

TOSHIBA IGBT Module Silicon N Channel IGBT

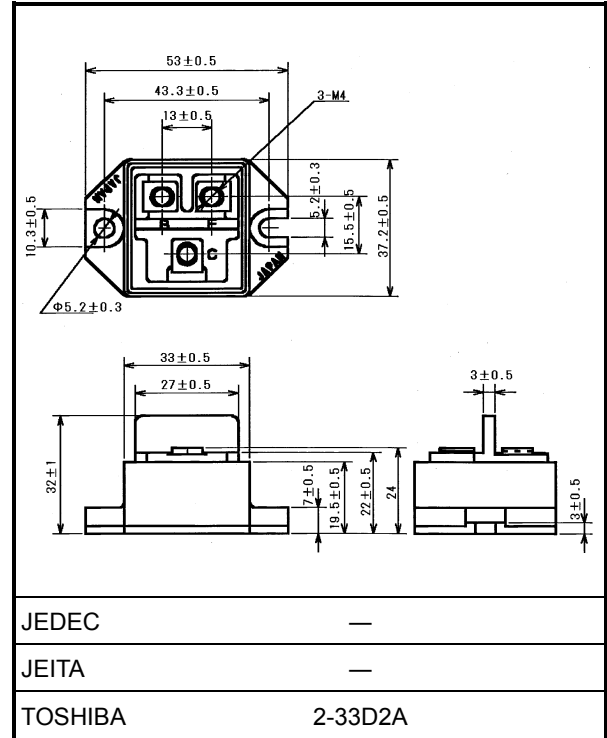
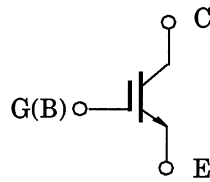
# MG75Q1BS11

High Power Switching Applications  
 Motor Control Applications

Unit: mm

- Enhancement-mode
- The electrodes are isolated from case.

## Equivalent Circuit

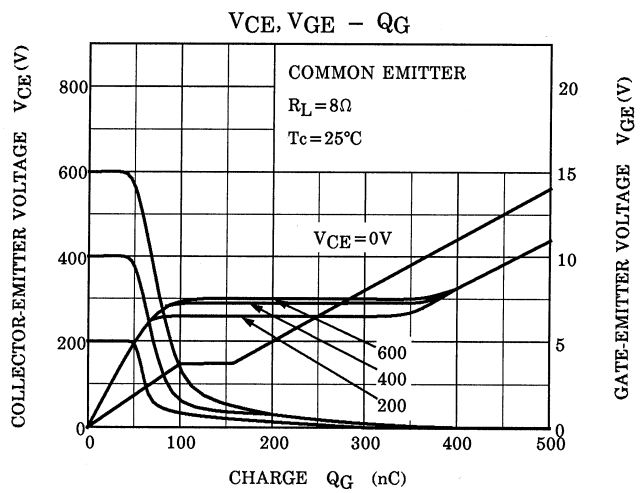
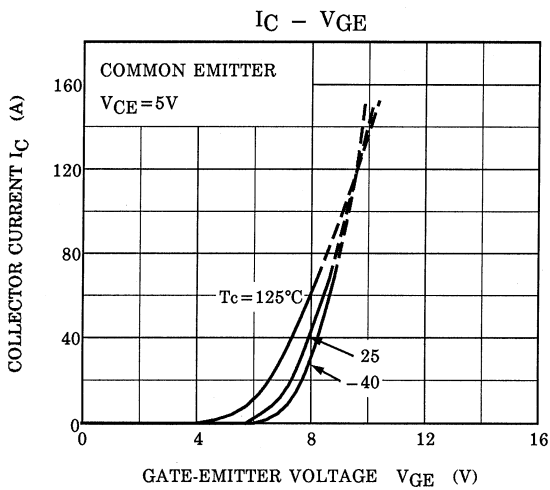
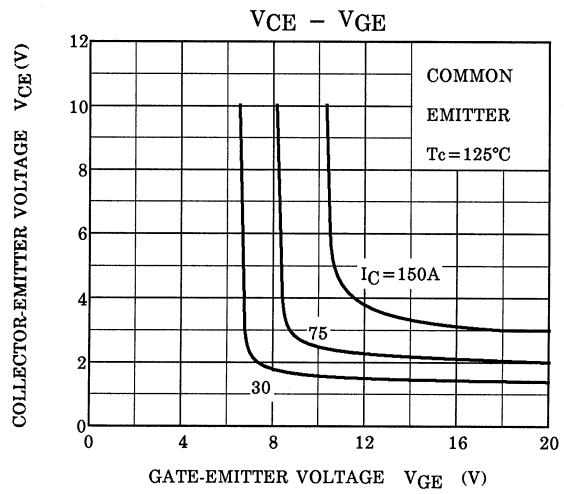
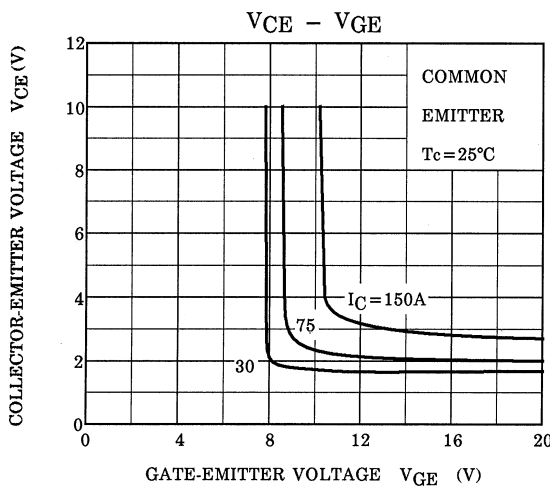
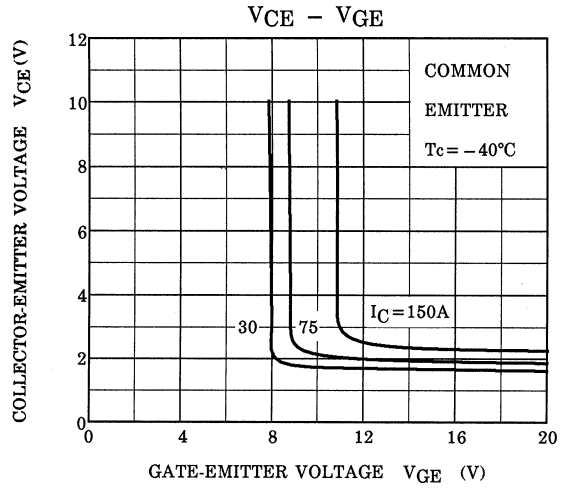
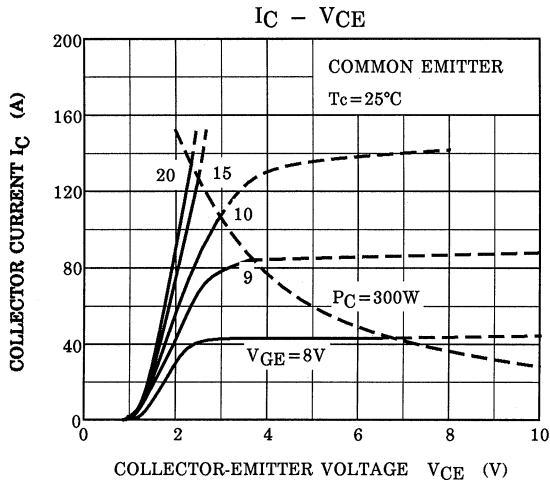


