Ordering number:ENN2298B

NPN Epitaxial Planar Type Silicon Transistor

2SC3785

Driver Applications

Applications

· Suitable for use in switching of L load (motor drivers, printer hammer drivers, relay drivers).

Features

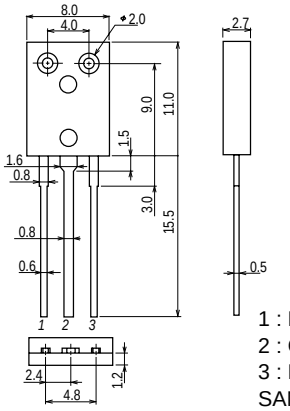
· High DC current gain.
· Wide ASO.
· On-chip Zener diode of 60±10V between collector and base.
· Uniformity in collector-to-base breakdown voltage.
· Large inductive load handling capability.

Package Dimensions

unit:mm

2043B

[2SC3785]



1 : Base
2 : Collector
3 : Emitter
SANYO : TO-126LP

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		50*	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}		4	A
Collector Dissipation	P_C		1.2	W
		Tc=25˚C	20	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

* : On-chip Zener diode (60±10V)

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			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			2	mA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=1A	1000	4000		
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=1A		180		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1A, I_B=4mA		1.0	1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1A, I_B=4mA			2.0	V

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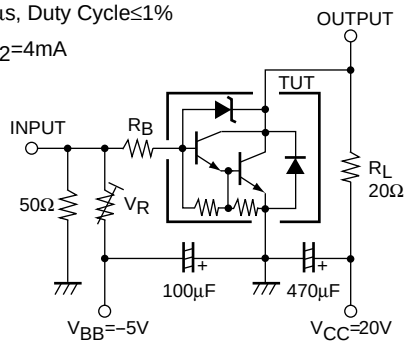
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Inductive Load Handling Capability	Es/b	L=100mH, R_{BE}=100Ω	25			mJ
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	50	60	70	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	50	60	70	V
Turn-on Time	t_{on}	See specified Test Circuit.		0.2		μs
Storage Time	t_{stg}	See specified Test Circuit.		3.5		μs
Fall Time	t_f	See specified Test Circuit.		0.5		μs

