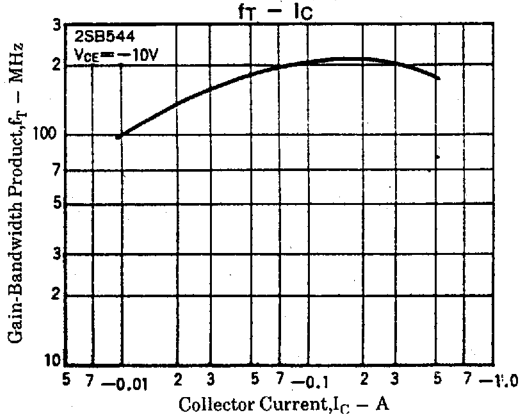

IC − VCE

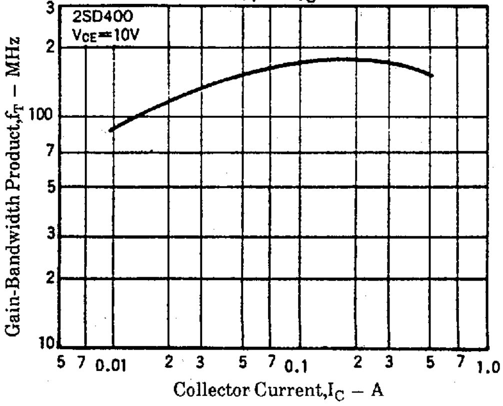

IC − VBE


IC − VBE

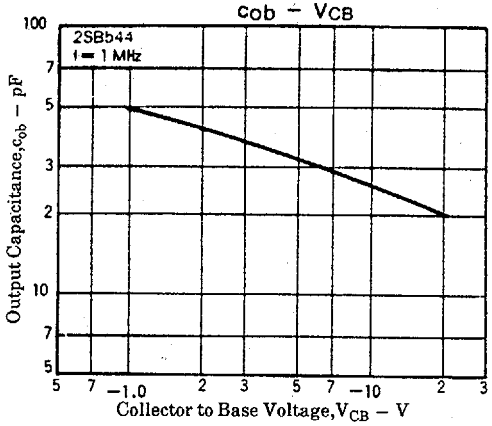

hFE − IC


hFE − IC

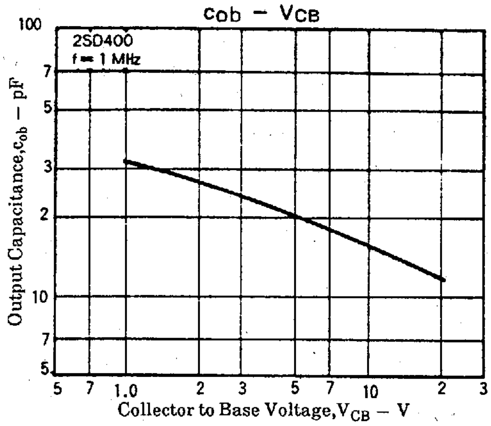

fT − IC


fT − IC

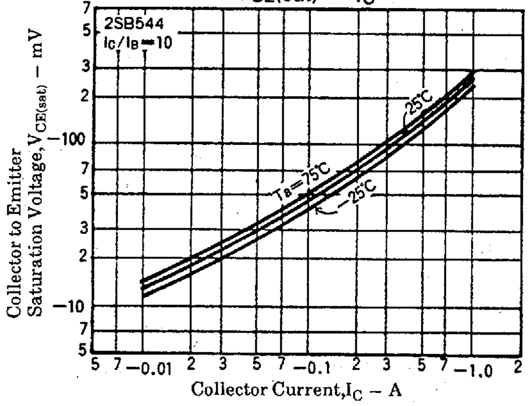
$c_{ob}$ − $V_{CB}$



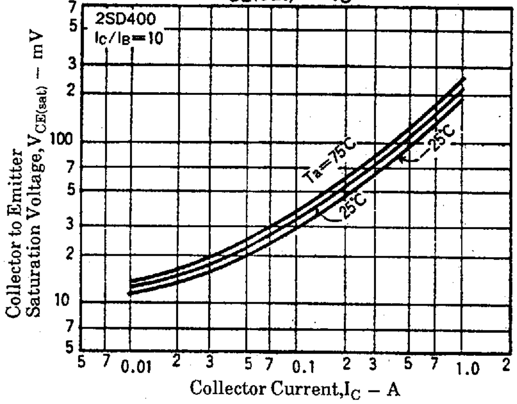
$c_{ob}$ − $V_{CB}$



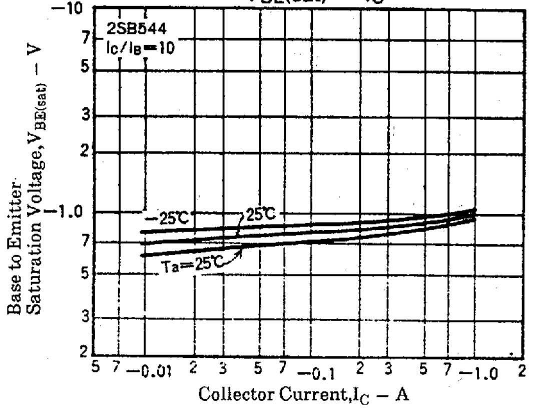
