

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SD2092

SWITCHING APPLICATIONS

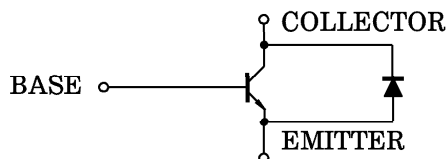
LAMP, SOLENOID DRIVE APPLICATIONS

- High DC Current Gain : $h_{FE(1)} = 500 \sim 1500$
- Low Collector Saturation Voltage : $V_{CE(sat)} = 0.3V$ (Max.)

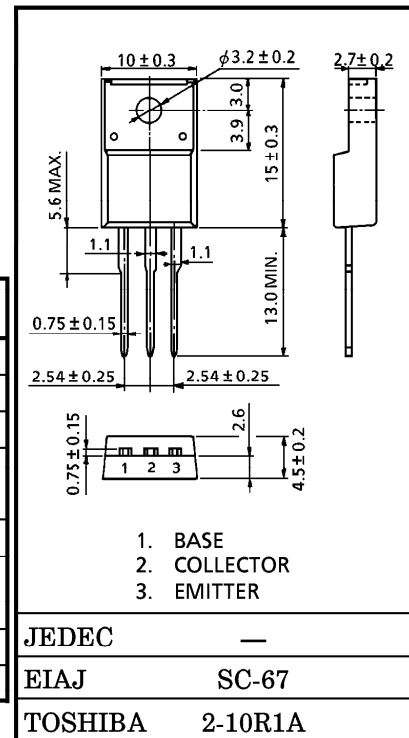
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	100	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	3	A
	Pulse	I_{CP}	5	
Base Current		I_B	1	A
Collector Power Dissipation	$T_a = 25^\circ C$	P_C	2.0	W
	$T_c = 25^\circ C$		25	
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$

EQUIVALENT CIRCUIT



Unit in mm



Weight : 1.7g (Typ.)

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Collector Cut-off Current	I_{CBO}	$V_{CB} = 100V, I_E = 0$	—	—	10	μA	
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 7V, I_C = 0$	—	—	10	μA	
Collector-Emitter Breakdown Voltage	$V_{(BR) CEO}$	$I_C = 50mA, I_B = 0$	100	—	—	V	
DC Current Gain	$h_{FE} (1)$	$V_{CE} = 1V, I_C = 0.5A$	500	—	1500		
	$h_{FE} (2)$	$V_{CE} = 1V, I_C = 1A$	150	—	—		
Collector-Emitter Saturation Voltage	$V_{CE} (sat)$	$I_C = 1A, I_B = 10mA$	—	—	0.3	V	
Base-Emitter Saturation Voltage	$V_{BE} (sat)$	$I_C = 1A, I_B = 10mA$	—	—	1.2	V	
Collector-Emitter Forward Voltage	V_{ECF}	$I_E = 1A, I_B = 0$	—	—	2.0	V	
Transition Frequency	f_T	$V_{CE} = 5V, I_C = 0.5A$	—	140	—	MHz	
Collector Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	30	—	pF	
Switching Time	Turn-on Time	t_{on}		—	0.5	—	μs
	Storage Time	t_{stg}		—	5	—	
	Fall Time	t_f		$I_{B1} = -I_{B2} = 10mA,$ $DUTY\ CYCLE \leq 1\%$	—	0.7	

