Ordering number:EN2158A

PNP/NPN Epitaxial Planar Silicon Transistor

2SB1229/2SD1835

Driver Applications

Applications

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

Features

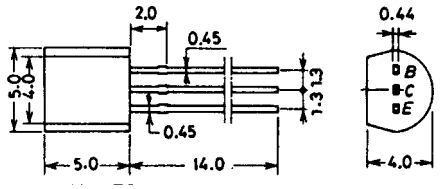
· Adoption of FBET, MBIT processes.
· Large current capacity.
· Low collector-to-emitter saturation voltage.
· Fast switching time.

Package Dimensions

unit:mm

2003A

[2SB1229/2SD1835]



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

B : Base
C : Collector
E : Emitter

( ) : 2SB1229

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		(–)2	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Collector Dissipation	P_C		0.75	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}=(–)50V, I_E=0			(–)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)100	nA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)100mA	100*		560*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		12(22)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1A, I_B=(–)50mA		0.15	0.4	V
				(–0.3)	(–0.7)	V

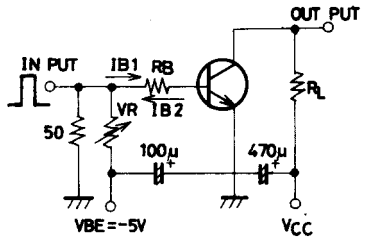
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1A, I_B=(–)50mA		(–)0.9	(–)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		60(60)		ns
Storage Time	t_{stg}	See specified Test Circuit		550		ns
				(450)		ns
Fall Time	t_f	See specified Test Circuit		30		ns
				30		ns

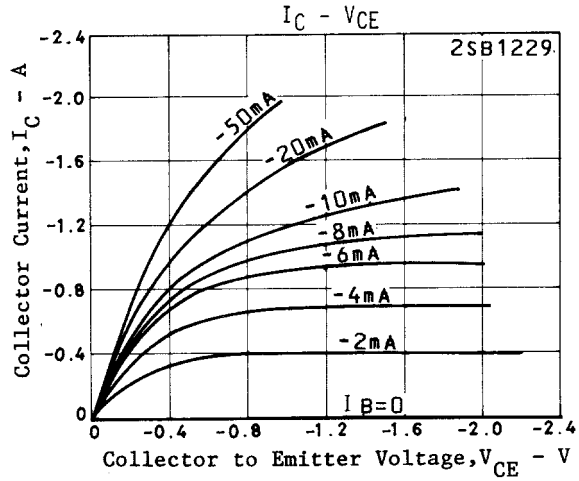
* : The 2SB1229/2SD1835 are classified by 100mA h_{FE} as follows :

