

TOSHIBA IGBT Module Silicon N Channel IGBT

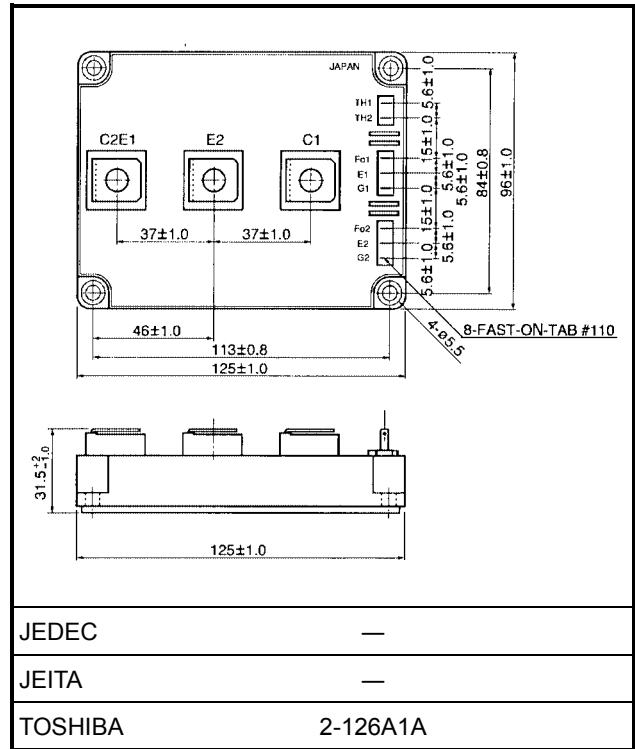
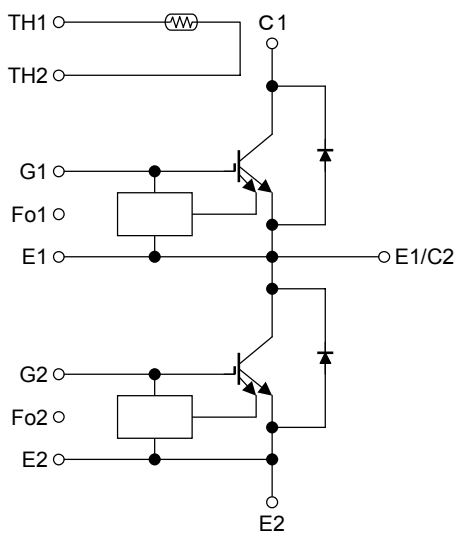
# MG800J2YS50A

High power switching applications  
 Motor control applications

Unit: mm

- The electrodes are isolated from case.
- Enhancement-mode
- Thermal output terminal (TH)

## Equivalent Circuit



Weight: 680 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	$I_C$	800	A
Forward current	DC	$I_F$	800	A
Collector power dissipation (Tc = 25°C)		$P_C$	2900	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: M8	—	10	N·m
	Mounting: M5	—	3	N·m

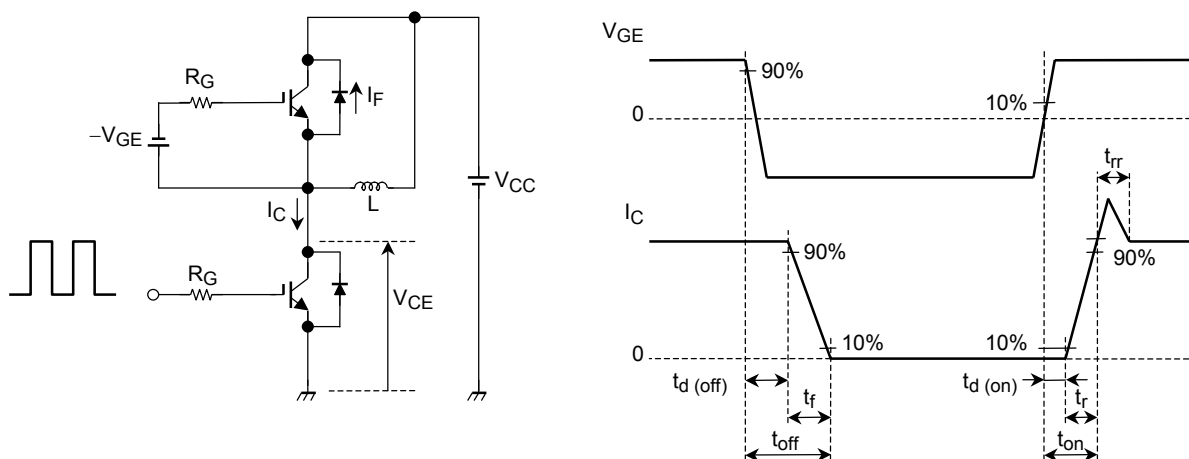
## Electrical Characteristics (Ta = 25°C)

