



Driver Applications

Applications

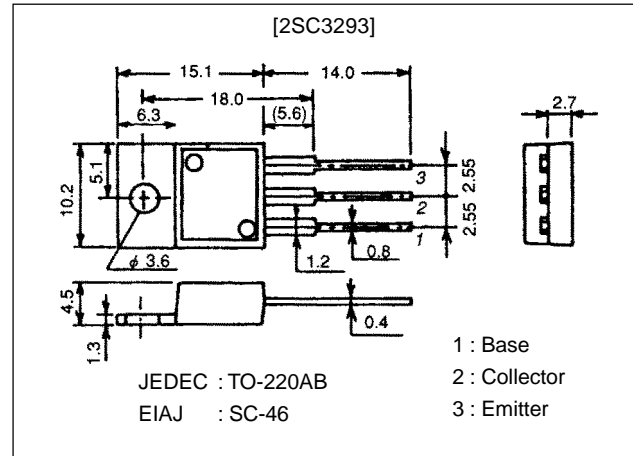
- Suitable for use in switching of L load (motor drivers, printer hammer drivers, relay drivers).

Features

- High DC current gain.
- Large current capacity and wide ASO.
- On-chip Zener diode of $60\pm 10V$ between collector and base.
- Uniformity in collector-to-base breakdown voltage due to the adoption of an accurate impurity diffusion process.
- High inductive load handling capability.

Package Dimensions

unit:mm
2010C



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ C$

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
Base Current	I_B		0.4	A
Collector Dissipation	P_C	$T_c=25^\circ C$	20	W
Junction Temperature	T_J		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

* : With Zener diode ($60\pm 10V$)

Electrical Characteristics at $T_a = 25^\circ C$

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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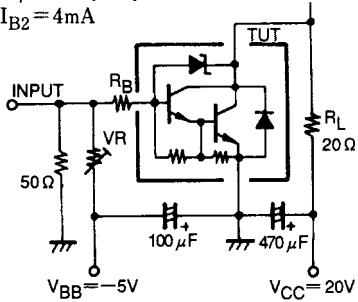
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=0.1mA, I_E=0$	50	60	70	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50	60	70	V
Inductive Load Handling Capability	Es/b	$L=100mH, R_{BE}=100\Omega$	25			mJ
Turn-ON Time	t_{on}	$V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		0.2		μs
Storage Time	t_{stg}	$V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		3.5		μs
Fall Time	t_f	$V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		0.5		μs

