Ordering number:ENN3249

PNP/~~NPN~~ Epitaxial Planar Silicon Transistors

2SB1454/~~2SD2202~~

High-Current Switching Applications

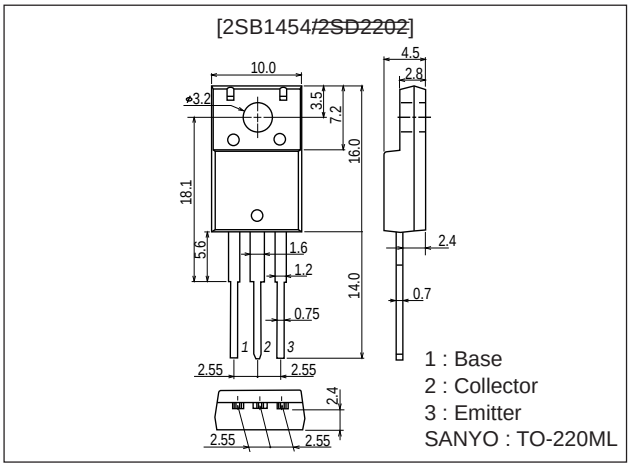
Features

- Low collector-to-emitter saturation voltage.
- Large current capacity.
- Micaless package facilitating easy mounting.

Package Dimensions

unit:mm

2041A



( ) : 2SB1454

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)90	V
Collector-to-Emitter Voltage	V_{CEO}		(–)80	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		2.0	W
		Tc=25˚C	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}=(–)80V, 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		20		MHz

* : The 2SB1454/~~2SD2202~~ 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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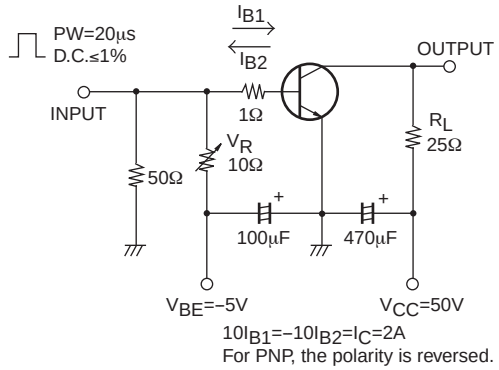
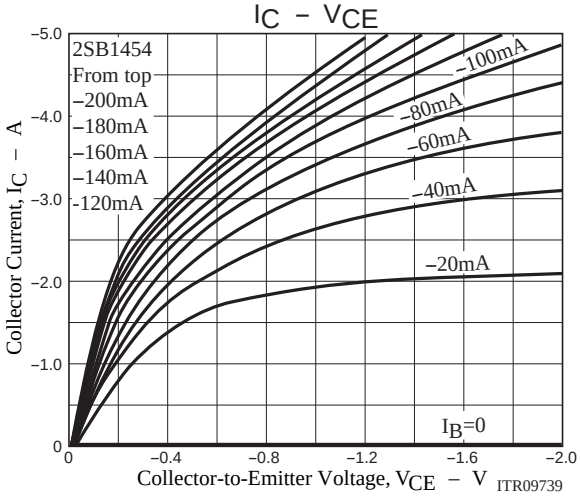
Continued from preceding page.

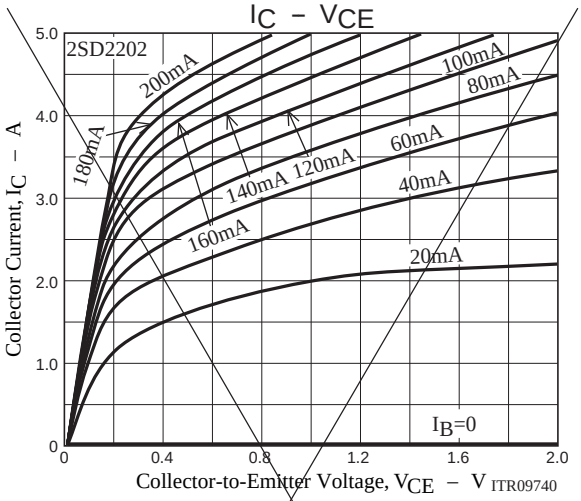
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)3A, I_B=(–)0.3A			~~0.4~~	V
					(–0.5)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)90			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)80			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified test circuit.		(0.2)		µs
				~~0.1~~		µs
Storage Time	t_{stg}	See specified test circuit.		(0.7)		µs
				~~1.2~~		µs
Fall Time	t_f	See specified test circuit.		(0.2)		µs
				~~0.4~~		µs

