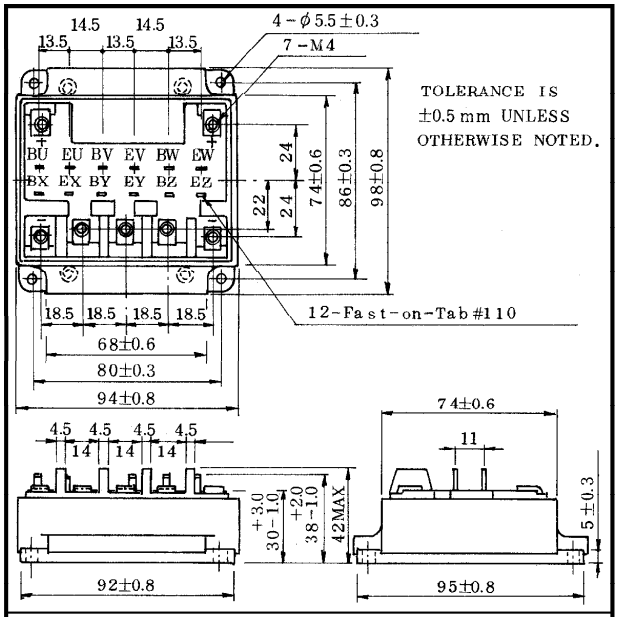
TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG50Q6ES40

HIGH POWER SWITCHING APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

- The Electrodes are Isolated from Case.
- 6 IGBTs are Built Into 1 Package.
- Enhancement-Mode
- Low Saturation Voltage
  : $V_{CE\,(sat)} = 4.0V$ (Max.)
- High Speed : $t_f = 0.5\mu s$ (Max.)

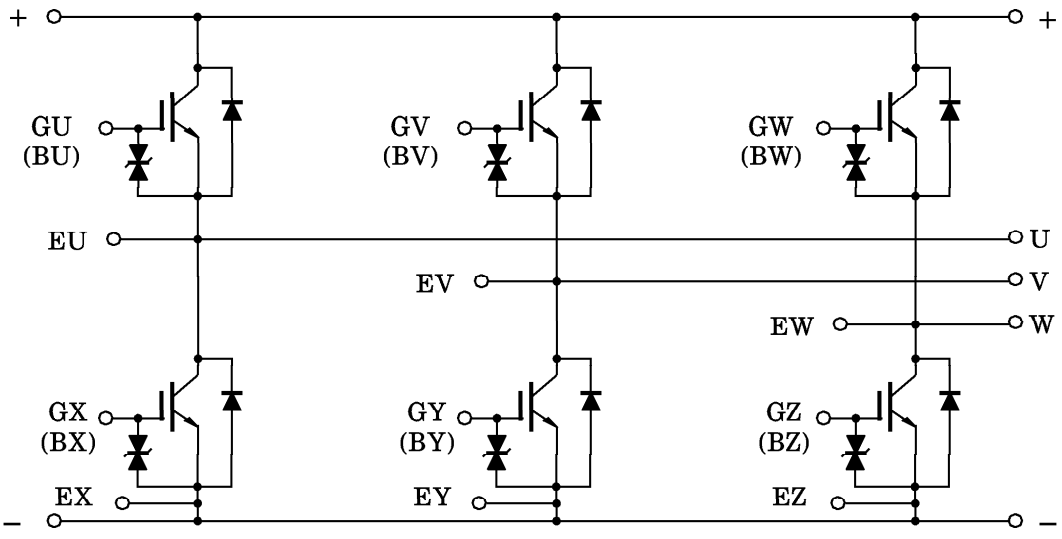
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-94B1A