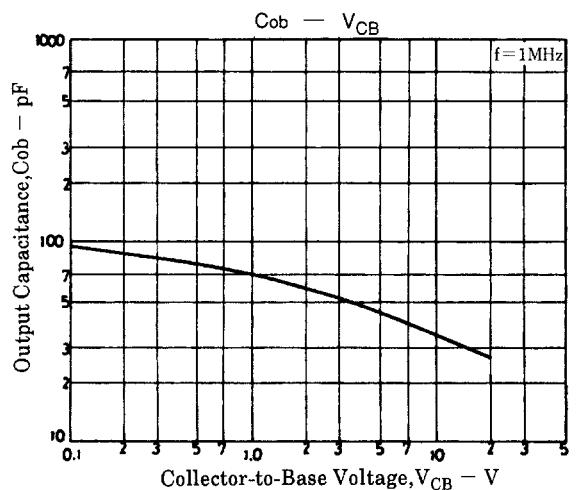
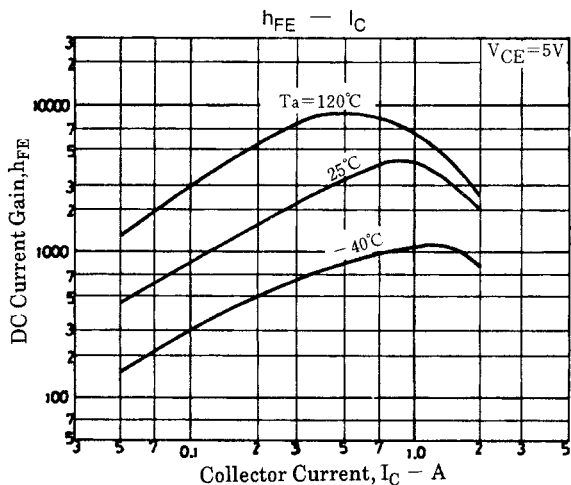
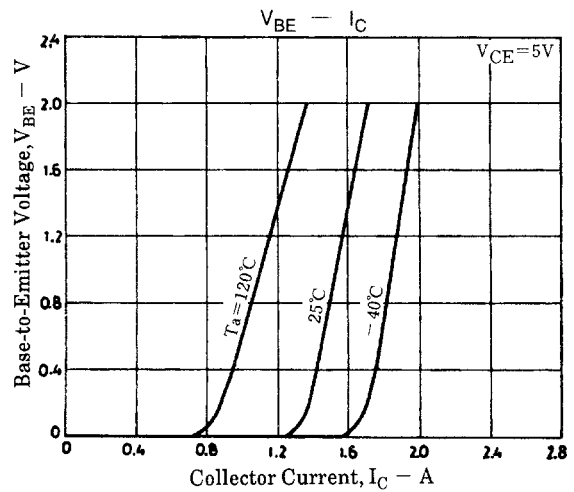
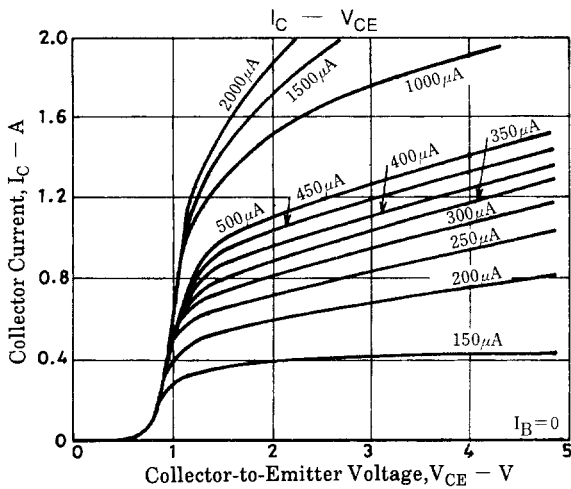
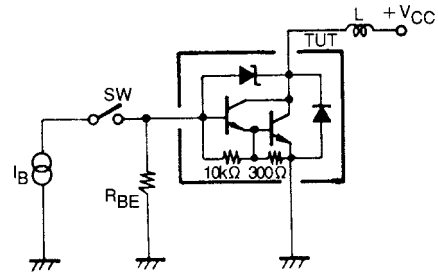
Switching Time Test Circuit