## Maximum Ratings (Ta = 25°C)

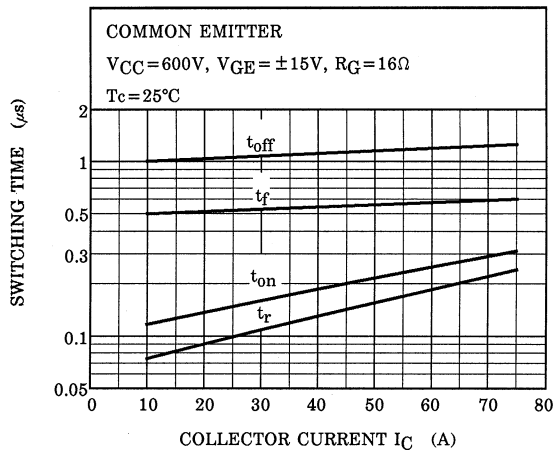
Characteristic	Symbol	Rating	Unit	
Collector-emitter voltage	$V_{CES}$	1200	V	
Gate-emitter voltage	$V_{GES}$	±20	V	
Collector current	DC	$I_C$	75	A
	1ms	$I_{CP}$	150	
Collector power dissipation (Tc = 25°C)	$P_C$	600	W	
Junction temperature	$T_j$	150	°C	
Storage temperature range	$T_{stg}$	-40 to 125	°C	
Isolation voltage	$V_{Isol}$	2500 (AC 1 minute)	V	
Screw torque (Termina / mounting)	—	2 / 3	N·m	

