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

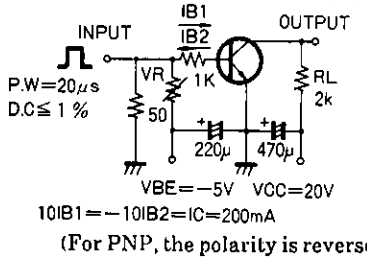
Electrical Characteristics at Ta = 25°C

			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



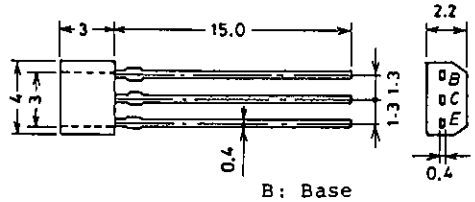
10IB1=−10IB2=IC=200mA

(For PNP, the polarity is reversed.)

Unit(Resistance : Ω , Capacitance : F)

Package Dimensions 2033

(unit: mm)



B: Base
C: Collector
E: Emitter

SANYO: SPA

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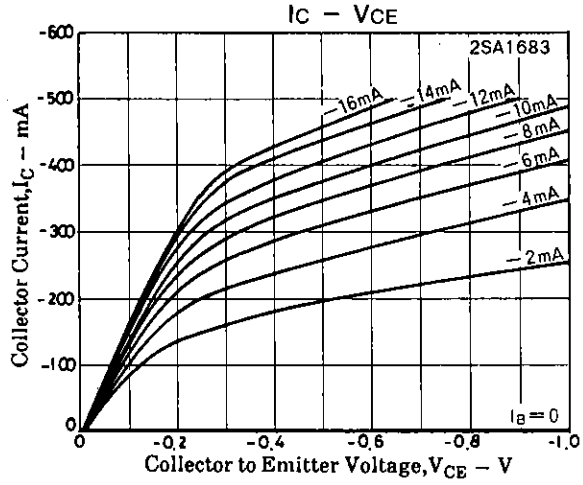
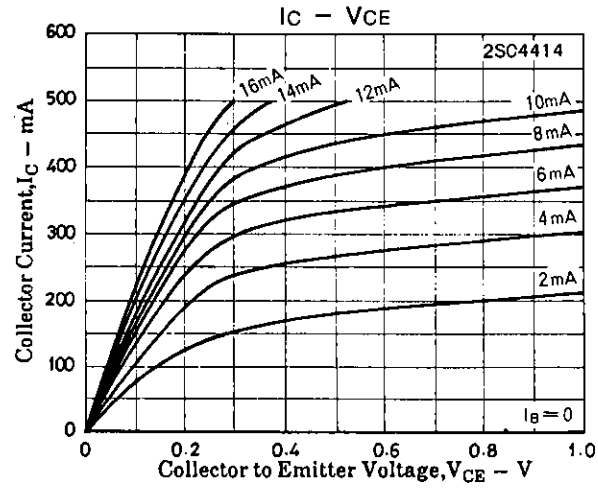
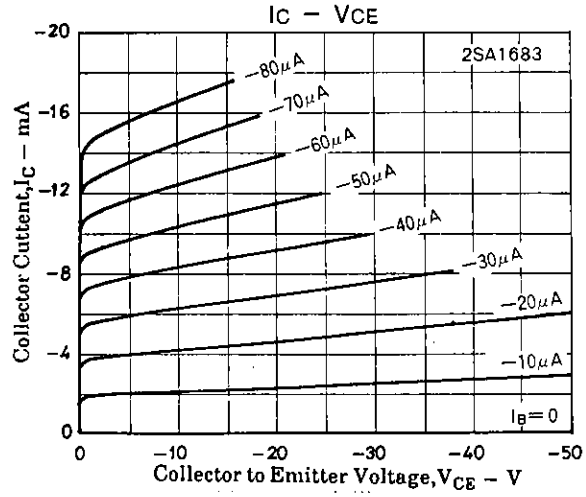
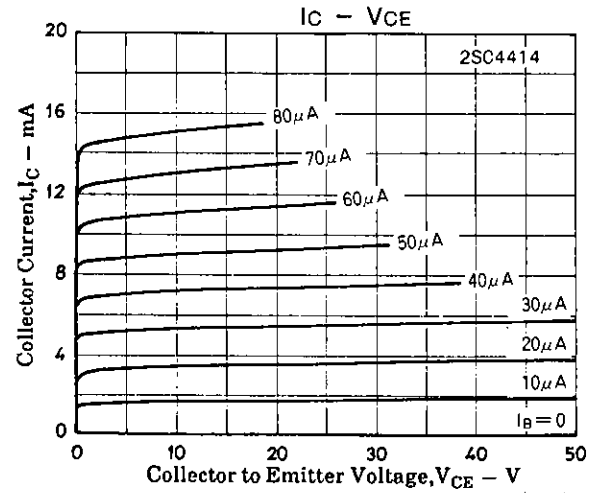
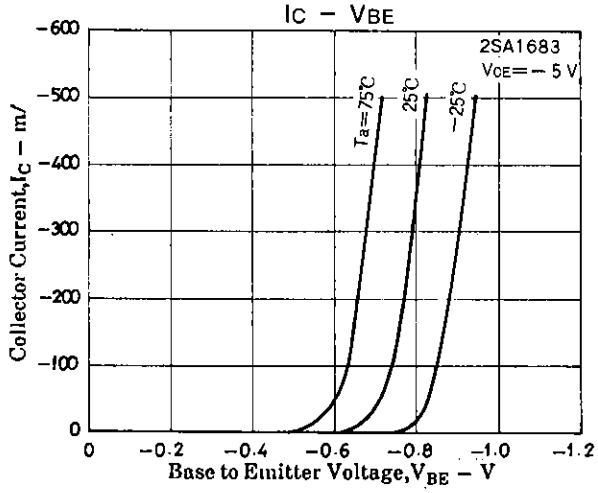
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

