TOSHIBA GTR Module Silicon N Channel IGBT

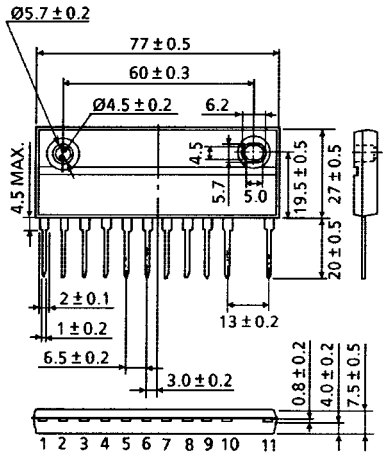
MP6759

Motor Control Applications

High Power Switching Applications

- The electrodes are isolated from case.
- 6 IGBTs are built into 1 package.
- Enhancement-mode
- Low saturation voltage
  : $V_{CE\ (sat)}$ = 2.7 V (max) (I_C = 10 A)
- High speed: t_f = 0.35 μs (max) (I_C = 10 A)

Unit: mm



1. (+) 2. GU 3. U 4. GV 5. V 6. GW
7. W 8. GX 9. GY 10. GZ 11. (−)

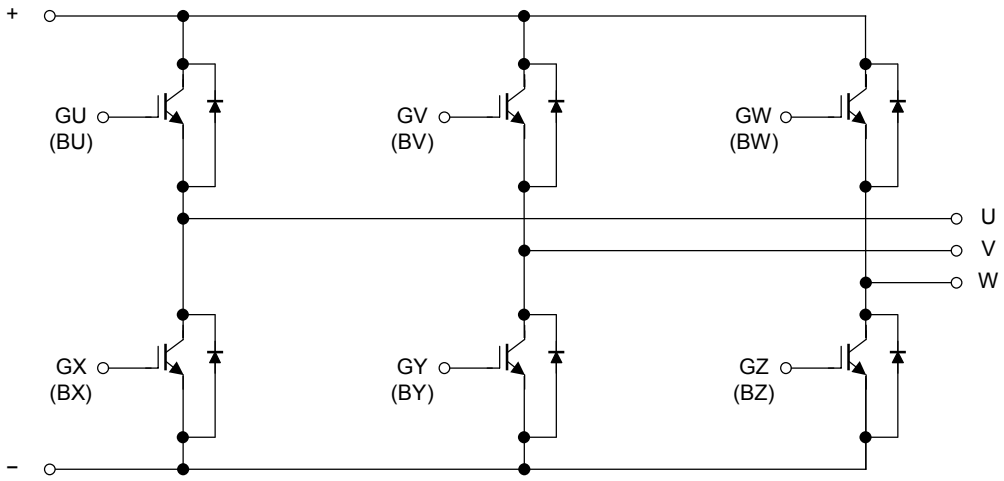
JEDEC	—
JEITA	—
TOSHIBA	2-78A1A

Weight: 44 g (typ.)

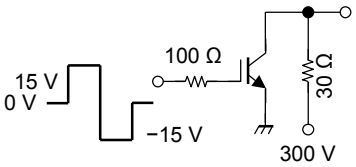
Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	600	V
Gate-emitter voltage		V_{GES}	±20	V
Collector current	DC	I_C	10	A
	1 ms	I_{CP}	20	
Forward current	DC	I_F	10	A
	1 ms	I_{FM}	20	
Collector power dissipation (Tc = 25°C)		P_C	40	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		—	1.5	N·m

