

**Preliminary**

TOSHIBA Insulated Gate Bipolar Transistor Silicon N Channel IGBT

# GT10Q101

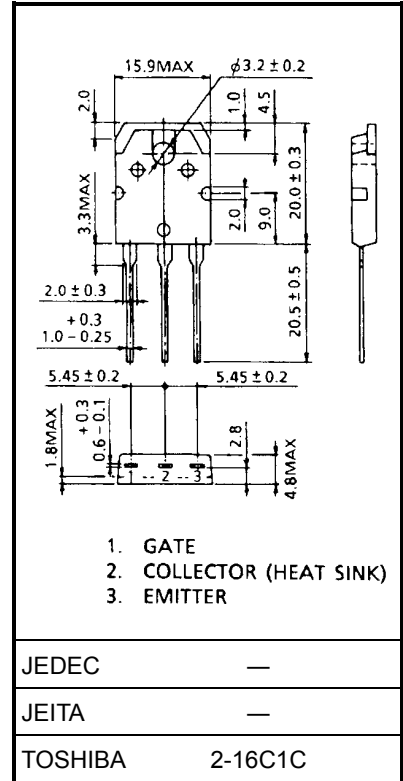
## High Power Switching Applications

- The 3<sup>rd</sup> Generation
- Enhancement-Mode
- High Speed:  $t_f = 0.32 \mu s$  (max)
- Low Saturation Voltage:  $V_{CE(sat)} = 2.7 V$  (max)

## Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-emitter voltage	$V_{CES}$	1200	V
Gate-emitter voltage	$V_{GES}$	$\pm 20$	V
Collector current	DC	$I_C$	10
	1 ms	$I_{CP}$	20
Collector power dissipation (Tc = 25°C)	$P_C$	140	W
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

Unit: mm

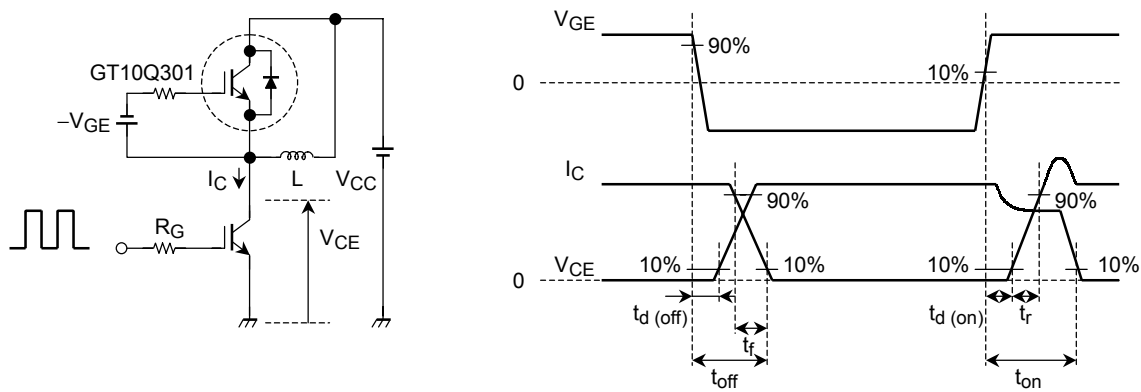


Weight: 4.6 g (typ.)

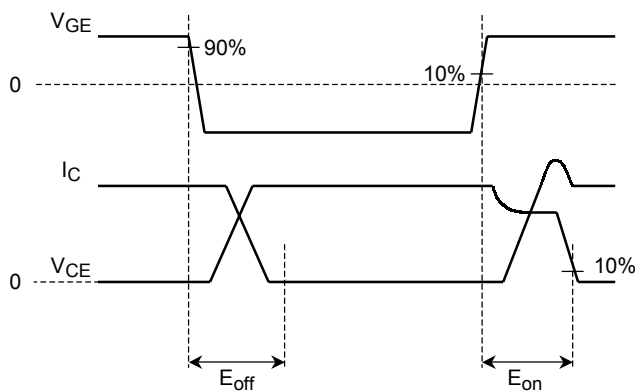
## Electrical Characteristics (Ta = 25°C)

