

TOSHIBA Transistor Silicon NPN Triple Diffused Type

# 2SC6142

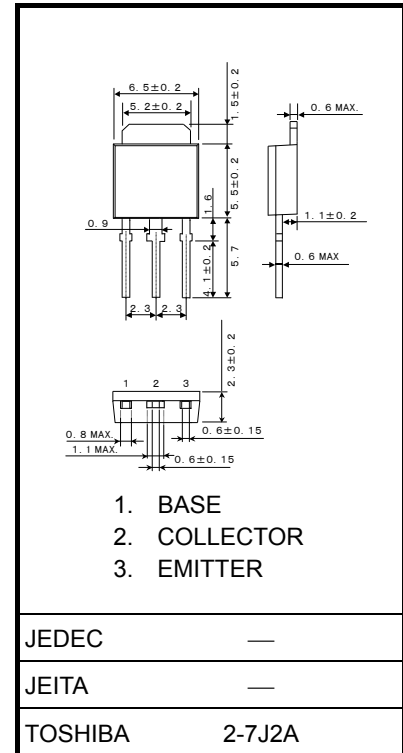
- High Voltage Switching Applications
- Switching Regulator Applications
- DC-DC Converter Applications

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

### 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

Unit: mm



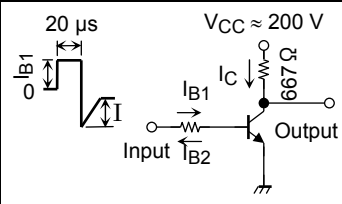
Weight: 0.32 g (typ.)

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

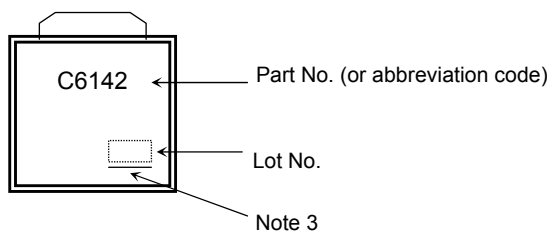
Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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		$I_{CBO}$	$V_{CB} = 800\text{ V}, I_E = 0$	—	—	50	$\mu\text{A}$
Emitter cutoff current		$I_{EBO}$	$V_{EB} = 8\text{ V}, I_C = 0$	—	—	100	nA
Collector-base breakdown voltage		$V_{(BR)CBO}$	$I_C = 1\text{ mA}, I_E = 0$	800	—	—	V
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	375	—	—	V
DC current gain		$h_{FE(1)}$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	80	—	—	—
		$h_{FE(2)}$	$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	100	—	200	
		$h_{FE(3)}$	$V_{CE} = 5\text{ V}, I_C = 0.2\text{ A}$	80	—	—	
Collector emitter saturation voltage		$V_{CE(sat)}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	0.9	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	1.3	V
Switching time	Rise time	$t_r$		—	0.2	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	3.5	—	
	Fall time	$t_f$		$I_{B1} = 20\text{ mA}, I_{B2} = 50\text{ mA}$ Duty cycle $\leq 1\%$	—	0.15	

