

TOSHIBA Insulated Gate Bipolar Transistor Silicon N Channel IGBT

# GT50J122

## Current Resonance Inverter Switching Application

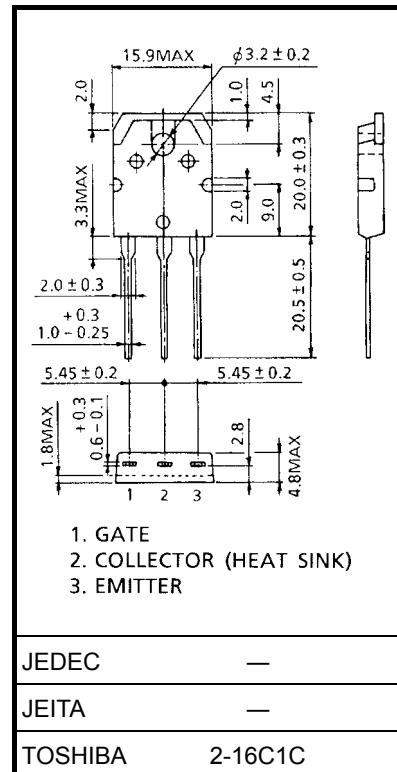
Unit: mm

- Enhancement mode type
- High speed :  $t_f = 0.16 \mu\text{s}$  (typ.) ( $I_C = 60\text{A}$ )
- Low saturation voltage:  $V_{CE}(\text{sat}) = 1.9 \text{ V}$  (typ.) ( $I_C = 60\text{A}$ )
- Fourth-generation IGBT
- TO-3P(N) (Toshiba package name)

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

Characteristics	Symbol	Rating	Unit
Collector-emitter voltage	$V_{CES}$	600	V
Gate-emitter voltage	$V_{GES}$	$\pm 25$	V
Continuous collector current @ $T_c = 100^\circ\text{C}$	$I_C$	31	A
@ $T_c = 25^\circ\text{C}$	$I_C$	50	
Pulsed collector current	$I_{CP}$	120	A
Collector power dissipation @ $T_c = 100^\circ\text{C}$	$P_C$	62	W
@ $T_c = 25^\circ\text{C}$	$P_C$	156	
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.).

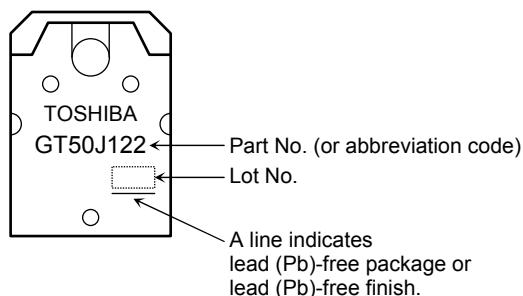


Weight: 4.6 g (typ.)

## Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance	$R_{th(j-c)}$	0.80	$^\circ\text{C}/\text{W}$