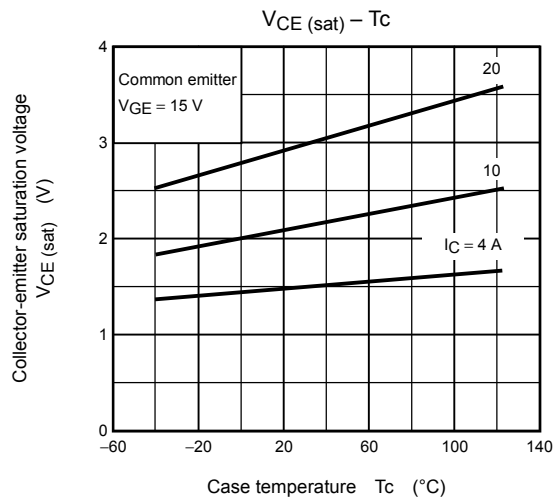
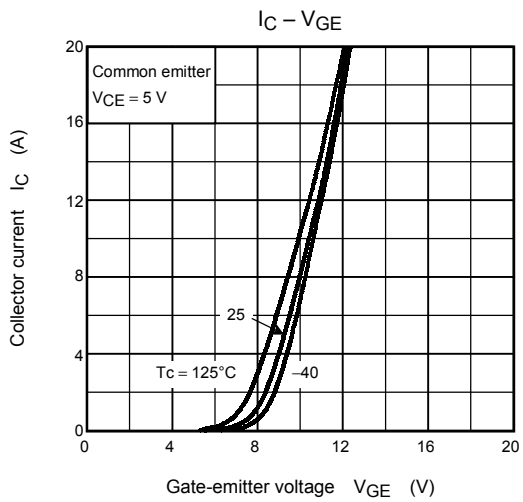
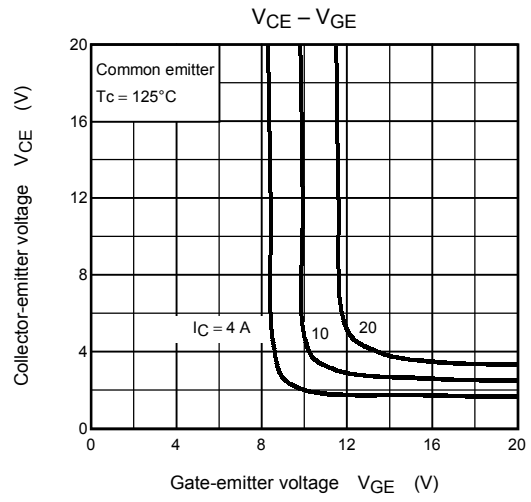
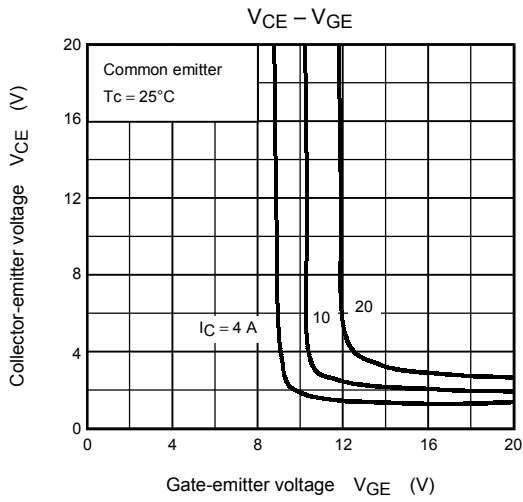
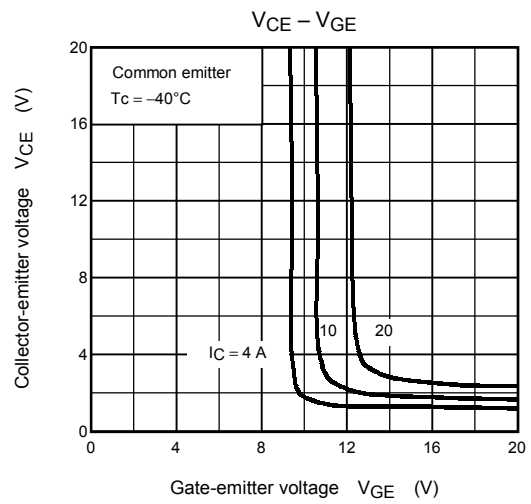
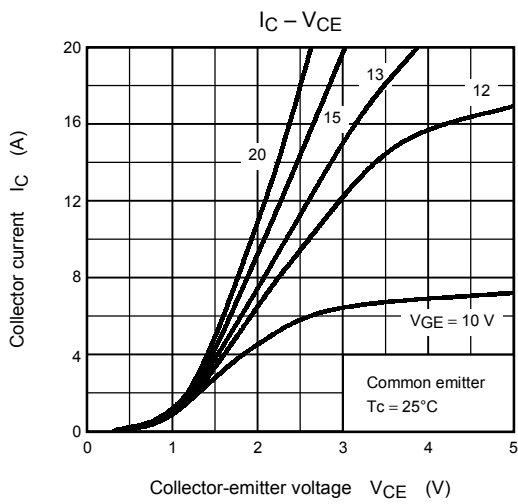
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GES}$	$V_{GE} = \pm 20\text{ V}, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector cut-off current		$I_{CES}$	$V_{CE} = 1200\text{ V}, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE(OFF)}$	$I_C = 1\text{ mA}, V_{CE} = 5\text{ V}$	4.0	—	7.0	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 10\text{ A}, V_{GE} = 15\text{ V}$	—	2.1	2.7	V
Input capacitance		$C_{ies}$	$V_{CE} = 50\text{ V}, V_{GE} = 0, f = 1\text{ MHz}$	—	600	—	pF
Switching time	Rise time	$t_r$	Inductive Load $V_{CC} = 600\text{ V}, I_C = 10\text{ A}$ $V_{GG} = \pm 15\text{ V}, R_G = 75\ \Omega$ (Note1)	—	0.07	—	$\mu\text{s}$
	Turn-on time	$t_{on}$		—	0.30	—	
	Fall time	$t_f$		—	0.16	0.32	
	Turn-off time	$t_{off}$		—	0.50	—	
Thermal resistance		$R_{th(j-c)}$	—	—	0.89	$^{\circ}\text{C/W}$	