$V_{CE}(sat)$ − $I_C$



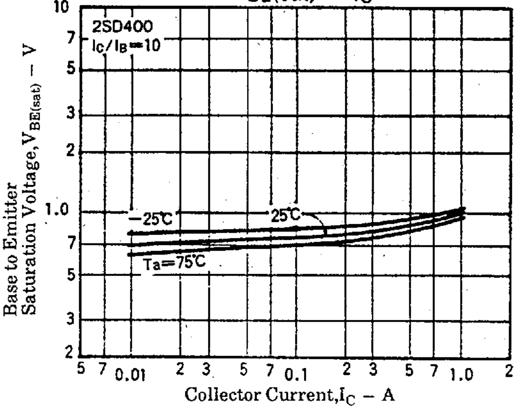
$V_{CE}(sat)$ − $I_C$



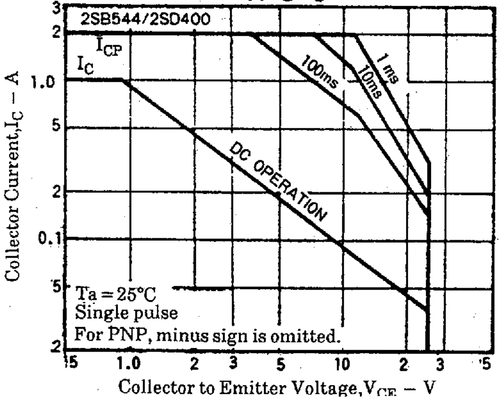
$V_{BE}(sat)$ − $I_C$



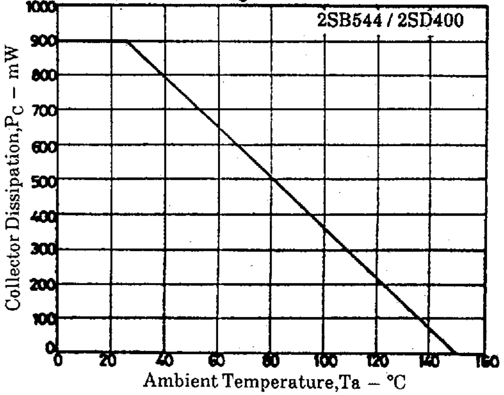
$V_{BE}(sat)$ − $I_C$



A S O



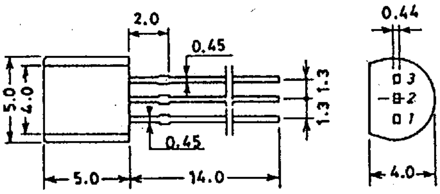
$P_C$ − Ta



# 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.

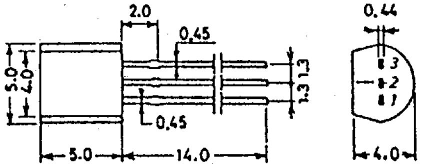
### Case Outline 2003A/2003B (unit : mm)



