

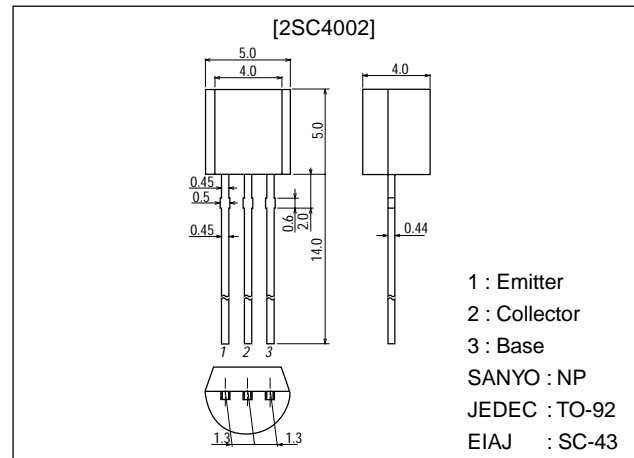
**2SC4002****High-Voltage Driver Applications****Features**

- High breakdown voltage.
- Adoption of MBIT process.
- Excellent  $h_{FE}$  linearity.

**Package Dimensions**

unit:mm

2003B

**Specifications****Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		400	V
Collector-to-Emitter Voltage	$V_{CEO}$		400	V
Emitter-to-Base Voltage	$V_{EBO}$		5	V
Collector Current	$I_C$		200	mA
Collector Current (Pulse)	$I_{CP}$		400	mA
Collector Dissipation	$P_C$		600	mW
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

**Electrical Characteristics at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=300\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=10\text{V}, I_C=50\text{mA}$	60*		200*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=30\text{V}, I_C=10\text{mA}$		70		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$			0.6	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$			1.0	V

\* : The 2SC4002 is classified by 50mA  $h_{FE}$  as follows :

60	D	120	100	E	200
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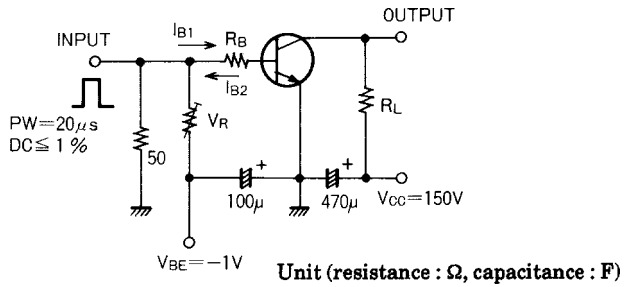
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# 2SC4002

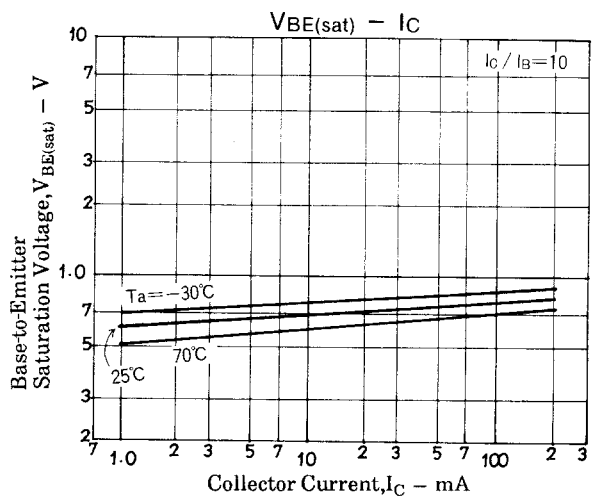
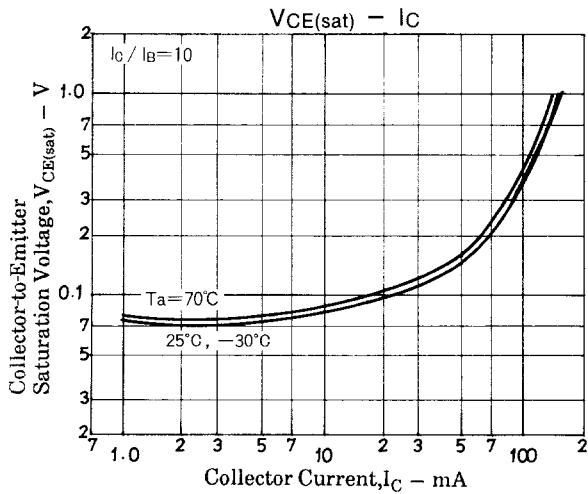
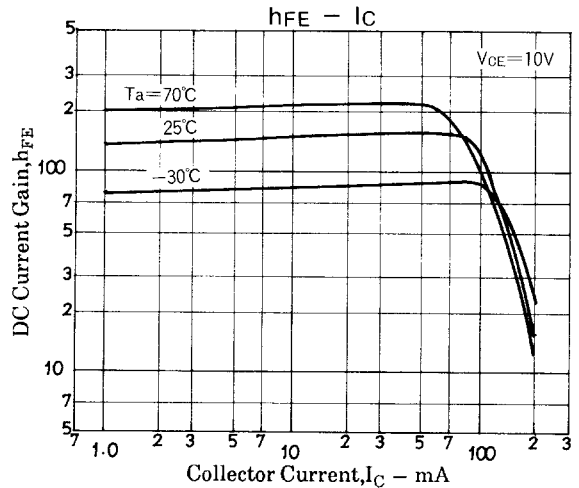
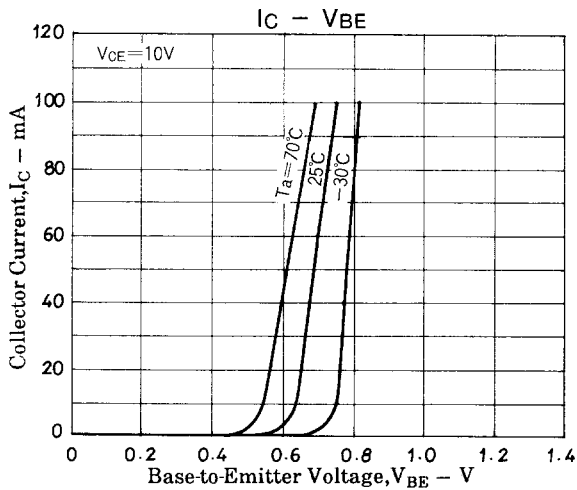
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Output Capacitance	$C_{ob}$	$V_{CB}=30V, f=1MHz$		4		pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB}=30V, f=1MHz$		3		pF
Turn-ON Time	$t_{on}$	See specified test circuit.		0.25		$\mu s$
Turn-OFF Time	$t_{off}$	See specified test circuit.		5.0		$\mu s$