PW = 50 μs , Duty Cycle $\leq 1\%$
 $I_{B1} = -I_{B2} = 4mA$

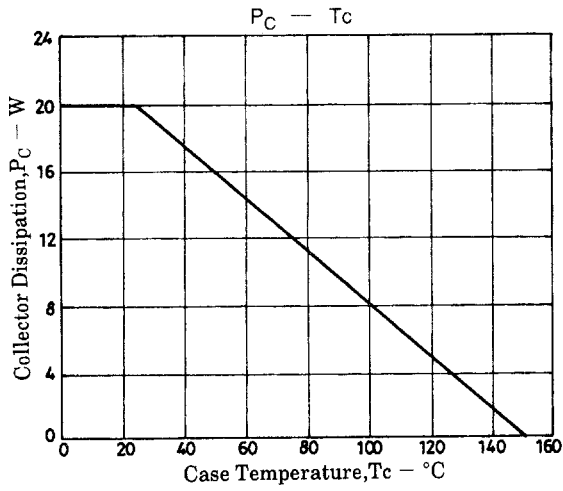
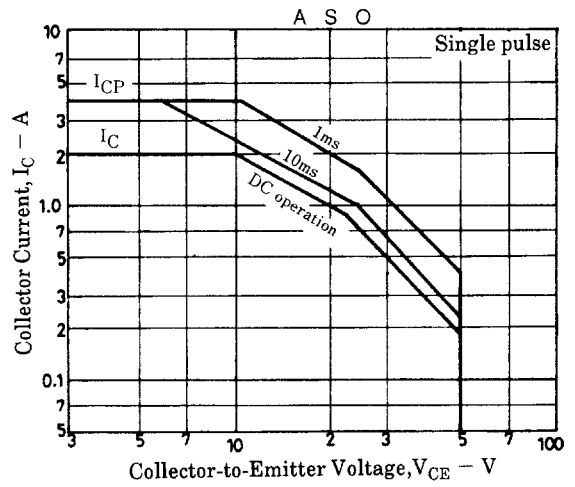
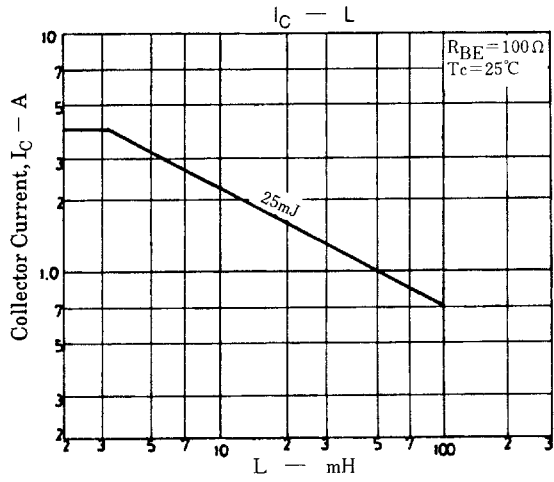
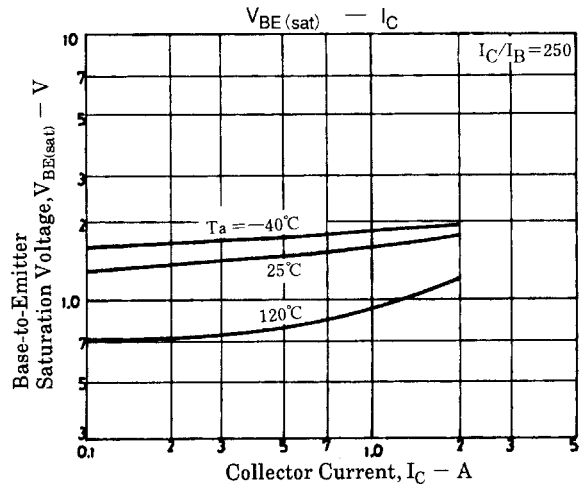
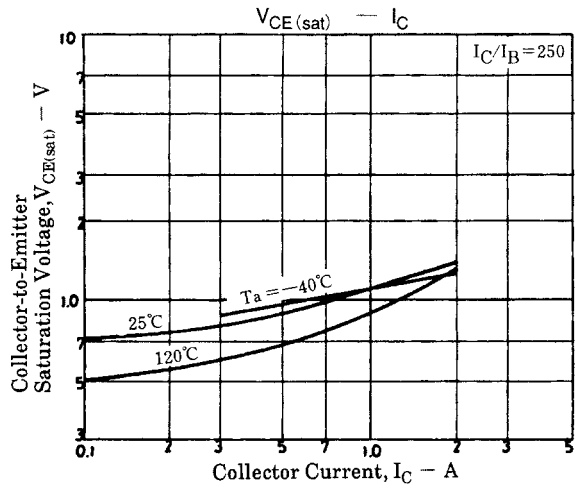


Es/b Test Circuit

$V_{CC}=20V, R_{BE}=100\Omega$



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