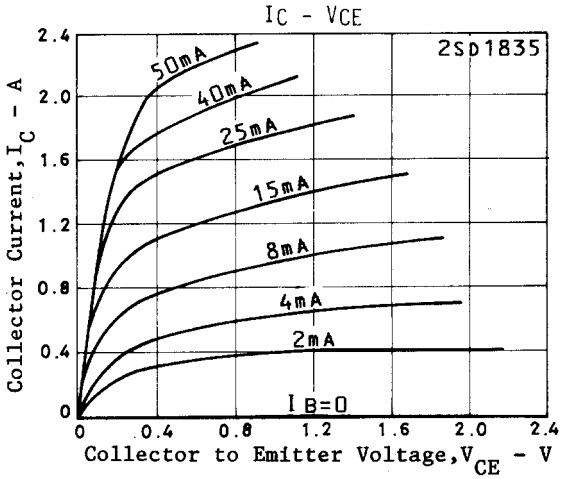
100 R 200	140 S 280	200 T 400	280 U 560

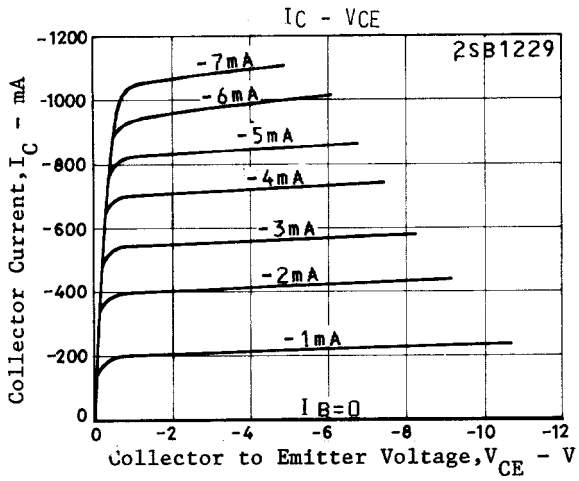
Switching Time Test Circuit

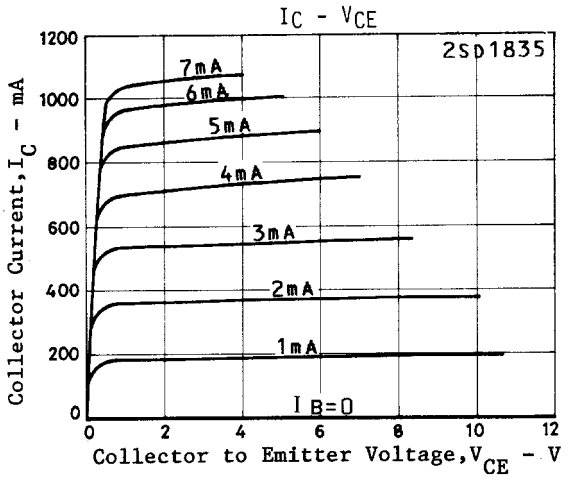


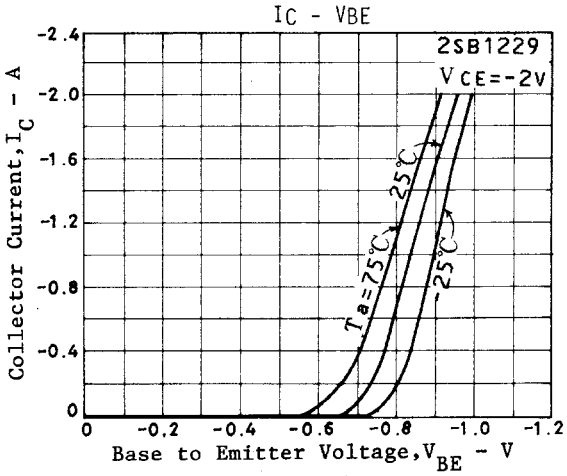
10 I B1=-10 I B2= I C=500mA, V CC=25V
(For PNP, the polarity is reversed.)
Unit (resistance : Ω, capacitance : F)