## Marking

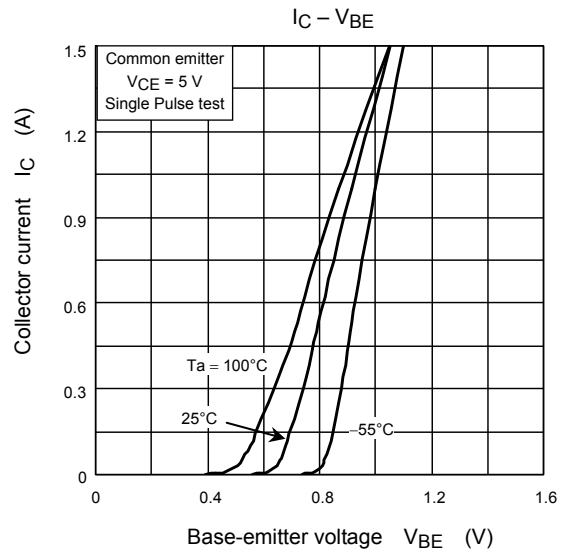
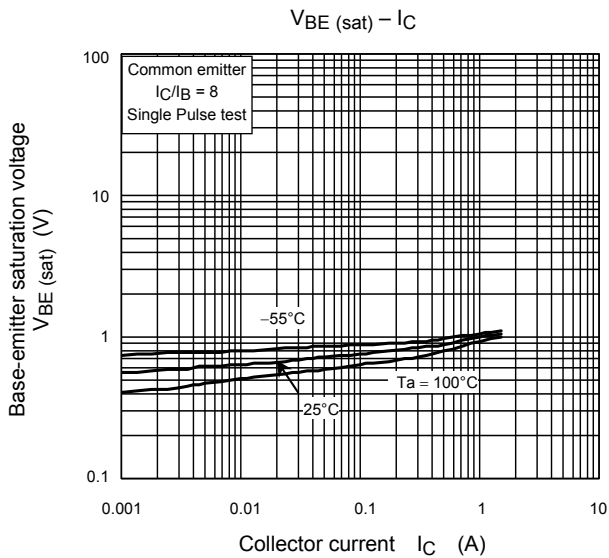
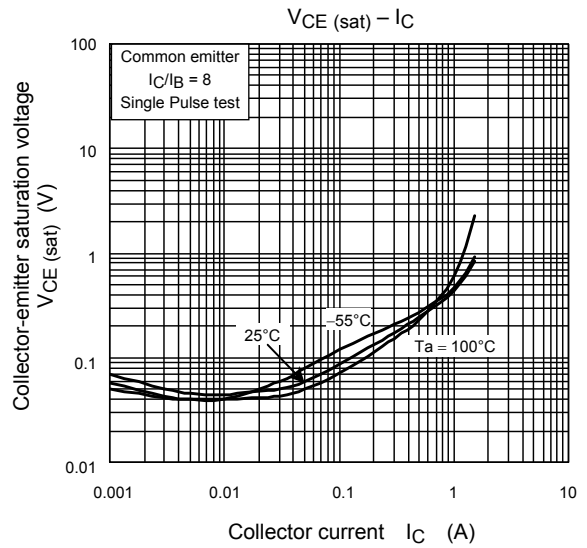
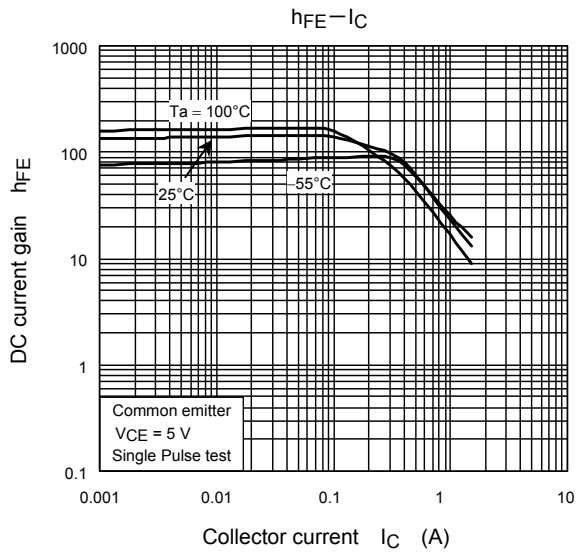
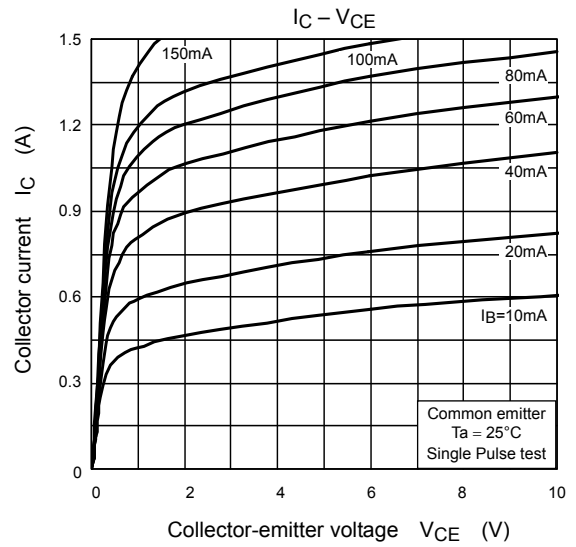
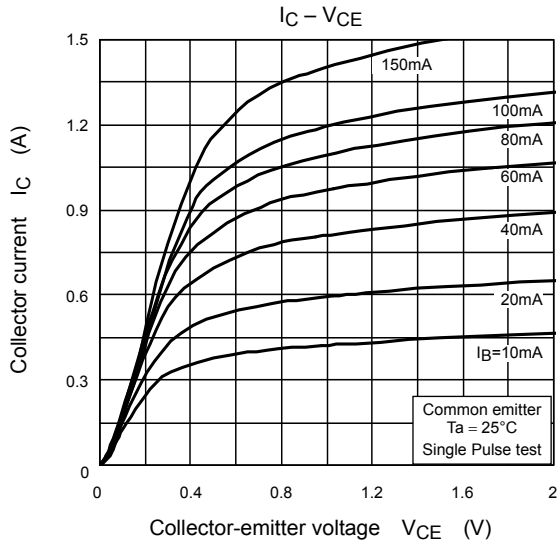


