Ordering number:ENN2091B

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1134/2SD1667

50V/5A Switching Applications

Applications

· Relay drivers, high-speed inverters, and other general high-current switching applications.

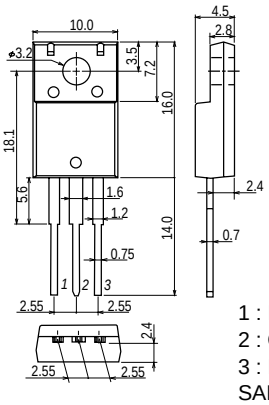
Features

· Low-saturation collector-to-emitter voltage : $V_{CE(sat)}$=–0.4V max/I_C=(–)3A, I_B=(–)0.3A.
· Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A



1 : Base
2 : Collector
3 : Emitter
SANYO : TO-220ML

( ) : 2SB1134

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		(–)5	A
Collector Current (Pulse)	I_{CP}		(–)9	A
Collector Dissipation	P_C		2	W
		Mounted on ceramic board (250mm^2×0.8mm)	25	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			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	mA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)1A	70*		280*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)3A	30			
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1A		30		MHz

* : The 2SB1134/2SD1667 are classified by 1A h_{FE} as follows :

Continued on next page.

Rank	Q	R	S
h_{FE}	70 to 140	100 to 200	140 to 280

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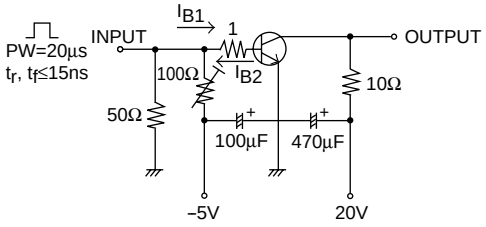
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TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

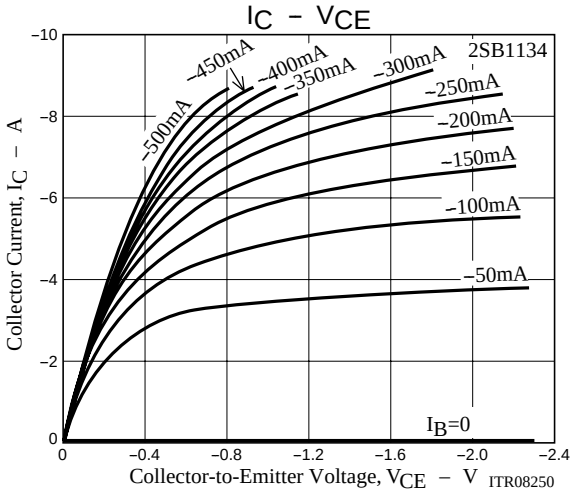
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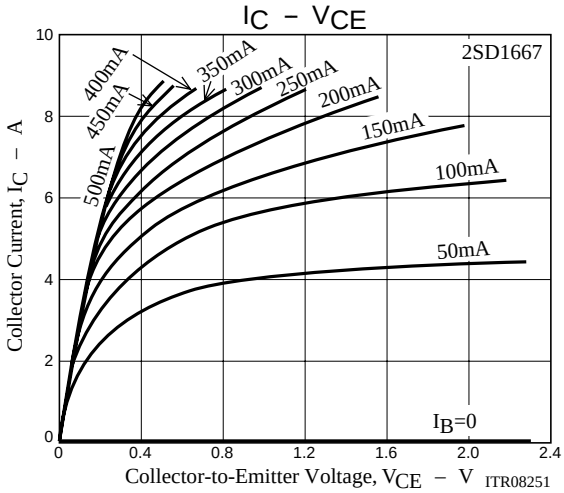
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		100		pF
				(160)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)3A, I_B=(–)0.3A			(–)0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA, I_C=0	(–)6			V
Rise Time	t_{on}	See specified Test Circuti.		0.1		μs
Storage Time	t_{stg}	See specified Test Circuit.		(0.7)		μs
				1.4		μs
Fall Time	t_f	See specified Test Circuit.		0.2		μs

