

MITSUBISHI IGBT Module

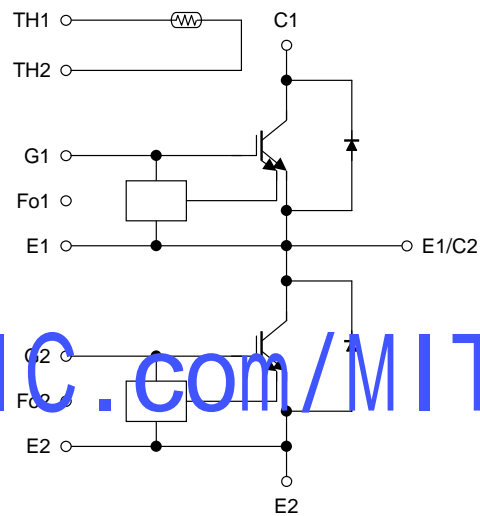
# MG800J2YS50A

High power switching applications

Motor control applications

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

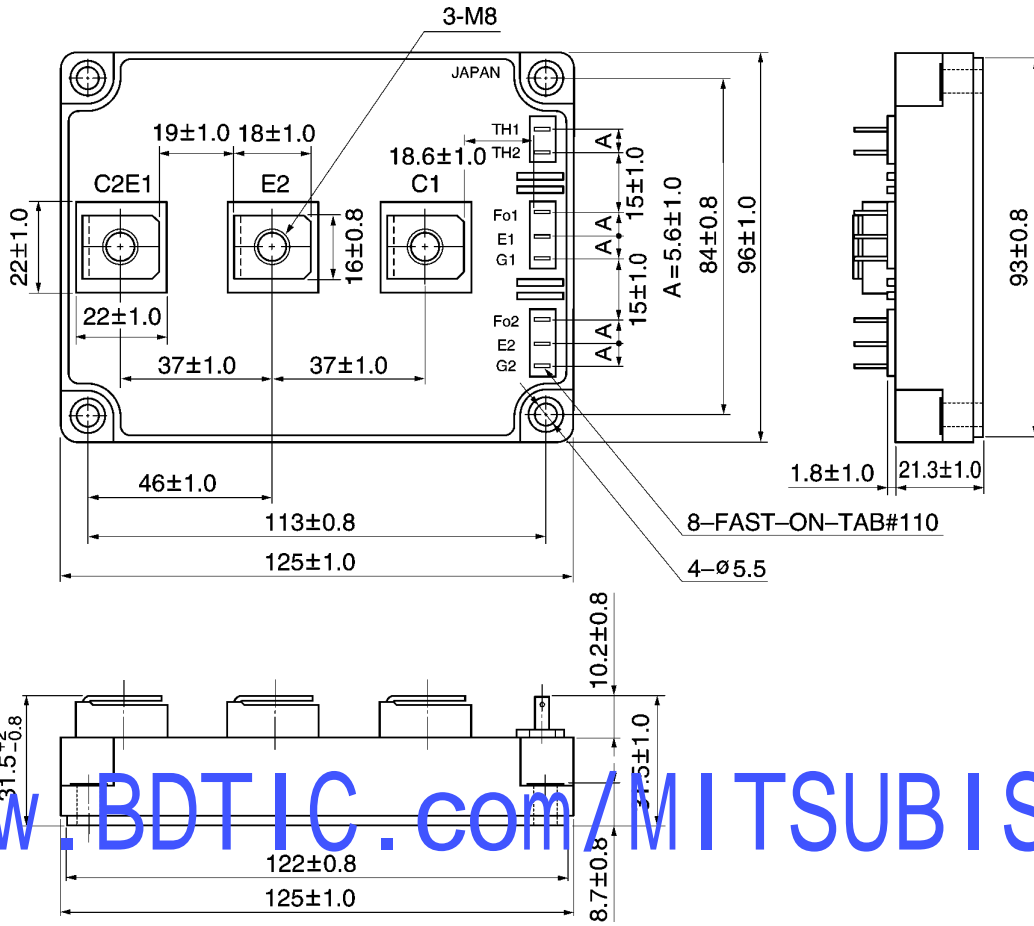
## Equivalent Circuit



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Package Dimensions

Unit: mm



Weight: 680 g (typ.)