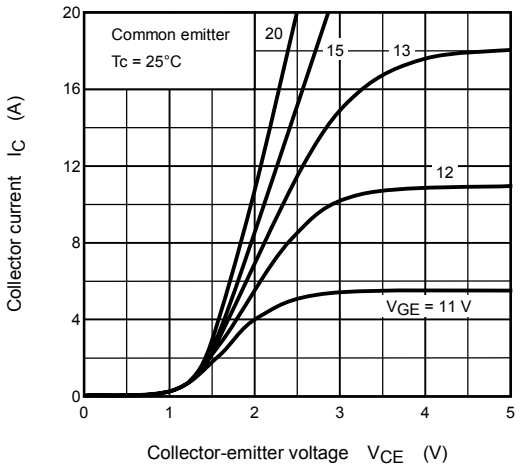
Equivalent Circuit



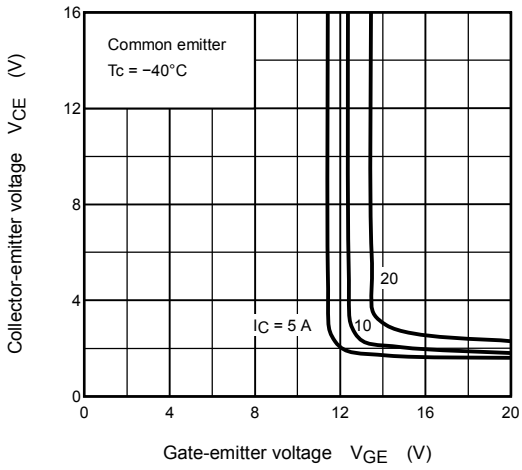
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	V_{GE} = ±20 V, V_{CE} = 0 V	—	—	±200	nA
Collector cut-off current		I_{CES}	V_{CE} = 600 V, V_{GE} = 0 V	—	—	1	mA
Gate-emitter cut-off voltage		$V_{GE\ (off)}$	I_C = 1 mA, V_{CE} = 5 V	5	—	8	V
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 10 A, V_{GE} = 15 V	—	2.1	2.7	V
Input capacitance		C_{ies}	V_{CE} = 10 V, V_{GE} = 0 V, f = 1 MHz	—	720	—	pF
Switching time	Rise time	t_r		—	0.3	—	μs
	Turn-on time	t_{on}		—	0.4	—	
	Fall time	t_f		—	0.2	0.35	
	Turn-off time	t_{off}		—	0.4	—	
Forward voltage		V_F	I_F = 10 A, V_{GE} = 0 V	—	—	2.0	V
Reverse recovery time		t_{rr}	I_F = 10 A, di/dt = −100 A/μs	—	—	200	ns
Thermal resistance		$R_{th\ (j\text{-}c)}$	Transistor	—	—	3.09	°C/W
			Diode	—	—	4.77	

