

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SD2092

Switching Applications

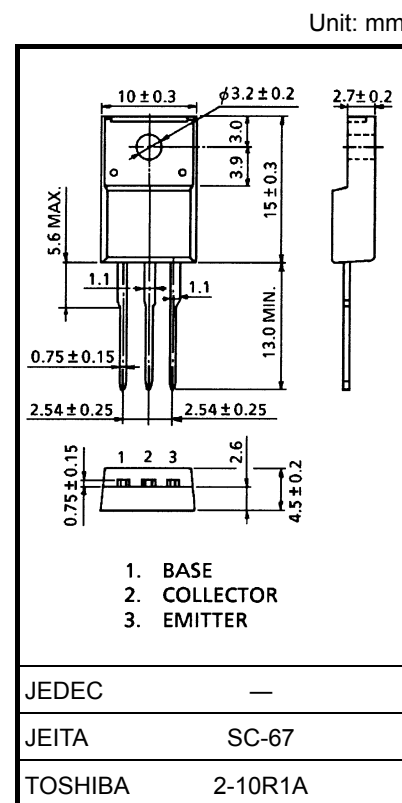
Lamp, Solenoid Drive Applications

- High DC current gain: $h_{FE}(1) = 500$ to 1500
- Low collector saturation voltage: $V_{CE(sat)} = 0.3 \text{ V (max)}$

Absolute Maximum Ratings (Tc = 25°C)

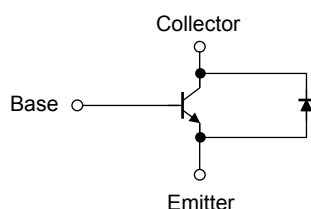
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	100	V
Collector-emitter voltage		V_{CEO}	100	V
Emitter-base voltage		V_{EBO}	7	V
Collector current	DC	I_C	3	A
	Pulse	I_{CP}	5	
Base current		I_B	1	A
Collector power dissipation	$T_a = 25^{\circ}\text{C}$	P_C	2.0	W
	$T_c = 25^{\circ}\text{C}$		25	
Junction temperature		T_j	150	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^{\circ}\text{C}$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

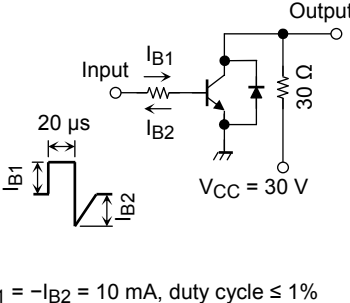


Weight: 1.7 g (typ.)

Equivalent Circuit



Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V _{CB} = 100 V, I _E = 0	—	—	10	μA
Emitter cut-off current		IEBO	V _{EB} = 7 V, I _C = 0	—	—	10	μA
Collector-emitter breakdown voltage		V _(BR) CEO	I _C = 50 mA, I _B = 0	100	—	—	V
DC current gain	h _{FE} (1)		V _{CE} = 1 V, I _C = 0.5 A	500	—	1500	
	h _{FE} (2)		V _{CE} = 1 V, I _C = 1 A	150	—	—	
Collector-emitter saturation voltage		V _{CE} (sat)	I _C = 1 A, I _B = 10 mA	—	—	0.3	V
Base-emitter saturation voltage		V _{BE} (sat)	I _C = 1 A, I _B = 10 mA	—	—	1.2	V
Collector-emitter forward voltage		V _{ECF}	I _E = 1 A, I _B = 0	—	—	2.0	V
Transition frequency		f _T	V _{CE} = 5 V, I _C = 0.5 A	—	140	—	MHz
Collector output capacitance		C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz	—	30	—	pF
Switching time	Turn-on time	t _{on}	 I _{B1} = -I _{B2} = 10 mA, duty cycle ≤ 1%	—	0.5	—	μs
	Storage time	t _{stg}		—	5	—	
	Fall time	t _f		—	0.7	—	

Marking

