Ordering number:EN1334C

PNP/NPN Epitaxial Planar Silicon Transistors

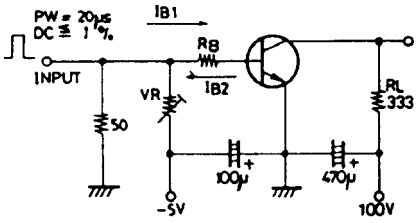
2SA1319/2SC3332

High-Voltage Switching Applications

Features

- Hgih breakdown voltage.
- Excellent h_{FE} linearity.
- Wide ASO and highly resistant to breakdown.
- Adoption of MBIT process.

Switching Test Circuit



$20I_{B1} = -20I_{B2} = I_C = 300mA$
(For PNP, the polarity is reversed)
Unit (resistance : Ω, capacitance : F)

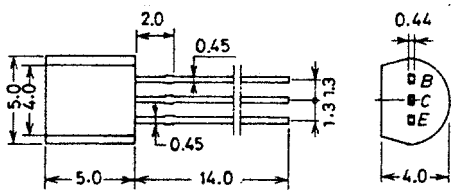
( ) : 2SA1319

Package Dimensions

unit:mm

2003A

[2SA1319/2SC3332]



JEDEC : TO-92 B : Base
EIAJ : SC-43 C : Collector
SANYO : NP E : Emitter

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)0.7	A
Collector Current (Pulse)	I_{CP}		(–)1.5	A
Collector Dissipation	P_C		700	mW
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

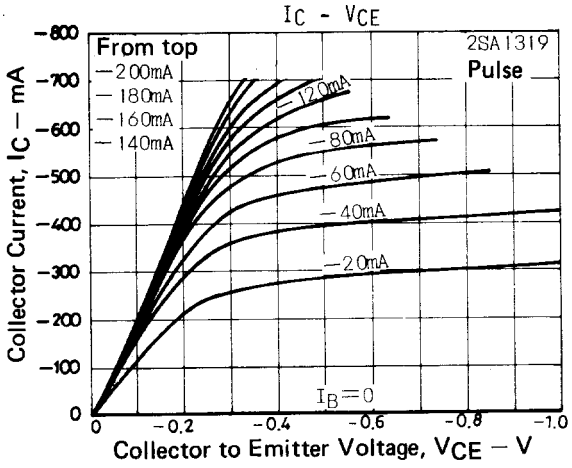
Electrical Characteristics at Ta = 25˚C

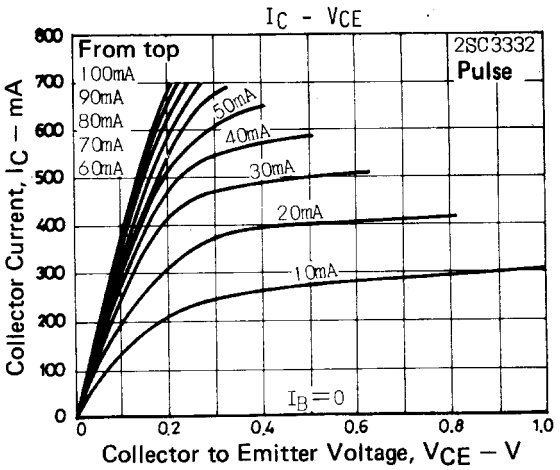
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)120V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)10mA	80			
Gain Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		120		MHz
Common Base Output Capacitance	C_{ob}	V_{CB}=(–)10V		(11)8		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		(0.20) 0.12	(0.5) 0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)160			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)50		ns
Storage Time	t_{stg}	See specified Test Circuit		(900) 1000		ns
Fall Time	t_f	See specified Test Circuit		(60)60		ns

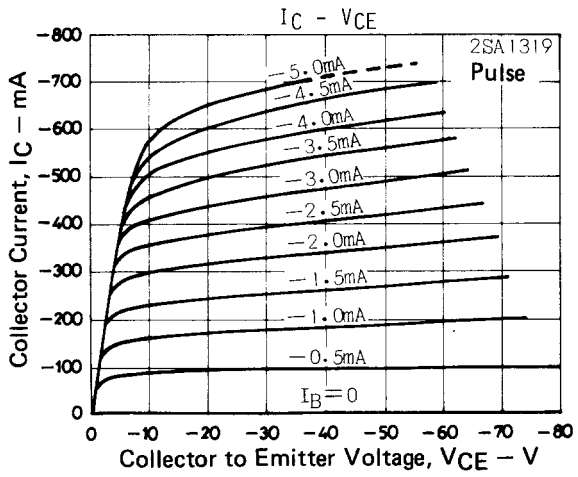
* : The 2SA1319/2SC3332 are classified by 100mA h_{FE} as follows :

