

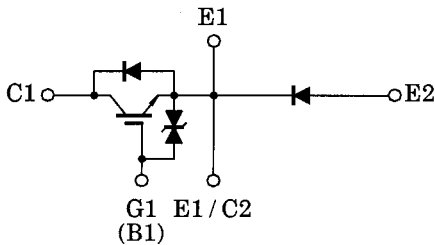
TOSHIBA GTR Module Silicon N Channel IGBT

# MG100Q1JS40

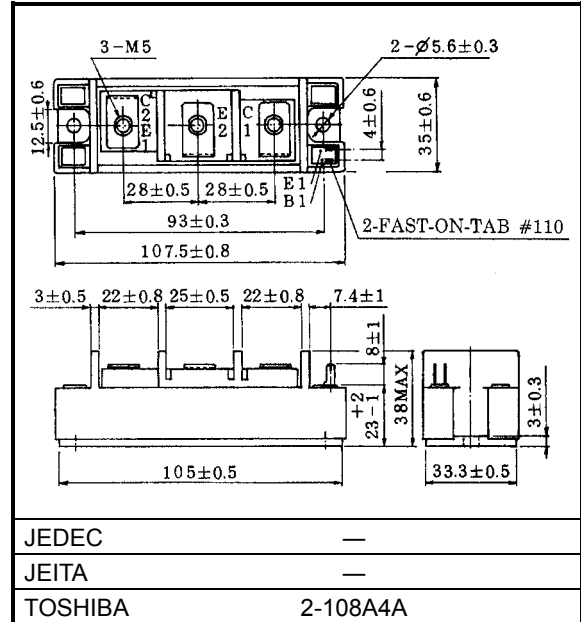
High Power Switching Applications  
Chopper Applications

- High input impedance
- High speed :  $t_f = 0.5\mu s$  (max)  
 $t_{rr} = 0.5\mu s$  (max)
- Low saturation voltage  
:  $V_{CE(sat)} = 4.0V$  (max)
- Enhancement-mode
- The electrodes are isolated from case.