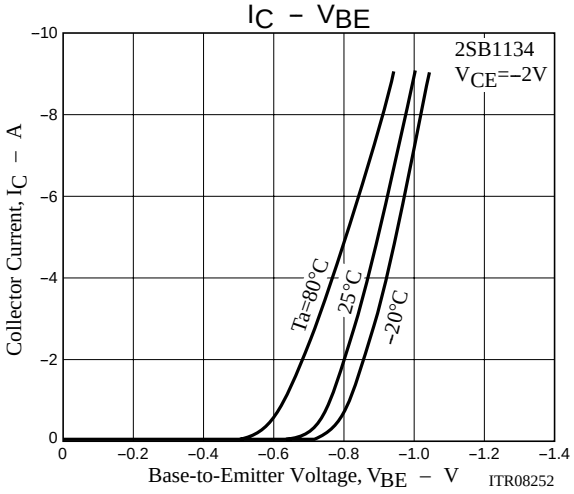
Switching Time Test Circuit

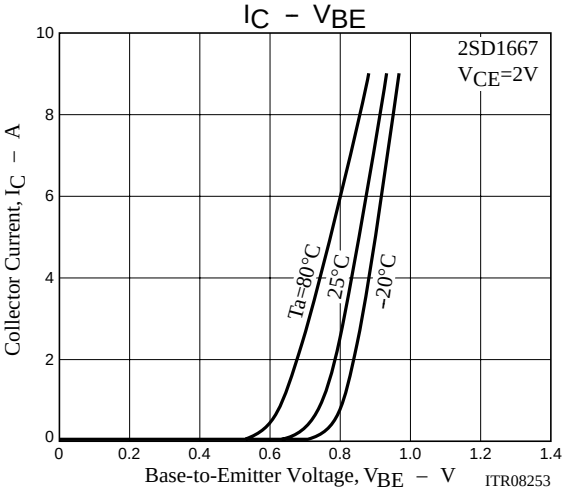


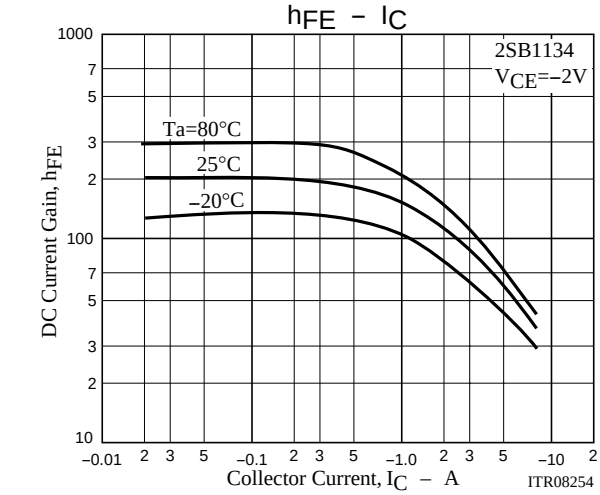
$10I_{B1}$= $-10I_{B2}$= I_C=2A
(For PNP, the polarity is reversed.)

