

No.3012

# 2SA1683/2SC4414

PNP/NPN Epitaxial Planar Silicon Transistors

## Low-Frequency General-Purpose Amp, Low-Frequency Power Amp Applications

**Features**

- Adoption of FBET process
- High breakdown voltage :  $V_{CE0} > 80V$

( ) : 2SA1683

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

			unit
Collector to Base Voltage	$V_{CBO}$	(-)100	V
Collector to Emitter Voltage	$V_{CEO}$	(-)80	V
Emitter to Base Voltage	$V_{EBO}$	(-)5	V
Collector Current	$I_C$	(-)500	mA
Collector Current (Pulse)	$I_{CP}$	(-)800	mA
Base Current	$I_B$	(-)100	mA
Collector Dissipation	$P_C$	300	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ C$

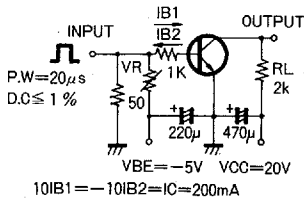
**Electrical Characteristics at  $T_a = 25^\circ C$**

			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)60V, I_E = 0$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE}(1)$	$V_{CE} = (-)5V, I_C = (-)50mA$	100*		400*	
	$h_{FE}(2)$	$V_{CE} = (-)5V, I_C = (-)400mA$	60			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)10mA$		120		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)400mA, I_B = (-)40mA$	(-0.20)	0.16	(-)0.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)400mA, I_B = (-)40mA$	(-)0.9	(-)1.2		V
Output Capacitance	$c_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		(7)5		pF
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)80			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$	(-)5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		50		ns
Storage Time	$t_{stg}$	"		(500)650		ns
Fall Time	$t_f$	"		(80)90		ns

\* : The 2SA1683/2SC4414 are classified by 50mA  $h_{FE}$  as follows :

100 R	200	140 S	280	200 T	400
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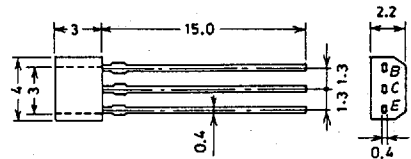
**Switching Time Test Circuit**



(For PNP, the polarity is reversed.)

Unit(Resistance :  $\Omega$  , Capacitance : F)