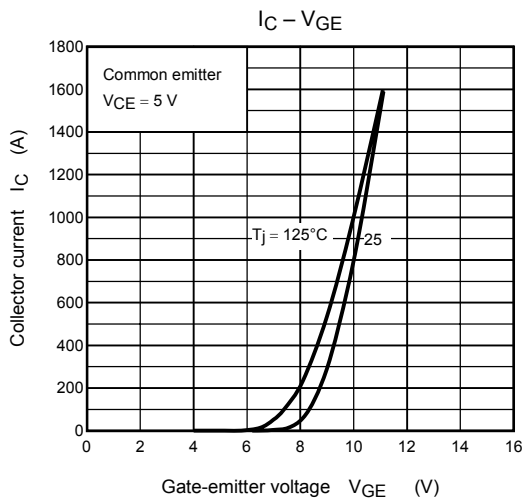
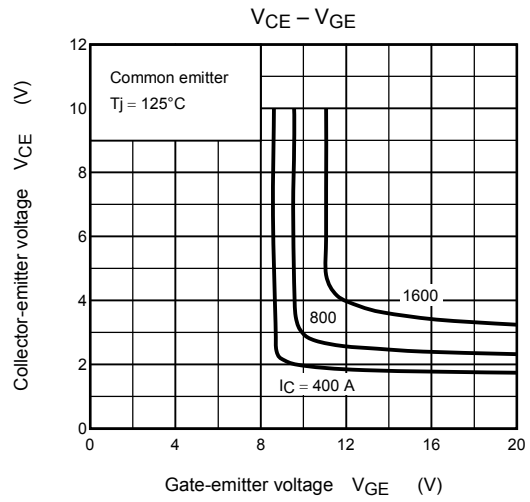
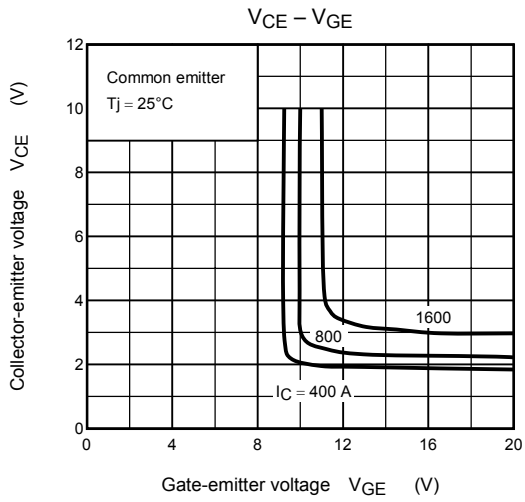
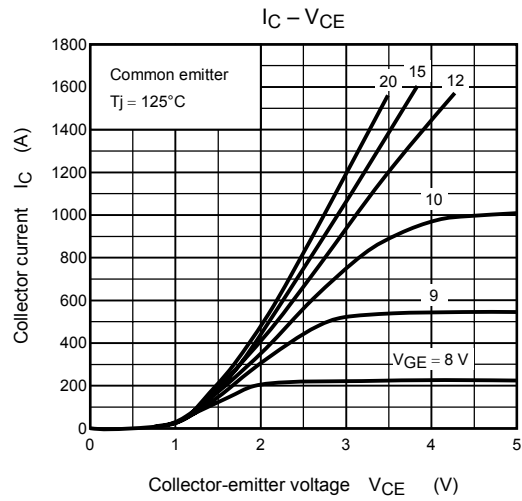
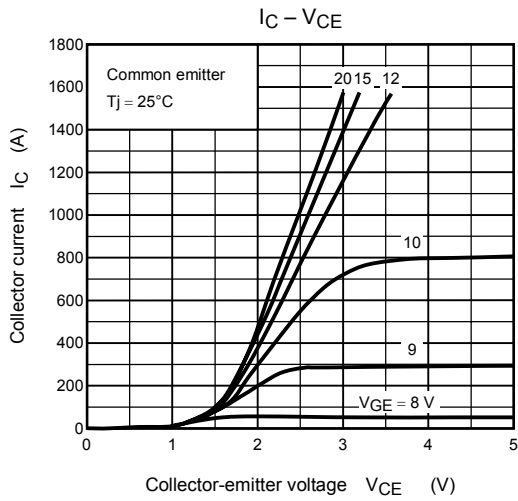
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Gate Leakage current	$I_{GES}$	$V_{GE} = \pm 20 \text{ V}, V_{CE} = 0 \text{ V}$	—	—	$\pm 10$	$\mu\text{A}$	
Collector cut-off current	$I_{CES}$	$V_{CE} = 600 \text{ V}, V_{GE} = 0 \text{ V}$	—	—	1	mA	
Gate-emitter cut-off voltage	$V_{GE} \text{ (off)}$	$I_C = 800 \text{ mA}, V_{CE} = 5 \text{ V}$	—	6.5	—	V	
Collector-emitter saturation voltage	$V_{CE} \text{ (sat)}$	$I_C = 800 \text{ A}, V_{GE} = 15 \text{ V}$	$T_j = 25^\circ\text{C}$	—	2.4	3.0	V
			$T_j = 125^\circ\text{C}$	—	2.6	3.3	
Input capacitance	$C_{ies}$	$V_{CE} = 10 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$	—	93000	—	pF	
Gate-emitter voltage	$V_{GE}$	—	13	15	17	V	
Gate resistance	$R_G$	—	4.7	—	15	$\Omega$	
Switching time	$t_d \text{ (on)}$	Inductive load $V_{CC} = 300 \text{ V}$ $I_C = 800 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$ $R_G = 4.7 \Omega$	(Note)	—	0.3	—	$\mu\text{s}$
	$t_r$			—	0.25	—	
	$t_{on}$			—	0.55	—	
	$t_d \text{ (off)}$			—	0.85	—	
	$t_f$			—	0.15	0.30	
	$t_{off}$			—	1.05	—	
Forward voltage	$V_F$	$I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}$	—	2.3	3.0	V
			$T_j = 125^\circ\text{C}$	—	2.1	—	
Reverse recovery time	$t_{rr}$	$I_F = 800 \text{ A}, V_{GE} = -10 \text{ V}$ $di/dt = 2000 \text{ A}/\mu\text{s}$	—	—	0.5	$\mu\text{s}$	
Thermal resistance	$R_{th} \text{ (j-c)}$	Transistor stage	—	—	0.043	C/W	
		Diode stage	—	—	0.056		
RTC Operating current	$I_{rtc}$	$T_j = 25^\circ\text{C}$	1600	—	—	A	