Switching Time Test Circuit

PW=50μs, Duty Cycle≤1%

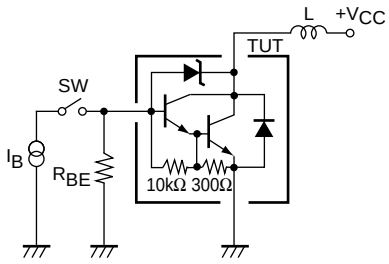
I_{B1}=−I_{B2}=4mA

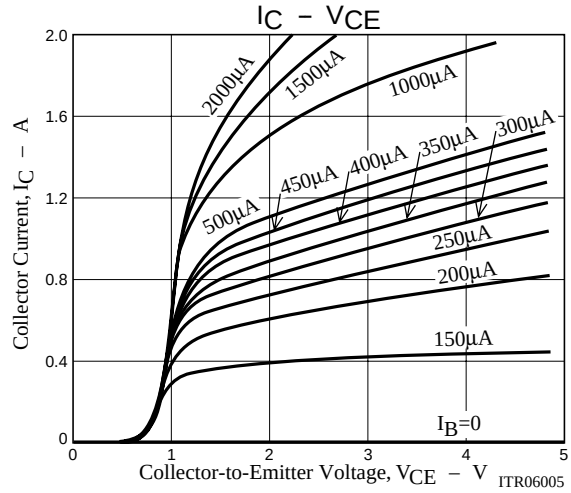


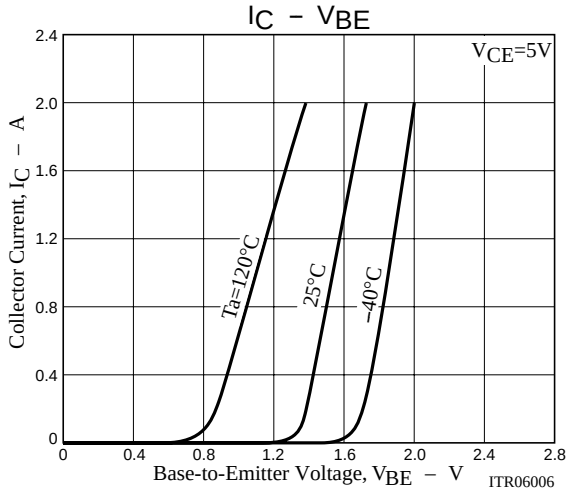
I_C=250, I_{B1}=−250, I_{B2}=1A

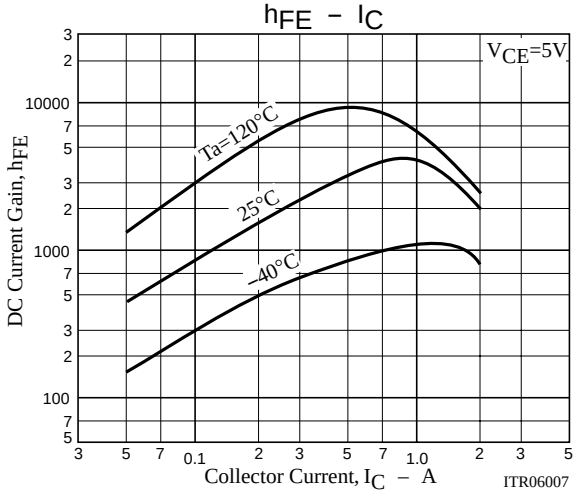
Es/b Test Circuit

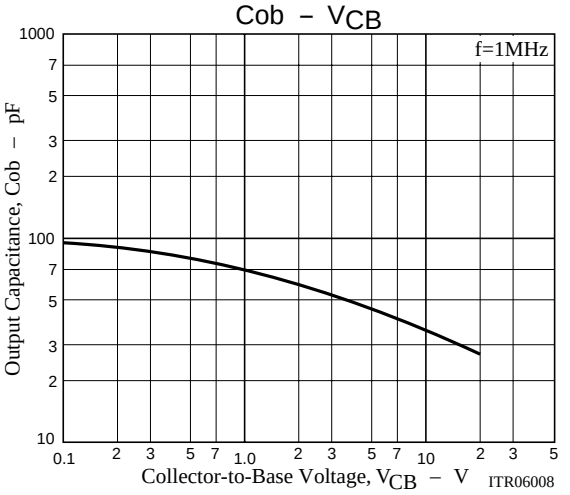
V_{CC}=20V, R_{BE}=100Ω

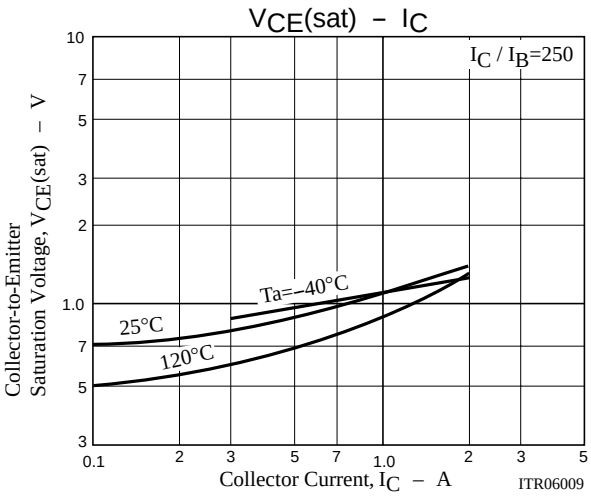


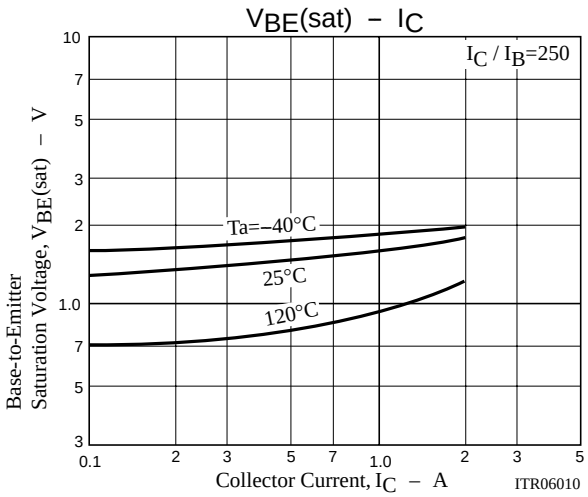


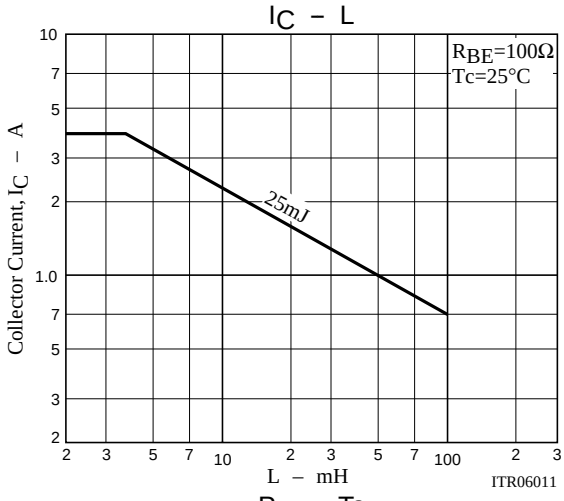


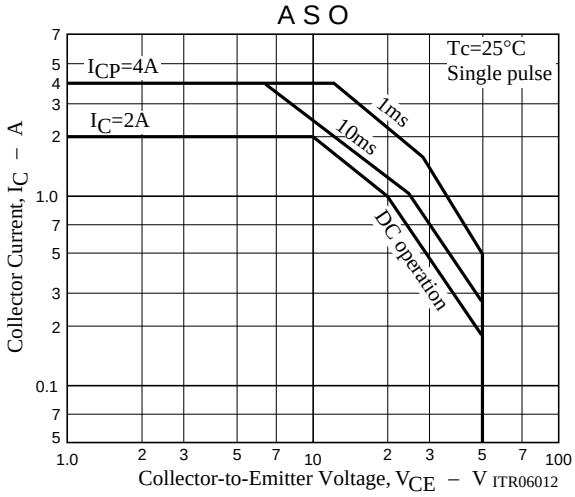