**Case Outline 2033**  
(unit : mm)

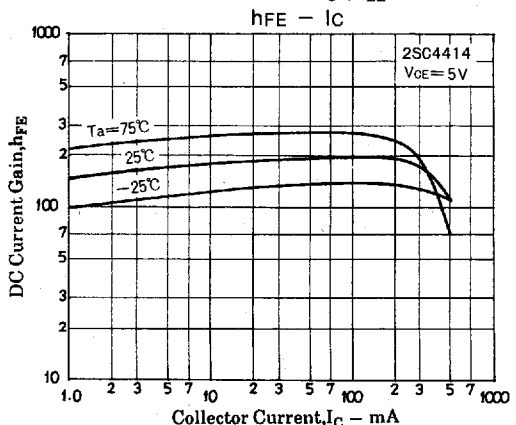
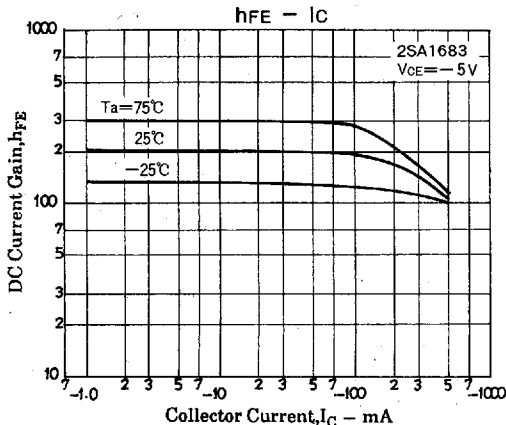
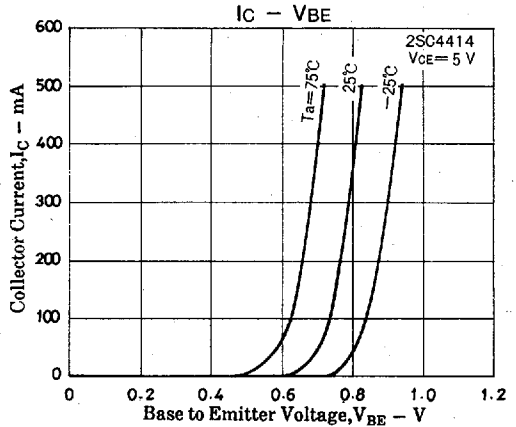
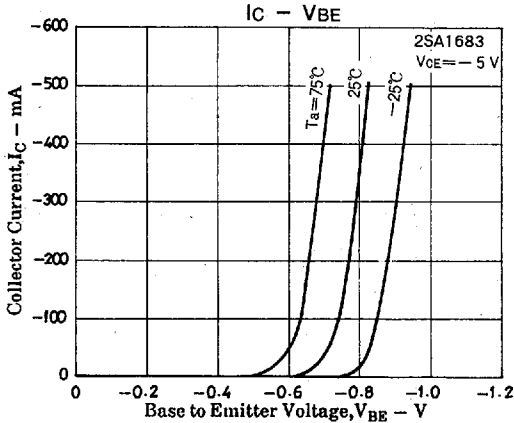
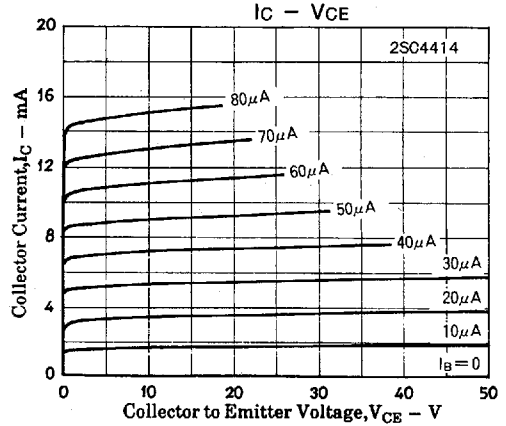
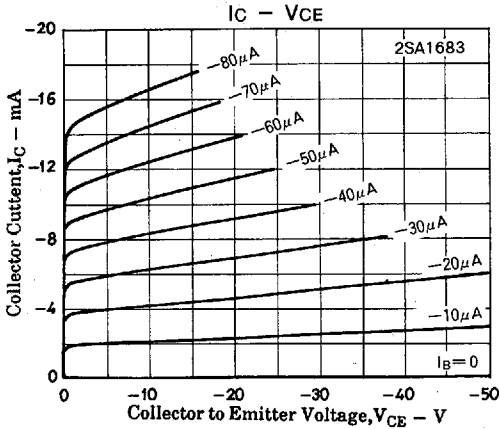
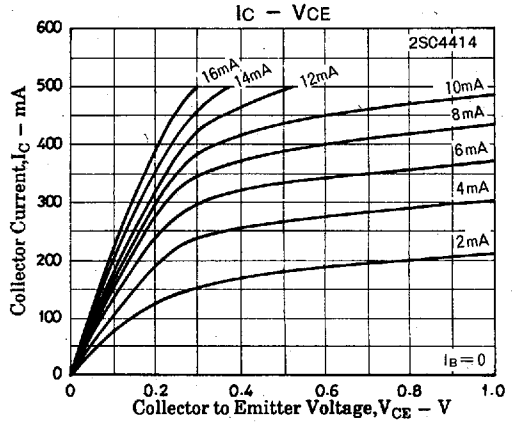
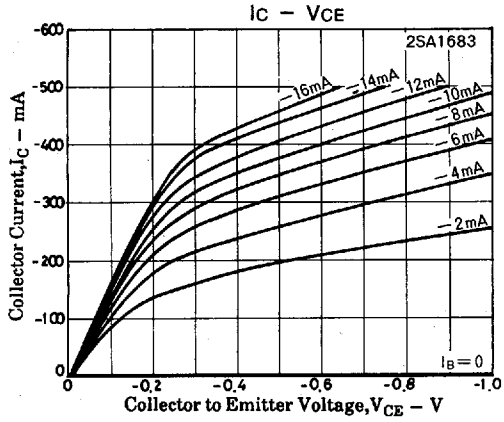