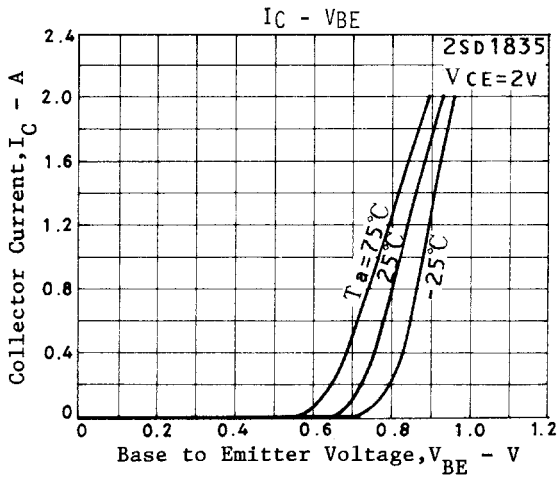


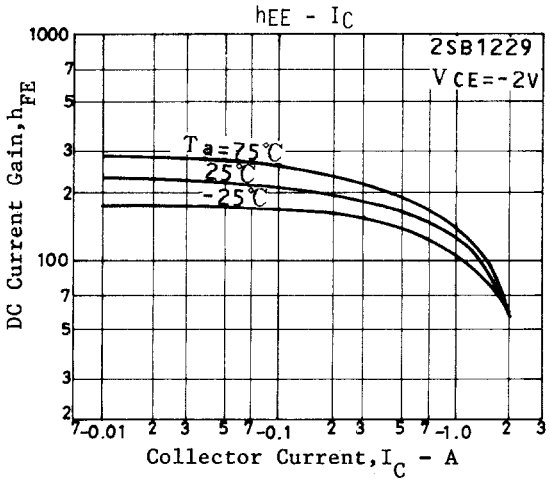


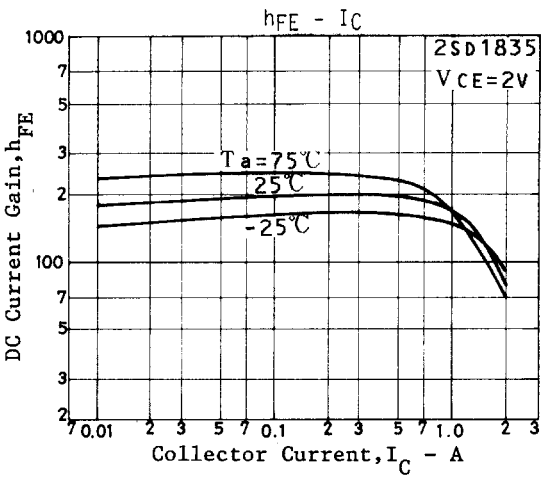


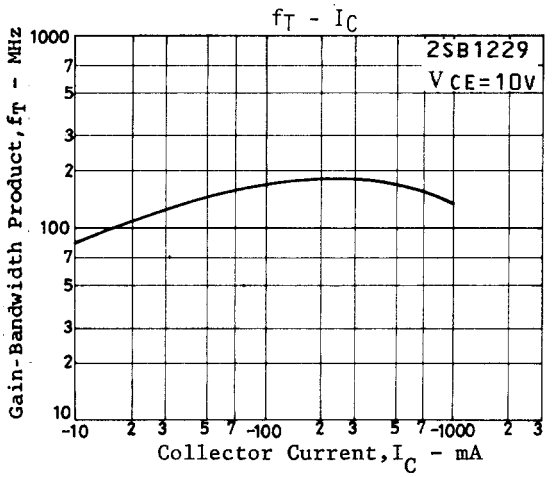


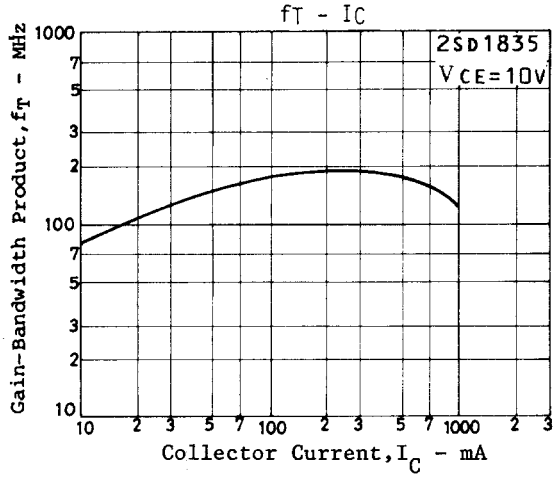

IC - VBE
2SB1229
VCE=-2V
Ta=75℃
25℃
-25℃
Collector Current, IC - A
Base to Emitter Voltage, VBE - V

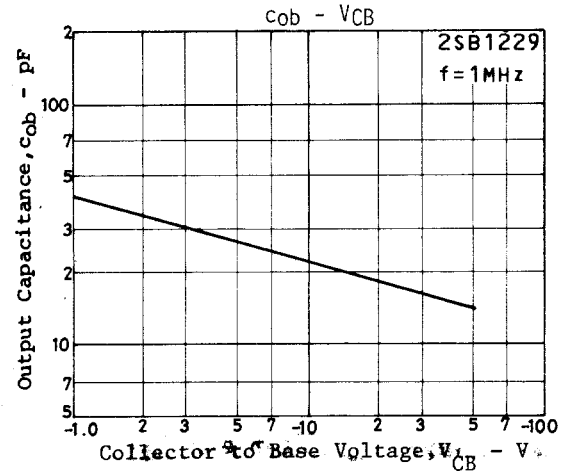

IC - VBE
2SD1835
VCE=2V
Ta=75℃
25℃
-25℃
Collector Current, IC - A
Base to Emitter Voltage, VBE - V