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## Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-emitter voltage		V <sub>CEs</sub>	600	V
Gate-emitter voltage		V <sub>GES</sub>	±20	V
Collector current	DC	I <sub>C</sub>	800	A
Forward current	DC	I <sub>F</sub>	800	A
Collector power dissipation (T <sub>c</sub> = 25°C)		P <sub>C</sub>	2900	W
Junction temperature		T <sub>j</sub>	150	°C
Storage temperature range		T <sub>stg</sub>	-40~125	°C
Isolation voltage		V <sub>isol</sub>	2500 (AC 1 min)	V
Screw torque	Terminal: M8	—	10	N·m
	Mounting: M5	—	3	N·m

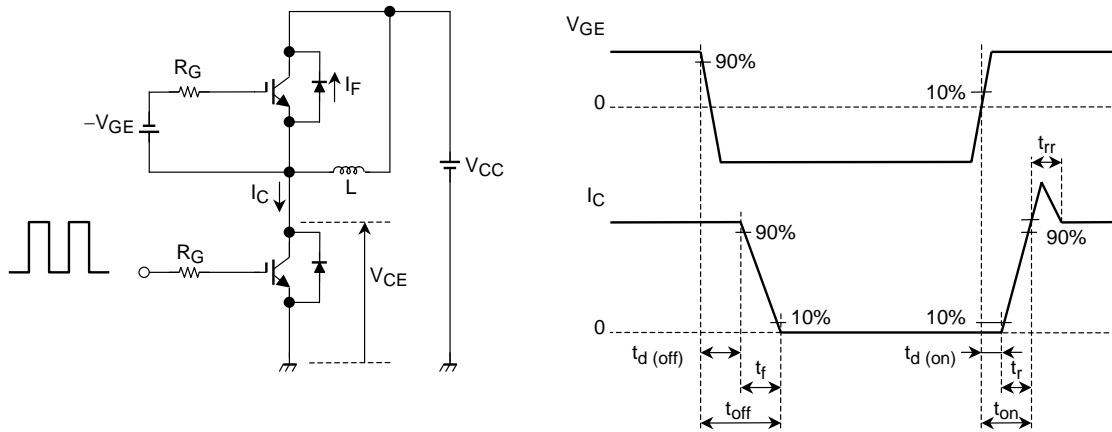
## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Gate Leakage current	I <sub>GES</sub>	V <sub>GE</sub> = ±20 V, V <sub>CE</sub> = 0 V	—	—	±10	μA	
Collector cut-off current	I <sub>CES</sub>	V <sub>CE</sub> = 600 V, V <sub>GE</sub> = 0 V	—	—	1	mA	
Gate-emitter cut-off voltage	V <sub>GE (off)</sub>	I <sub>C</sub> = 800 mA, V <sub>CE</sub> = 5 V	5.0	6.5	8.0	V	
Collector-emitter saturation voltage	V <sub>CE (sat)</sub>	I <sub>C</sub> = 800 A, V <sub>GE</sub> = 15 V	—	2.4	3.0	V	
Input capacitance	C <sub>ies</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = 0 V, f = 1 MHz	—	2.6	3.0	pF	
Gate-emitter voltage	V <sub>GE</sub>	—	13	15	17	V	
Gate resistance	R <sub>G</sub>	—	4.7	—	15	Ω	
Switching time	t <sub>d (on)</sub>	Inductive load V <sub>CC</sub> = 300 V I <sub>C</sub> = 800 A V <sub>GE</sub> = ±15 V R <sub>G</sub> = 4.7 Ω  (Note)	—	0.3	—	μs	
	t <sub>r</sub>		—	0.25	—		
	t <sub>on</sub>		—	0.55	—		
	t <sub>d (off)</sub>		—	0.85	—		
	t <sub>f</sub>		—	0.15	0.30		
	t <sub>off</sub>		—	1.05	—		
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 800 A, V <sub>GE</sub> = 0 V	T <sub>j</sub> = 25°C	—	2.3	3.0	V
			T <sub>j</sub> = 125°C	—	2.1	—	
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = 800 A, V <sub>GE</sub> = -10 V di/dt = 2000 A/μs	—	—	0.5	μs	
Thermal resistance	R <sub>th (j-c)</sub>	Transistor stage	—	—	0.043	C/W	
		Diode stage	—	—	0.056		
RTC Operating current	I <sub>rtc</sub>	T <sub>j</sub> = 25°C	1600	—	—	A	