B : Base  
C : Collector  
E : Emitter

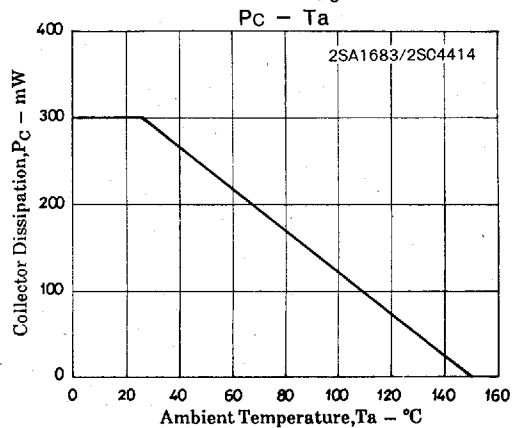
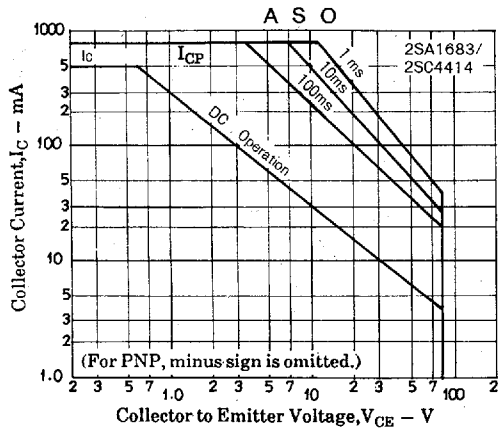
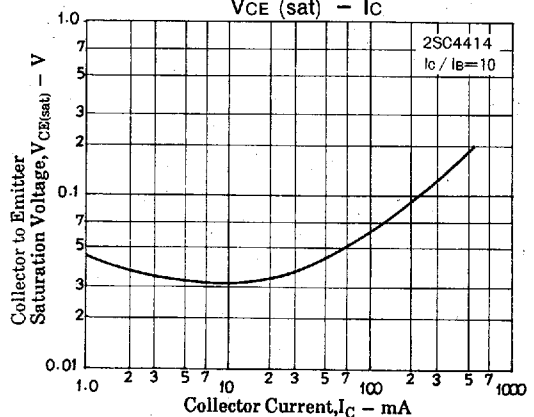
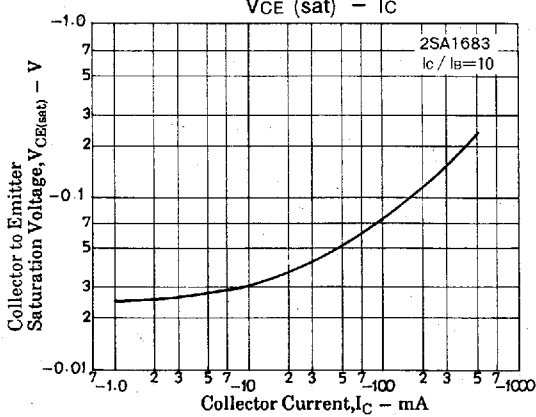
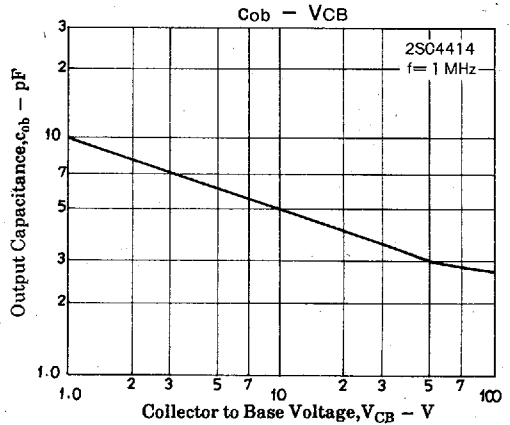
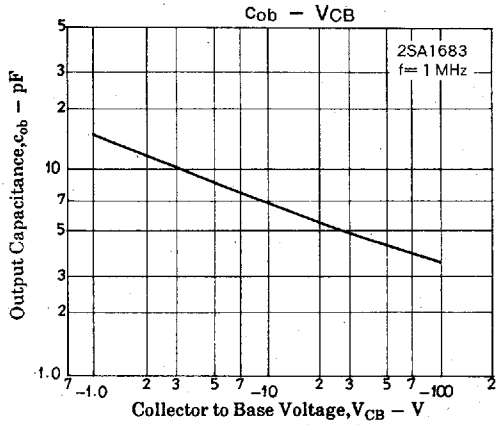
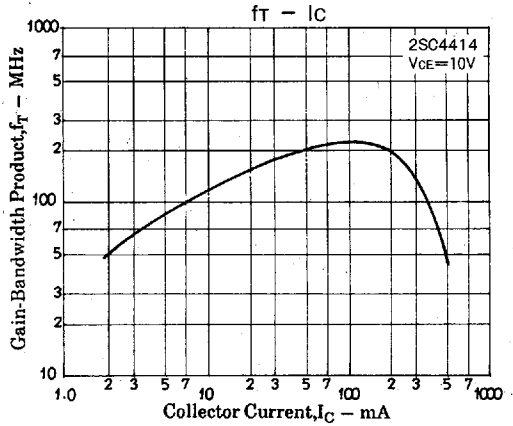
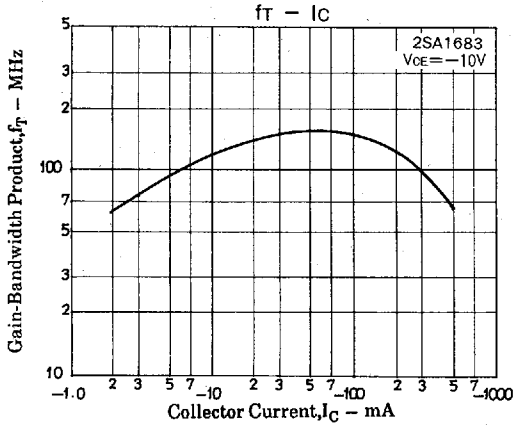
SANYO : SPA

Specifications and information herein are subject to change without notice.