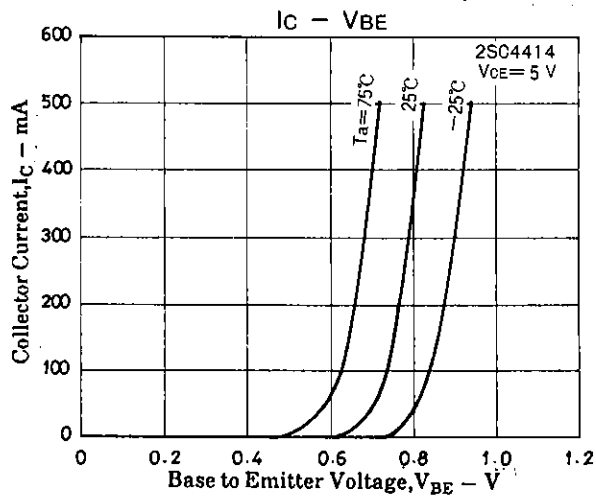

IC – VCE
2SA1683
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V
–16mA
–14mA
–12mA
–10mA
–8mA
–6mA
–4mA
–2mA
IB=0

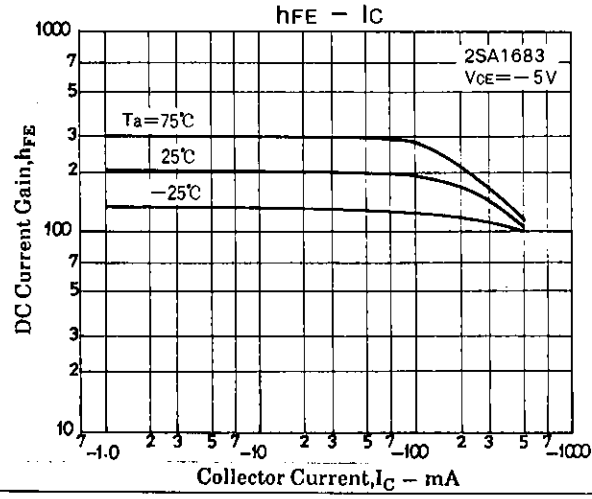

IC – VCE
2SC4414
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V
16mA
14mA
12mA
10mA
8mA
6mA
4mA
2mA
IB=0

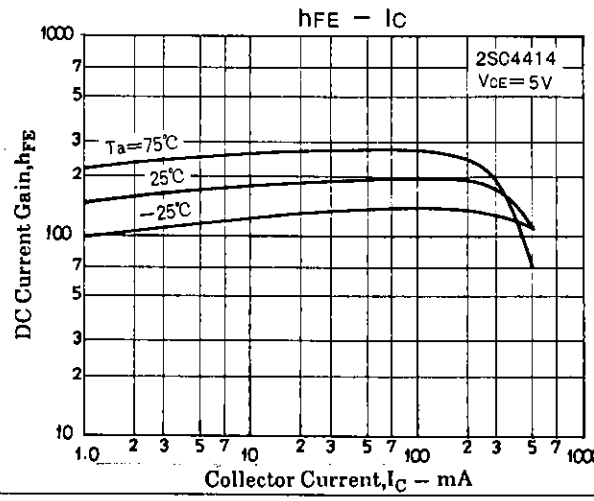

IC – VCE
2SA1683
Collector Cuttent,IC – mA
Collector to Emitter Voltage,VCE – V
–80μA
–70μA
–60μA
–50μA
–40μA
–30μA
–20μA
–10μA
IB=0

