

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SD2248

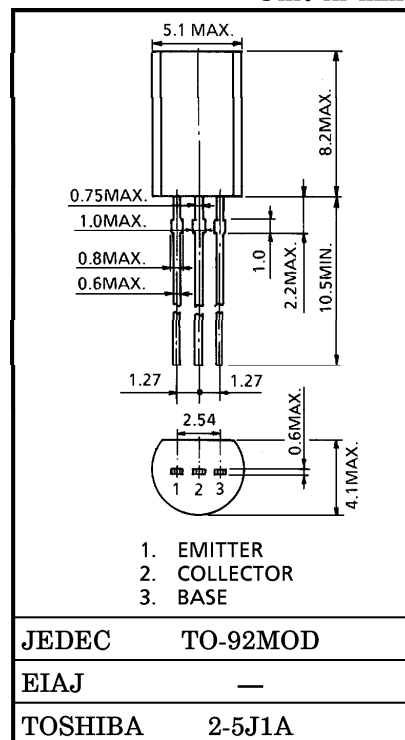
HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS
FOR INDUCTIVE LOAD DRIVE

- High DC Current Gain
: $h_{FE} = 2000$ (Min.) ($V_{CE} = 2V$, $I_C = 1A$)
- Low Saturation Voltage
: $V_{CE(sat)} = 1.5V$ (Max.) ($I_C = 1A$, $I_B = 1mA$)
- Built-in Zener Diode between Collector and Base

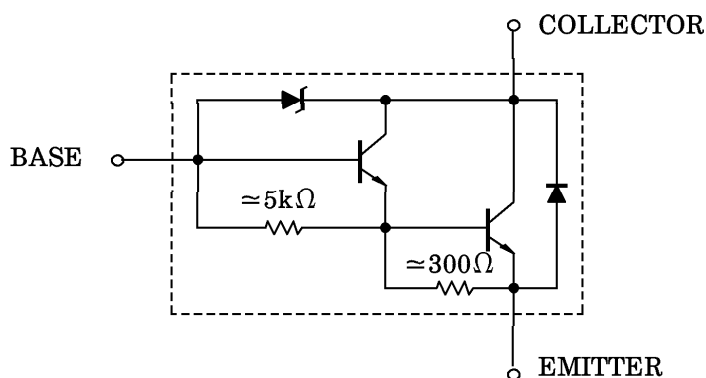
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	80 ± 10	V
Collector-Emitter Voltage	V_{CEO}	80 ± 10	V
Emitter-Base Voltage	V_{EBO}	8	V
Collector Current	DC	I_C	± 2
	Pulse	I_{CP}	± 3
Base Current	I_B	0.5	A
Collector Power Dissipation ($T_a = 25^\circ C$)	P_C	0.9	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ C$

Unit in mm



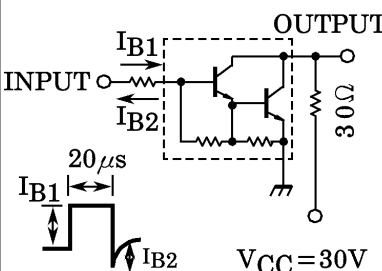
EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 60V, I_E = 0$	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 8V, I_C = 0$	0.8	—	4.0	mA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	70	80	90	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = 10mA, I_E = 0$	70	80	90	V
DC Current Gain		h_{FE}	$V_{CE} = 2V, I_C = 1A$	2000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 1A, I_B = 1mA$	—	—	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 1A, I_B = 1mA$	—	—	2.0	V
Emitter-Collector Forward Voltage		V_{ECF}	$I_E = 1A, I_B = 0$	—	1.2	2.0	V
Transition Frequency		f_T	$V_{CE} = 2V, I_C = 0.5A$	—	100	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	20	—	pF
Unclamped Inductive Load Energy		$E_{S/B}$	$L = 10mH, I_C = 1.2A, I_B = \pm 50mA$	7.2	—	—	mJ
Switching Time	Turn-on Time	t_{on}	 <p style="text-align: center;">$I_{B1} = -I_{B2} = 1mA,$ $DUTY\ CYCLE \leq 1\%$</p>	—	0.2	—	μs
	Storage Time	t_{stg}		—	4.0	—	
	Fall Time	t_f		—	0.6	—	