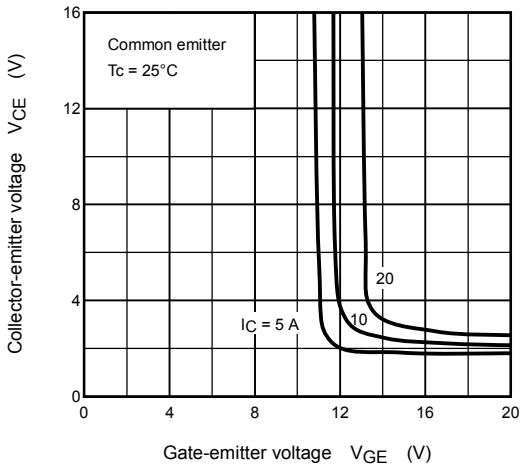
$I_C - V_{CE}$



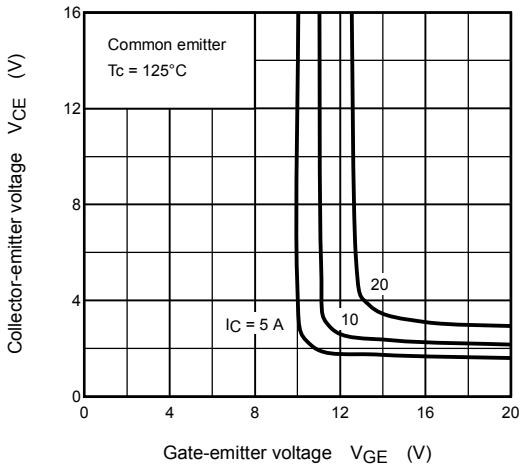
$V_{CE} - V_{GE}$



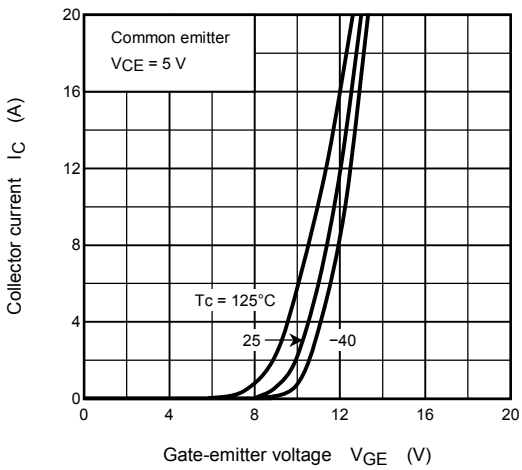
$V_{CE} - V_{GE}$



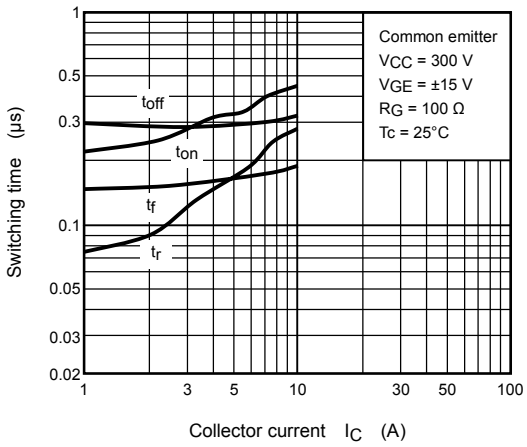
$V_{CE} - V_{GE}$



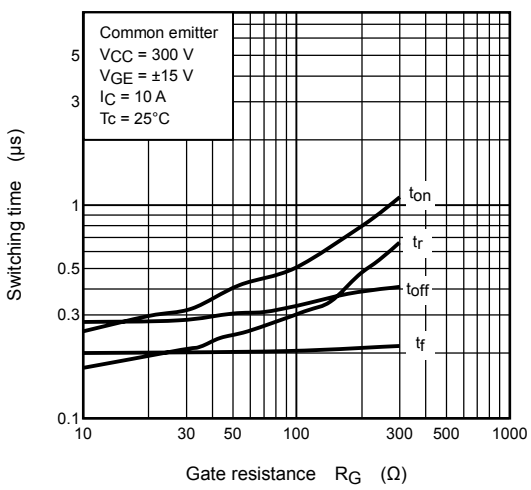
$I_C - V_{GE}$



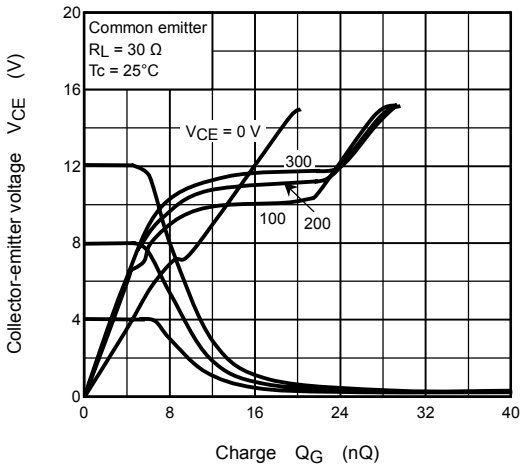
Switching Time – I_C



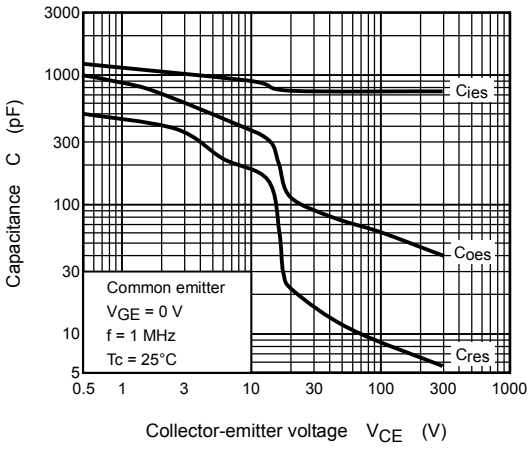
