

TOSHIBA Insulated Gate Bipolar Transistor Silicon N Channel IGBT

GT15Q102

High Power Switching Applications

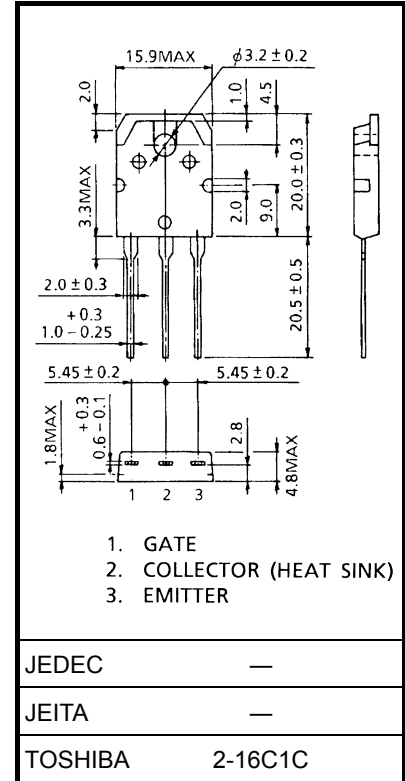
- Third-generation IGBT
- Enhancement mode type
- High speed: $t_f = 0.32 \mu s$ (max)
- Low saturation voltage: $V_{CE(sat)} = 2.7 V$ (max)

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

Characteristic		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	1200	V
Gate-emitter voltage		V_{GES}	± 20	V
Collector current	DC	I_C	15	A
	1 ms	I_{CP}	30	
Collector power dissipation ($T_c = 25^\circ C$)		P_C	170	W
Junction temperature		T_j	150	$^\circ C$
Storage temperature range		T_{stg}	-55~150	$^\circ C$

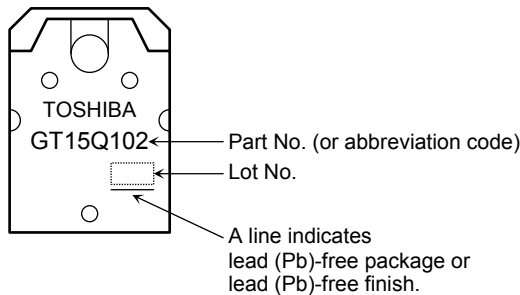
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Unit: mm



Weight: 4.6 g

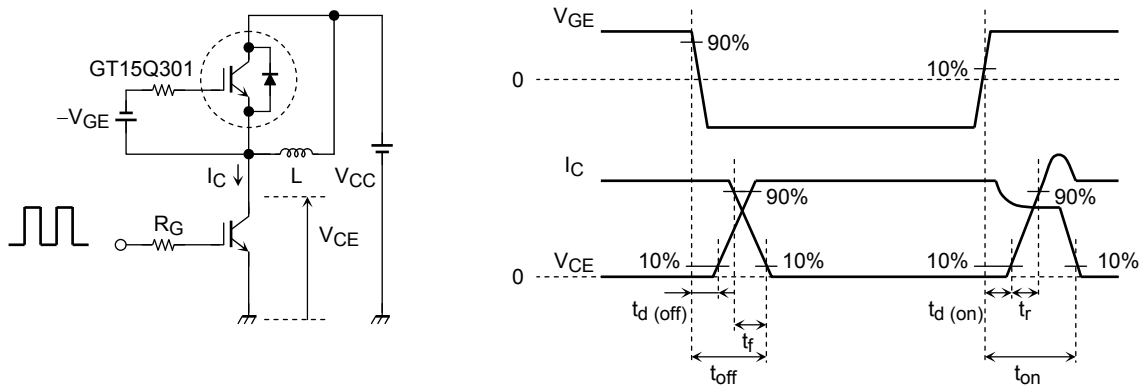
Marking



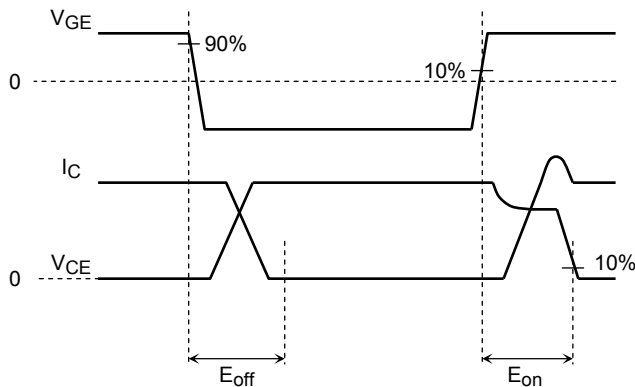
Electrical Characteristics (Ta = 25°C)