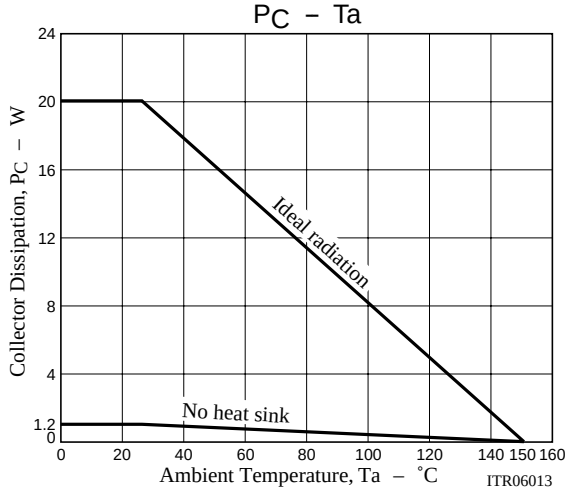



VCE(sat) – IC
IC / IB=250
Ta=–40°C
25°C
120°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR06009


VBE(sat) – IC
IC / IB=250
Ta=–40°C
25°C
120°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR06010


IC – L
RBE=100Ω
Tc=25°C
25mJ
Collector Current, IC – A
L – mH
ITR06011


ASO
ICP=4A
IC=2A
Tc=25°C
Single pulse
1ms
10ms
DC operation
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR06012


PC – Ta
Ideal radiation
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
ITR06013