

TOSHIBA Transistor Silicon NPN Triple Diffused Type

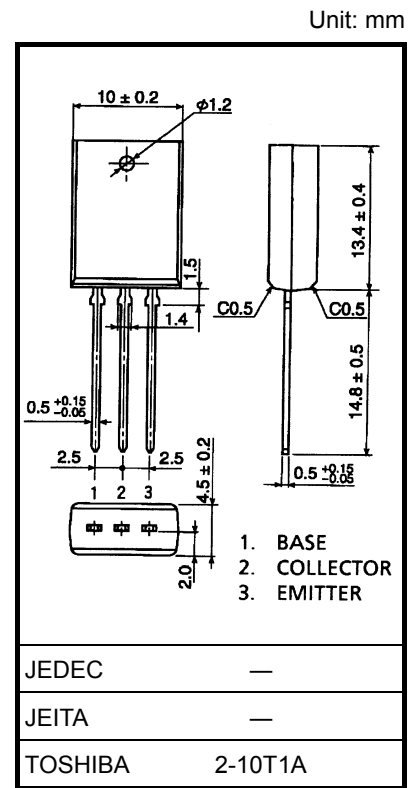
2SC5684

Switching Regulator and High-Voltage Switching Applications

- Excellent switching times ($I_C = 0.3 \text{ A}$)
: $t_r = 0.7 \text{ } \mu\text{s}$ (max), $t_f = 0.5 \text{ } \mu\text{s}$ (max)
- High collector breakdown voltage: $V_{CEO} = 800 \text{ V}$
- High-speed DC-DC converter applications

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

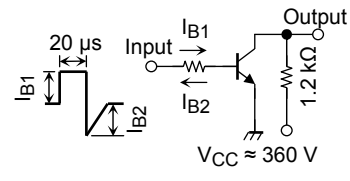
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	900	V
Collector-emitter voltage		V_{CEO}	800	V
Emitter-base voltage		V_{EBO}	7	V
Collector current	DC	I_C	0.8	A
	Pulse	I_{CP}	1.5	
Base current		I_B	0.4	A
Collector power dissipation		P_C	1.8	W
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$



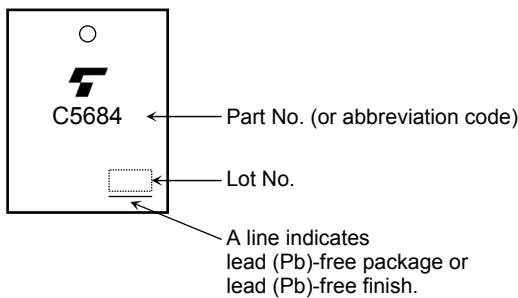
Weight: 1.5 g (typ.)

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).

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 720 \text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 7 \text{ V}, I_C = 0$	—	—	1	mA
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1 \text{ mA}, I_E = 0$	900	—	—	V
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10 \text{ mA}, I_B = 0$	800	—	—	V
DC current gain		$h_{FE} (1)$	$V_{CE} = 5 \text{ V}, I_C = 1 \text{ mA}$	10	—	—	
		$h_{FE} (2)$	$V_{CE} = 5 \text{ V}, I_C = 0.08 \text{ A}$	15	—	60	
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 0.3 \text{ A}, I_B = 0.06 \text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 0.3 \text{ A}, I_B = 0.06 \text{ A}$	—	—	1.2	V
Switching time	Rise time	t_r		—	—	0.7	μs
	Storage time	t_{stg}		—	—	4.5	
	Fall time	t_f		$I_{B1} = 0.06 \text{ A}, I_{B2} = -0.12 \text{ A}$ Duty cycle $\leq 1\%$	—	—	

Marking



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20070701-EN

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