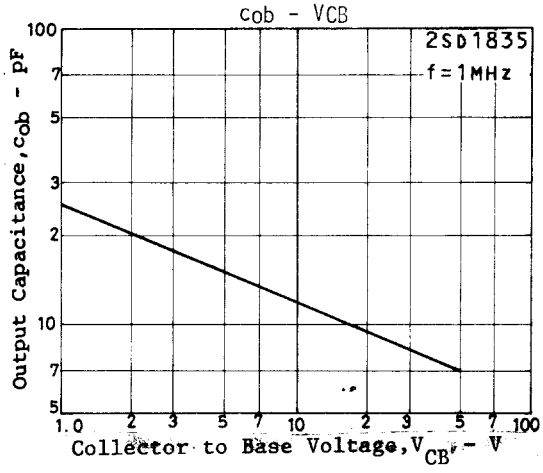

hFE - IC
2SB1229
VCE=-2V
Ta=75℃
25℃
-25℃
DC Current Gain, hFE
Collector Current, IC - A

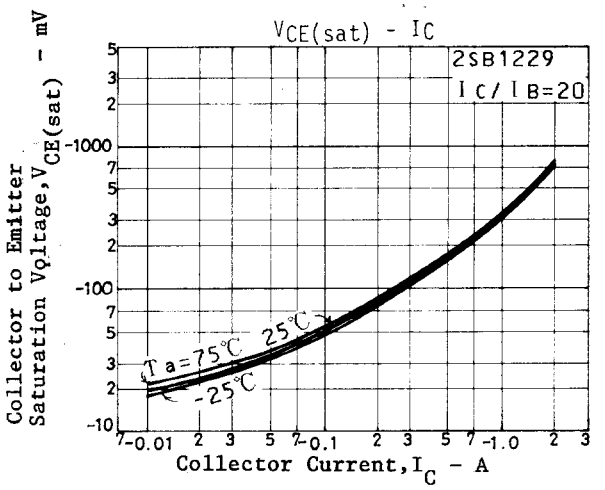

hFE - IC
2SD1835
VCE=2V
Ta=75℃
25℃
-25℃
DC Current Gain, hFE
Collector Current, IC - A

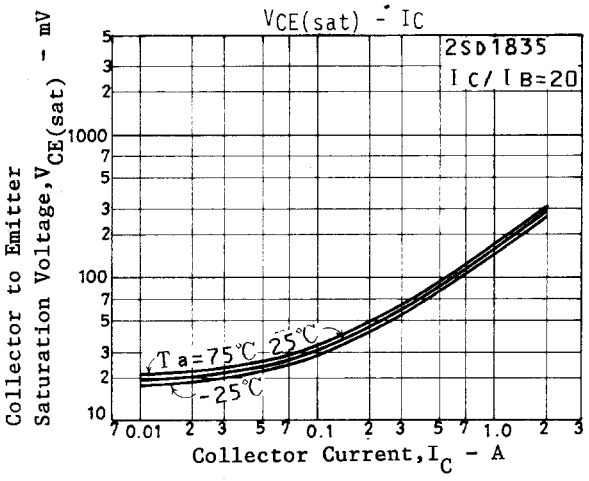

fT - IC
2SB1229
VCE=10V
Gain-Bandwidth Product, fT - MHz
Collector Current, IC - mA

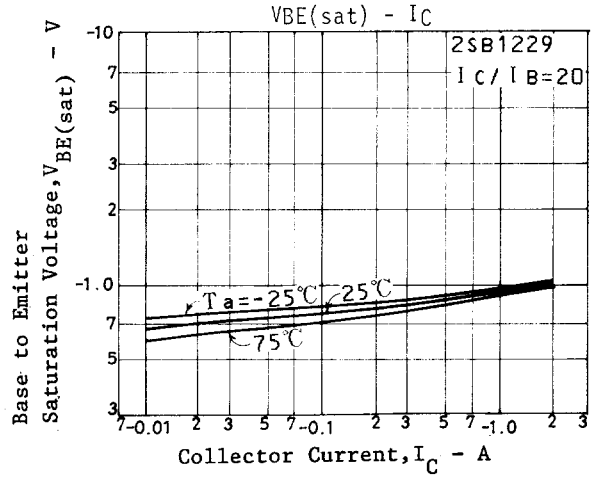

fT - IC
2SD1835
VCE=10V
Gain-Bandwidth Product, fT - MHz
Collector Current, IC - mA