## Electrical Characteristics (Ta = 25°C)

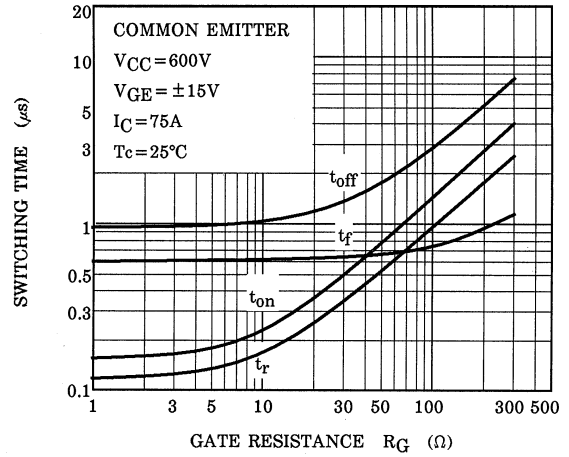
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector cut-off current		$I_{CES}$	$V_{CE} = 1200V, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE (OFF)}$	$I_C = 75mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 75A, V_{GE} = 15V$	—	2.2	2.7	V
Input capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	10500	—	pF
Switching time	Rise time	$t_r$		—	0.3	0.6	μs
	Turn-on time	$t_{on}$		—	0.4	0.8	
	Fall time	$t_f$		—	0.6	1.0	
	Turn-off time	$t_{off}$		—	1.2	1.8	
Thermal resistance		$R_{th (j-c)}$	—	—	0.208	°C / W	



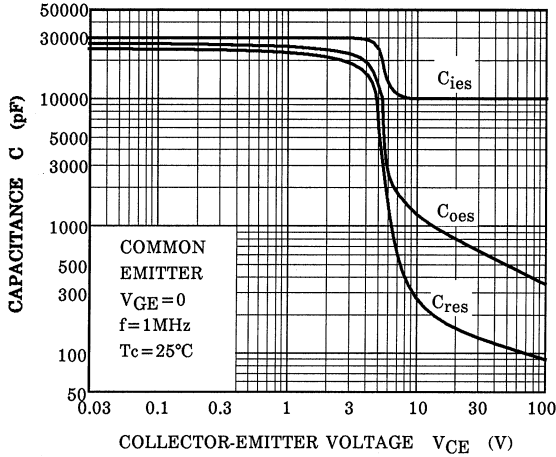
SWITCHING TIME -  $I_C$



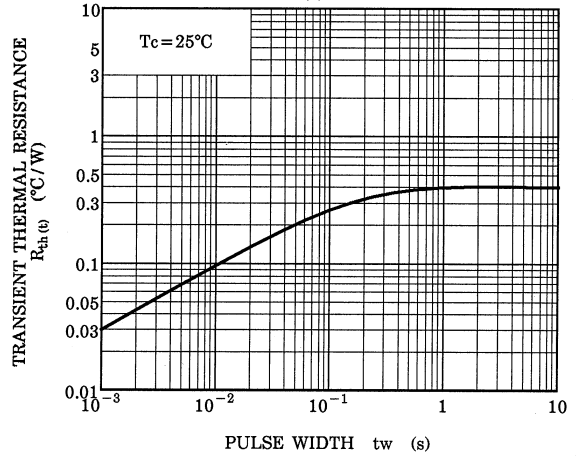
SWITCHING TIME -  $R_G$



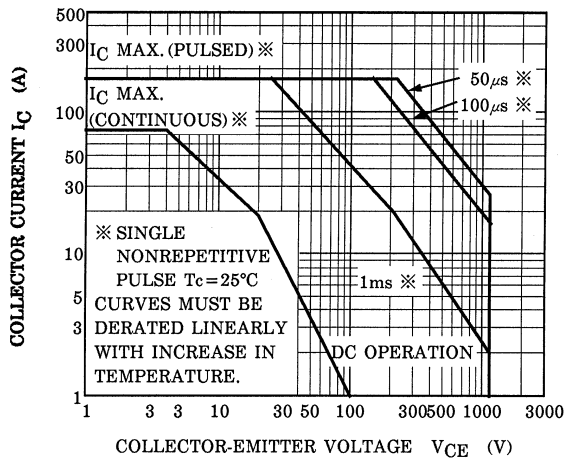
C -  $V_{CE}$



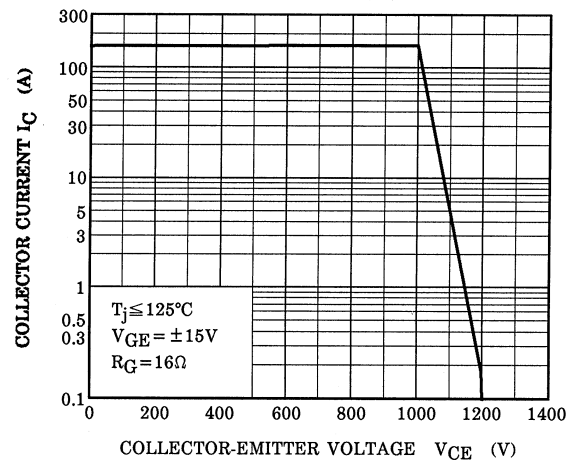
$R_{th}(t) - t_w$



SAFE OPERATING AREA



REVERSE BIAS SOA



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