## Equivalent Circuit



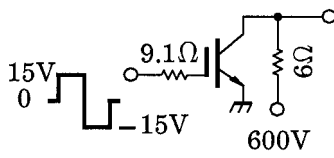
Unit: mm

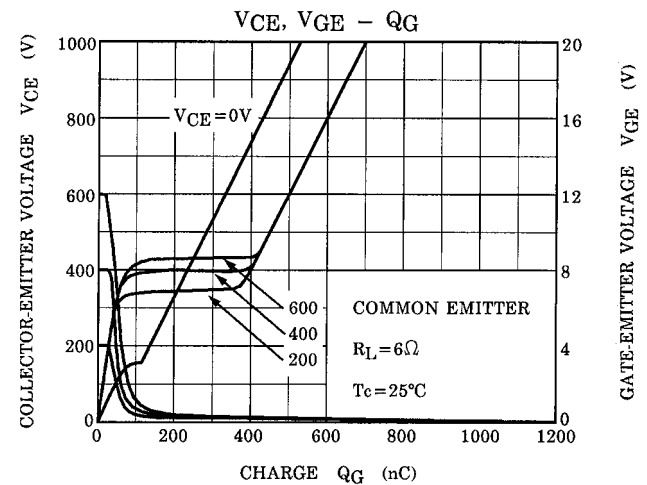
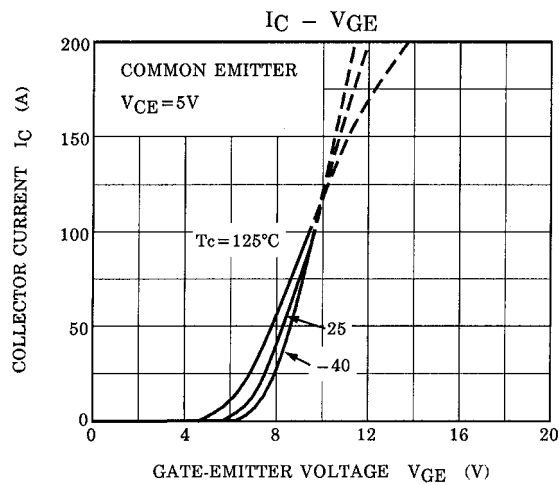
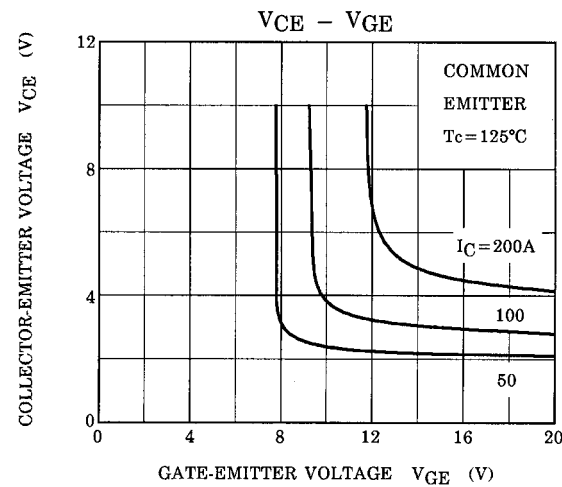
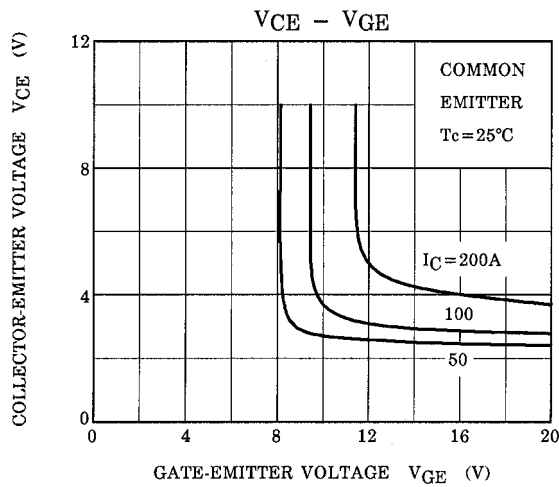
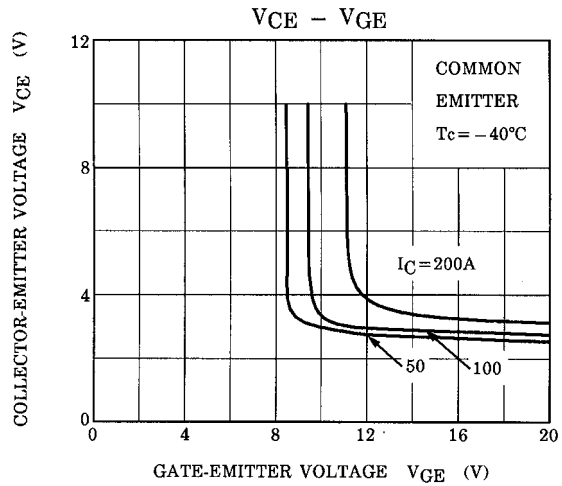
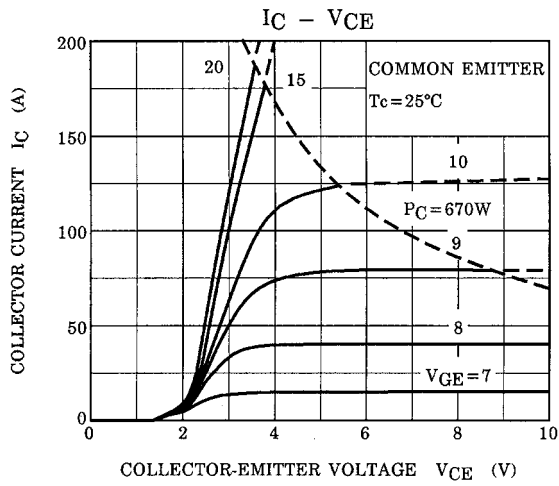