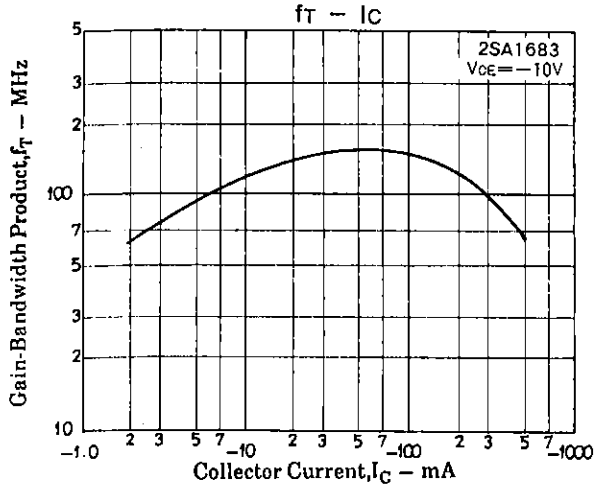

IC – VCE
2SC4414
Collector Current,IC – mA
Collector to Emitter Voltage,VCE – V
80μA
70μA
60μA
50μA
40μA
30μA
20μA
10μA
IB=0

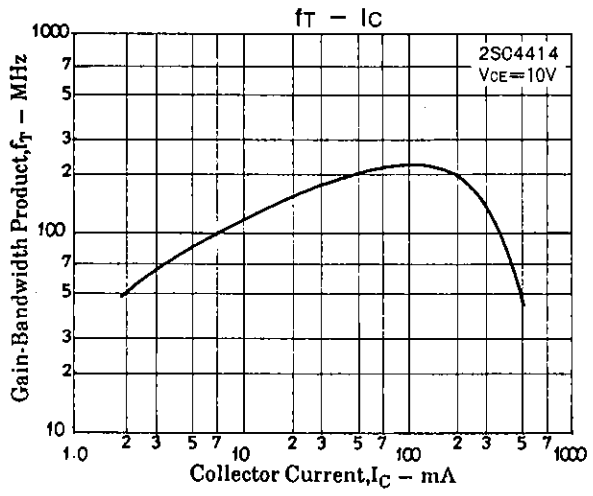

IC – VBE
2SA1683
VCE=–5V
Collector Current,IC – mA
Base to Emitter Voltage,VBE – V
Ta=75°C
25°C
–25°C

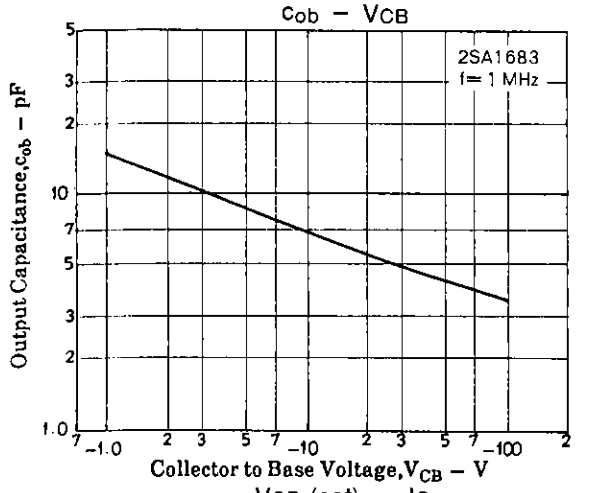

IC – VBE
2SC4414
VCE=5V
Collector Current,IC – mA
Base to Emitter Voltage,VBE – V
Ta=75°C
25°C
–25°C

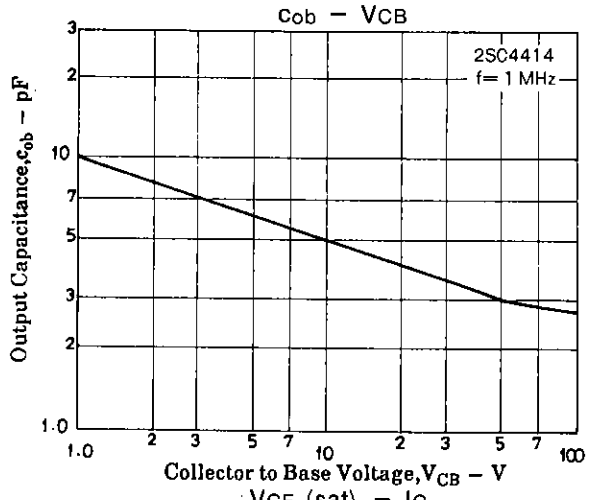

hFE – IC
2SA1683
VCE=–5V
DC Current Gain,hFE
Collector Current,IC – mA
Ta=75°C
25°C
–25°C

