Ordering number:EN2113B

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1202/2SD1802

High-Current Switching Applications

Applications

· Voltage regulators, relay drivers, lamp drivers, electrical equipment.

Features

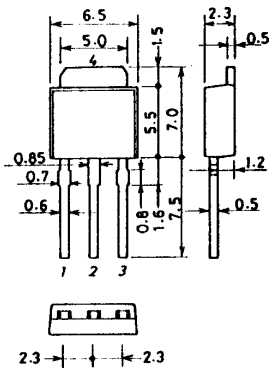
· Adoption of FBET, MBIT processes.
· Large currrent capacity and wide ASO.
· Low collector-to-emitter saturation voltage.
· Fast switching speed.
· Small and slim package making it easy to make 2SB1202/2SD1802-used sets smaller.

Package Dimensions

unit:mm

2045B

[2SB1202/2SD1802]



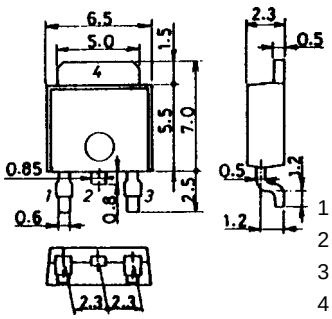
1 : Base
2 : Collector
3 : Emitter
4 : Collector

SANYO : TP

unit:mm

2044B

[2SB1202/2SD1802]



1 : Base
2 : Collector
3 : Emitter
4 : Collector

SANYO : TP-FA

SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

( ) : 2SB1202

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)60	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)6	A
Collector Dissipation	P_C		1	W
		Tc=25˚C	15	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

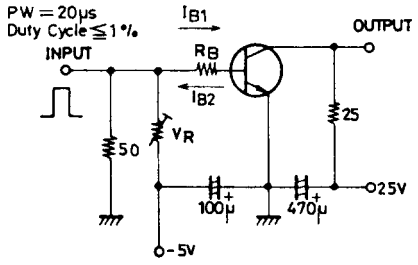
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)40V, I_E=0			(–)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)100mA	100*		560*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)3A	35			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(39)25		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)2A, I_B=(–)100mA		0.19	0.5	V
				(–0.35)	(–0.7)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)2A, I_B=(–)100mA		(–)0.94	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit		70		ns
Storage Time	t_{stg}	See specified Test Circuit		(450)		ns
				650		ns
Fall Time	t_f	See specified Test Circuit		35		ns

* : The 2SB1202/2SD1802 are classified by 100mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400	280	U	560