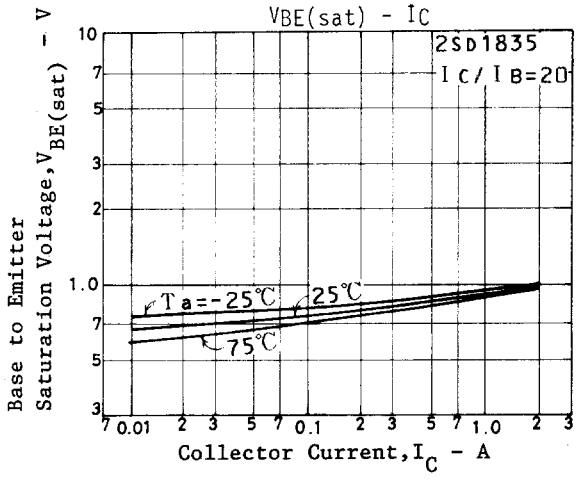

Cob - VCB
2SB1229
f=1MHz
Output Capacitance, Cob - pF
Collector to Base Voltage, VCB - V

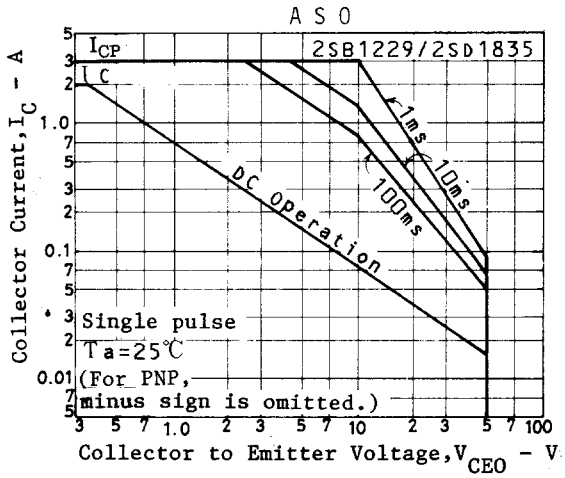

Cob - VCB
2SD1835
f=1MHz
Output Capacitance, Cob - pF
Collector to Base Voltage, VCB - V

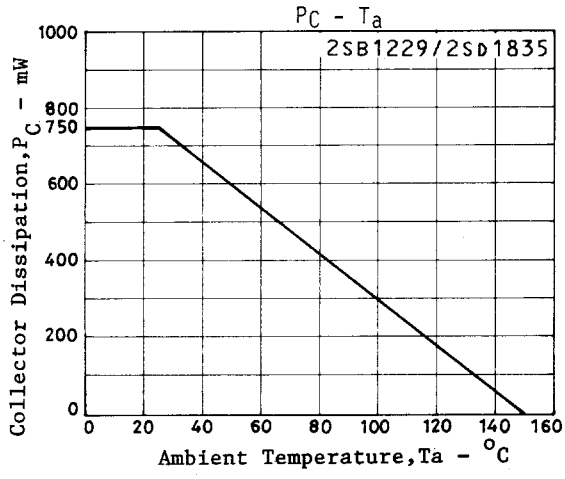

VCE(sat) - IC
2SB1229
IC/IB=20
Collector to Emitter Saturation Voltage,VCE(sat) - mV
Ta=75℃
25℃
-25℃
Collector Current,IC - A


VCE(sat) - IC
2SD1835
IC/IB=20
Collector to Emitter Saturation Voltage,VCE(sat) - mV
Ta=75℃
25℃
-25℃
Collector Current,IC - A


VBE(sat) - IC
2SB1229
IC/IB=20
Base to Emitter Saturation Voltage,VBE(sat) - V
Ta=-25℃
25℃
75℃
Collector Current,IC - A


VBE(sat) - IC
2SD1835
IC/IB=20
Base to Emitter Saturation Voltage,VBE(sat) - V
Ta=-25℃
25℃
75℃
Collector Current,IC - A


A S O
ICP
IC
2SB1229/2SD1835
1ms
10ms
100ms
DC operation
Single pulse
Ta=25℃
(For PNP, minus sign is omitted.)
Collector Current,IC - A
Collector to Emitter Voltage,VCEO - V


PC - Ta
2SB1229/2SD1835
Collector Dissipation,PC - mW
Ambient Temperature,Ta - °C