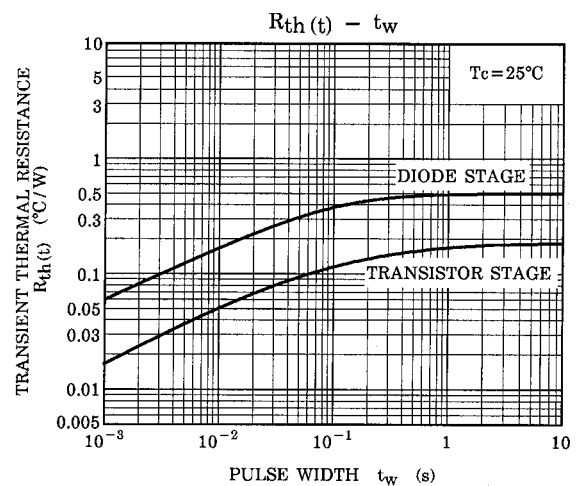
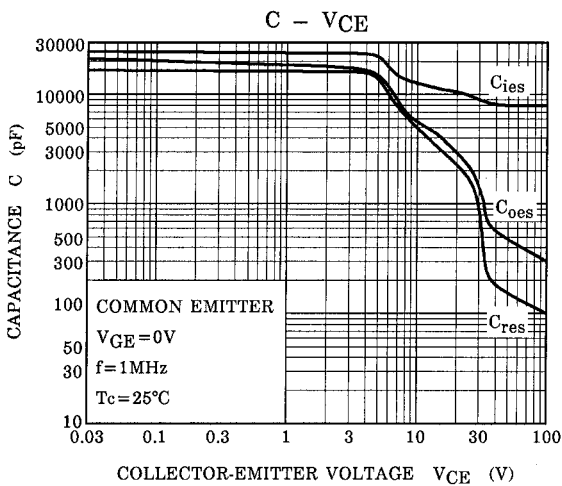
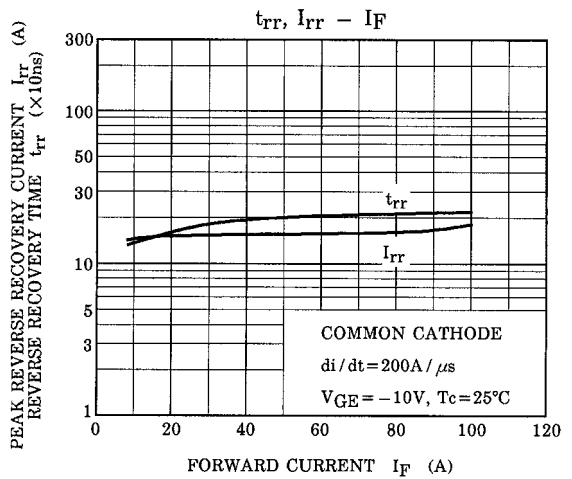
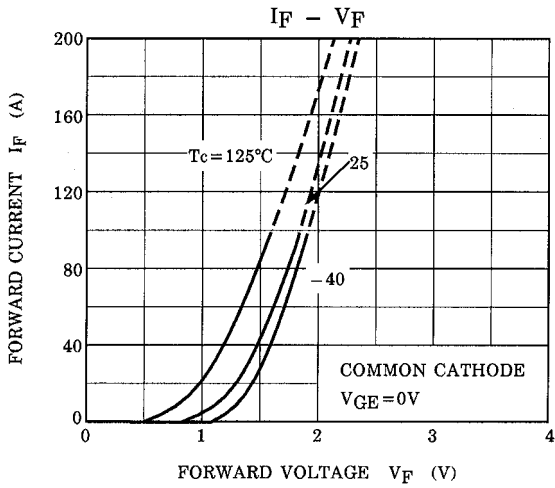
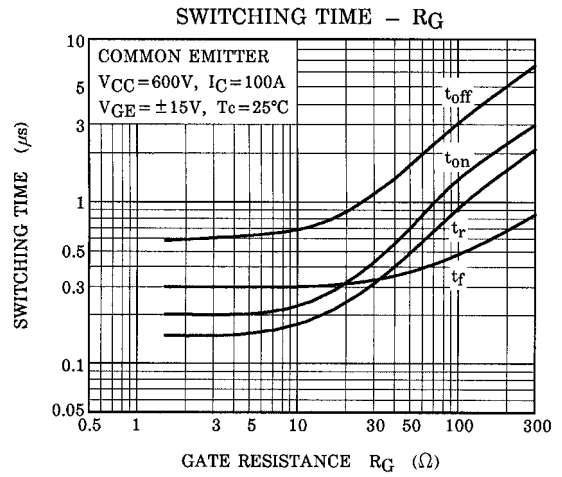
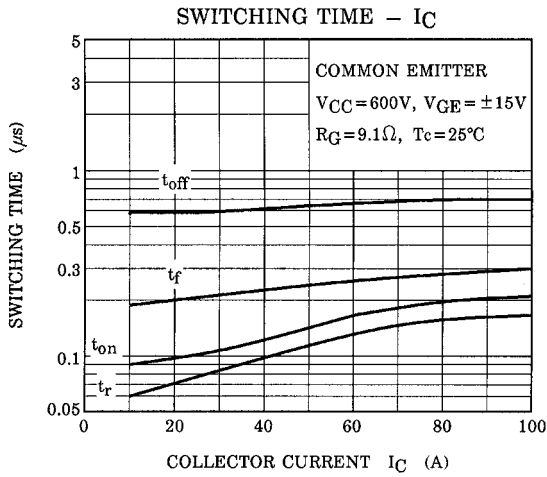
## Maximum Ratings (Ta = 25°C)