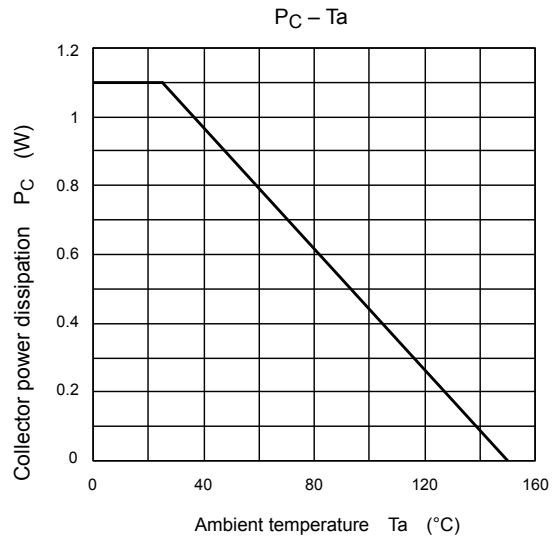
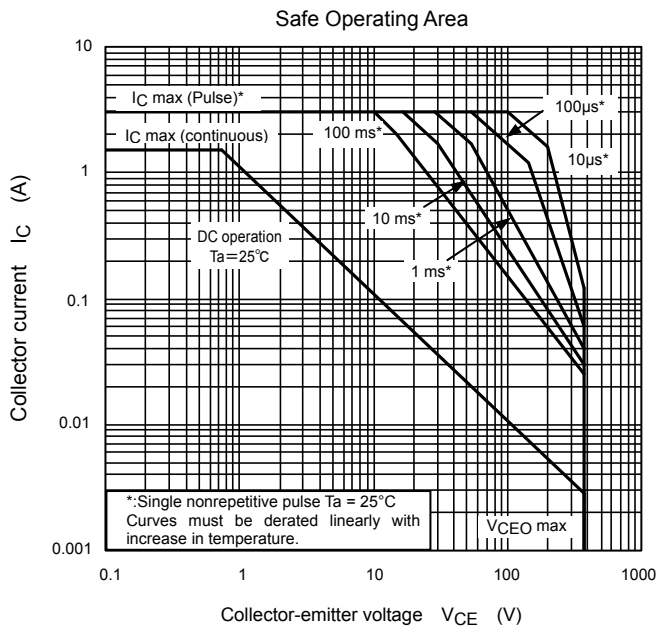
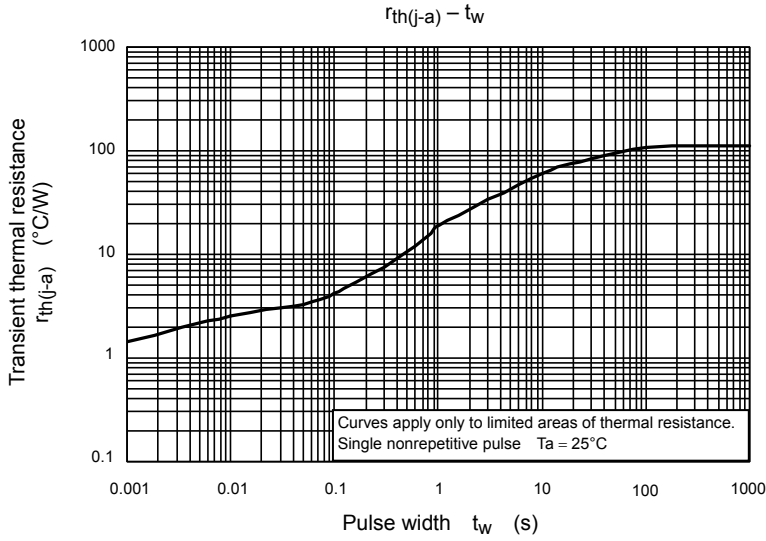
Note 3: A line under a Lot No. identifies the indication of product Labels.

[[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.





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