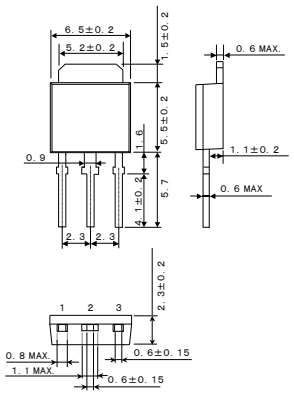
TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SC6142

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

- Excellent switching times: t_f = 0.15 μs (typ.)
- High collector breakdown voltage: V_{CES} = 800 V, V_{CEO} = 375 V

Unit: mm



1. BASE
2. COLLECTOR
3. EMITTER

JEDEC	—
JEITA	—
TOSHIBA	2-7J2A

Weight: 0.32 g (typ.)

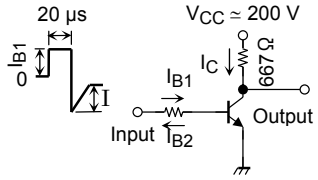
Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	800	V
Collector-emitter voltage		V_{CES}	800	V
		V_{CEO}	375	V
Emitter-base voltage		V_{EBO}	8	V
Collector current	DC	I_C	1.5	A
	Pulse	I_{CP}	3	
Base current		I_B	0.75	A
Collector power dissipation		P_C	1.1	W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

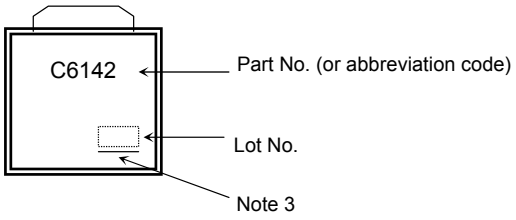
Note 1: Ensure that the channel temperature does not exceed 150°C during use of the device.

Note 2: 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)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		I_{CBO}	V_{CB} = 800 V, I_E = 0	—	—	50	μA
Emitter cutoff current		I_{EBO}	V_{EB} = 8 V, I_C = 0	—	—	100	nA
Collector-base breakdown voltage		$V_{(BR)\ CBO}$	I_C = 1 mA, I_E = 0	800	—	—	V
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	375	—	—	V
DC current gain		h_{FE} (1)	V_{CE} = 5 V, I_C = 1 mA	80	—	—	
		h_{FE} (2)	V_{CE} = 5 V, I_C = 0.1 A	100	—	200	
		h_{FE} (3)	V_{CE} = 5 V, I_C = 0.2 A	80	—	—	
Collector emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 0.8 A, I_B = 0.1 A	—	—	0.9	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 0.8 A, I_B = 0.1 A	—	—	1.3	V
Switching time	Rise time	t_r	 I_{B1} = 20 mA, I_{B2} = 50 mA Duty cycle < 1%	—	0.2	—	μs
	Storage time	t_{stg}		—	3.5	—	
	Fall time	t_f		—	0.15	—	

Marking

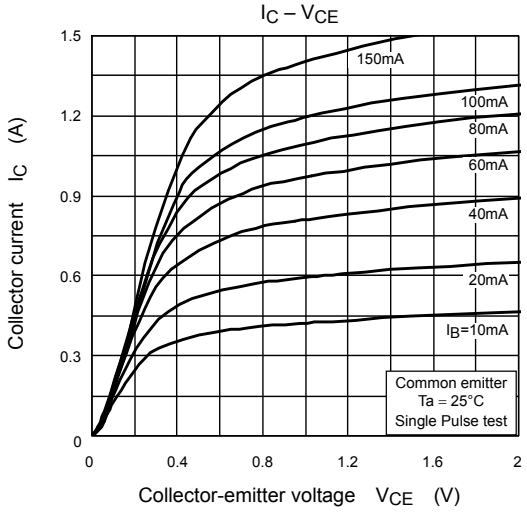


Note 3: A line under a Lot No. identifies the indication of product Labels.
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

