

## 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
- Wide ASO.
- On-chip Zener diode of  $60\pm 10V$  between collector and base.
- Uniformity in collector-to-base breakdown voltage due to adoption of accurate impurity diffusion process.
- High inductive load handling capability.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		50*	V
Collector-to-Emitter Voltage	$V_{CE0}$		50*	V
Emitter-to-Base Voltage	$V_{EB0}$		6	V
Collector Current	$I_C$		5	A
Collector Current (Pulse)	$I_{CP}$		8	A
Base Current	$I_B$		0.5	A
Collector Dissipation	$P_C$	$T_C=25^\circ C$	40	W
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB}=40V, I_E=0$			100	$\mu A$
Emitter Cutoff Current	$I_{EB0}$	$V_{EB}=5V, I_C=0$			3	mA
DC Current Gain	$h_{FE}$	$V_{CE}=3V, I_C=2.5A$	1000	4000		
Gain-Bandwidth Product	$f_T$	$V_{CE}=5V, I_C=2.5A$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2.5A, I_B=5mA$		0.9	1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=2.5A, I_B=5mA$			2.0	V

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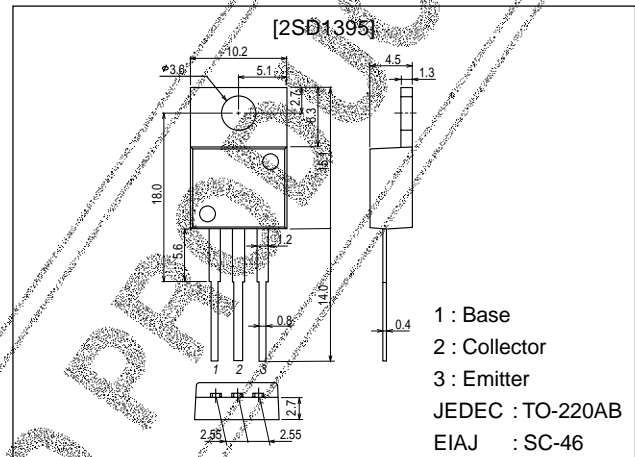
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### Package Dimensions

unit:mm

2010C



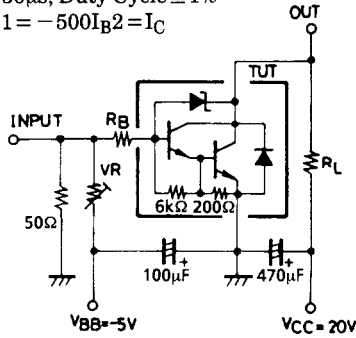
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=5mA, I_E=0$	50	60	70	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=50mA, R_{BE}=\infty$	50	60	70	V
Inductive Load Handling Capability	Es/b	$L=100mH, R_{BE}=100\Omega$	50			mJ
Rise Time	$t_{on}$	$V_{CC}=20V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		0.6		$\mu s$
Storage Time	$t_{stg}$	$V_{CC}=20V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		4.0		$\mu s$
Fall Time	$t_f$	$V_{CC}=20V, I_C=3.0A, I_{B1}=-I_{B2}=6mA$		1.5		$\mu s$

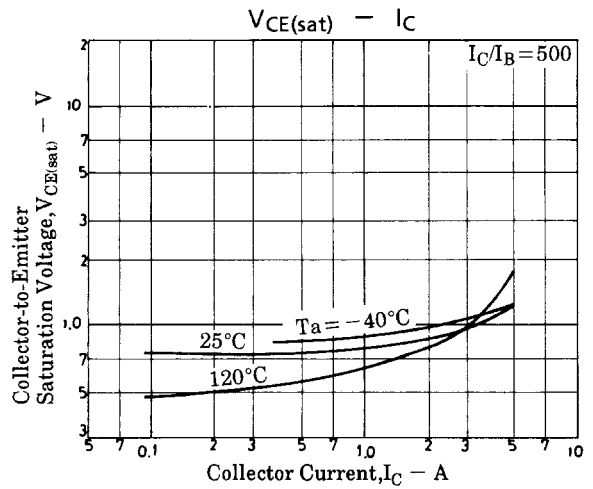
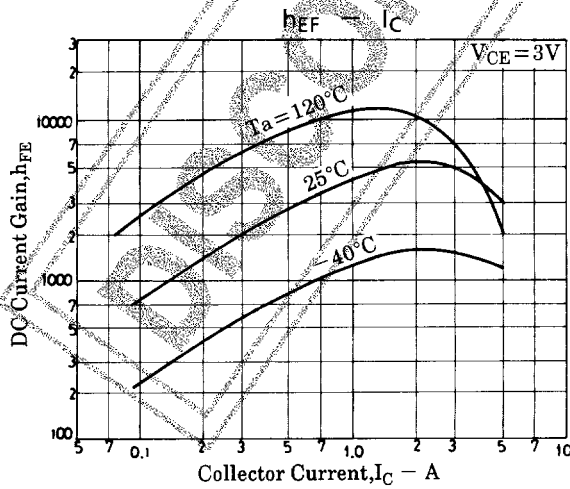
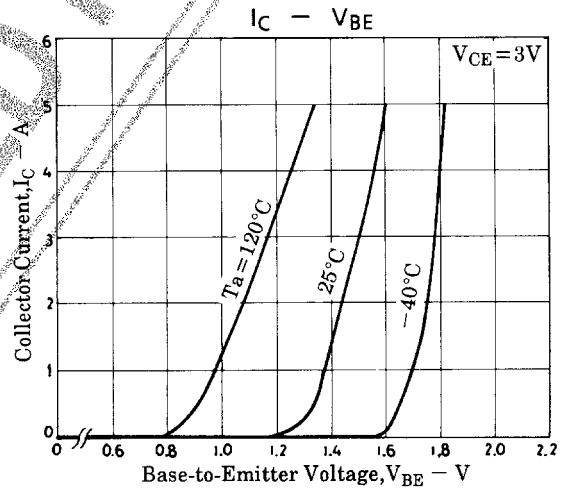
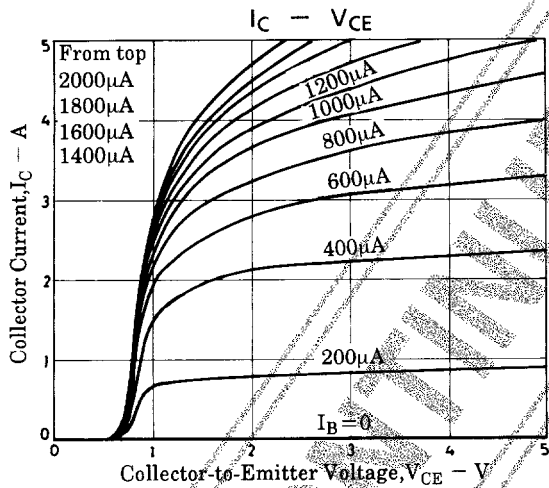
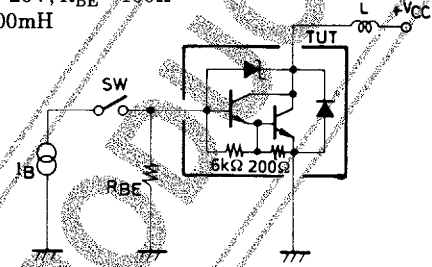
## Specified Test Circuit