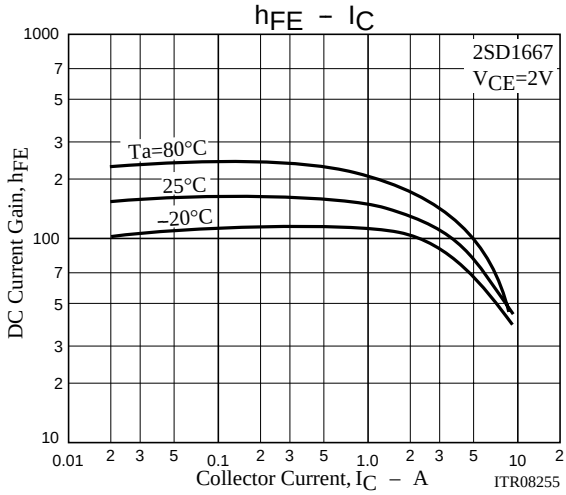


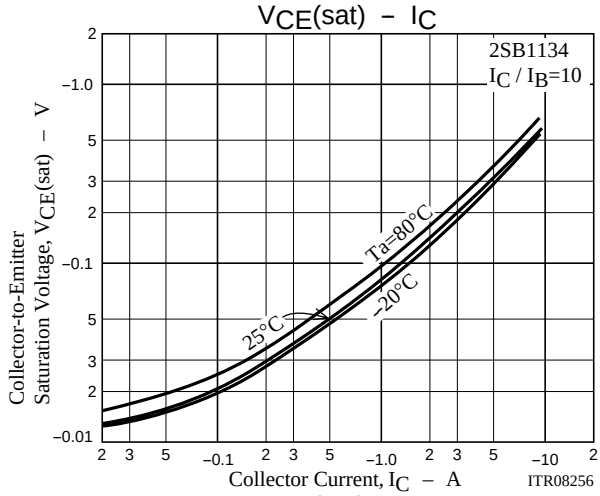


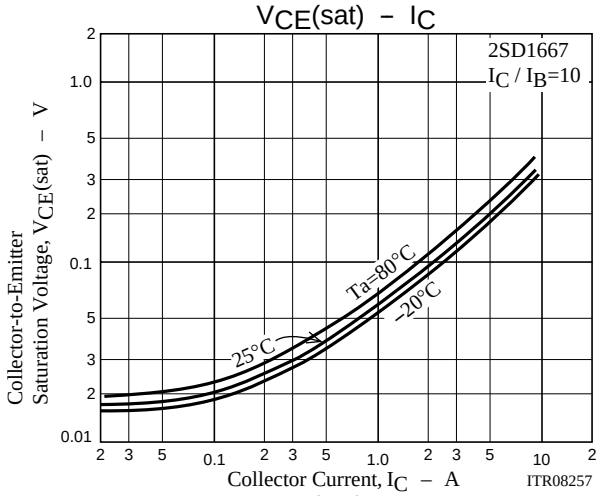


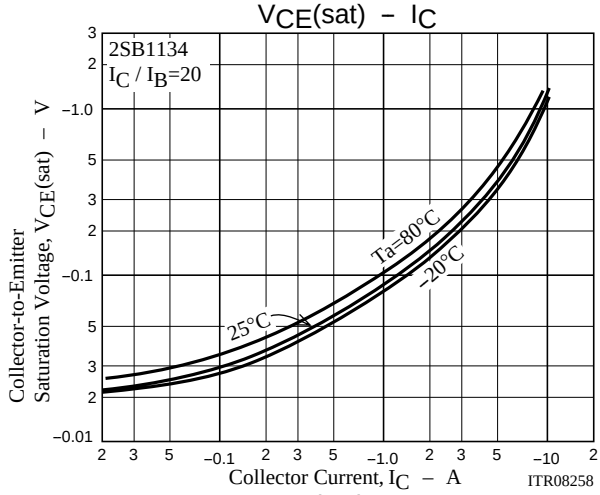


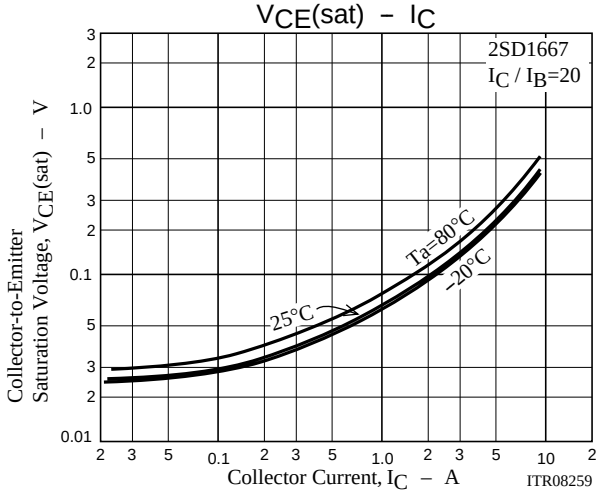

hFE – IC
2SB1134
VCE=–2V
Ta=80°C
25°C
–20°C
DC Current Gain, hFE
Collector Current, IC – A
ITR08254

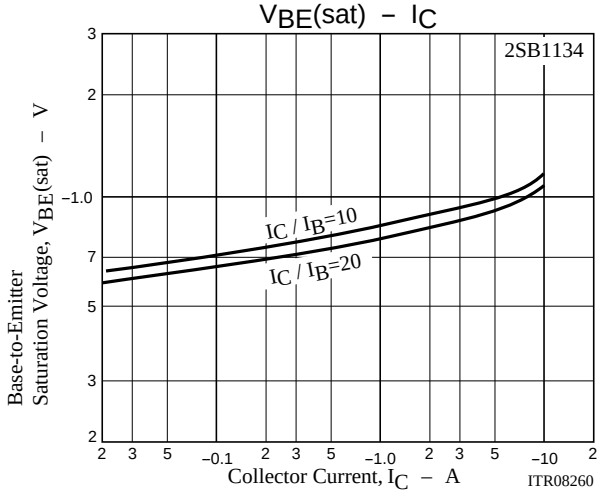

hFE – IC
2SD1667
VCE=2V
Ta=80°C
25°C
–20°C
DC Current Gain, hFE
Collector Current, IC – A
ITR08255

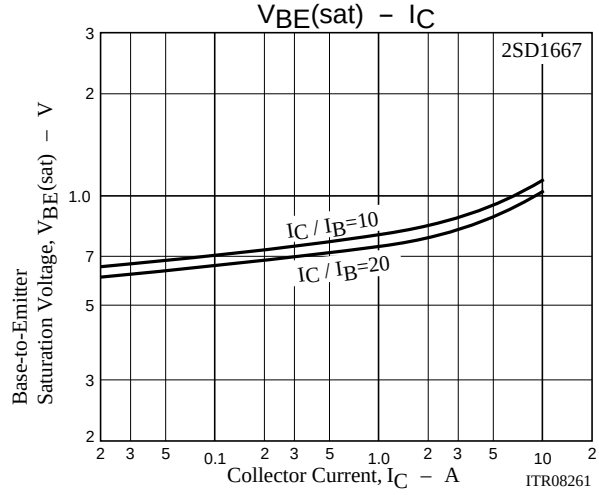

VCE(sat) – IC
2SB1134
IC / IB=10
Ta=80°C
25°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08256