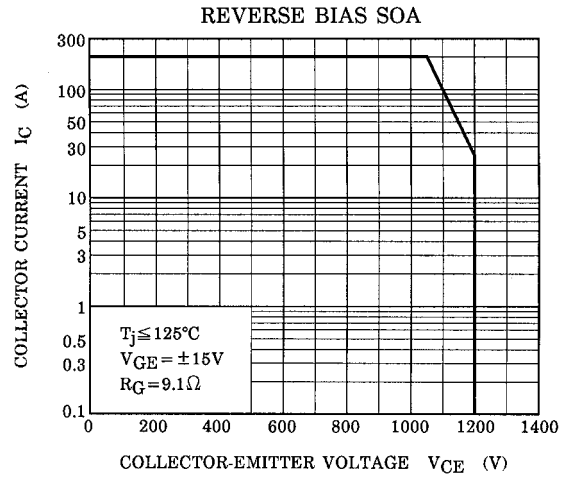
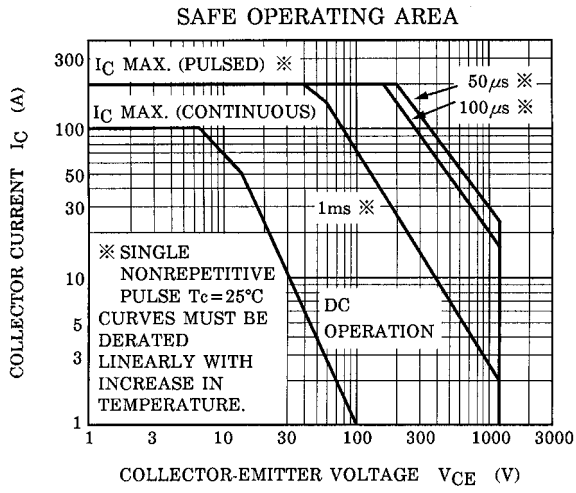
Characteristics	Symbol	Rating	Unit
Collector-emitter voltage	$V_{CES}$	1200	V
Gate-emitter voltage	$V_{GES}$	±20	V
Reverse voltage	$V_R$	1200	V
Collector current	DC	$I_C$	100
	1ms	$I_{CP}$	200
Forward current	DC	$I_F$	100
	1ms	$I_{FM}$	200
Collector power dissipation (Tc = 25°C)	$P_C$	670	W
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-40 ~ 125	°C
Isolation voltage	$V_{isol}$	2500 (AC 1 min.)	V
Screw torque (Terminal / mounting)	—	3 / 3	N·m

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 10$	$\mu A$
Collector cut-off current		$I_{CES}$	$V_{CE} = 1200V, V_{GE} = 0$	—	—	1.0	mA
Collector-emitter voltage		$V_{CES}$	$I_C = 1mA, V_{GE} = 0$	1200	—	—	V
Gate-emitter cut-off voltage		$V_{GE (off)}$	$V_{CE} = 5V, I_C = 100mA$	3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 100A, V_{GE} = 15V$	—	3.0	4.0	V
Input capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	12000	—	pF
Switching time	Rise time	$t_r$		—	0.3	0.6	$\mu s$
	Turn-on time	$t_{on}$		—	0.4	0.8	
	Fall time	$t_f$		—	0.2	0.5	
	Turn-off time	$t_{off}$		—	0.8	1.5	
Reverse current		$I_R$	$V_R = 1200V$	—	—	2.0	mA
Forward voltage		$V_F$	$I_F = 100A, V_{GE} = 0$	—	2.0	3.0	V
Reverse recovery time		$t_{rr}$	$I_F = 100A, V_{GE} = -10V$ $di/dt = 200A/\mu s$	—	0.25	0.5	$\mu s$
Thermal resistance	Transistor	$R_{th (j-c)}$	—	—	—	0.19	$^{\circ}C/W$
	Diode			—	—	0.5	







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