TOSHIBA GTR MODULE

MG400Q1US1/MG400Q1US2

SILICON N CHANNEL IGBT

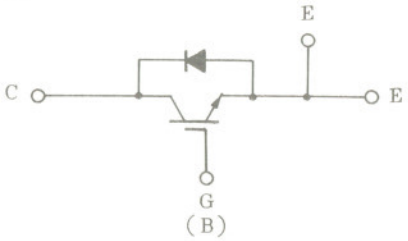
HIGH POWER SWITCHING APPLICATIONS.

MOTOR CONTROL APPLICATIONS.

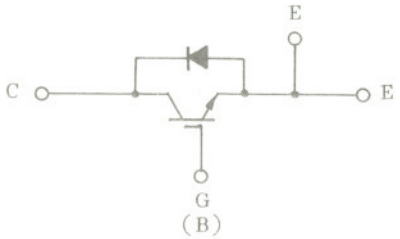
- High Input Impedance
- High Speed : t_f=0.5μs(Max.)
  t_{rr}=0.5μs(Max.)
- Low Saturation Voltage : $V_{CE(sat)}$=4.0V(Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT

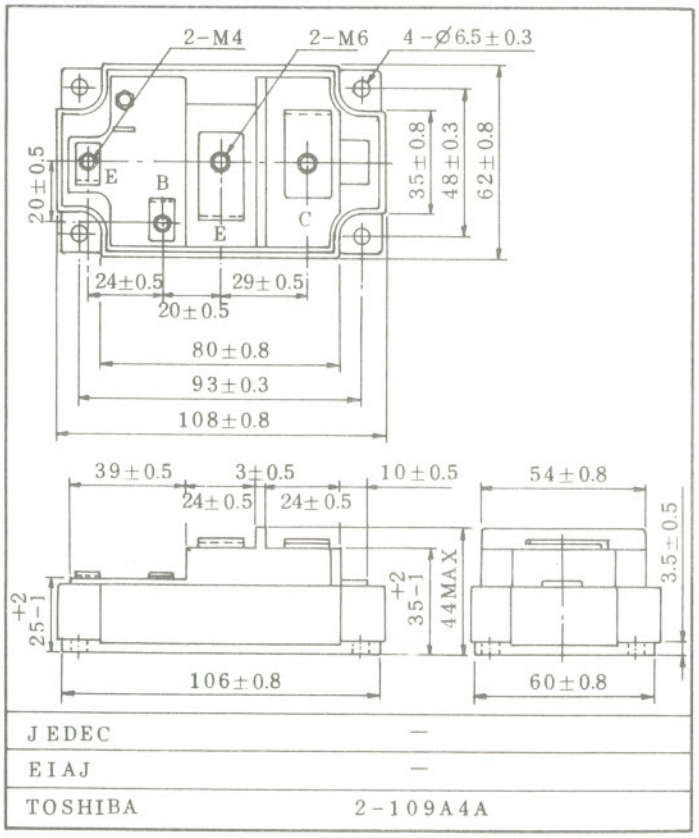
MG400Q1US1



MG400Q1US2



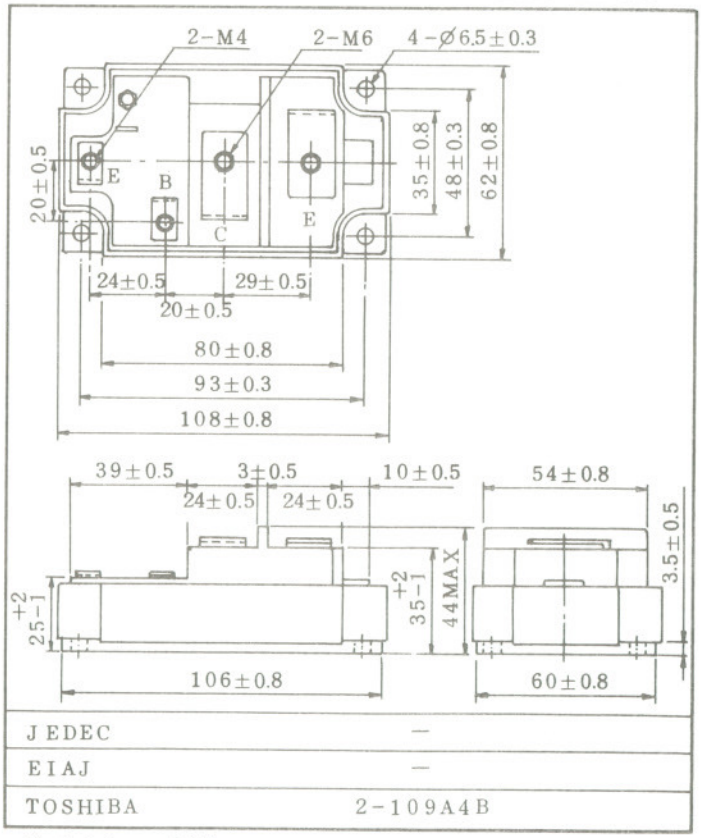
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-109A4A

Weight : 465g