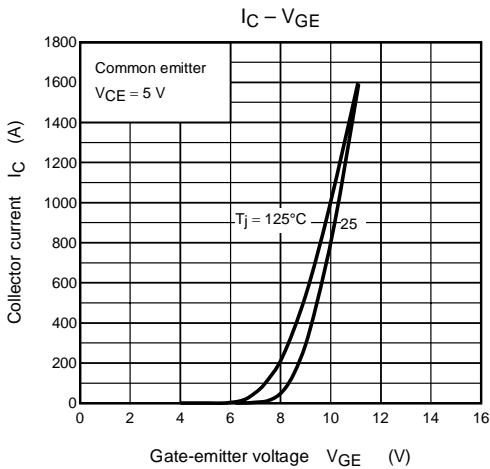
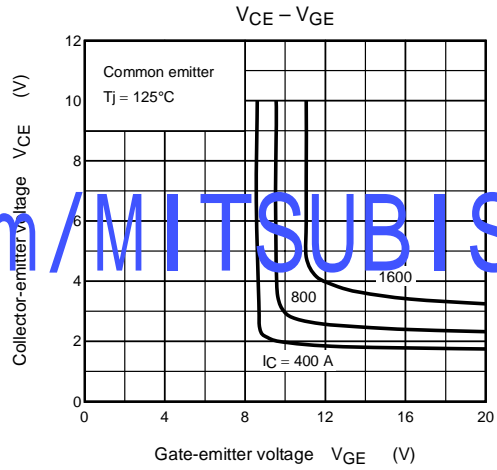
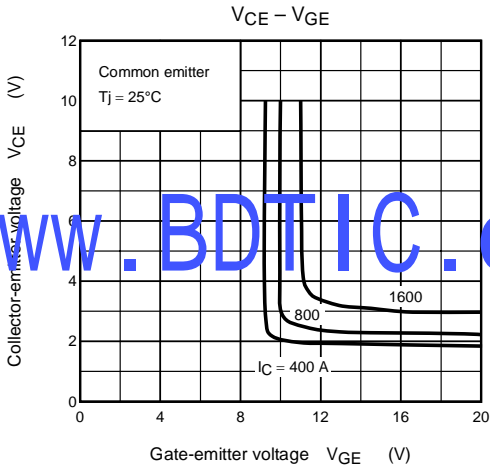
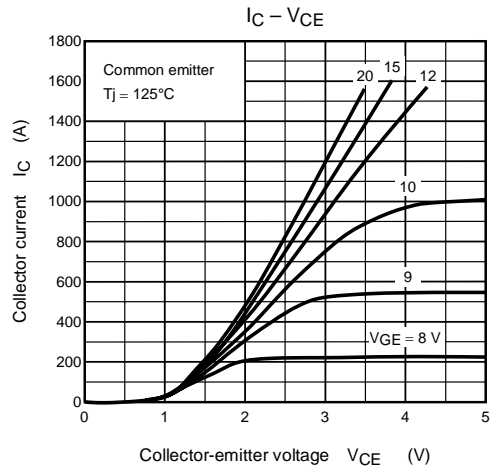
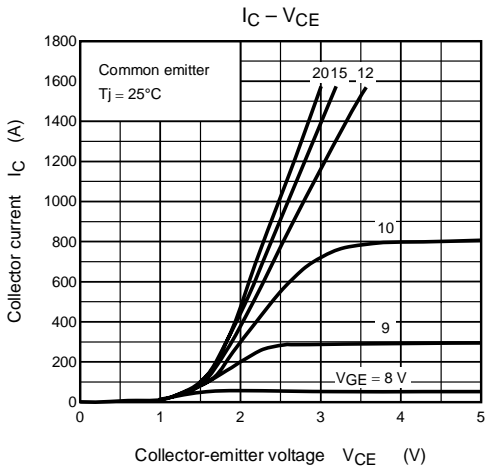
**Thermistor**

