

MITSUBISHI IGBT Module

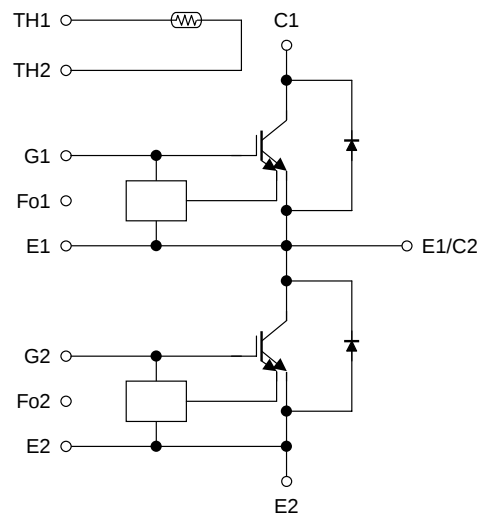
MG800J2YS50A

High power switching applications

Motor control applications

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

Equivalent Circuit



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

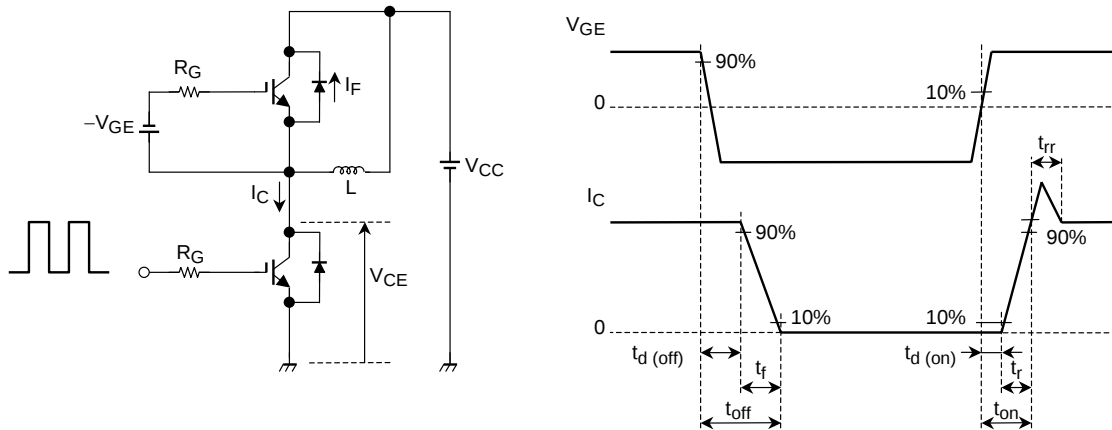
Electrical Characteristics (Ta = 25°C)