Unit in mm



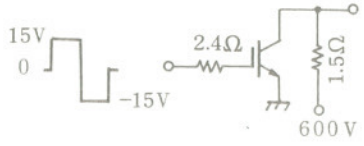
JEDEC	—
EIAJ	—
TOSHIBA	2-109A4B

Weight : 465g

MAXIMUM RATINGS (Ta=25°C)

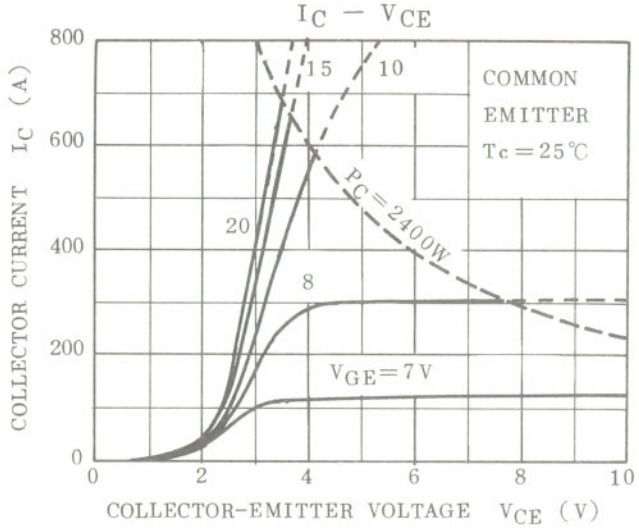
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collector Current	DC	I_C	400	A
	1ms	I_{CP}	800	
Forward Current	DC	I_F	400	A
	1ms	I_{FM}	800	
Collector Power Dissipation (Ta=25°C)		P_C	2400	W
Junction Temperature		Tj	150	°C
Storage Temperature Range		Tstg	-40~125	°C
Isolation Voltage		V_{Isol}	2500 (AC, 1 minute)	V
Screw Torque (Terminal/M4/M6/Mounting)		-	2/3/3	Nm

ELECTRICAL CHARACTERISTICS (Ta=25°C)

