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TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

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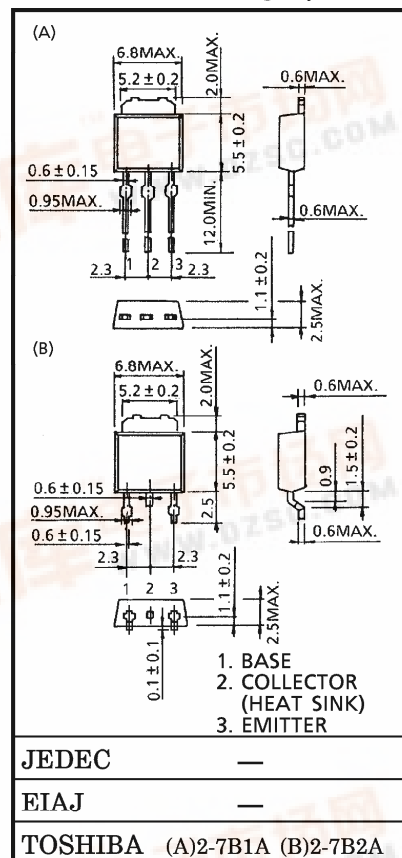
Unit in mm

HIGH SPEED DC-DC CONVERTER APPLICATIONS

- **Excellent Switching Times**
: $t_r = 1.0 \mu s$ (Max.), $t_f = 1.0 \mu s$ (Max.) at $I_C = 0.8 A$
- **High Collector Breakdown Voltage** : $V_{CE0} = 400 V$

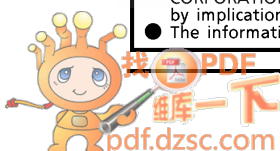
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CB0}	500	V
Collector-Emitter Voltage		V_{CEO}	400	V
Emitter-Base Voltage		V_{EB0}	7	V
Collector Current		I_C	2	A
Base Current		I_B	0.5	A
Collector Power	$T_a = 25^\circ\text{C}$	P_C	1.0	W
Dissipation	$T_c = 25^\circ\text{C}$		20	
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ\text{C}$

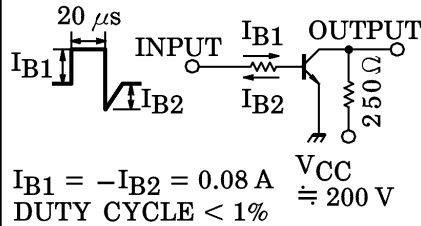


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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 400\text{ V}, I_E = 0$	—	—	100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1	mA
Collector-Base Breakdown Voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_E = 0$	500	—	—	V
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	400	—	—	V
DC Current Gain		h_{FE}	$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	20	—	—	
			$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	8	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 1\text{ A}, I_B = 0.2\text{ A}$	—	—	1.0	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 1\text{ A}, I_B = 0.2\text{ A}$	—	—	1.5	V
Switching Time	Rise Time	t_r	 $I_{B1} = -I_{B2} = 0.08\text{ A}$ DUTY CYCLE < 1% $V_{CC} \doteq 200\text{ V}$	—	—	1.0	μs
	Storage Time	t_{stg}		—	—	2.5	
	Fall Time	t_f		—	—	1.0	