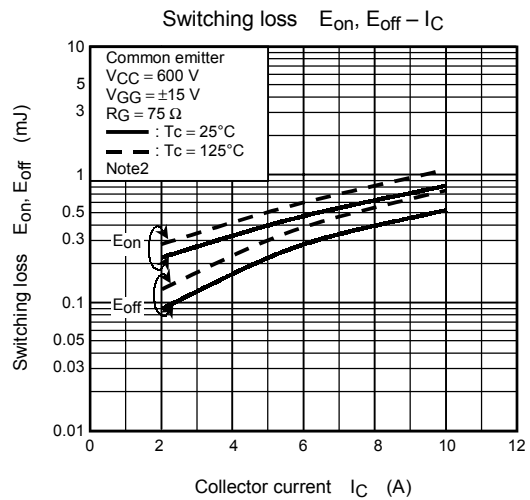
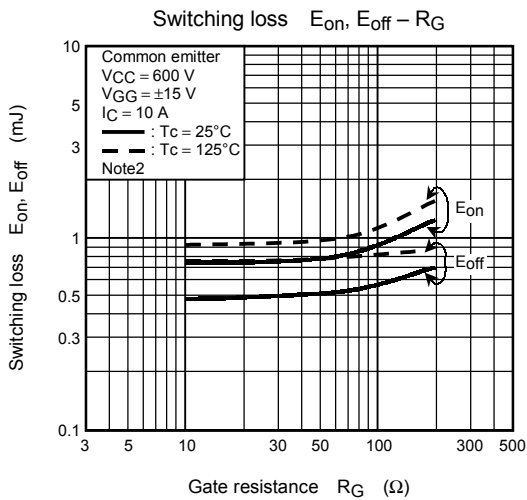
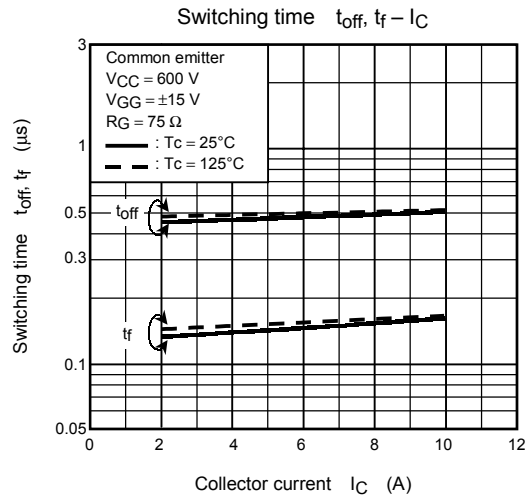
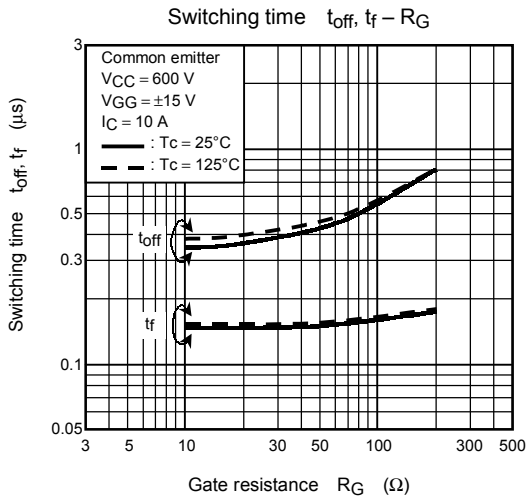
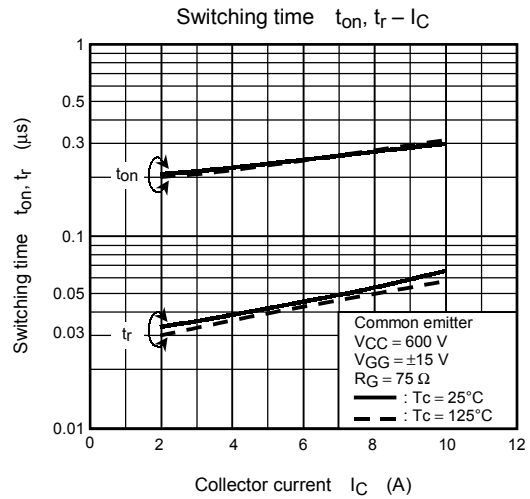
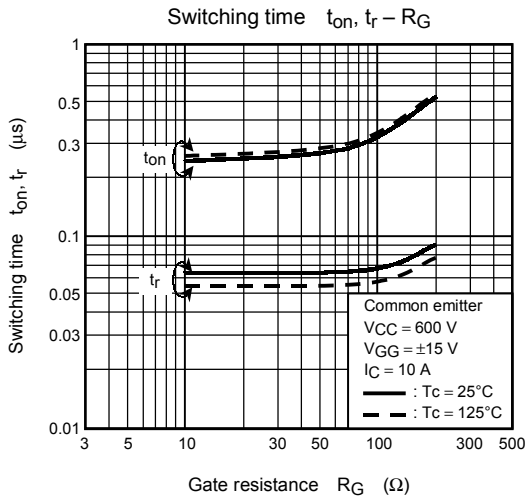
Note1: Switching time measurement circuit and input/output waveforms