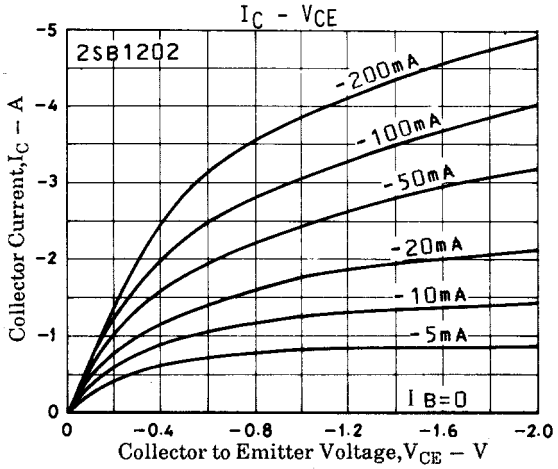
Switching Time Test Circuit

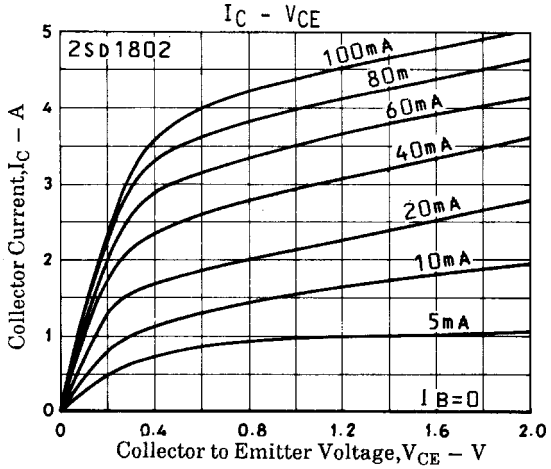


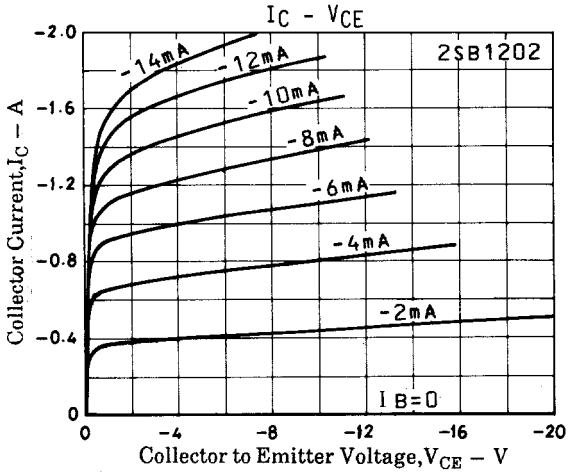
I C = 10 I B1 = - 10 I B2 = 1A

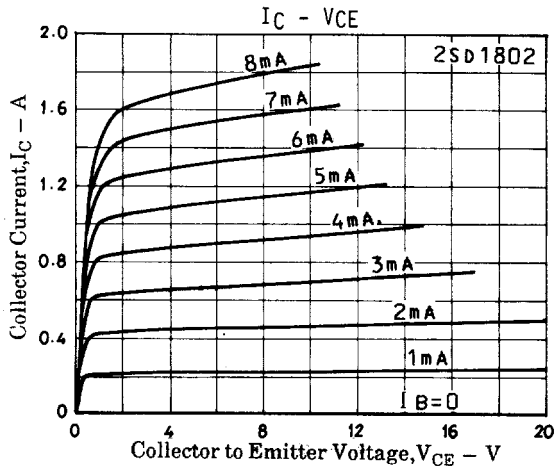
(For PNP, the polarity is reversed.)

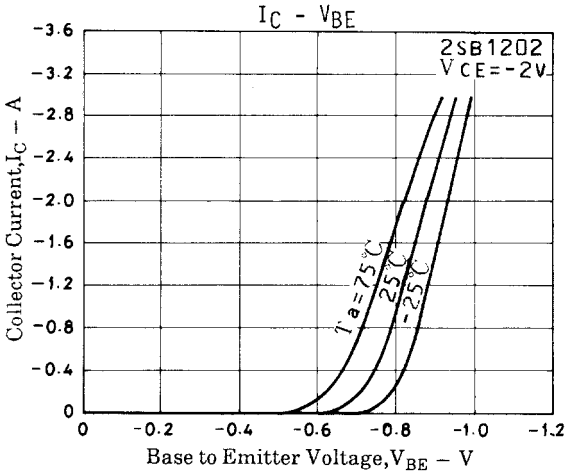
Unit (resistance : Ω, capacitance : F)

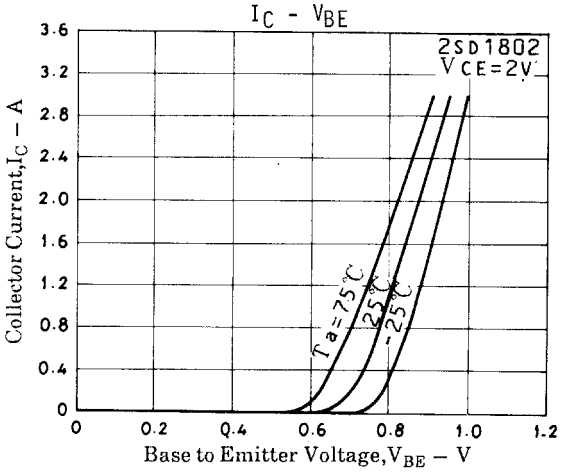

IC - VCE
2SB1202
-200mA
-100mA
-50mA
-20mA
-10mA
-5mA
IB=0
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V

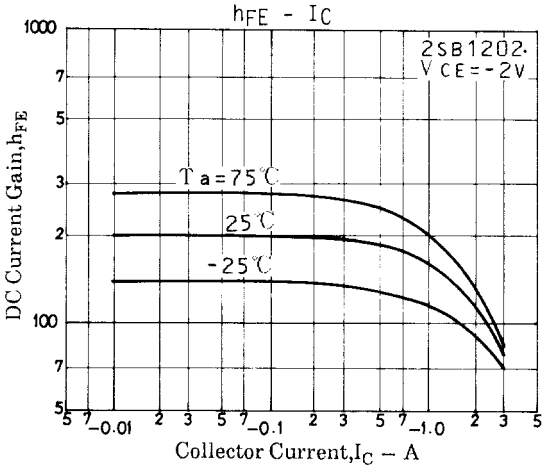

IC - VCE
2SD1802
100mA
80m
60mA
40mA
20mA
10mA
5mA
IB=0
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V