Weight : 690g

EQUIVALENT CIRCUIT

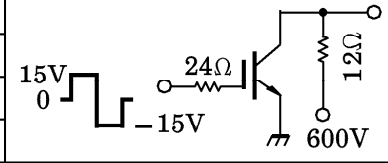


961001EAA2

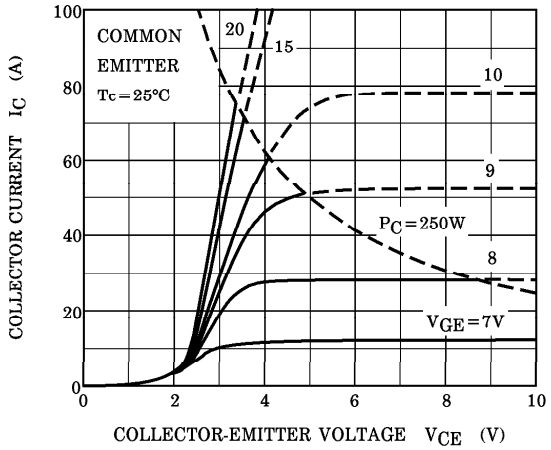
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collector Current	DC	I_C	50	A
	1ms	I_{CP}	100	
Forward Current	DC	I_F	50	A
	1ms	I_{FM}	100	
Collector Power Dissipation (Tc=25°C)		P_C	250	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−40~125	°C
Isolation Voltage		V_{Isol}	2500 (AC 1 minute)	V
Screw Torque (Terminal / Mounting)		—	2 / 3	N·m

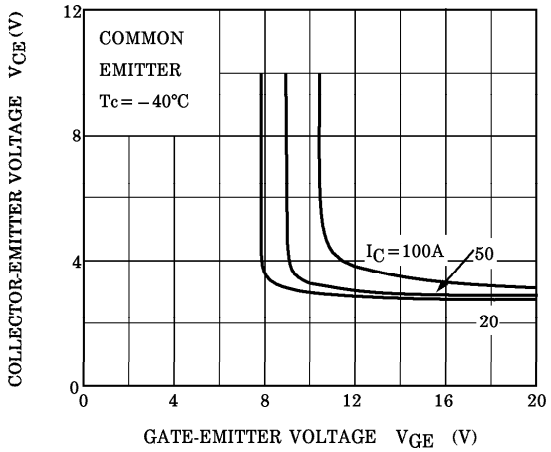
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	V_{GE} = ±20V, V_{CE} = 0	—	—	±10	μA
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 = 50mA, V_{CE} = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 50A, V_{GE} = 15V	—	3.0	4.0	V
Input Capacitance		C_{ies}	V_{CE} = 10V, V_{GE} = 0, f = 1MHz	—	6000	—	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		—	0.2	0.5	
	Turn-off Time	t_{off}		—	0.8	1.5	
Forward Voltage		V_F	I_F = 50A, V_{GE} = 0	—	2.0	2.5	V
Reverse Recovery Time		t_{rr}	I_F = 50A, V_{GE} = −10V di / dt = 100A / μs	—	0.25	0.5	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	—	—	0.5	°C / W
			Diode	—	—	1.0	