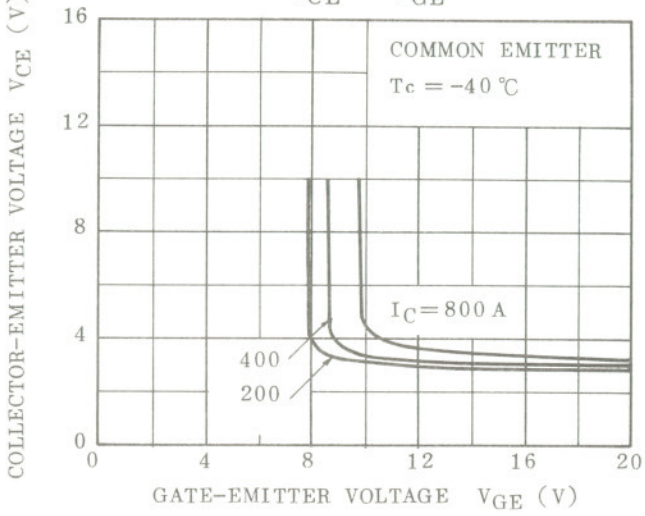
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	V_{GE}=±20V, V_{CE}=0	-	-	±500	nA
Collector Cut-off Current		I_{CES}	V_{CE}=1200V, V_{GE}=0	-	-	4	mA
Collector-Emitter Voltage		V_{CES}	I_C≦4mA, V_{GE}=0 Note 1	1200	-	-	V
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	I_C=400mA, V_{CE}=5V	3.0	-	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=400A, V_{GE}=15V	-	3.0	4.0	V
Input Capacitance		Cies	V_{CE}=10V, V_{GE}=0, f=1MHz	-	59000	-	pF
Switching Time	Rise Time	t_r		-	0.3	0.60	μs
	Turn-on Time	t_{on}		-	0.4	0.80	
	Fall Time	t_f		-	0.2	0.50	
	Turn-off Time	t_{off}		-	0.8	1.5	
Forward Voltage		V_F	I_F=400A, V_{GE}=0	-	2.0	3.0	V
Reverse Recovery Time		t_{rr}	I_F=400A, V_{GE}=-10V di/dt=300A/μs	-	0.25	0.5	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	-	-	0.052	°C/W
			Diode	-	-	0.20	