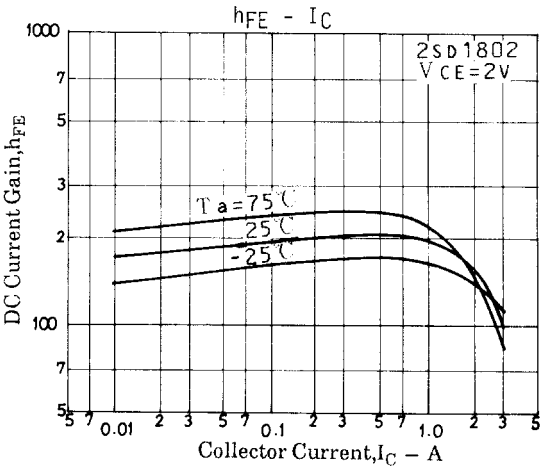

IC - VCE
2SB1202
-14mA
-12mA
-10mA
-8mA
-6mA
-4mA
-2mA
IB=0
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V

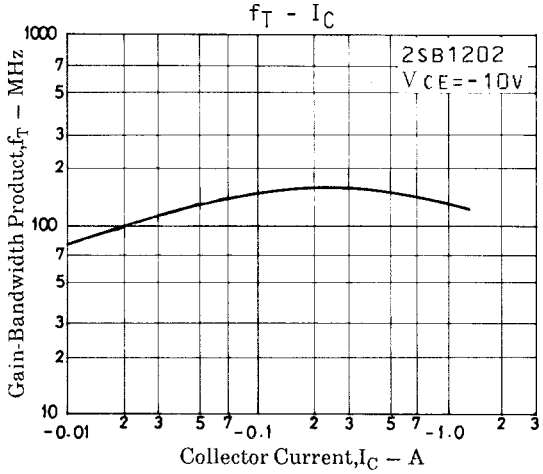

IC - VCE
2SD1802
8mA
7mA
6mA
5mA
4mA
3mA
2mA
1mA
IB=0
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V

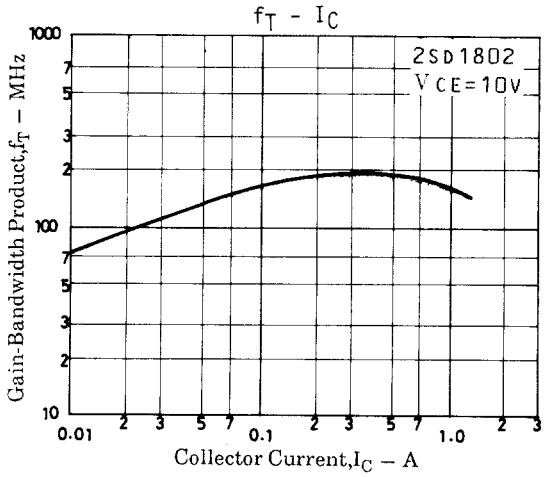

IC - VBE
2SB1202
VCE=-2V
Ta=75℃
25℃
-25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

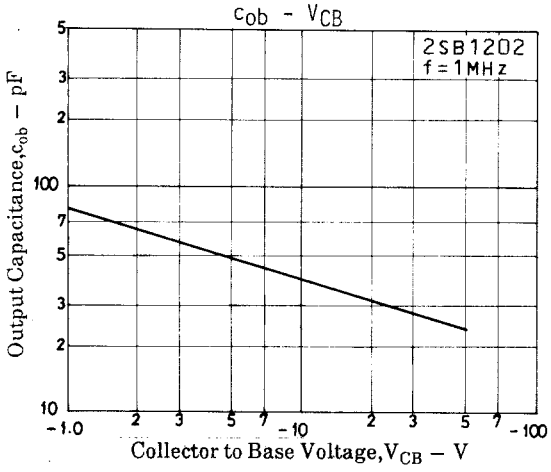

IC - VBE
2SD1802
VCE=2V
Ta=75℃
25℃
-25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

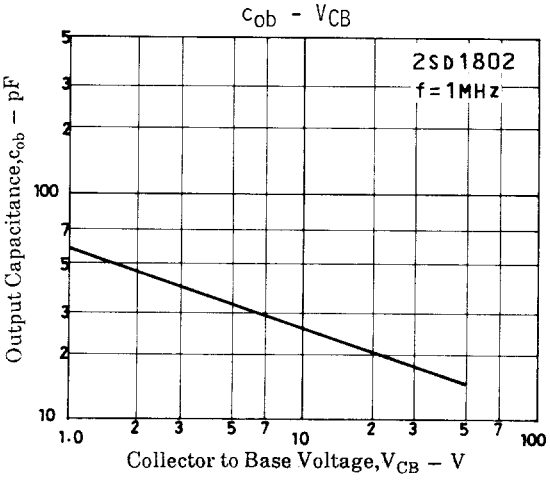

hFE - IC
2SB1202
VCE=-2V
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – A