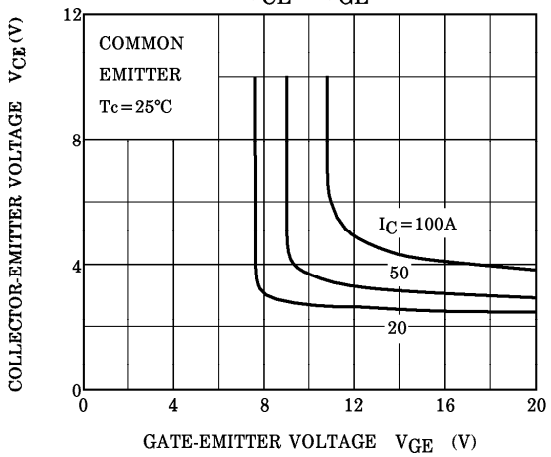
I_C – V_{CE}



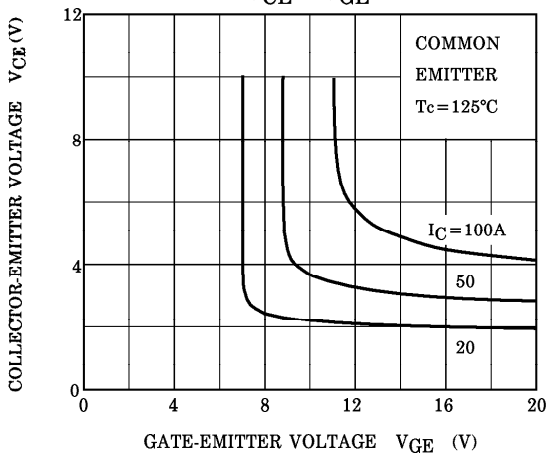
V_{CE} – V_{GE}



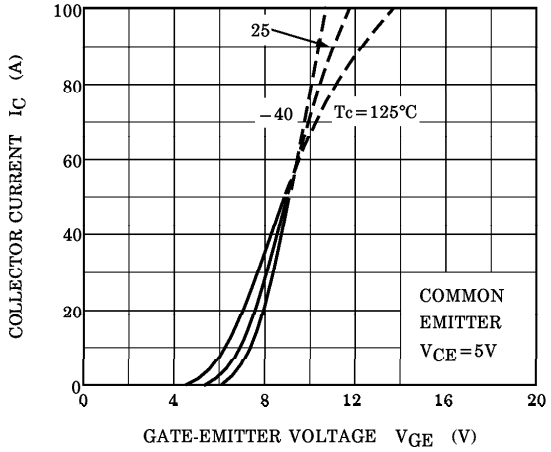
V_{CE} – V_{GE}



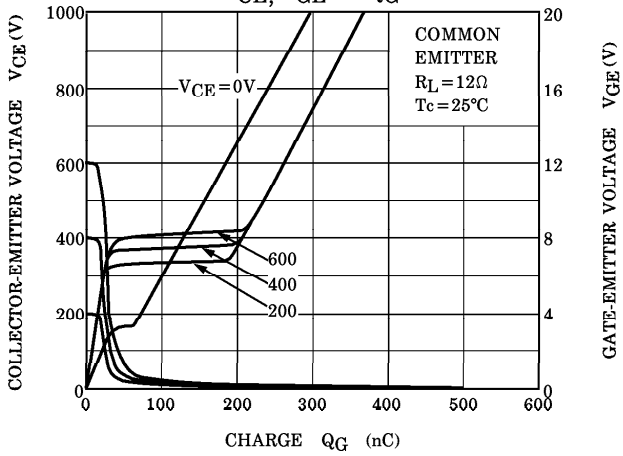
V_{CE} – V_{GE}



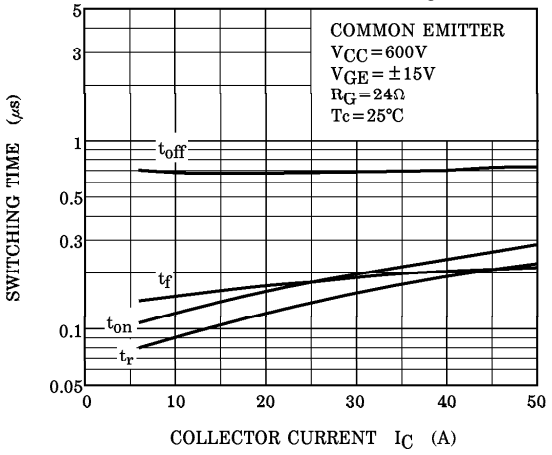
I_C – V_{GE}



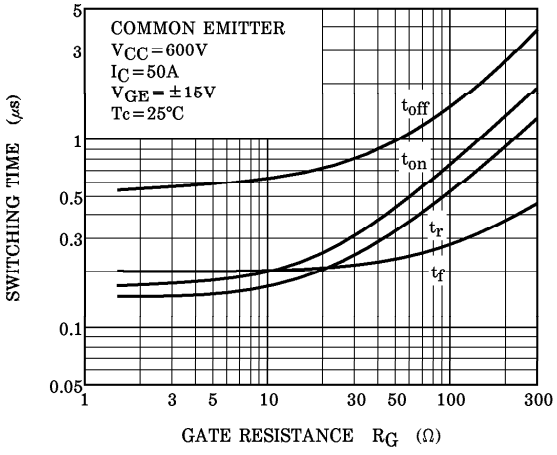
V_{CE}, V_{GE} – Q_G