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



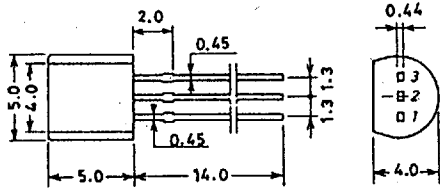
2SA1683/2SC4414



# 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.

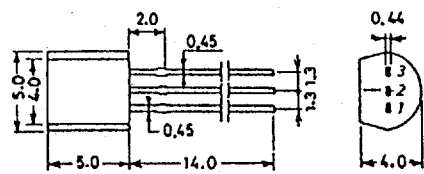
Case Outline 2003A/2003B (unit : mm)



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

1 : Emitter  
2 : Collector  
3 : Base

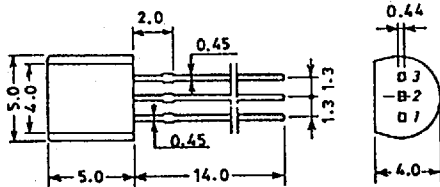
Case Outline 2019A/2019B (unit : mm)



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

1 : Source  
2 : Gate  
3 : Drain

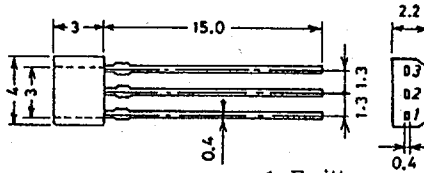
Case Outline 2004A (unit : mm)



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

1 : Base  
2 : Emitter  
3 : Collector

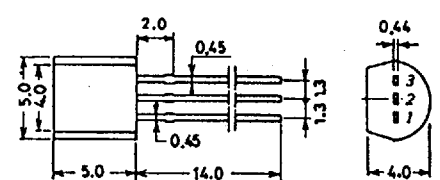
Case Outline 2033 (unit : mm)



1 : Emitter  
2 : Collector  
3 : Base

SANYO : SPA

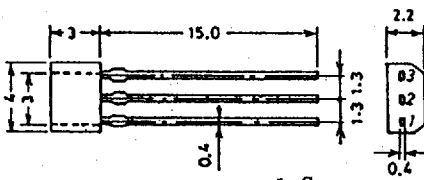
Case Outline 2005A (unit : mm)



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

1 : Drain  
2 : Source  
3 : Gate

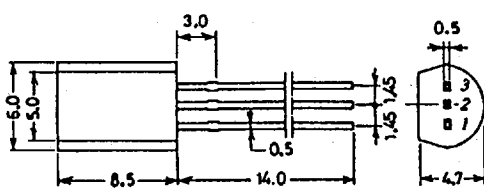
Case Outline 2034/2034A (unit : mm)



1 : Source  
2 : Gate  
3 : Drain

SANYO : SPA

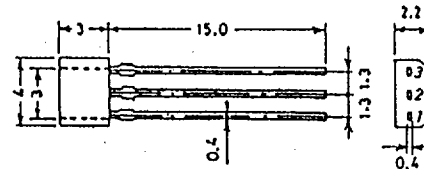
Case Outline 2006A (unit : mm)



EIAJ : SC-51  
SANYO : MP

1 : Emitter  
2 : Collector  
3 : Base

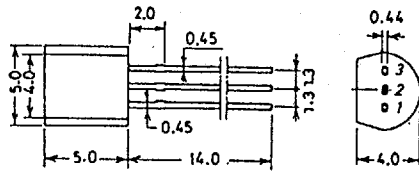
Case Outline 2040 (unit : mm)



1 : Drain  
2 : Source  
3 : Gate

SANYO : SPA

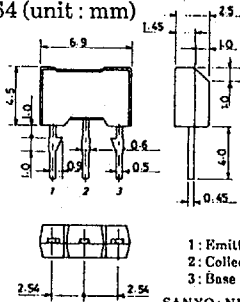
Case Outline 2061 (unit : mm)



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

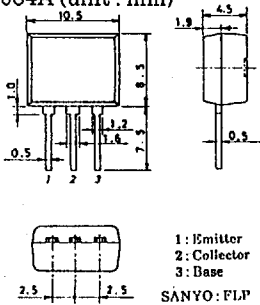
1 : Emitter  
2 : Base  
3 : Collector

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