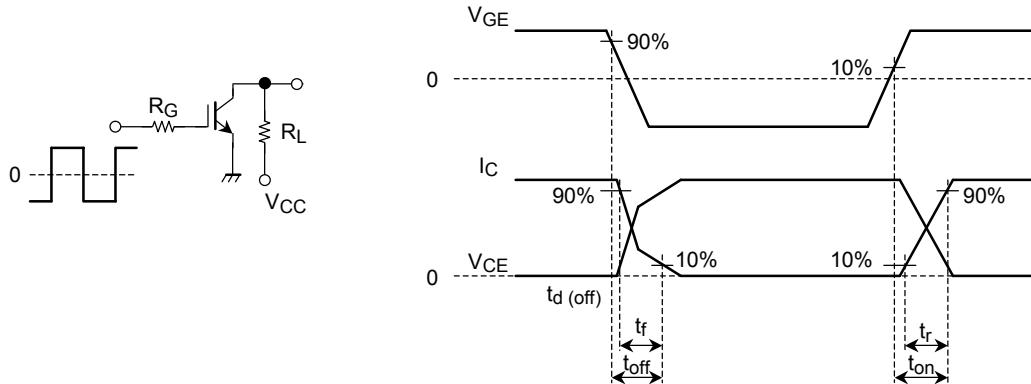
## Marking

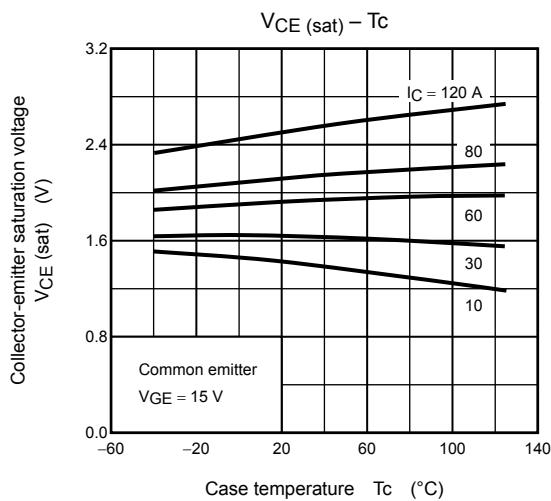
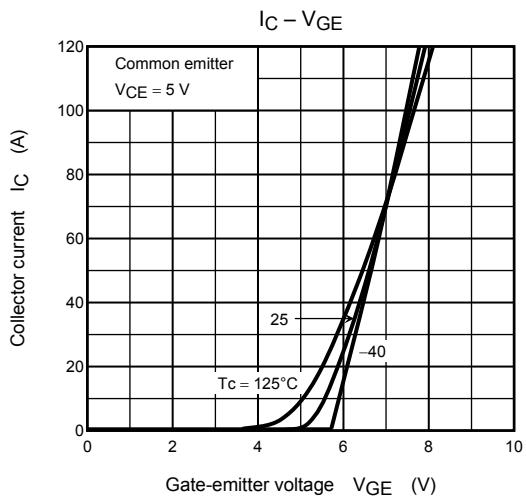
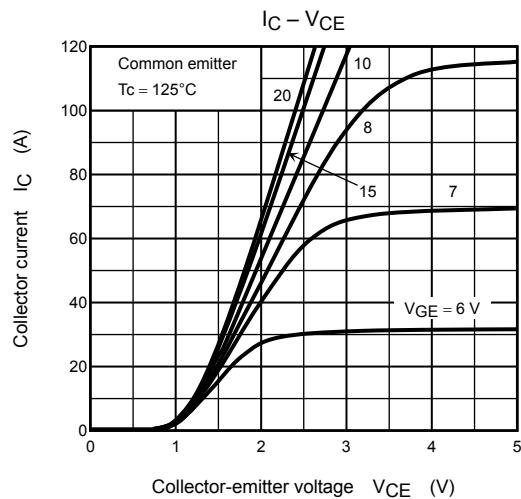
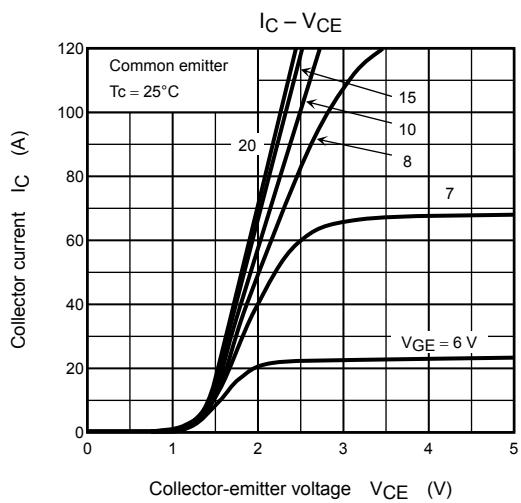
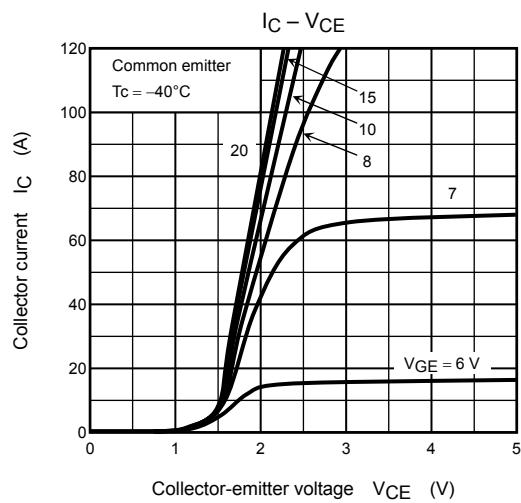


