Ordering number: EN 3012

SANYO

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_{CEO} > 80V

( ) : 2SA1683

Absolute Maximum Ratings at Ta = 25°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	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

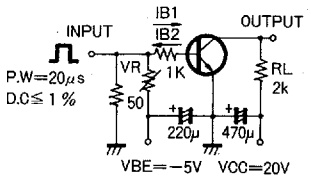
Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)60V, I_E=0			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0			(−)0.1	μA
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=(−)10μA, I_E=0	(−)100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)80			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, 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

Switching Time Test Circuit

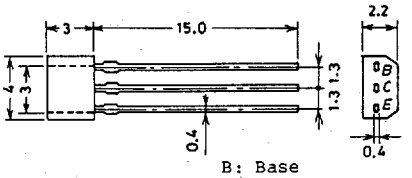


10IB1=−10IB2=IC=200mA

(For PNP, the polarity is reversed.)

Unit(Resistance : Ω , Capacitance : F)

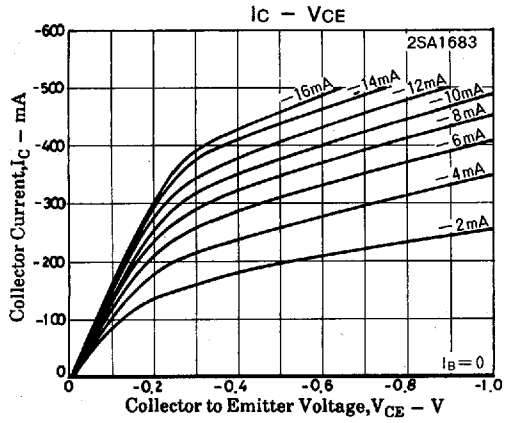
Case Outline 2033
(unit : mm)