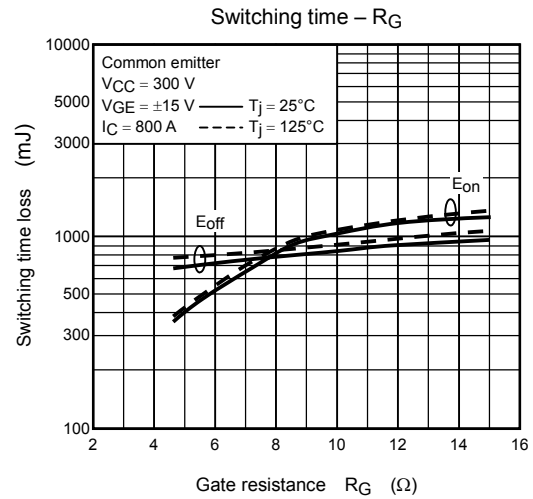
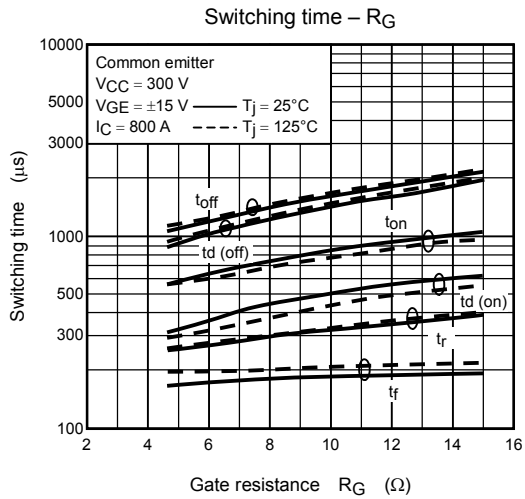
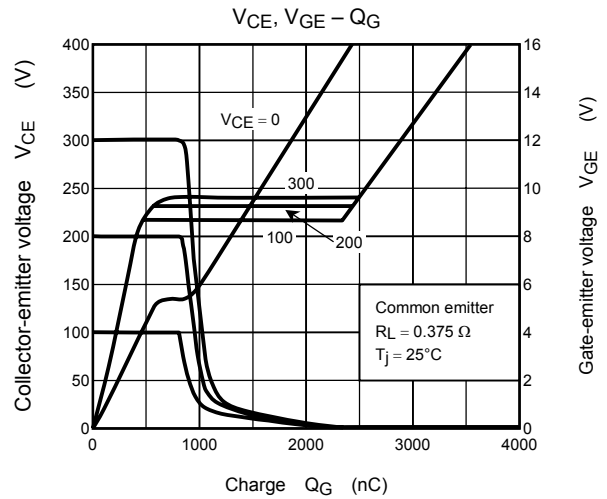
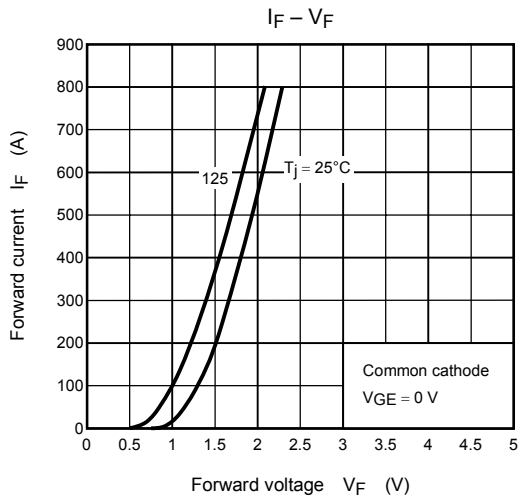
## Thermistor