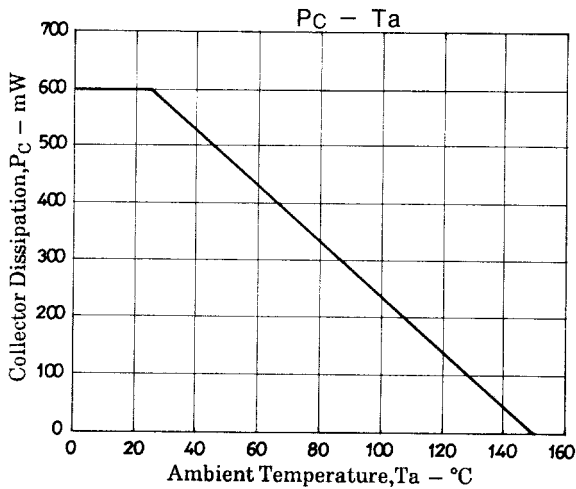
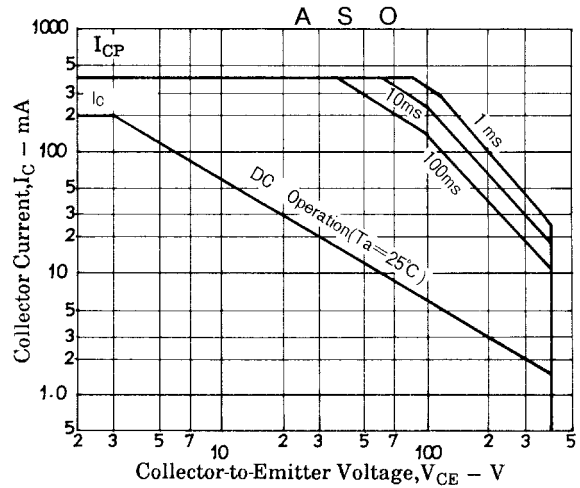
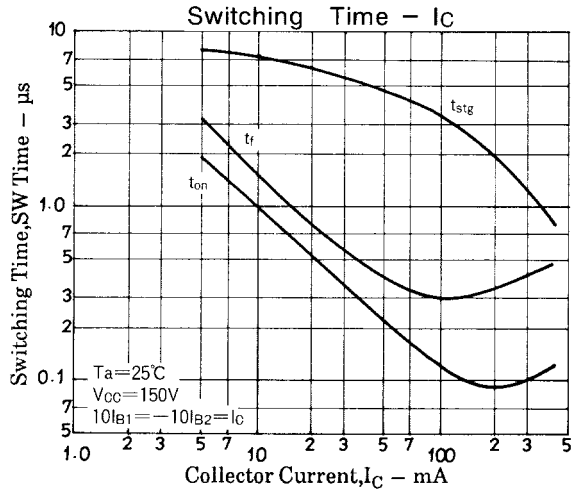
## Switching Time Test Circuit



$$10I_{B1} = -10I_{B2} = I_C = 50mA$$

$$R_L = 3k\Omega, R_B = 200\Omega \text{ at } I_C = 50mA$$





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