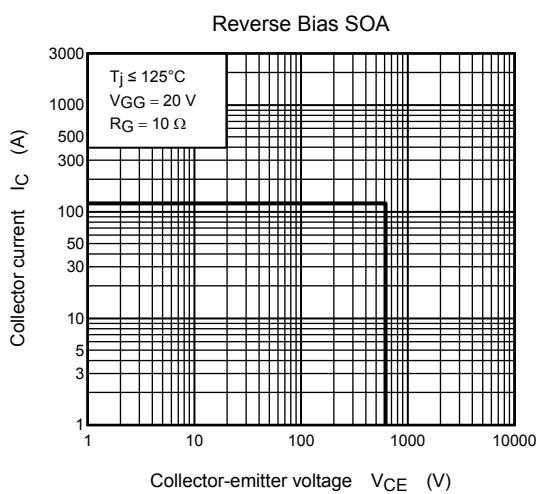
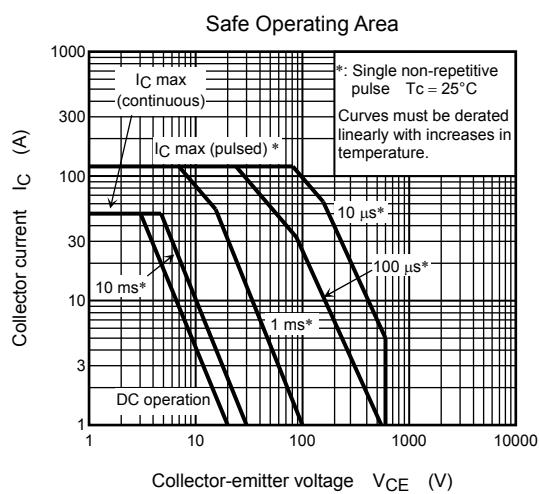
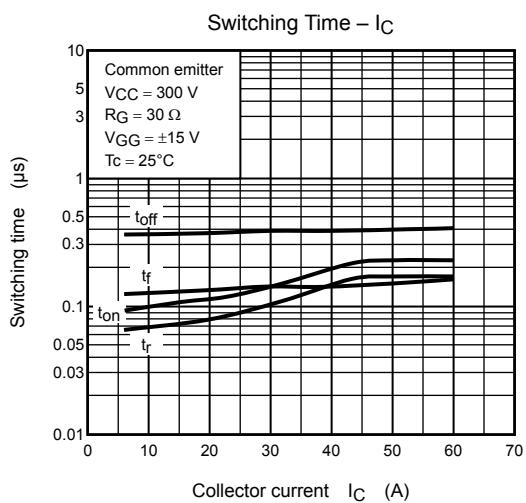
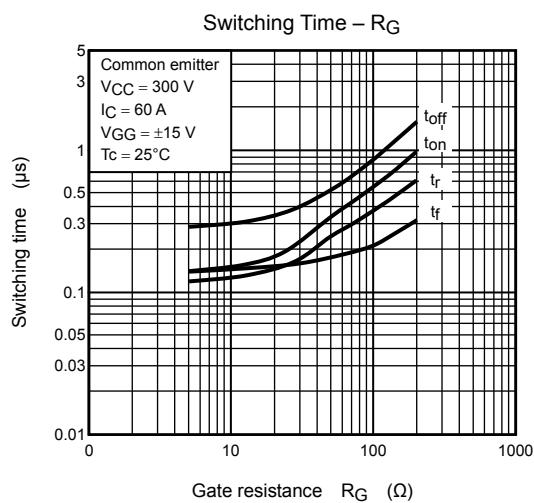
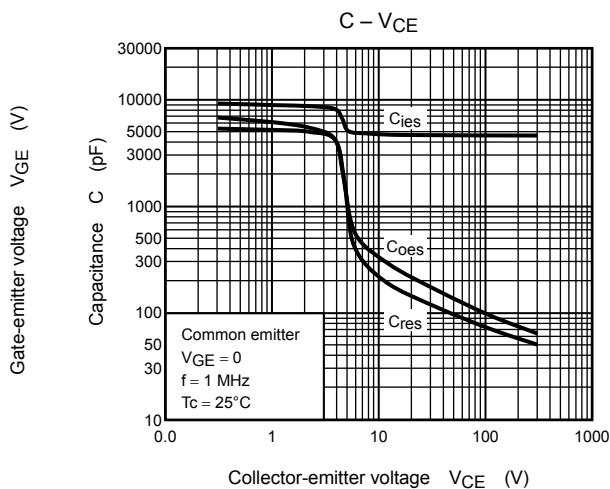
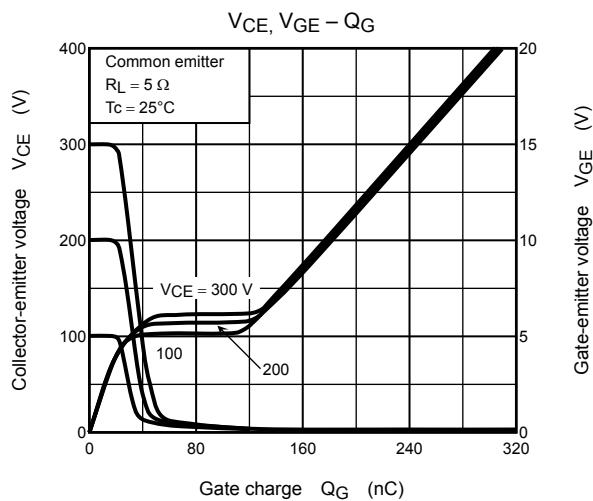
## Electrical Characteristics (Ta = 25°C)