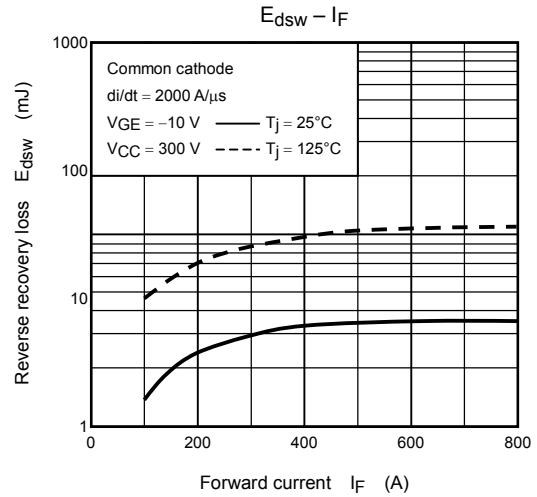
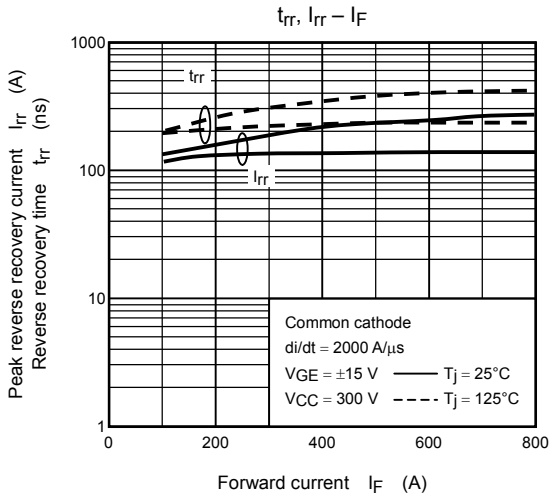
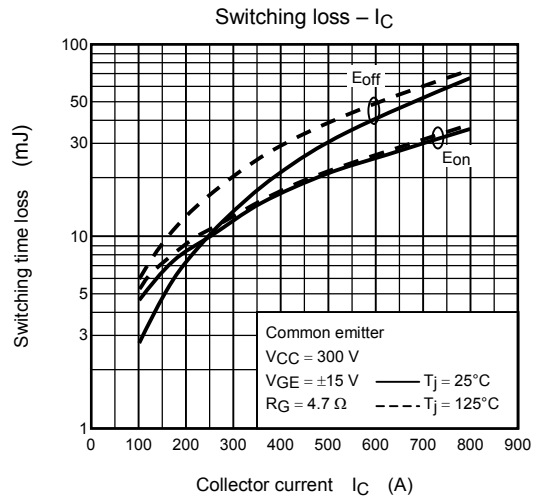
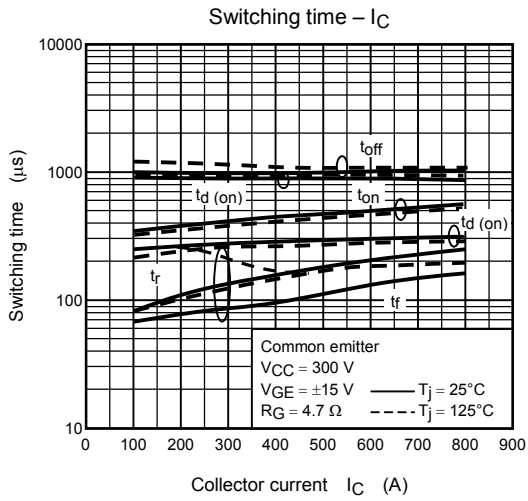
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Zero power resistance	$R_{25}$	$T_c = 25^\circ\text{C}$	—	100	—	$k\Omega$
B value	$R_{25/85}$	$T_c = 25^\circ\text{C}/T_c = 85^\circ\text{C}$	—	4390	—	K
Isolation voltage		$T_c = 25^\circ\text{C}$	2500	—	—	Vrms