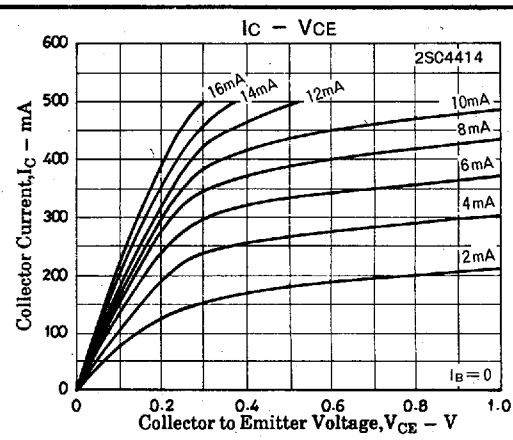


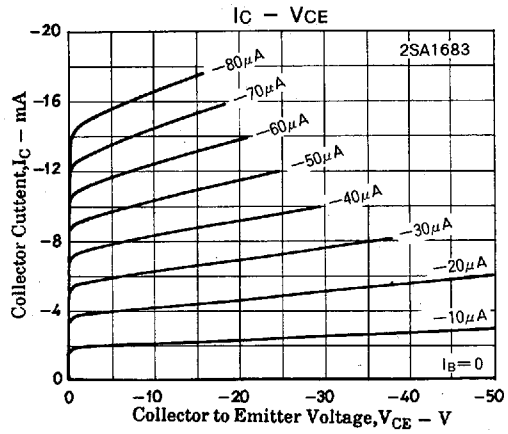
B: Base
C: Collector
E: Emitter

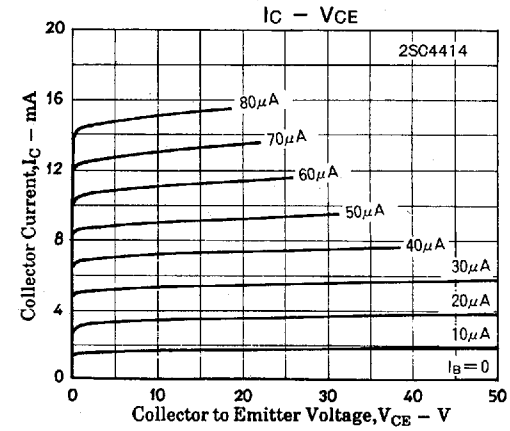
SANYO: SPA

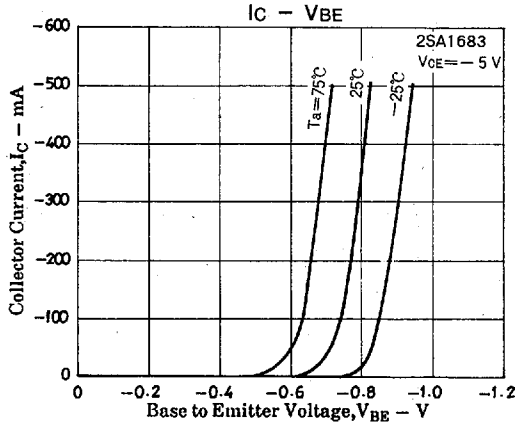
Specifications and information herein are subject to change without notice.

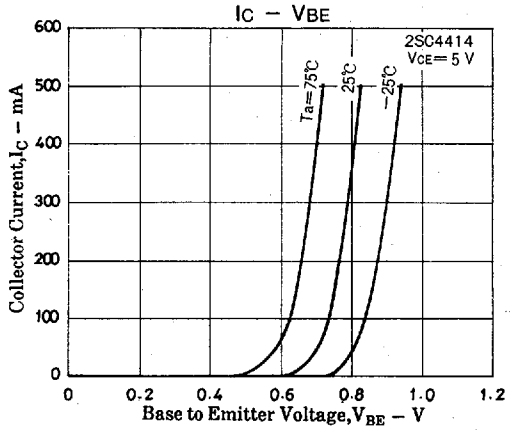

IC – VCE
2SA1683
16mA
14mA
12mA
10mA
8mA
6mA
4mA
2mA
IB=0
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V

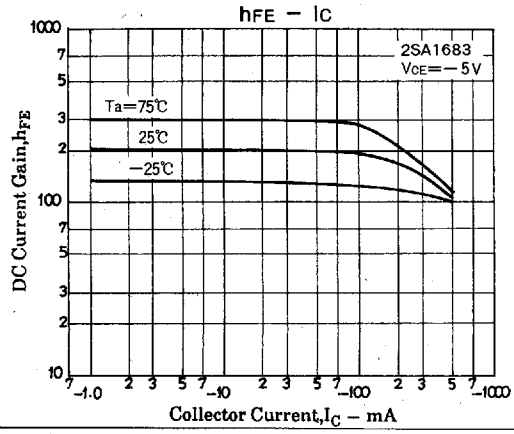

IC – VCE
2SC4414
16mA
14mA
12mA
10mA
8mA
6mA
4mA
2mA
IB=0
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V

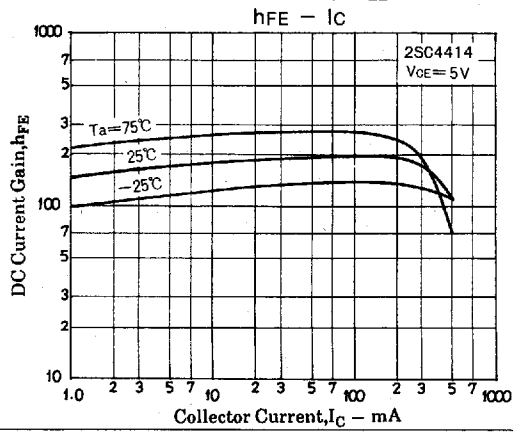

IC – VCE
2SA1683
80μA
70μA
60μA
50μA
40μA
30μA
20μA
10μA
IB=0
Collector Cuttent,IC – mA
Collector to Emitter Voltage,VCE – V