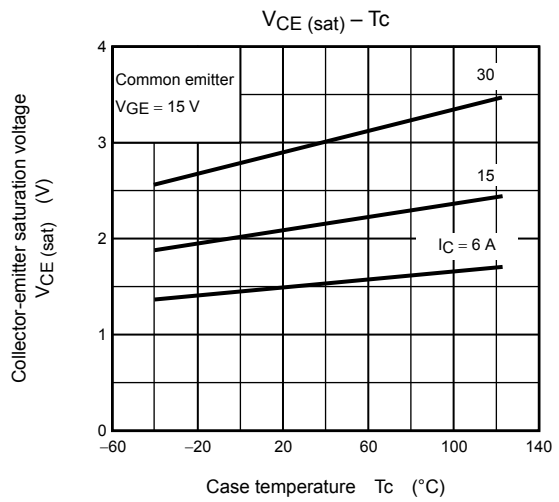
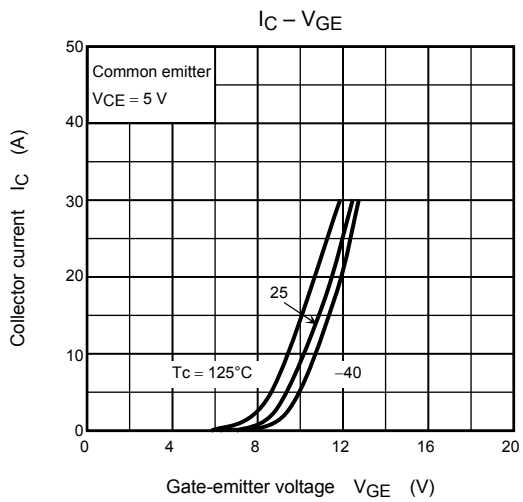
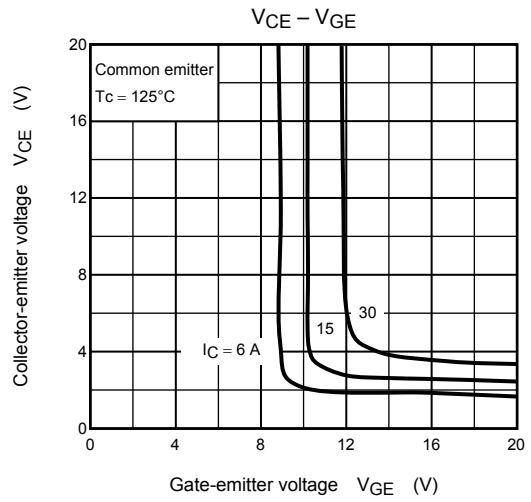
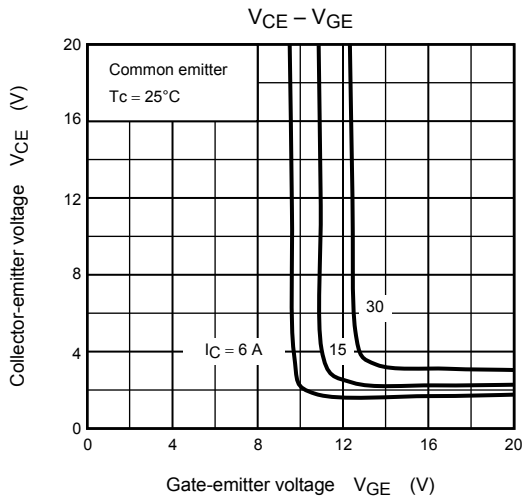
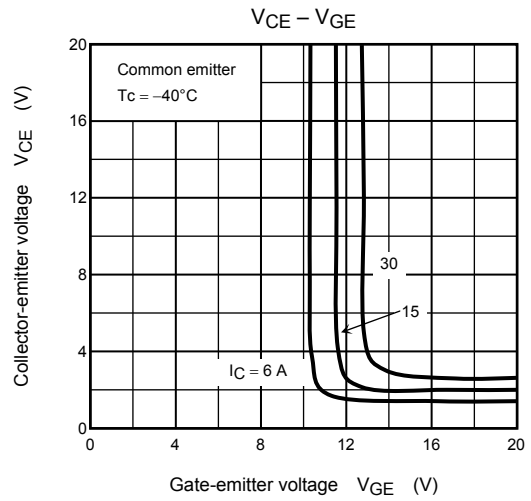
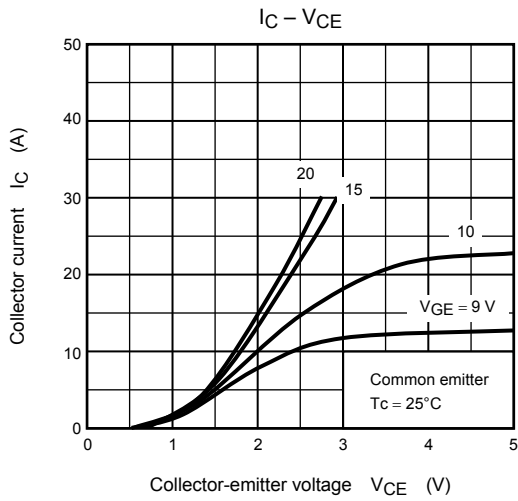
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 20\text{ V}, V_{CE} = 0$	—	—	± 500	nA
Collector cut-off current		I_{CES}	$V_{CE} = 1200\text{ V}, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE(OFF)}$	$I_C = 1.5\text{ mA}, V_{CE} = 5\text{ V}$	4.0	—	7.0	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 15\text{ A}, V_{GE} = 15\text{ V}$	—	2.1	2.7	V
Input capacitance		C_{ies}	$V_{CE} = 50\text{ V}, V_{GE} = 0, f = 1\text{ MHz}$	—	850	—	pF
Switching time	Rise time	t_r	Inductive Load $V_{CC} = 600\text{ V}, I_C = 15\text{ A}$ $V_{GG} = \pm 15\text{ V}, R_G = 56\ \Omega$ (Note1)	—	0.05	—	μs
	Turn-on time	t_{on}		—	0.12	—	
	Fall time	t_f		—	0.16	0.32	
	Turn-off time	t_{off}		—	0.56	—	
Thermal resistance		$R_{th(j-c)}$	—	—	0.74	$^{\circ}\text{C/W}$	