Switching Time – R_G



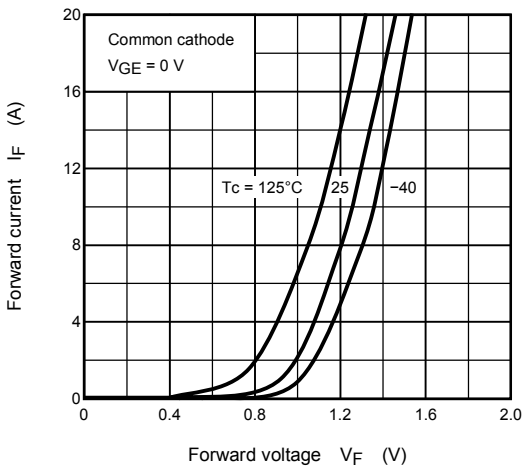
V_{CE}, V_{GE} – Q_G



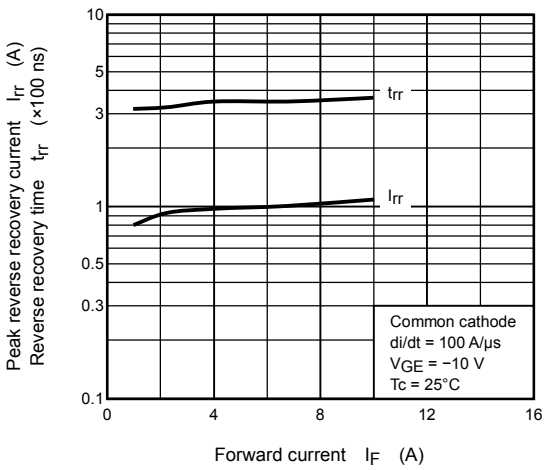
C – V_{CE}



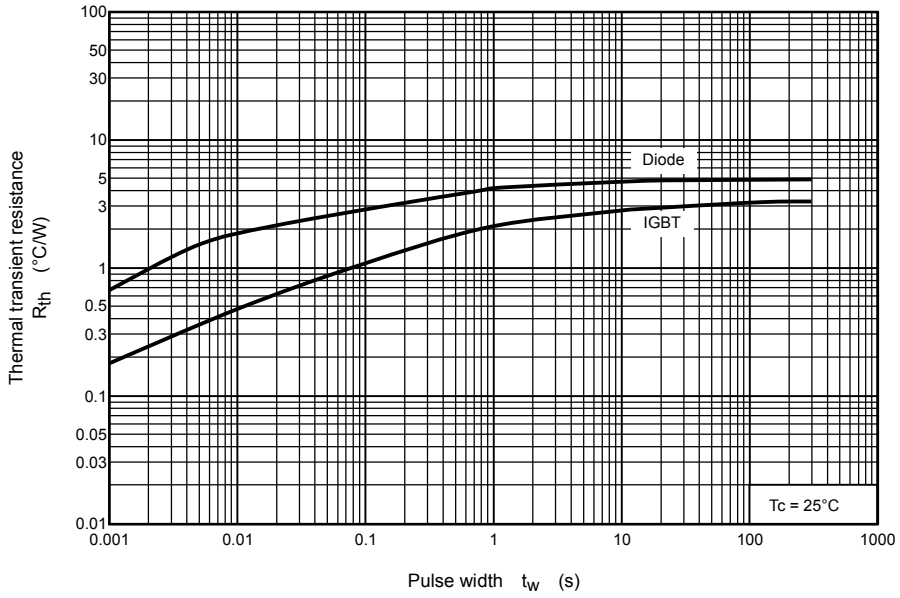
I_F – V_F



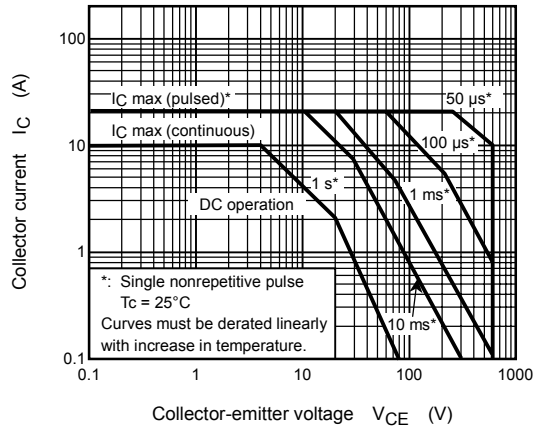
t_{rr}, I_{rr} – I_F



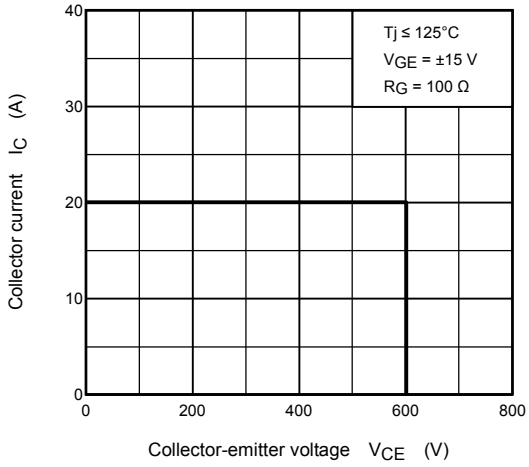
$R_{th} - t_w$



Safe Operating Area



Reverse Bias Area



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