Note 1: Do not apply the over rating voltage

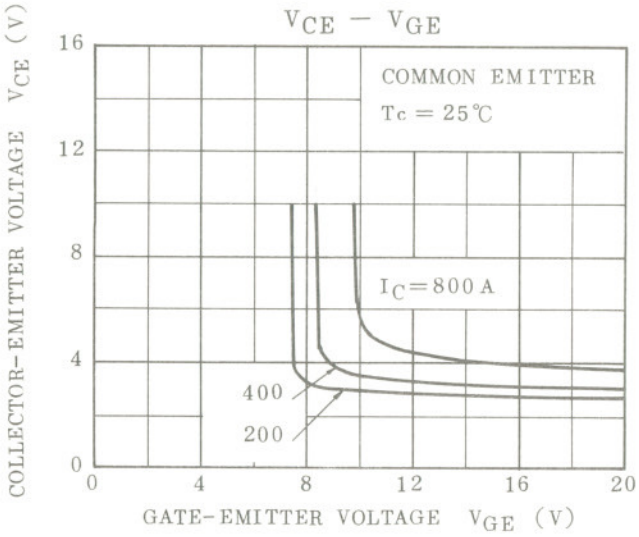
$I_C - V_{CE}$



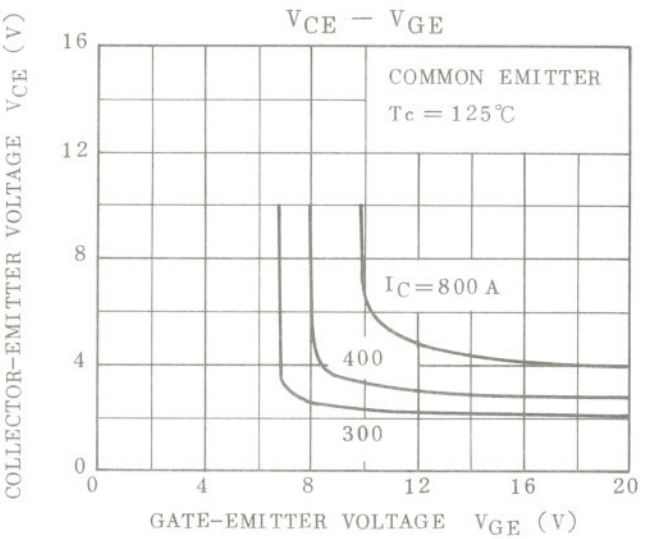
$V_{CE} - V_{GE}$



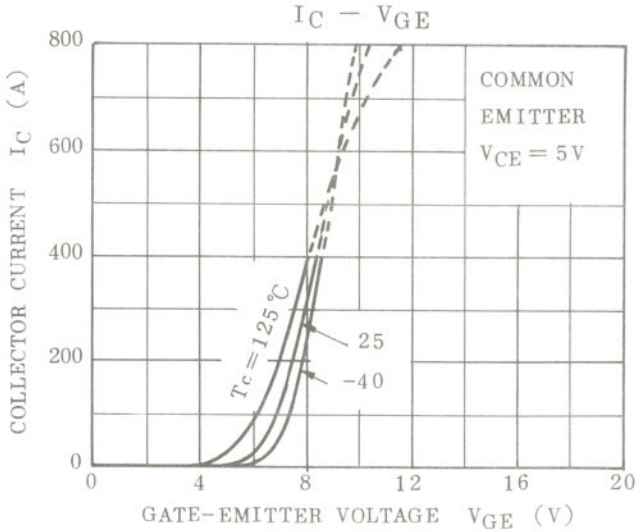
$V_{CE} - V_{GE}$



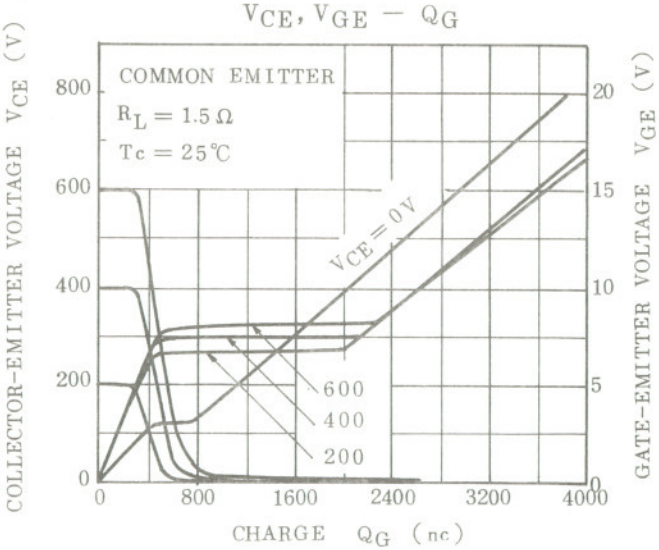