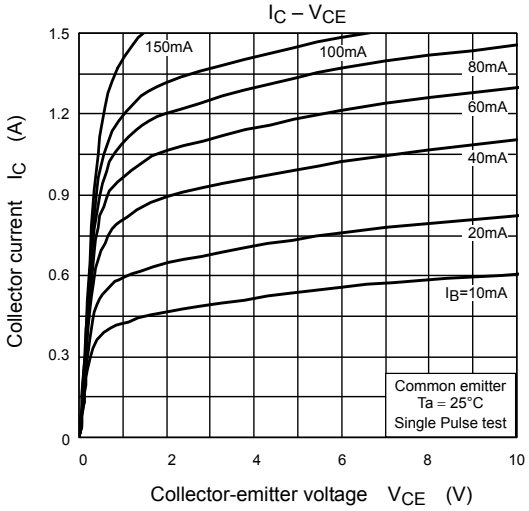
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

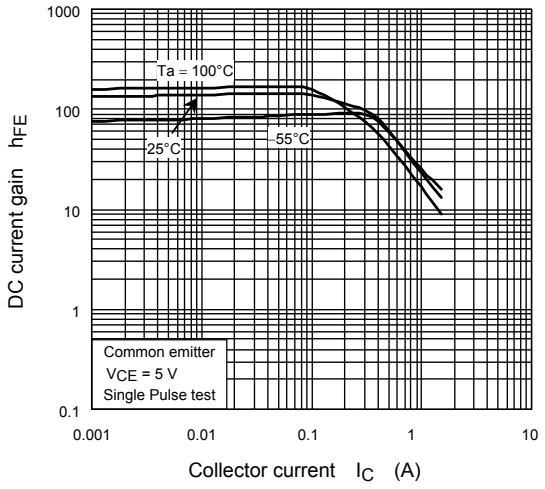
$I_C - V_{CE}$



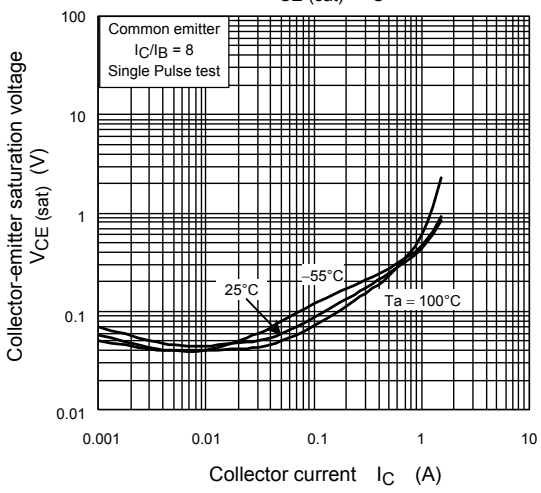
$I_C - V_{CE}$



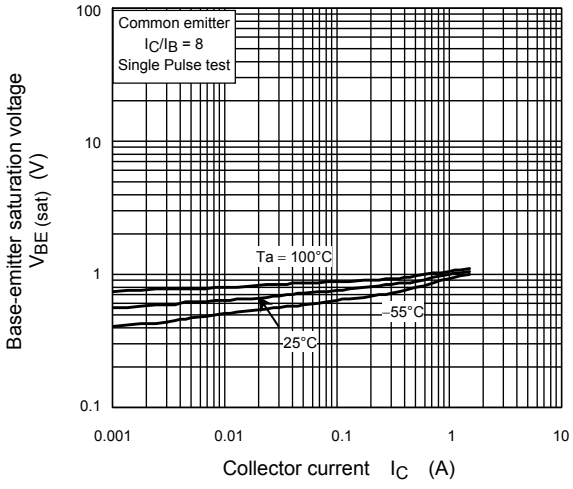
$h_{FE} - I_C$



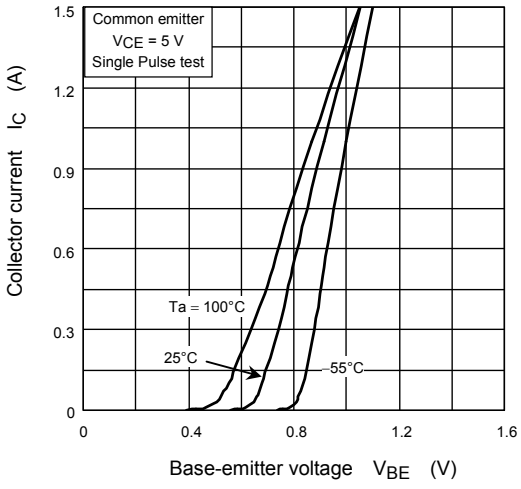