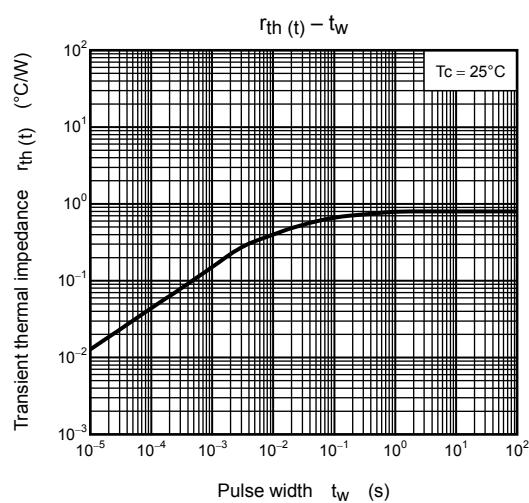
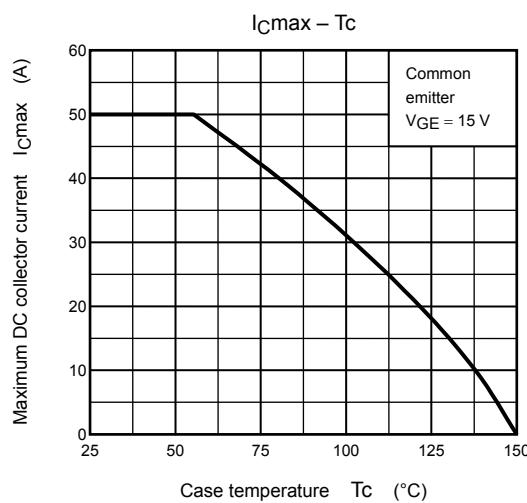
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I <sub>GES</sub>	V <sub>GE</sub> = ±25 V, V <sub>CE</sub> = 0	—	—	±500	nA
Collector cut-off current	I <sub>CES</sub>	V <sub>CE</sub> = 600 V, V <sub>GE</sub> = 0	—	—	1.0	mA
Gate-emitter cut-off voltage	V <sub>GE</sub> (OFF)	I <sub>C</sub> = 60 mA, V <sub>CE</sub> = 5 V	3.0	—	6.0	V
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = 60 A, V <sub>GE</sub> = 15 V	—	1.9	2.5	V
Input capacitance	C <sub>ies</sub>	V <sub>CE</sub> = 10 V, V <sub>GE</sub> = 0, f = 1 MHz	—	4800	—	pF
Switching time	Rise time	t <sub>r</sub>	Resistive Load V <sub>CC</sub> = 300 V, I <sub>C</sub> = 60 A V <sub>GG</sub> = ±15 V, R <sub>G</sub> = 30 Ω (Note 1)	0.17	—	μs
	Turn-on time	t <sub>on</sub>		0.23	—	
	Fall time	t <sub>f</sub>		0.16	0.26	
	Turn-off time	t <sub>off</sub>		0.41	—	

Note 1: Switching time measurement circuit and input/output waveforms









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