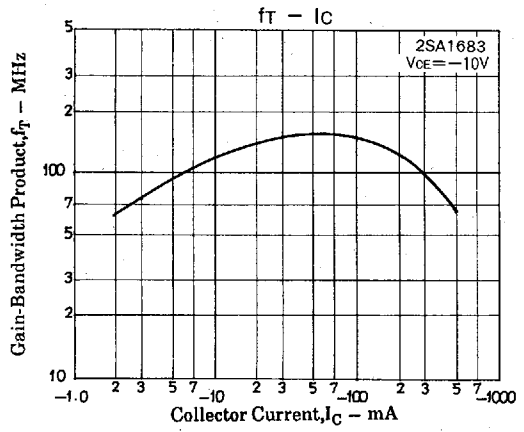

IC – VCE
2SC4414
80μA
70μA
60μA
50μA
40μA
30μA
20μA
10μA
IB=0
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V

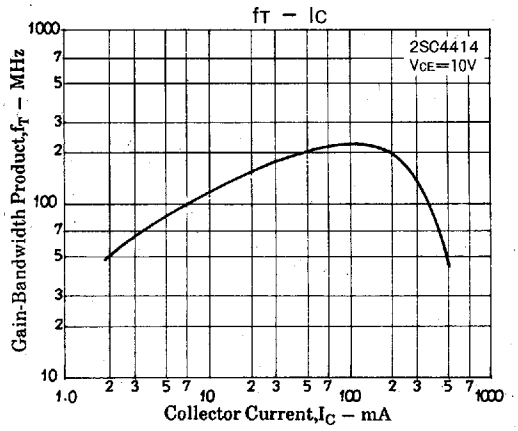

IC – VBE
2SA1683
VCE=– 5 V
Ta=75℃
25℃
–25℃
Collector Current,IC – mA
Base to Emitter Voltage,VBE – V

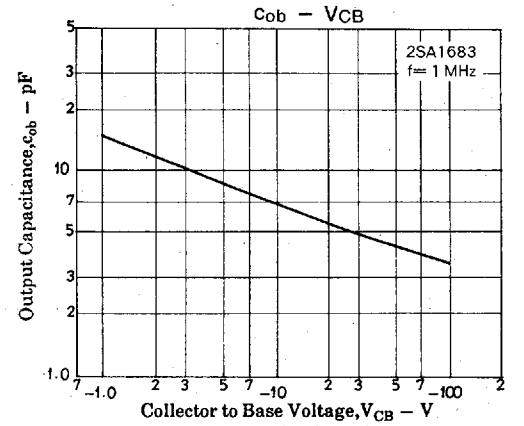

IC – VBE
2SC4414
VCE=5 V
Ta=75℃
25℃
–25℃
Collector Current,IC – mA
Base to Emitter Voltage,VBE – V

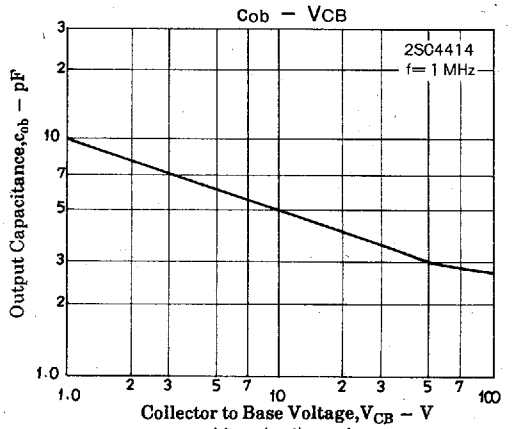

hFE – IC
2SA1683
VCE=– 5V
Ta=75℃
25℃
–25℃
DC Current Gain,hFE
Collector Current,IC – mA