$V_{CE\ (sat)} - I_C$



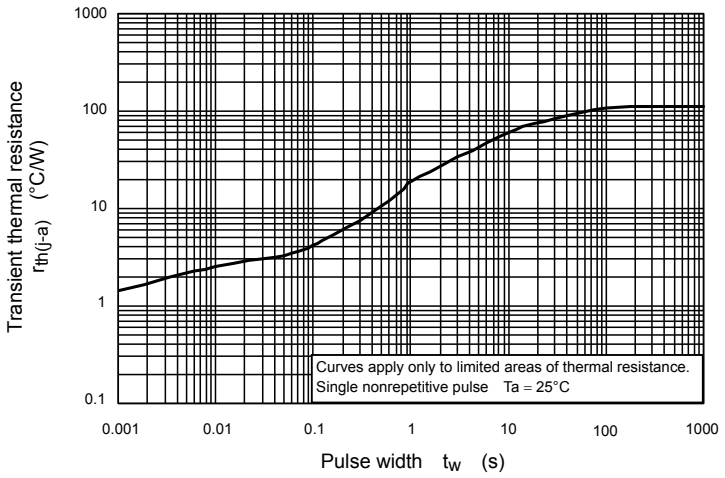
$V_{BE\ (sat)} - I_C$



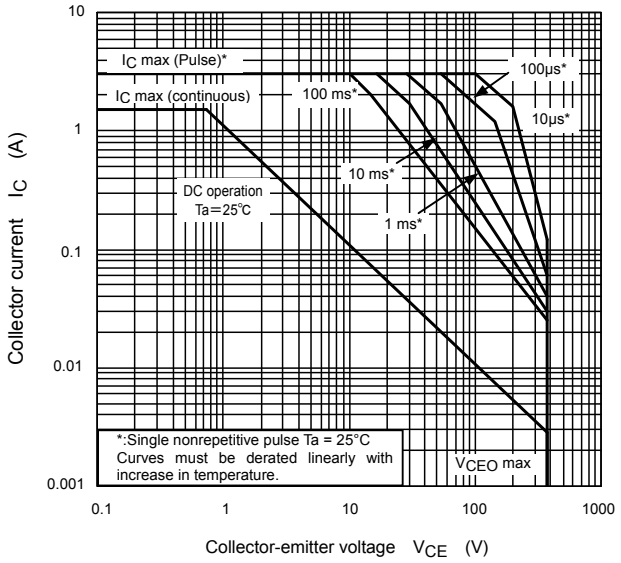
$I_C - V_{BE}$



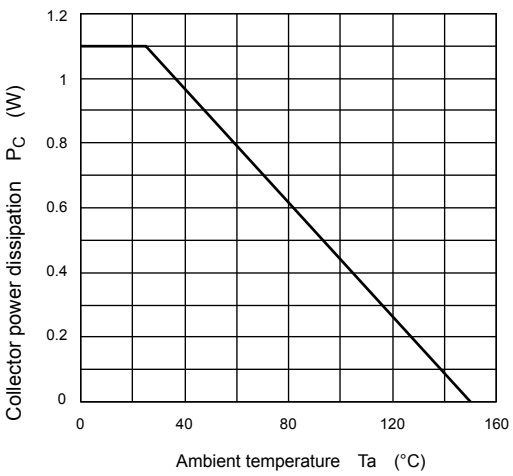
$r_{th(j-a)} - t_w$



Safe Operating Area



P_C – Ta



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