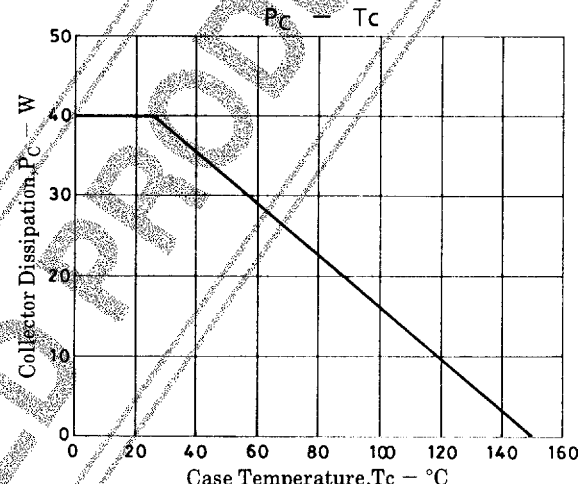
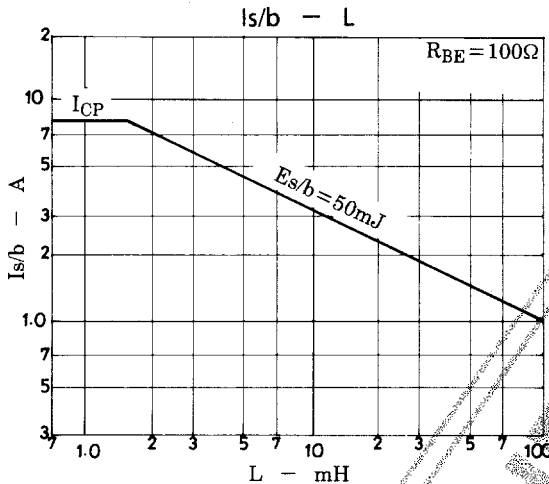
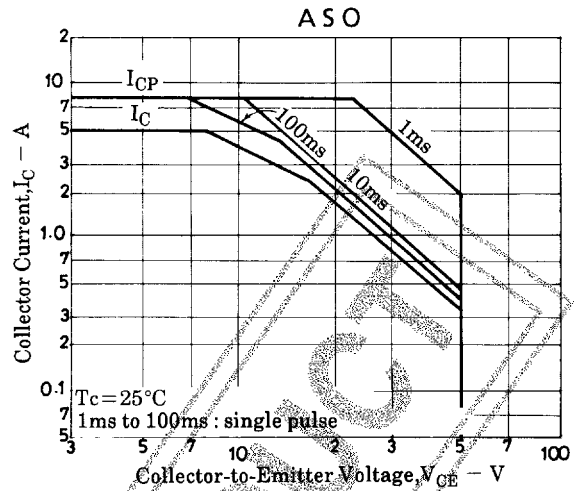
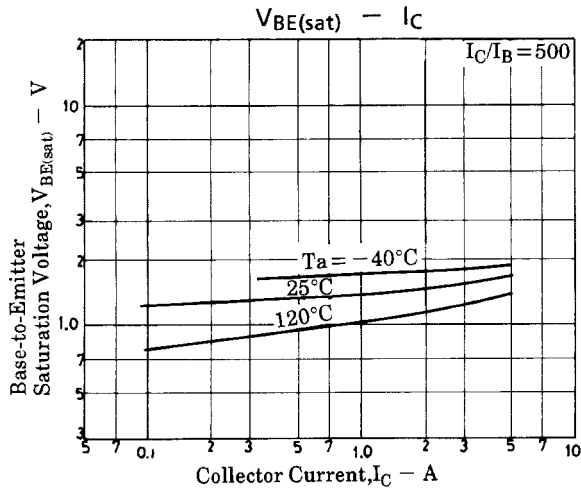
PW = 50 $\mu s$ , Duty Cycle  $\leq 1\%$   
 $500I_{B1} = -500I_{B2} = I_C$



## Es/b Test Circuit

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





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