$V_{CE} - V_{GE}$



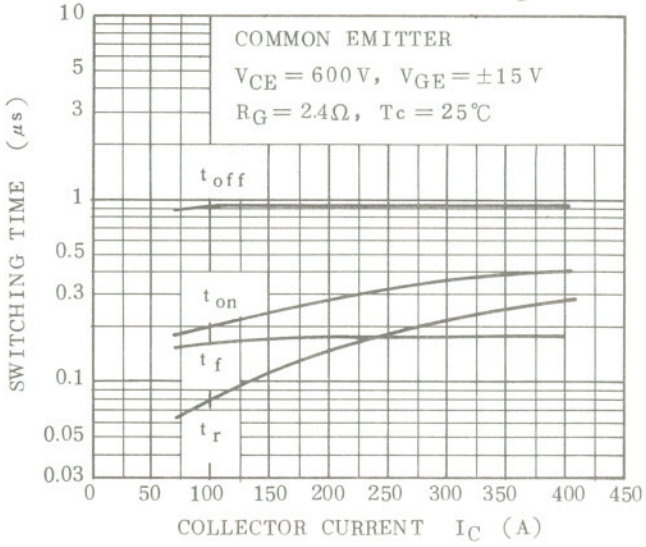
$I_C - V_{GE}$



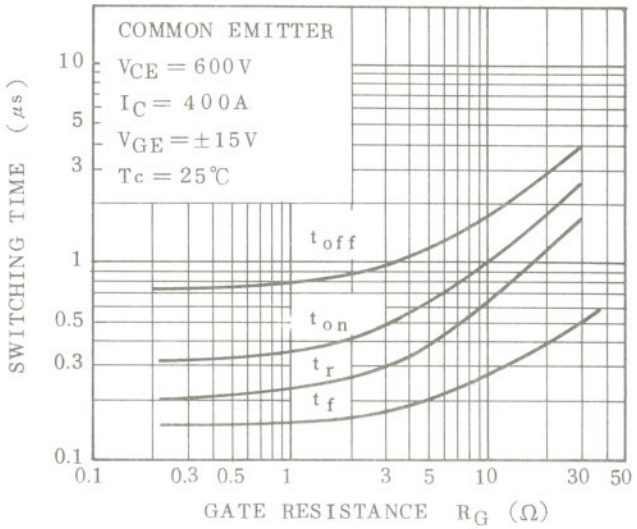
$V_{CE}, V_{GE} - Q_G$



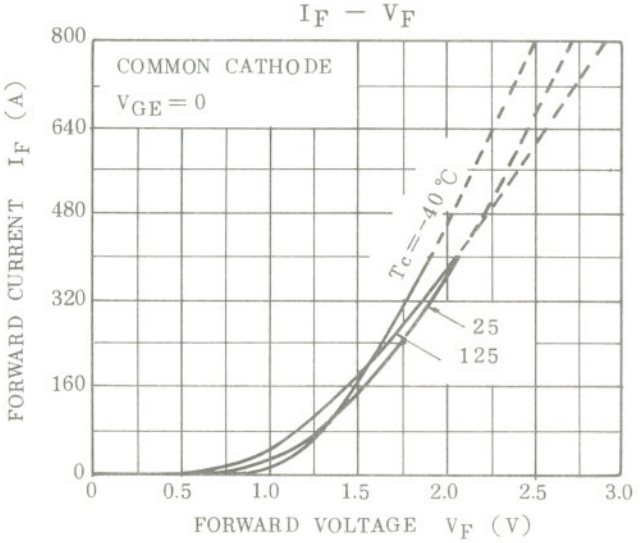
SWITCHING TIME — I_C



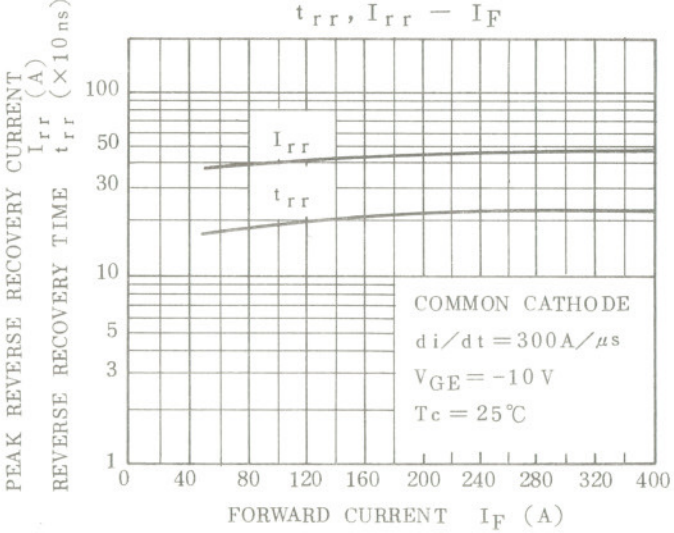