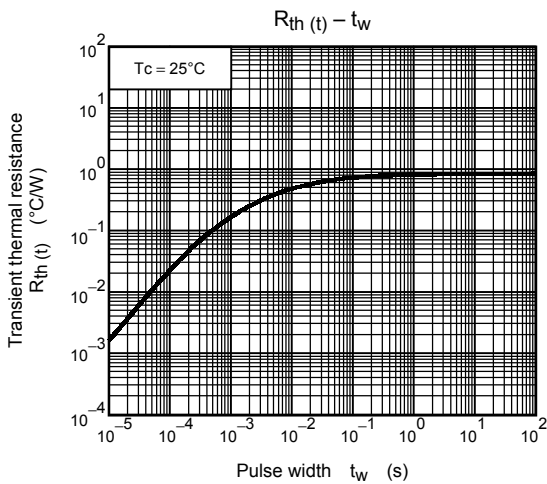
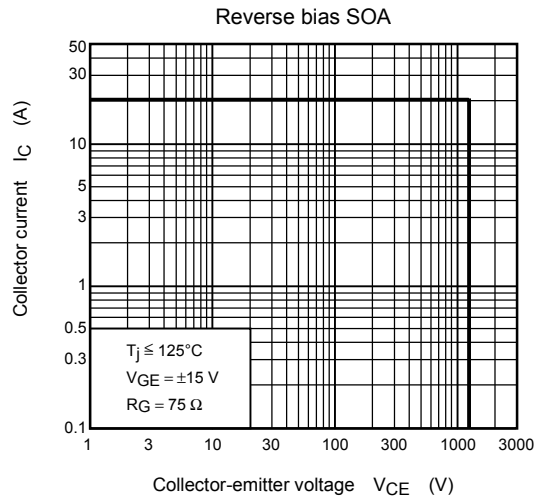
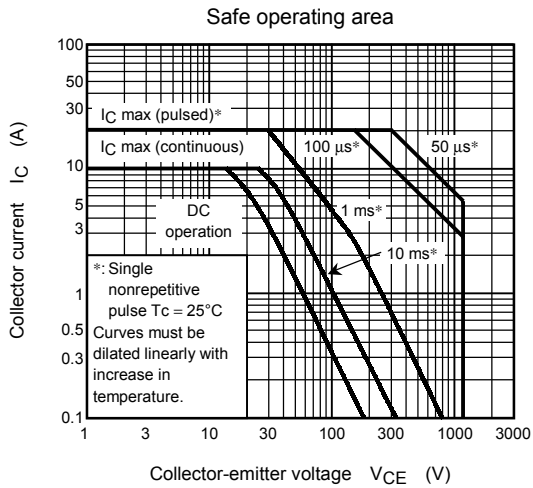
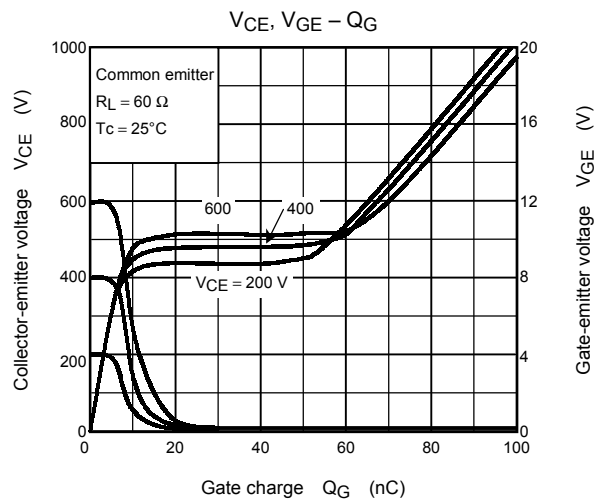
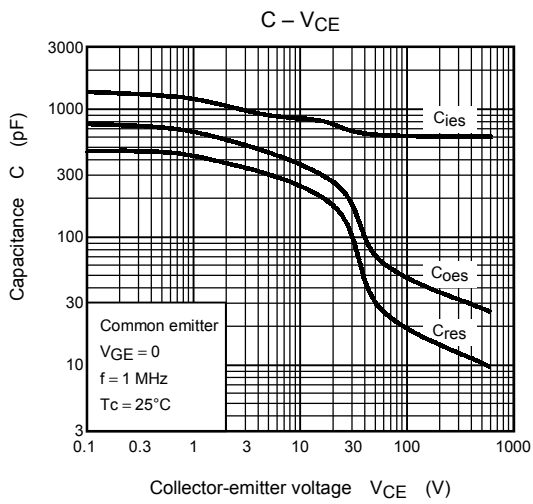


Note2: Switching loss measurement waveforms









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