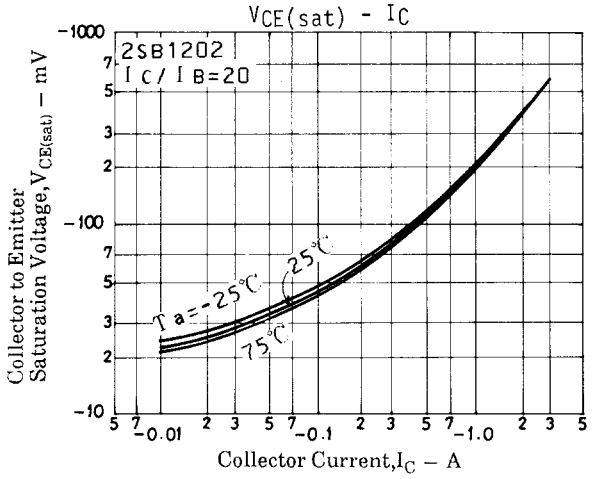

hFE - IC
2SD1802
VCE=2V
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – A

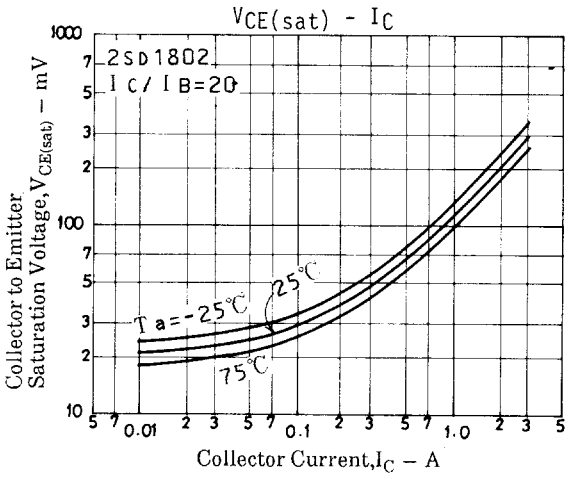

fT - IC
2SB1202
VCE=-10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – A

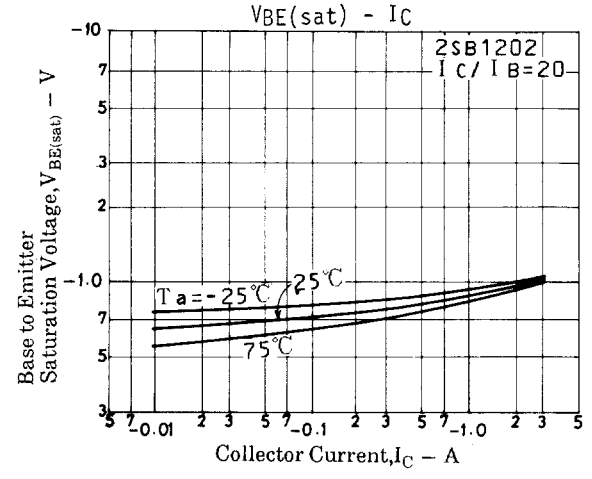

fT - IC
2SD1802
VCE=10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – A

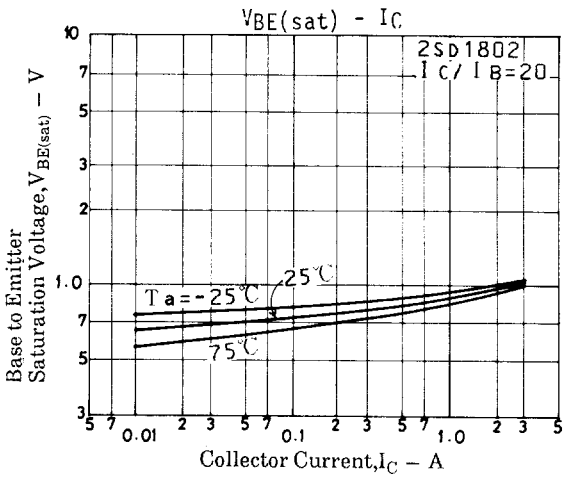

Cob - VCB
2SB1202
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


Cob - VCB
2SD1802
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


VCE(sat) - IC
2SB1202
IC/IB=20
Ta=-25℃
25℃
75℃
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VCE(sat) - IC
2SD1802
IC/IB=20
Ta=-25℃
25℃
75℃
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VBE(sat) - IC
2SB1202
IC/IB=20
Ta=-25℃
25℃
75℃
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A


VBE(sat) - IC
2SD1802
IC/IB=20
Ta=-25℃
25℃
75℃
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A