

TOSHIBA Transistor Silicon NPN Triple Diffused Type

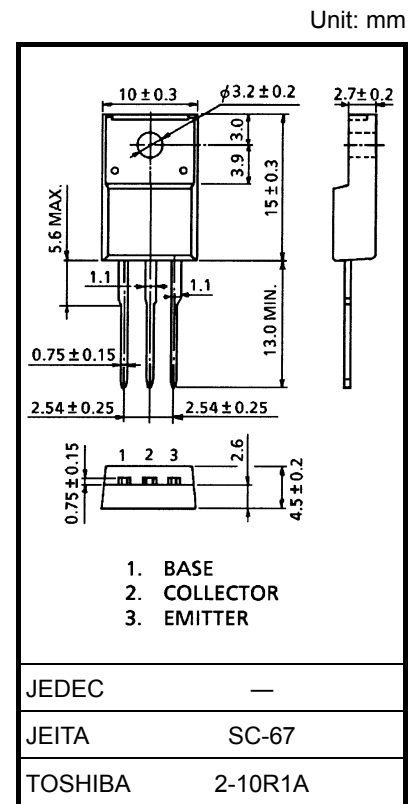
2SC5459

Switching Regulator Applications
 High-Voltage Switching Applications
 DC-DC Converter Applications

- High-speed switching: $t_f = 0.3 \mu s$ (max) ($I_C = 1.2 A$)
- High collector breakdown voltage: $V_{CEO} = 400 V$
- High DC current gain: $h_{FE} = 20$ (min) ($I_C = 0.3 A$)

Absolute Maximum Ratings ($T_c = 25^\circ C$)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	600	V
Collector-emitter voltage		V_{CEO}	400	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 to 150	$^\circ C$



Weight: 1.7 g (typ.)

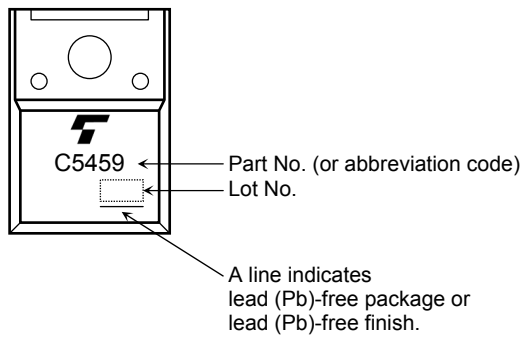
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