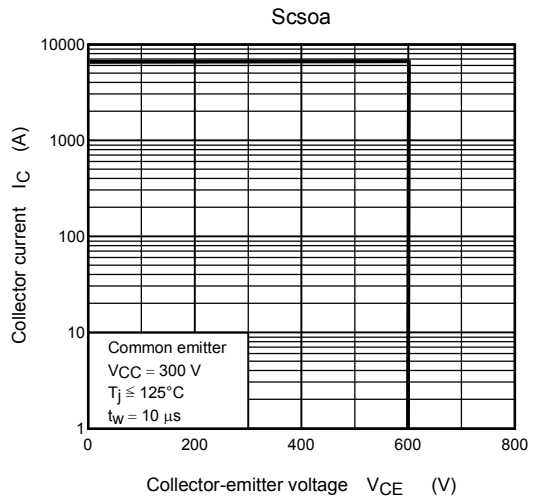
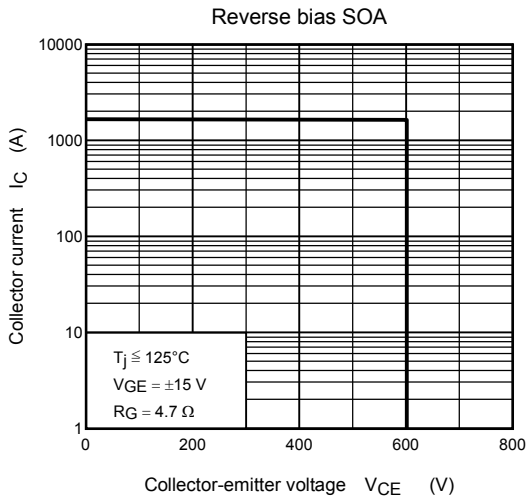
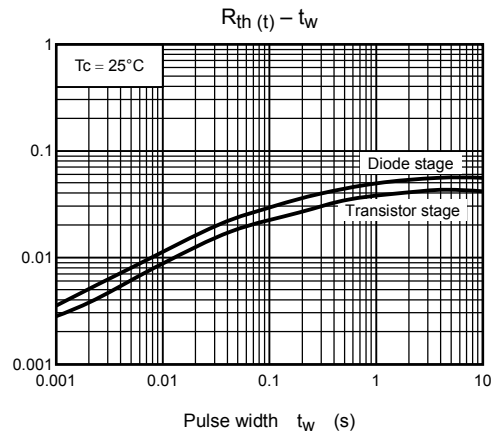
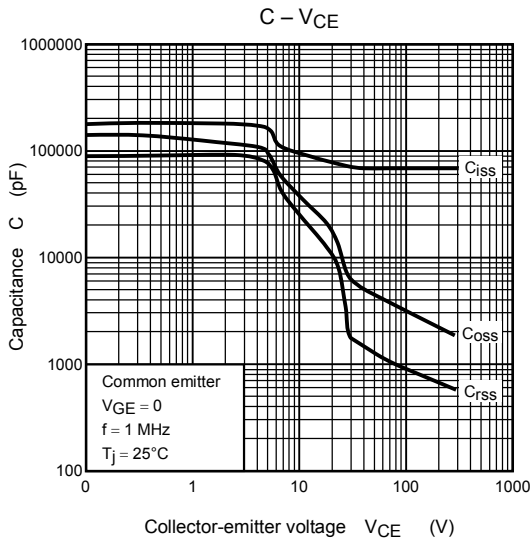
Note: Switching time measurement circuit and input/output waveforms











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