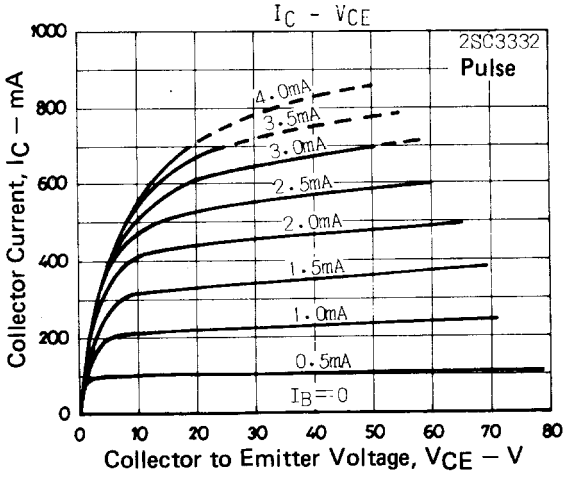
100 R 200	140 S 280	200 T 400

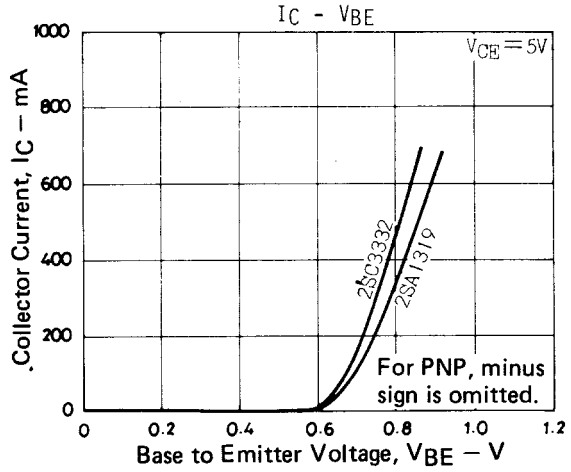
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

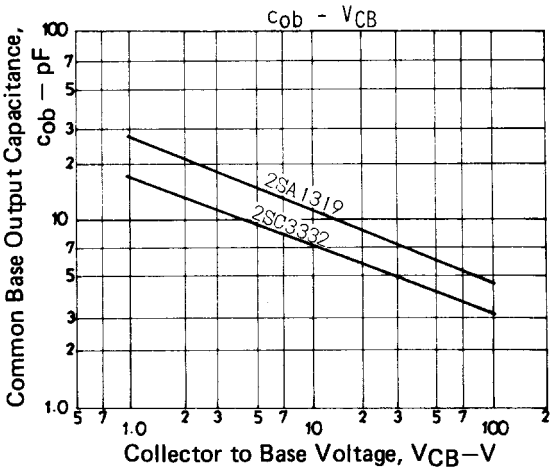

IC - VCE
2SA1319
Pulse
From top
−200mA
−180mA
−160mA
−140mA
−120mA
−80mA
−60mA
−40mA
−20mA
IB=0
Collector Current, IC − mA
Collector to Emitter Voltage, VCE − V

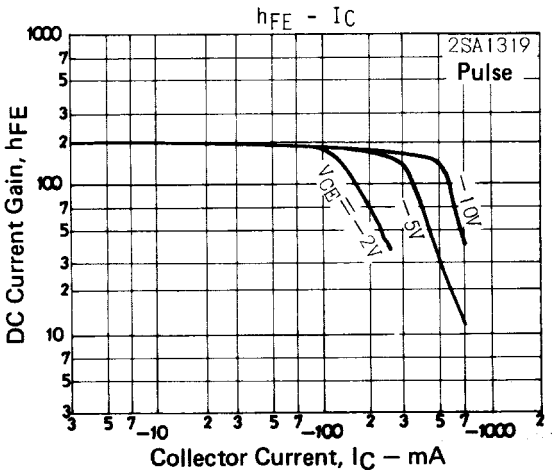

IC - VCE
2SC3332
Pulse
From top
100mA
90mA
80mA
70mA
60mA
50mA
40mA
30mA
20mA
10mA
IB=0
Collector Current, IC − mA
Collector to Emitter Voltage, VCE − V

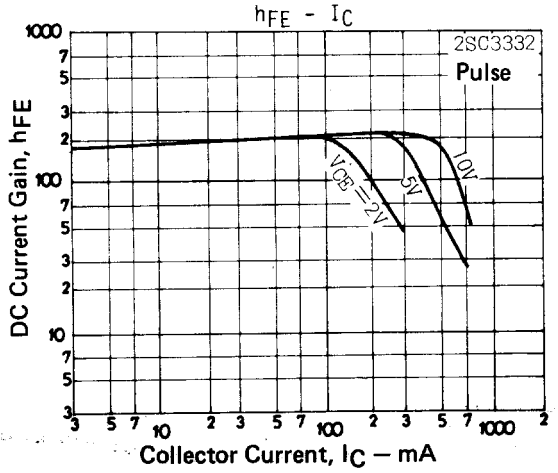

IC - VCE
2SA1319
Pulse
−5.0mA
−4.5mA
−4.0mA
−3.5mA
−3.0mA
−2.5mA
−2.0mA
−1.5mA
−1.0mA
−0.5mA
IB=0
Collector Current, IC − mA
Collector to Emitter Voltage, VCE − V


IC - VCE
2SC3332
Pulse
4.0mA
3.5mA
3.0mA
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
IB=0
Collector Current, IC − mA
Collector to Emitter Voltage, VCE − V


IC - VBE
VCE=5V
2SC3332
2SA1319
For PNP, minus sign is omitted.
Collector Current, IC − mA
Base to Emitter Voltage, VBE − V


Cob - VCB
2SA1319
2SC3332
Common Base Output Capacitance, Cob − pF
Collector to Base Voltage, VCB−V


hFE - IC
2SA1319
Pulse
VCE=−2V
−5V
−10V
DC Current Gain, hFE
Collector Current, IC − mA


hFE - IC
2SC3332
Pulse
VCE=2V
5V
10V
DC Current Gain, hFE
Collector Current, IC − mA