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Zero power resistance	R25	$T_c = 25^\circ\text{C}$	—	100	—	k $\Omega$
B value	R25/85	$T_c = 25^\circ\text{C}/T_c = 85^\circ\text{C}$	—	4390	—	K
Isolation voltage		$T_c = 25^\circ\text{C}$	2500	—	—	V <sub>rms</sub>

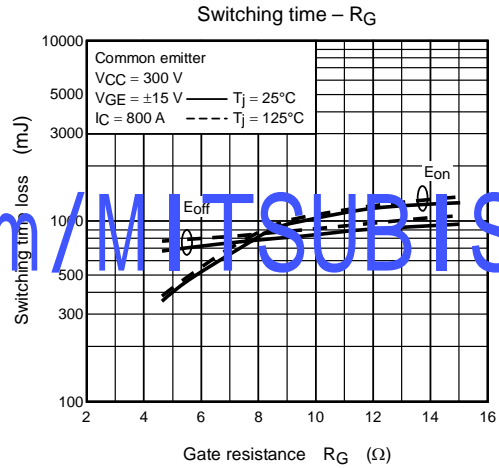
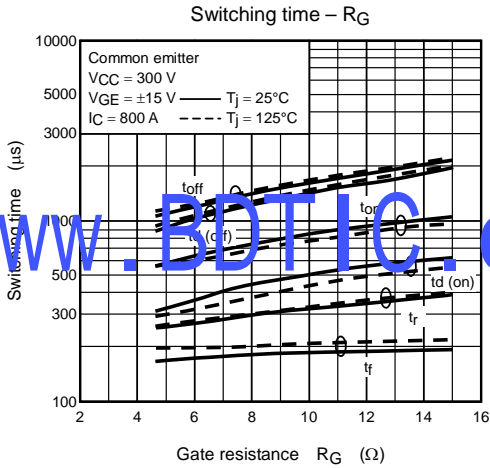
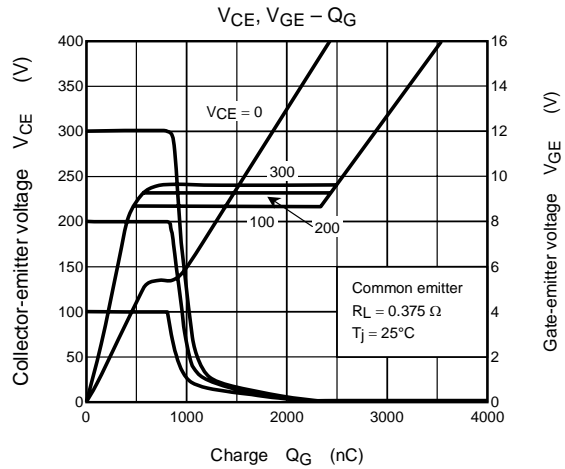
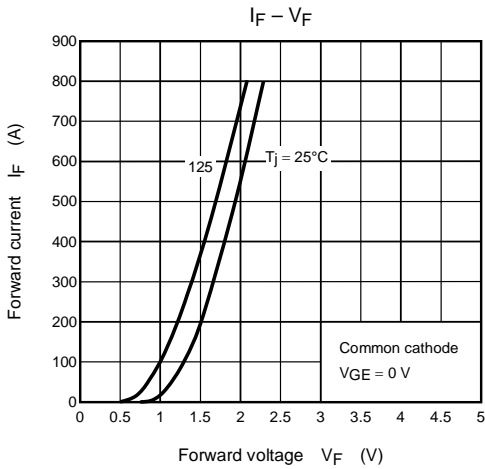
Note: Switching time measurement circuit and input/output waveforms