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

1 : Emitter
2 : Collector
3 : Base

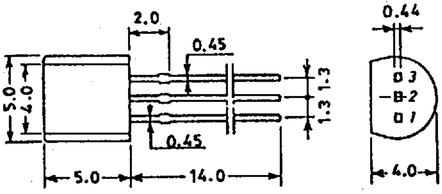
### Case Outline 2019A/2019B (unit : mm)



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

1 : Source
2 : Gate
3 : Drain

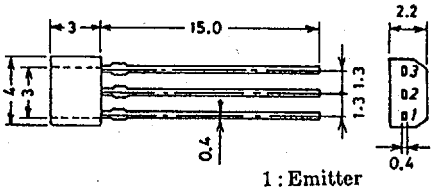
### Case Outline 2004A (unit : mm)



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

1 : Base
2 : Emitter
3 : Collector

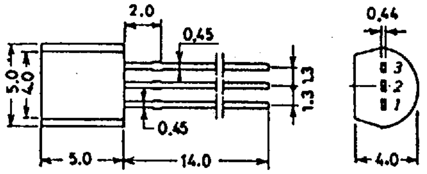
### Case Outline 2033 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : SPA

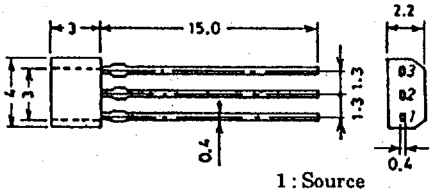
### Case Outline 2005A (unit : mm)



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

1 : Drain
2 : Source
3 : Gate

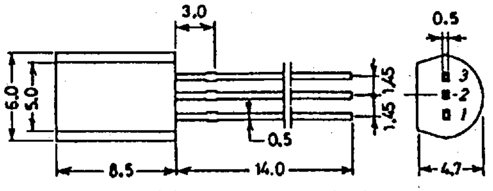
### Case Outline 2034/2034A (unit : mm)



1 : Source
2 : Gate
3 : Drain

SANYO : SPA

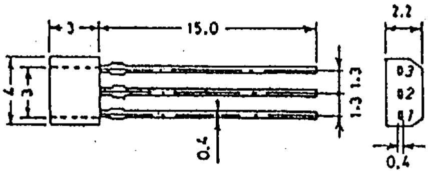
### Case Outline 2006A (unit : mm)



EIAJ : SC-51
SANYO : MP

1 : Emitter
2 : Collector
3 : Base

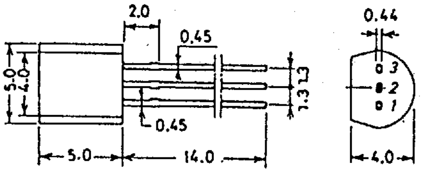
### Case Outline 2040 (unit : mm)



1 : Drain
2 : Source
3 : Gate

SANYO : SPA

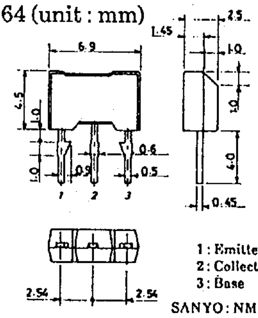
## Case Outline 2061 (unit : mm)



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

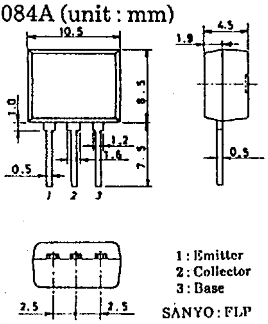
1 : Emitter
2 : Base
3 : Collector

## 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