SWITCHING TIME — R_G



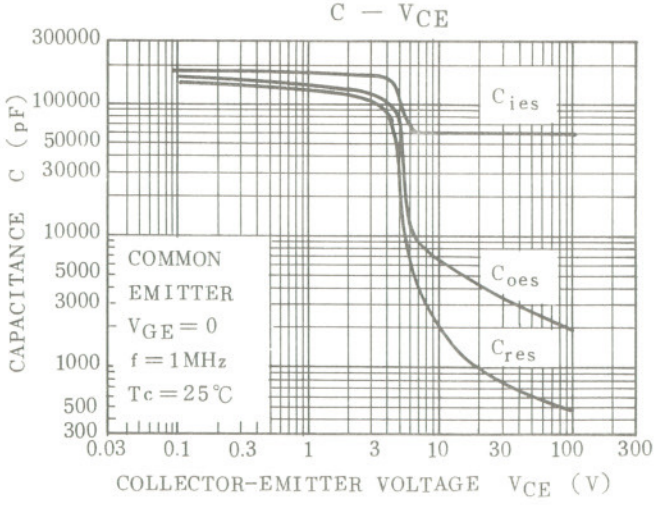
I_F — V_F



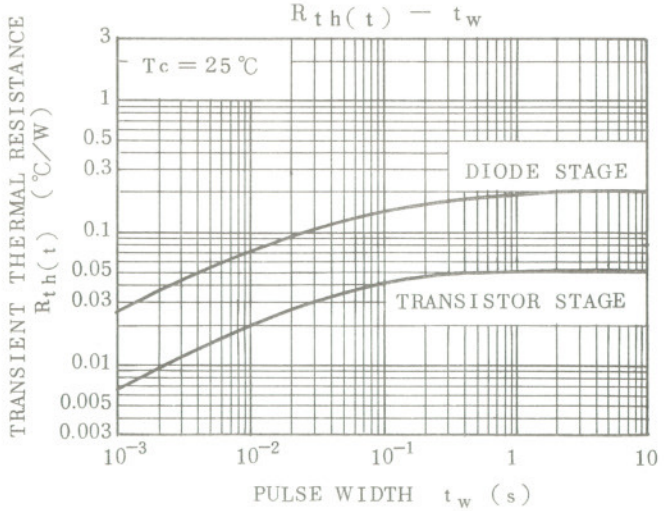
t_{rr}, I_{rr} — I_F



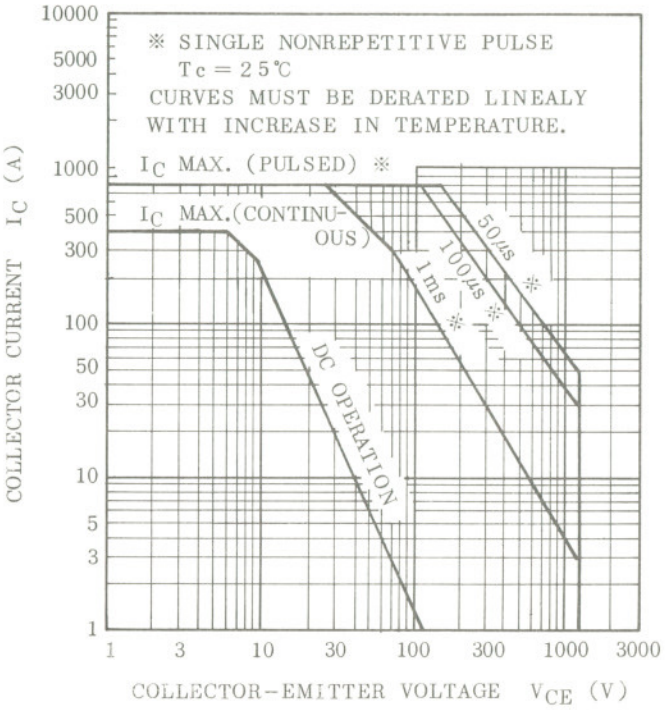
C — V_{CE}



$R_{th(t)}$ — t_w



SAFE OPERATING AREA



REVERSE BIAS SOA