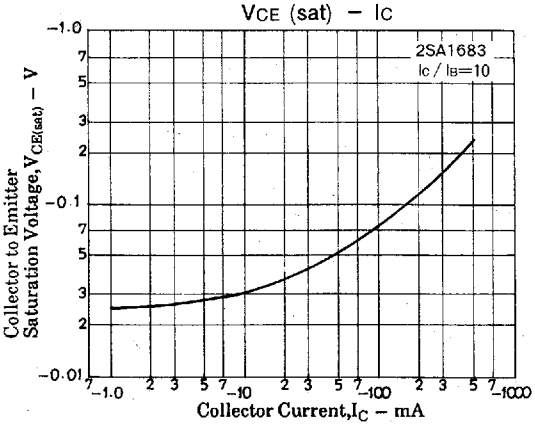

hFE – IC
2SC4414
VCE=5V
Ta=75℃
25℃
–25℃
DC Current Gain,hFE
Collector Current,IC – mA

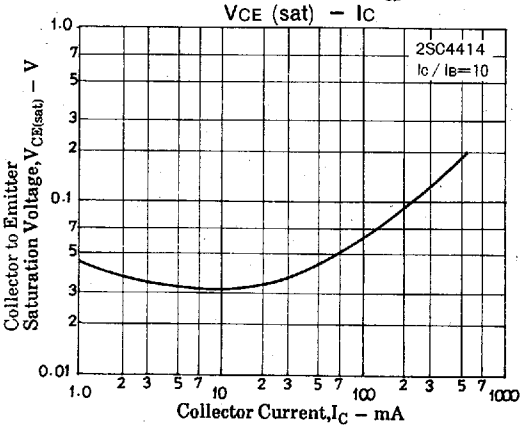

fT – Ic
2SA1683
VCE=–10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

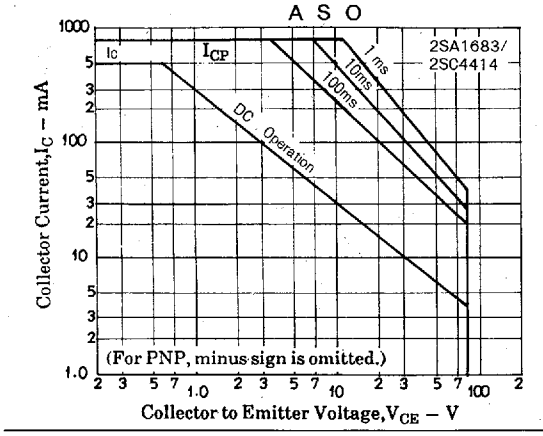

fT – Ic
2SC4414
VCE=10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

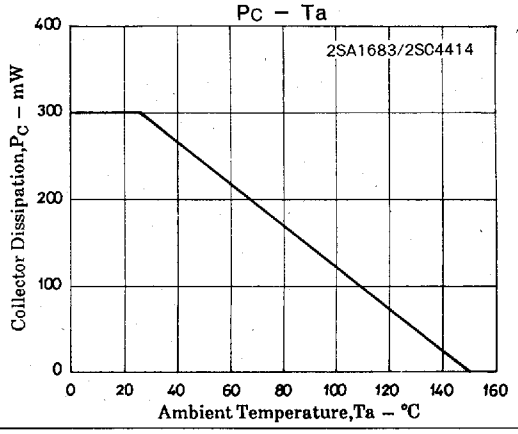

Cob – VCB
2SA1683
f= 1 MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


Cob – VCB
2SC4414
f= 1 MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


VCE (sat) – Ic
2SA1683
Ic / IB=10
Collector to Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA


VCE (sat) – Ic
2SC4414
Ic / IB=10
Collector to Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA

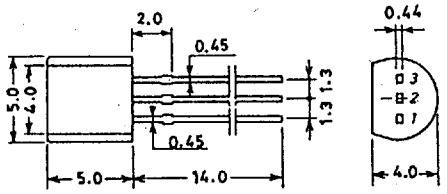

A S O
2SA1683/
2SC4414
Ic
ICP
1 ms
10ms
100ms
DC Operation
(For PNP, minus sign is omitted.)
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V


PC – Ta
2SA1683/2SC4414
Collector Dissipation,PC – mW
Ambient Temperature,Ta – °C

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.