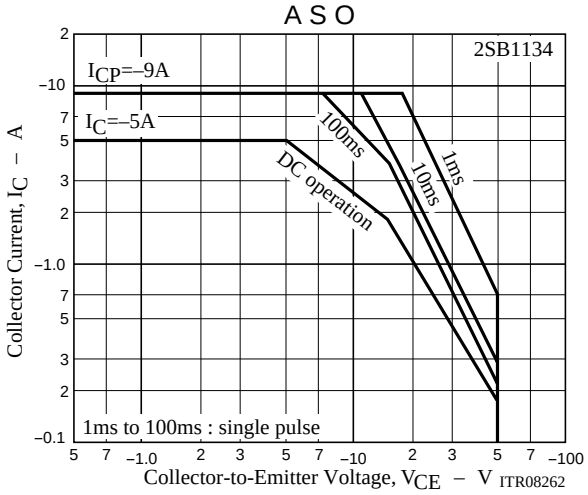

VCE(sat) – IC
2SD1667
IC / IB=10
Ta=80°C
25°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08257

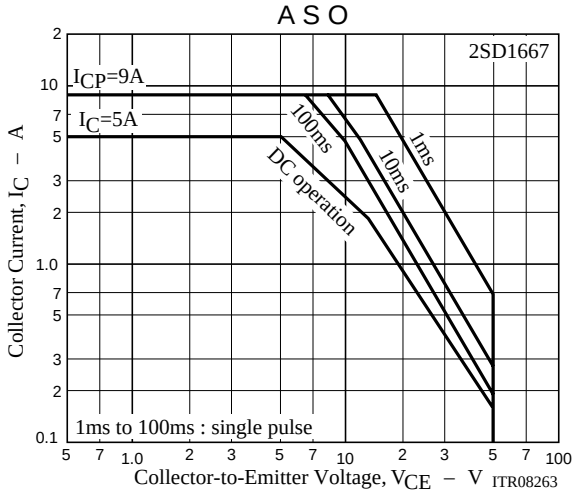

VCE(sat) – IC
2SB1134
IC / IB=20
Ta=80°C
25°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08258

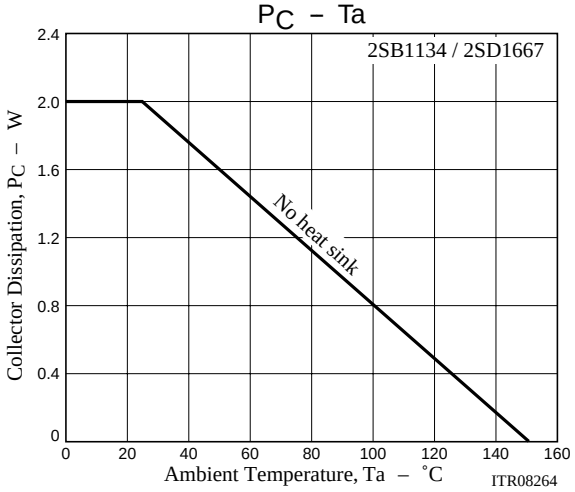

VCE(sat) – IC
2SD1667
IC / IB=20
Ta=80°C
25°C
–20°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR08259

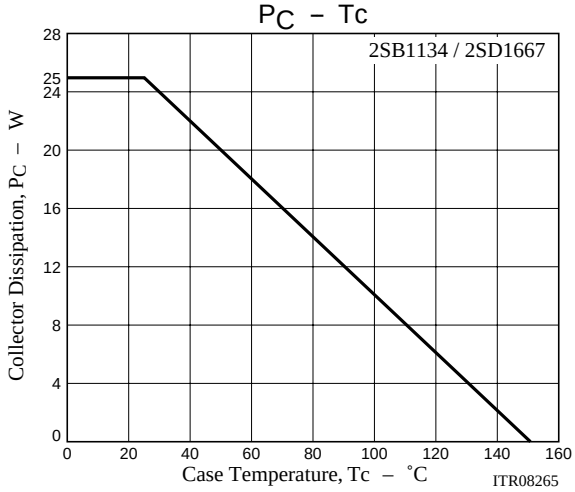

VBE(sat) – IC
2SB1134
IC / IB=10
IC / IB=20
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR08260


VBE(sat) – IC
2SD1667
IC / IB=10
IC / IB=20
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR08261









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