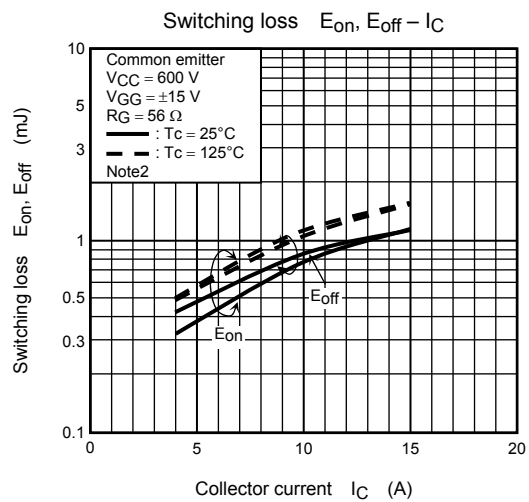
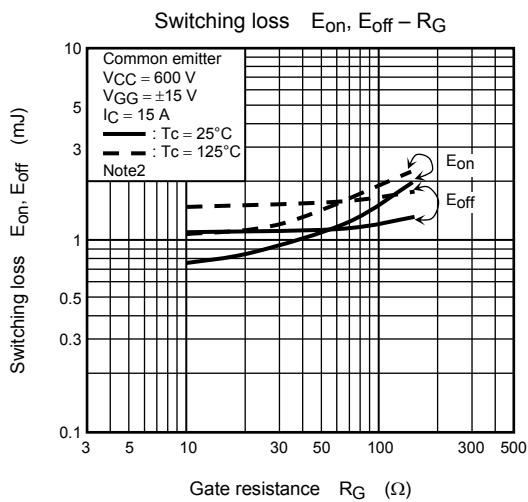
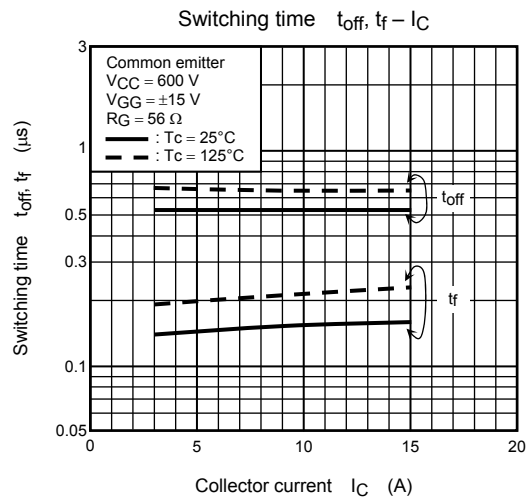
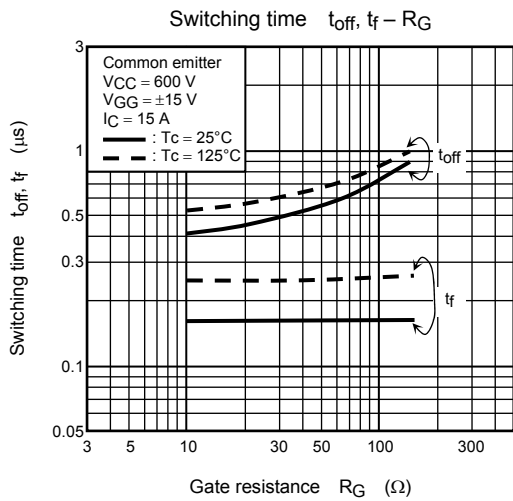
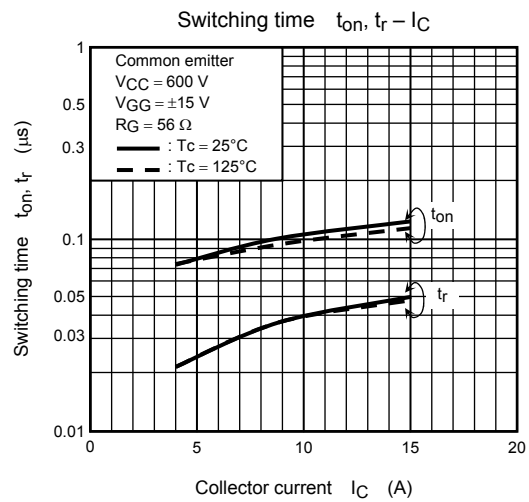
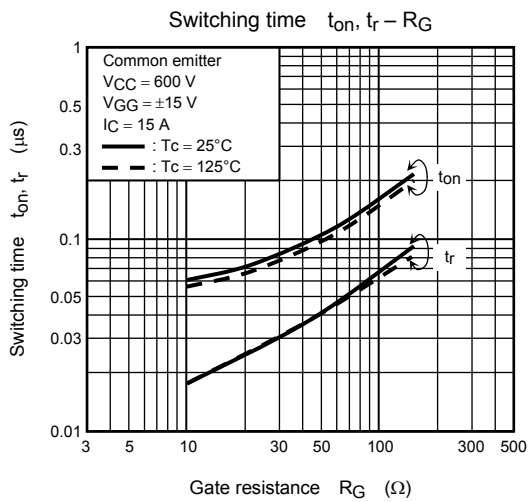
Note1: Switching time measurement circuit and input/output waveforms