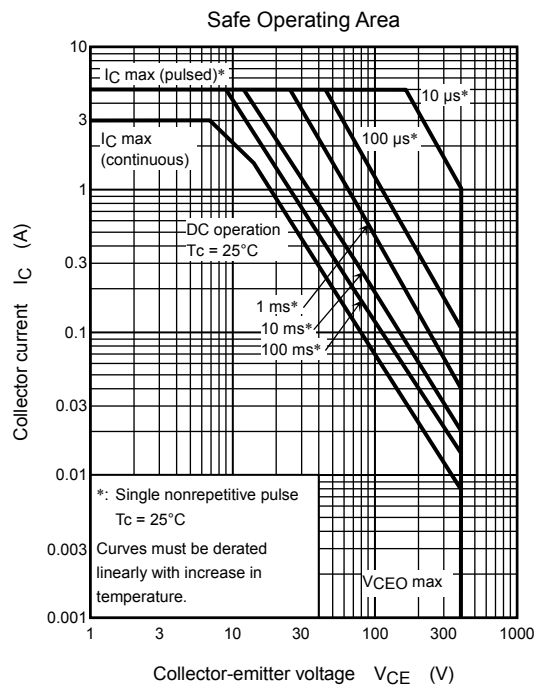
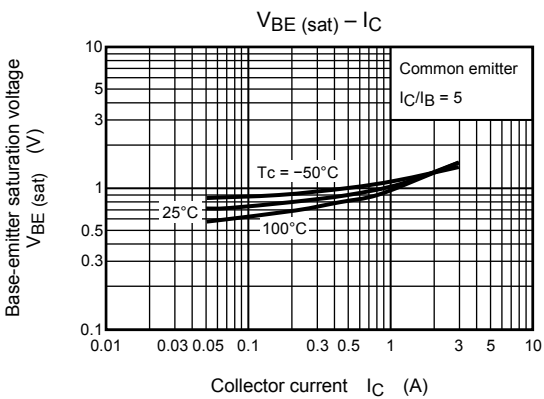
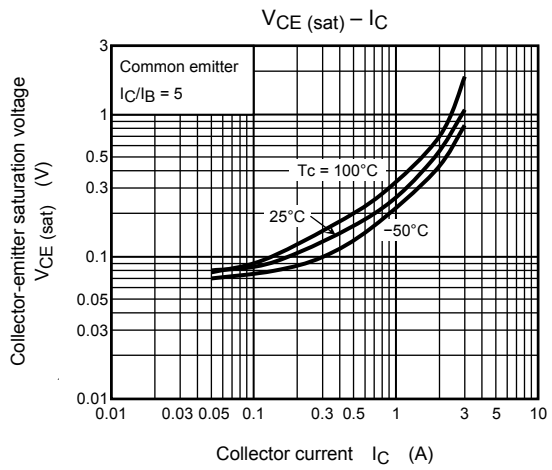
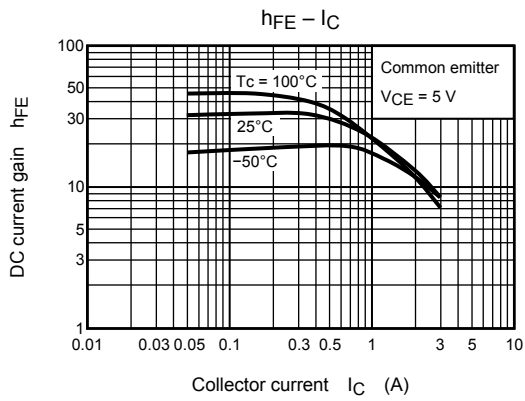
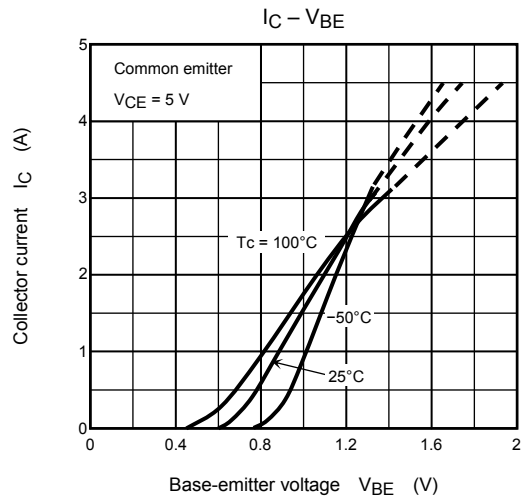
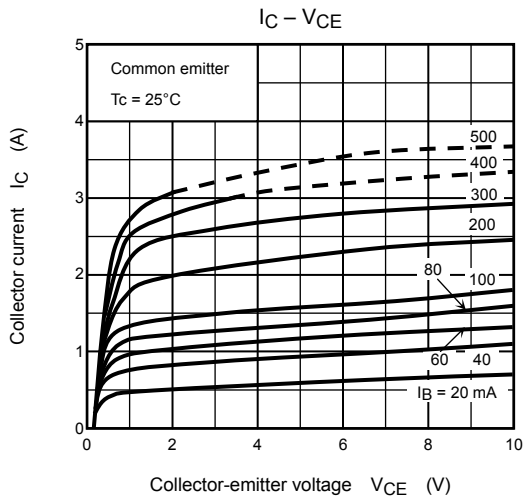
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 480\text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	10	μA
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_E = 0$	600	—	—	V
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	400	—	—	V
DC current gain		$h_{FE} (1)$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	13	—	—	
		$h_{FE} (2)$	$V_{CE} = 5\text{ V}, I_C = 0.3\text{ A}$	20	—	—	
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 1.2\text{ A}, I_B = 0.15\text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 1.2\text{ A}, I_B = 0.15\text{ A}$	—	—	1.3	V
Switching time	Turn-on time	t_r	<p>$V_{CC} \approx 360\text{ V}$ $300\ \Omega$ $20\ \mu\text{s}$ I_{B1} I_{B2} $I_{B1} = 0.15\text{ A}, I_{B2} = -0.3\text{ A},$ $\text{duty cycle} \leq 1\%$</p>	—	—	0.5	μs
	Storage time	t_{stg}		—	—	2.0	
	Fall time	t_f		—	—	0.3	

Marking





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