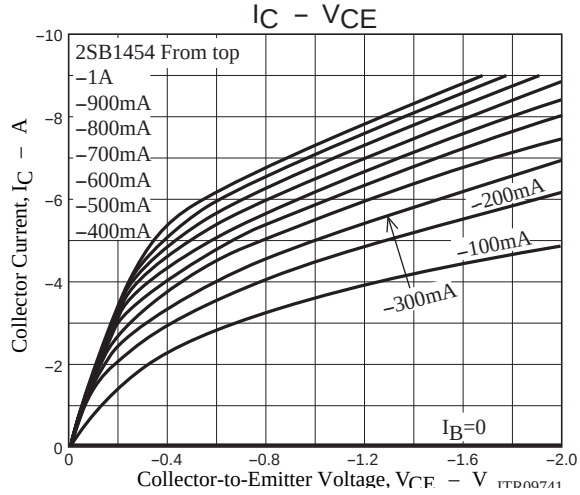
Switching Time Test Circuit

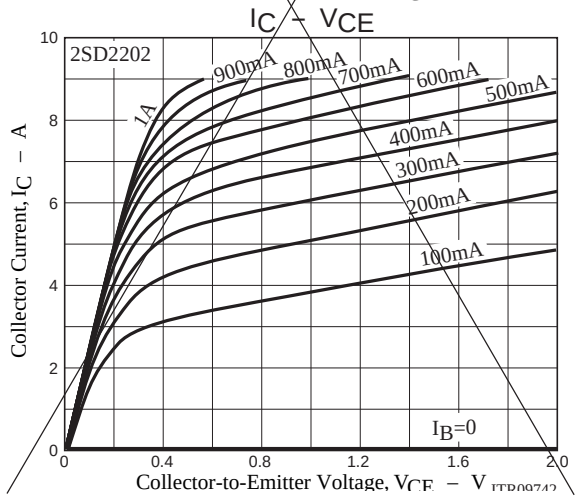


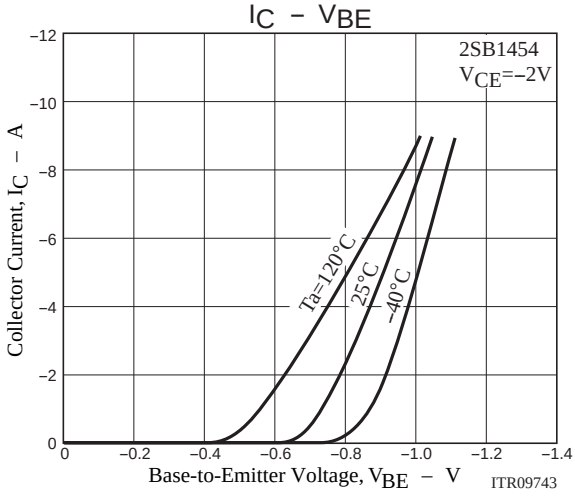
$10I_{B1}=-10I_{B2}=I_C=2A$
For PNP, the polarity is reversed.