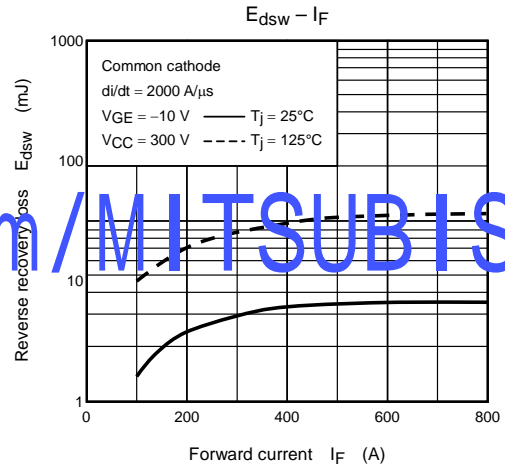
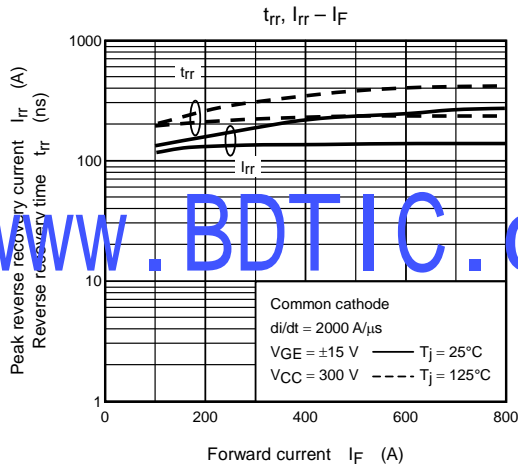
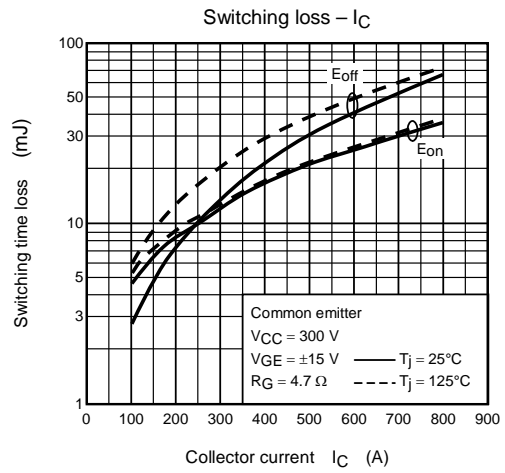
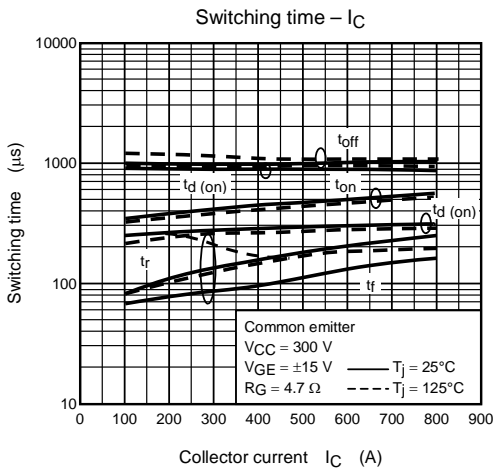
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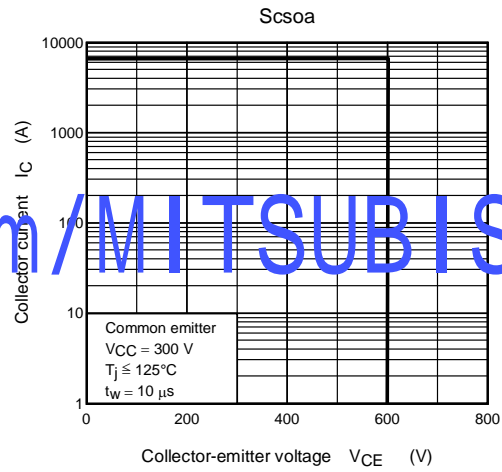
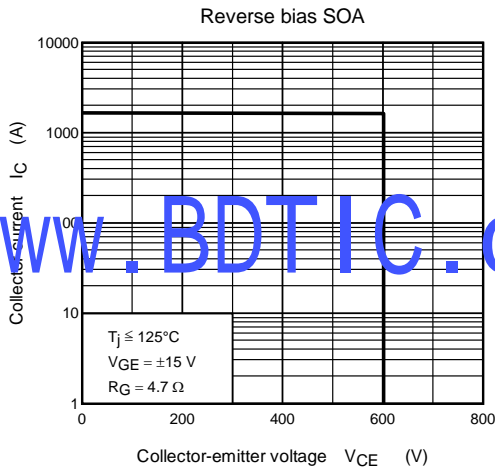
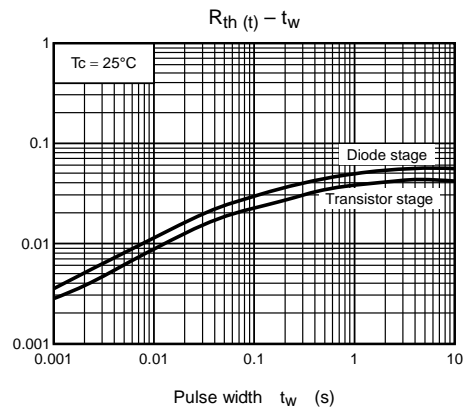
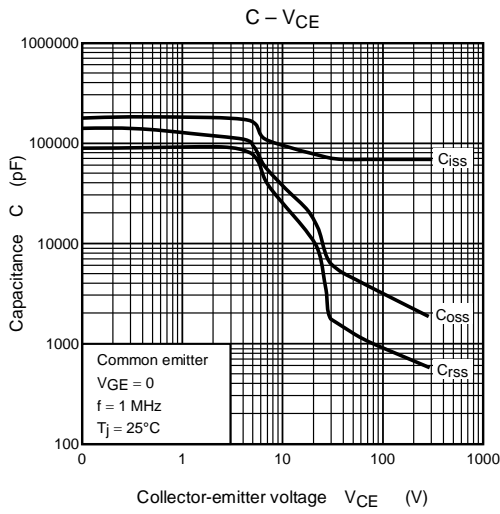
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<V<sub>CE(sat)</sub> Rank>

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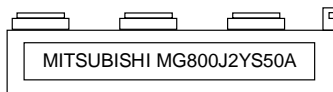
Rank Symbol	Min.	Max.
21	1.8	2.1
22	1.9	2.2
23	2.0	2.3
24	2.1	2.4
25	2.2	2.5
26	2.3	2.6
27	2.4	2.7
28	2.5	2.8
29	2.6	2.9
30	2.7	3.0

<V<sub>F</sub> Rank>

V<sub>F</sub>

Rank Symbol	Min.	Max.
B	1.5	1.8
C	1.7	2.0
D	1.9	2.2
E	2.1	2.4
F	2.3	2.6
G	2.5	2.8
H	2.7	3.0

<Mark Position>



High side  
Low side

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