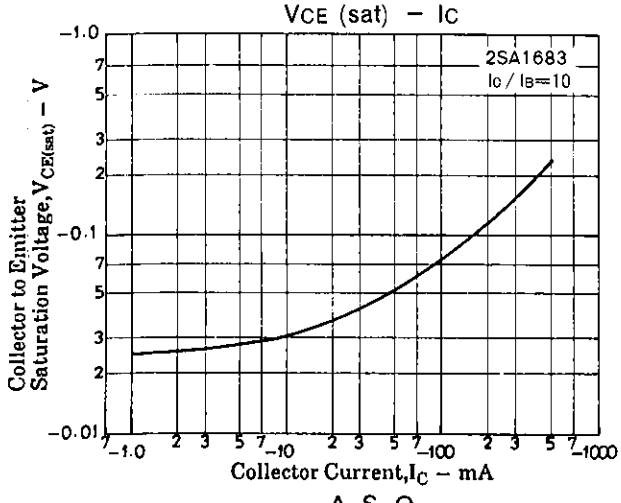

hFE – IC
2SC4414
VCE=5V
DC Current Gain,hFE
Collector Current,IC – mA
Ta=75°C
25°C
–25°C

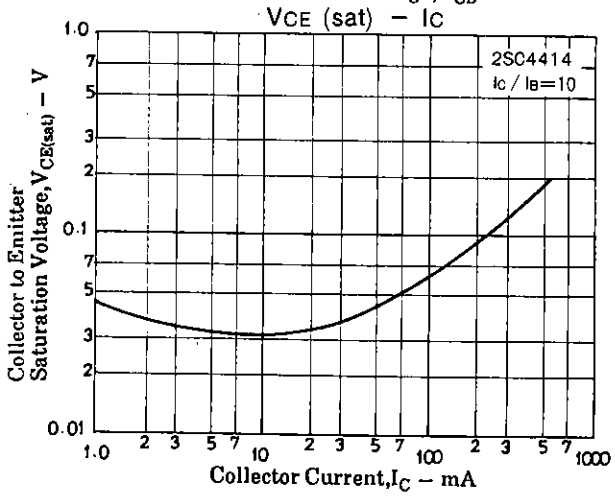

fT – Ic
2SA1683
VCE=–10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

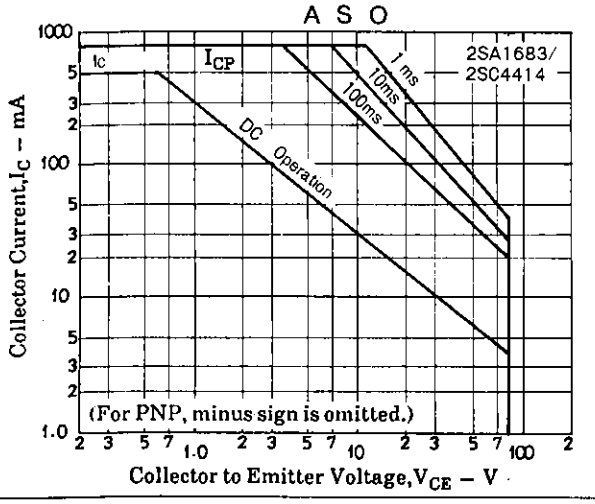

fT – Ic
2SC4414
VCE=10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

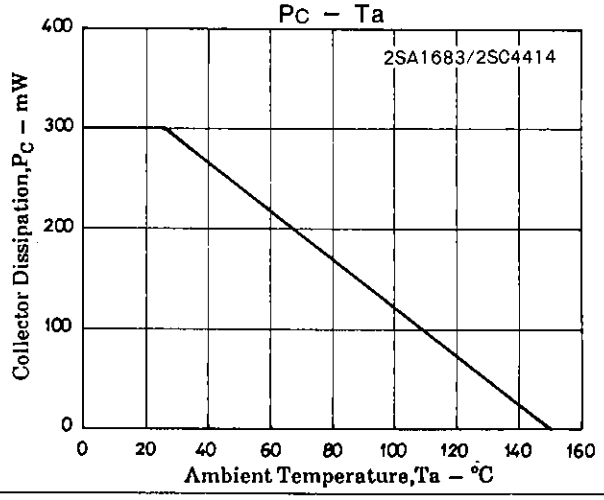

Cob – VCB
2SA1683
f= 1 MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


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
ICP
DC Operation
1 ms
10ms
100ms
(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