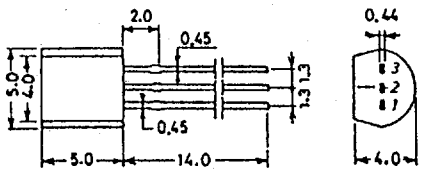
Case Outline 2003A/2003B (unit : mm)



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

1 : Emitter
2 : Collector
3 : Base

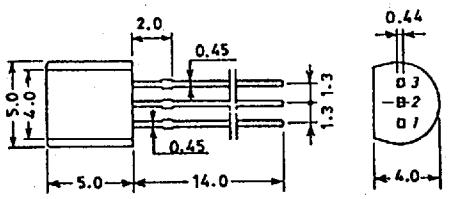
Case Outline 2019A/2019B (unit : mm)



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

1 : Source
2 : Gate
3 : Drain

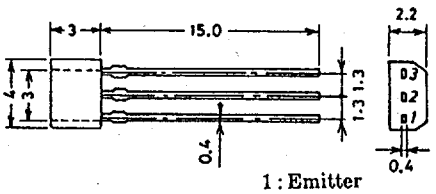
Case Outline 2004A (unit : mm)



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

1 : Base
2 : Emitter
3 : Collector

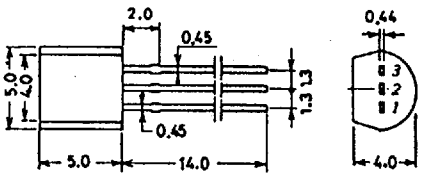
Case Outline 2033 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : SPA

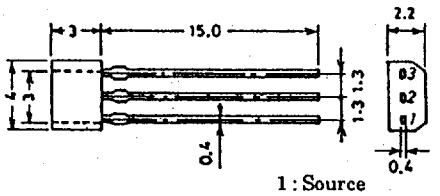
Case Outline 2005A (unit : mm)



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

1 : Drain
2 : Source
3 : Gate

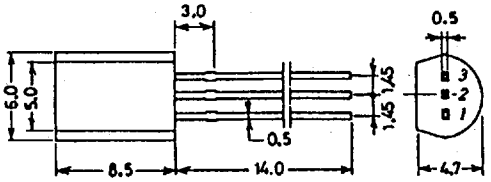
Case Outline 2034/2034A (unit : mm)



1 : Source
2 : Gate
3 : Drain

SANYO : SPA

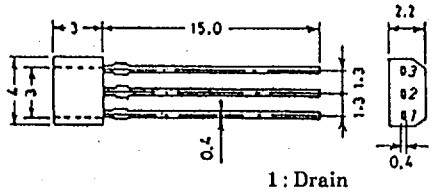
Case Outline 2006A (unit : mm)



EIAJ : SC-51
SANYO : MP

1 : Emitter
2 : Collector
3 : Base

Case Outline 2040 (unit : mm)

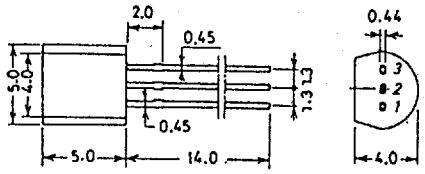


1 : Drain
2 : Source
3 : Gate

SANYO : SPA

7997076 0015489 529

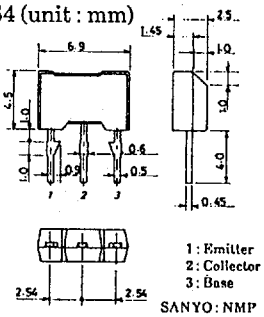
Case Outline 2061 (unit : mm)



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

1 : Emitter
2 : Base
3 : Collector

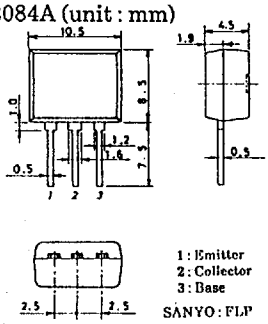
Case Outline 2064 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : NMP

Case Outline 2084A (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : FLP