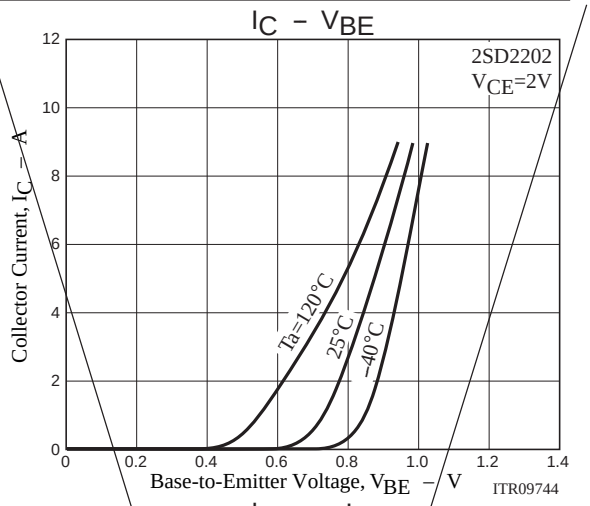


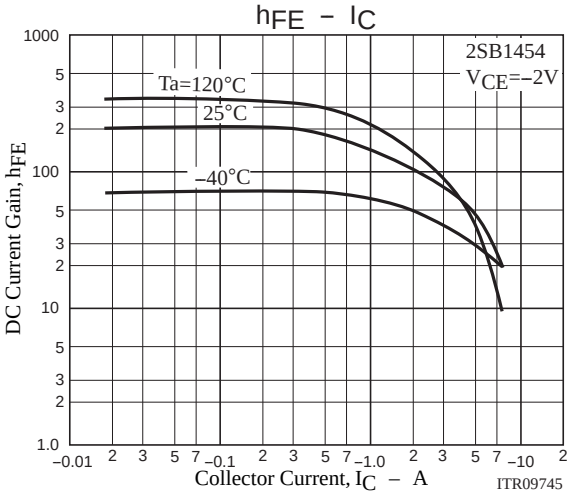


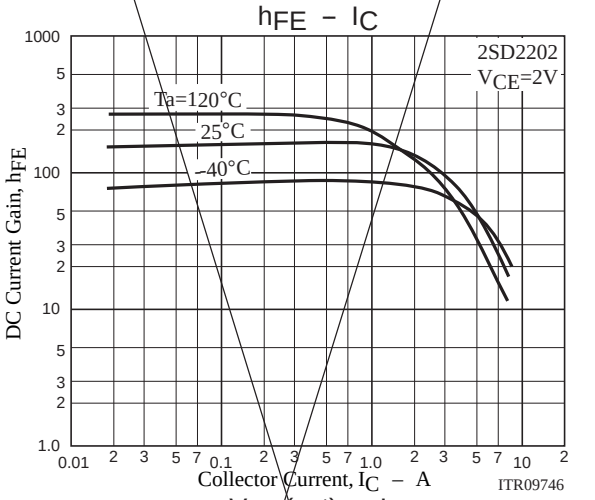


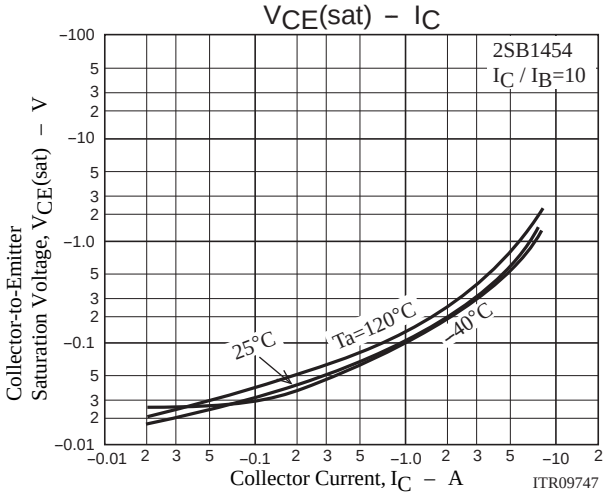


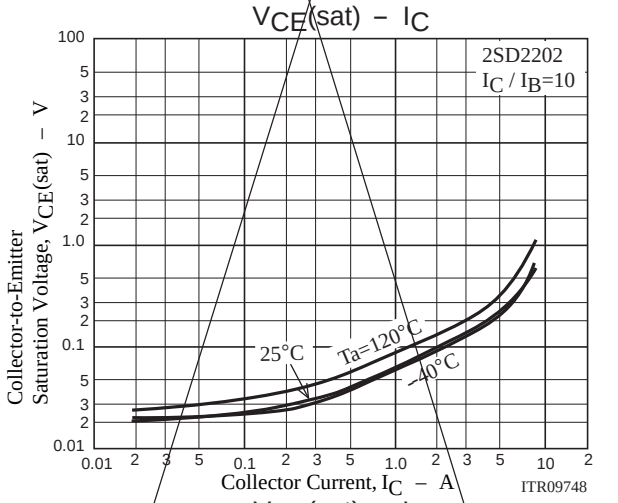

IC – VBE
2SB1454
VCE=–2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
Ta=120°C
25°C
–40°C
ITR09743

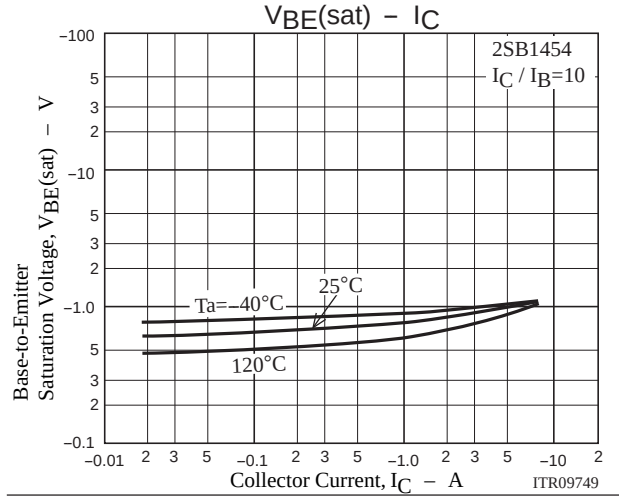

IC – VBE
2SD2202
VCE=2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
Ta=120°C
25°C
–40°C
ITR09744

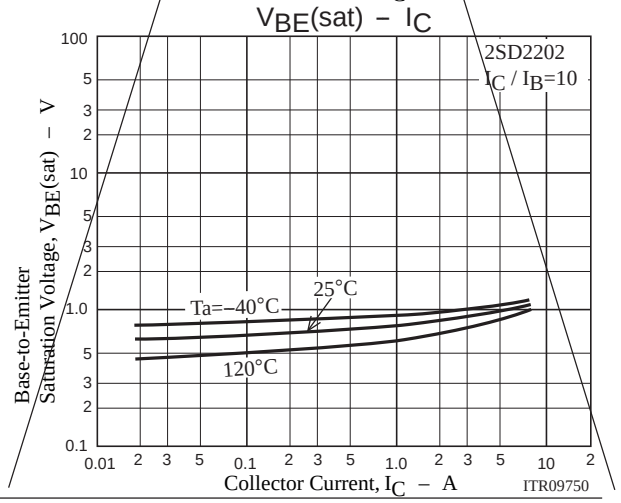

hFE – IC
2SB1454
VCE=–2V
DC Current Gain, hFE
Collector Current, IC – A
Ta=120°C
25°C
–40°C
ITR09745


hFE – IC
2SD2202
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
Ta=120°C
25°C
–40°C
ITR09746


VCE(sat) – IC
2SB1454
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
25°C
Ta=120°C
–40°C
ITR09747


VCE(sat) – IC
2SD2202
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
25°C
Ta=120°C
–40°C
ITR09748


VBE(sat) – IC
2SB1454
IC / IB=10
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
Ta=–40°C
25°C
120°C
ITR09749


VBE(sat) – IC
2SD2202
IC / IB=10
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
Ta=–40°C
25°C
120°C
ITR09750