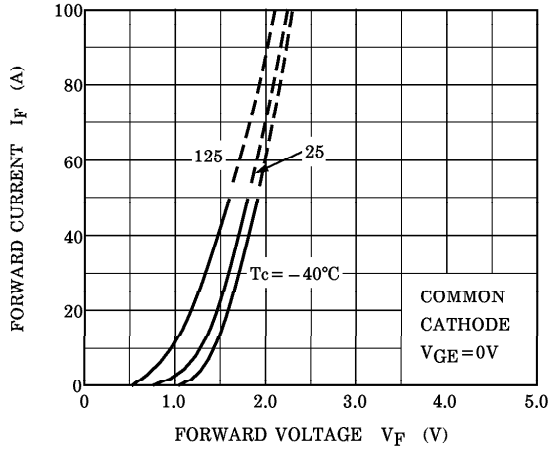
SWITCHING TIME – I_C



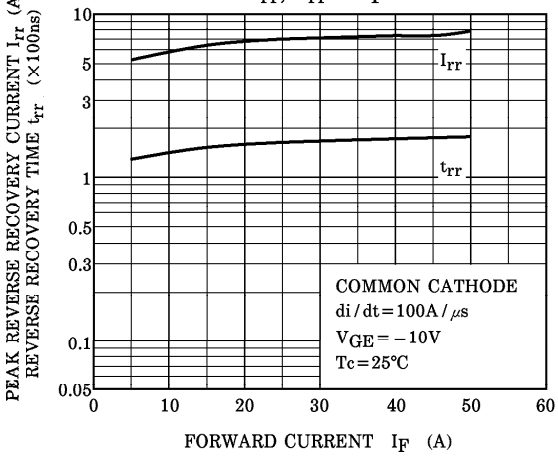
SWITCHING TIME – R_G



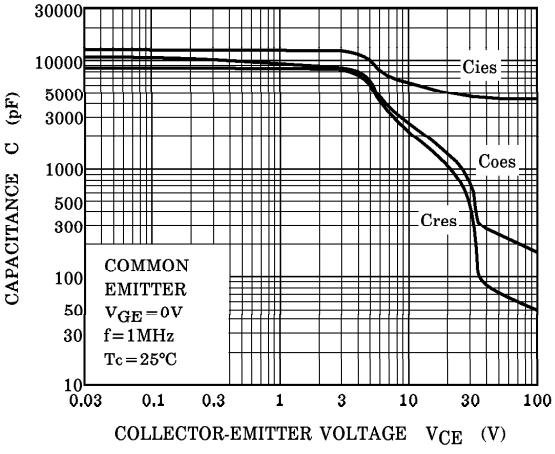
I_F – V_F



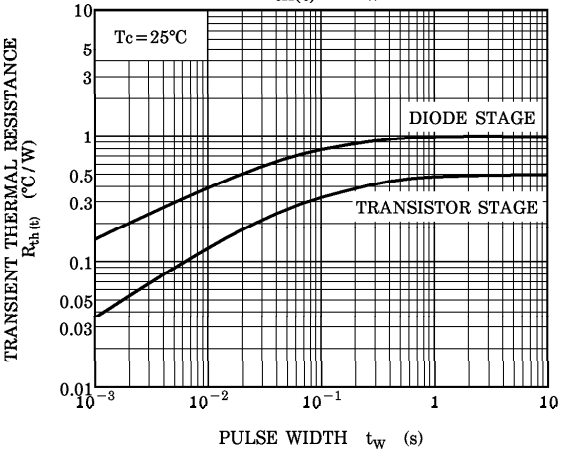
t_{rr}, I_{rr} – I_F



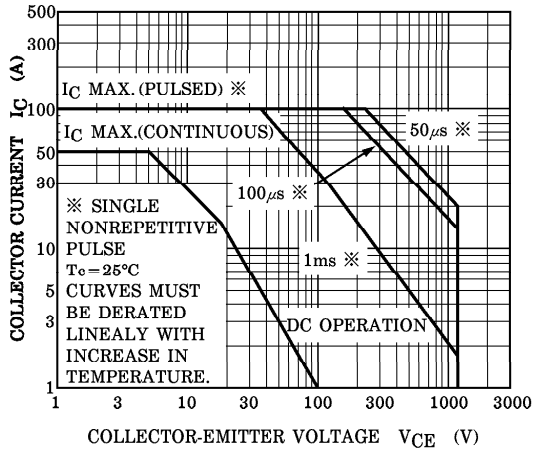
C – V_{CE}



$R_{th(t)}$ – t_w



SAFE OPERATING AREA



REVERSE BIAS SOA