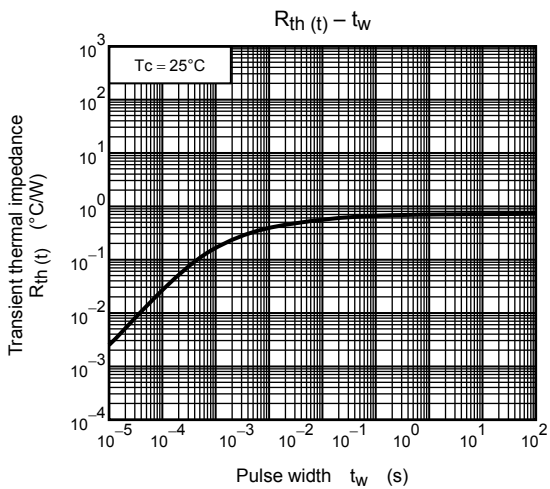
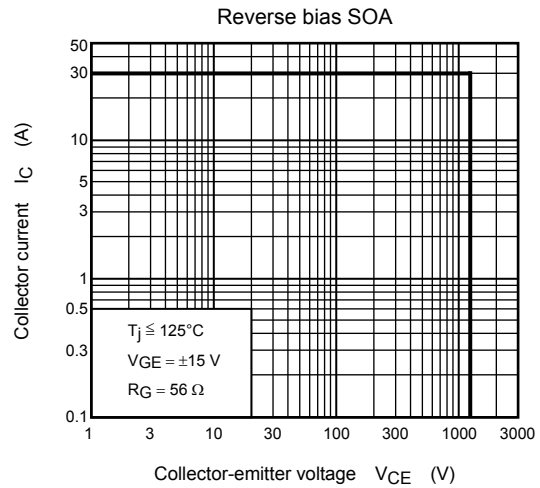
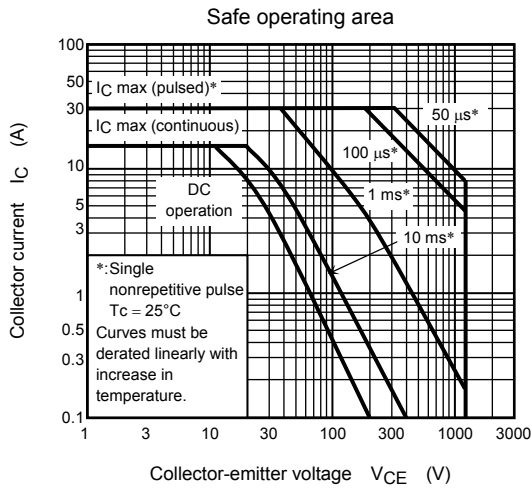
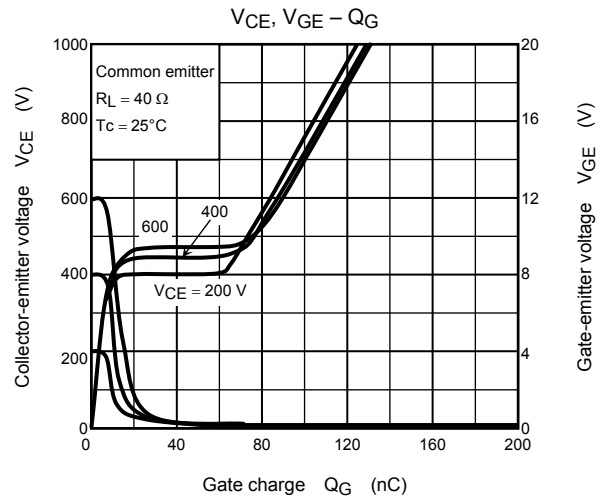
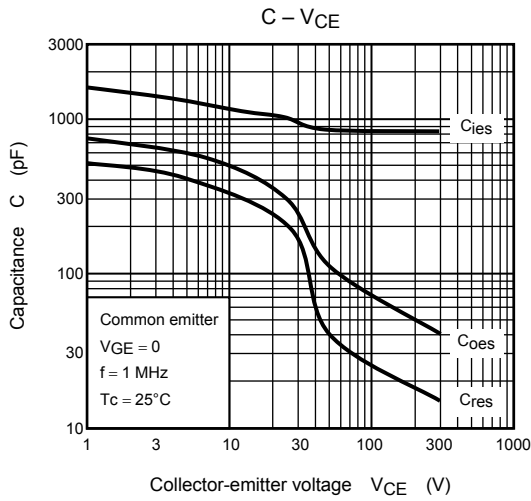


Note2: Switching loss measurement waveforms









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