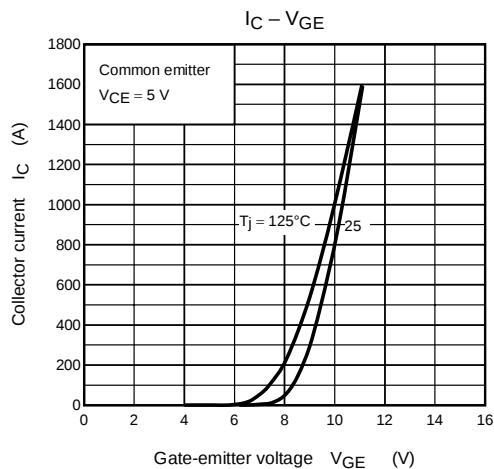
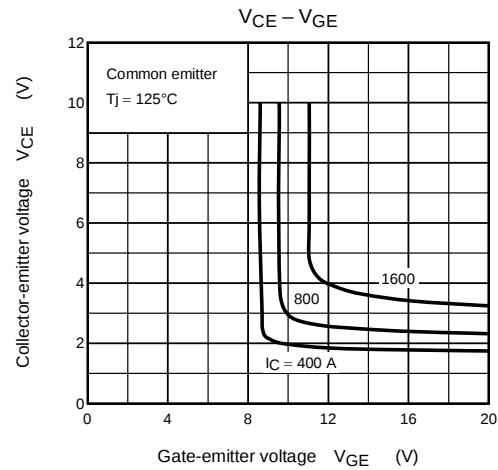
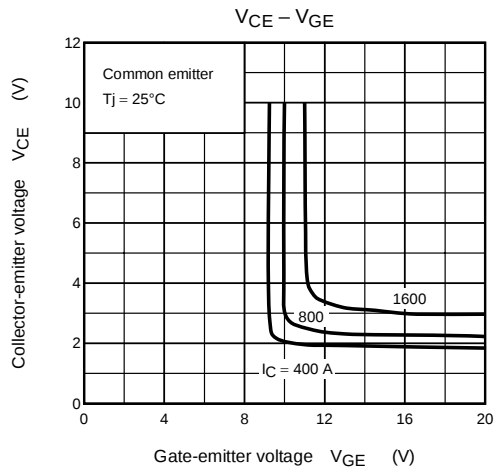
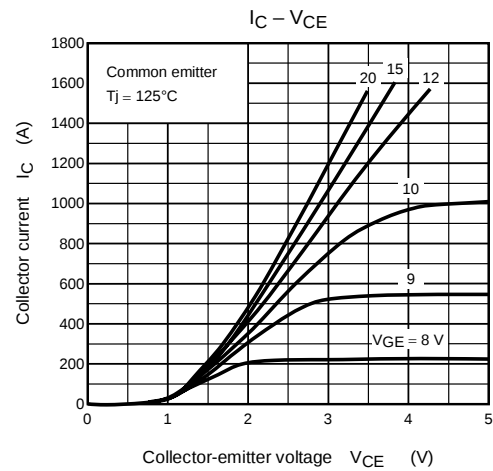
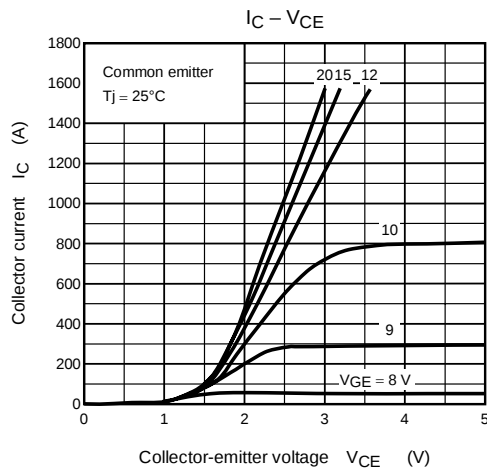
Characteristics	Symbol	Test Condition		Min	Typ.	Max	Unit
Gate Leakage current	I _{GES}	V _{GE} = ±20 V, V _{CE} = 0 V		—	—	±10	μA
Collector cut-off current	I _{CES}	V _{CE} = 600 V, V _{GE} = 0 V		—	—	1	mA
Gate-emitter cut-off voltage	V _{GE (off)}	I _C = 800 mA, V _{CE} = 5 V		5.0	6.5	8.0	V
Collector-emitter saturation voltage	V _{CE (sat)}	I _C = 800 A, V _{GE} = 15 V	T _J = 25°C	—	2.4	3.0	V
			T _J = 125°C	—	2.6	3.3	
Input capacitance	C _{ies}	V _{CE} = 10 V, V _{GE} = 0 V, f = 1 MHz		—	93000	—	pF
Gate-emitter voltage	V _{GE}	—		13	15	17	V
Gate resistance	R _G	—		4.7	—	15	Ω
Switching time	t _{d (on)}	Inductive load V _{CC} = 300 V I _C = 800 A V _{GE} = ±15 V R _G = 4.7 Ω (Note)		—	0.3	—	μs
	t _r			—	0.25	—	
	t _{on}			—	0.55	—	
	t _{d (off)}			—	0.85	—	
	t _f			—	0.15	0.30	
	t _{off}			—	1.05	—	
Forward voltage	V _F	I _F = 800A, V _{GE} = 0V	T _J = 25°C	—	2.3	3.0	V
			T _J = 125°C	—	2.1	—	
Reverse recovery time	t _{rr}	I _F = 800 A, V _{GE} = −10 V di/dt = 2000 A/μs		—	—	0.5	μs
Thermal resistance	R _{th (j-c)}	Transistor stage		—	—	0.043	C/W
		Diode stage		—	—	0.056	
RTC Operating current	I _{rtc}	T _J = 25°C		1600	—	—	A

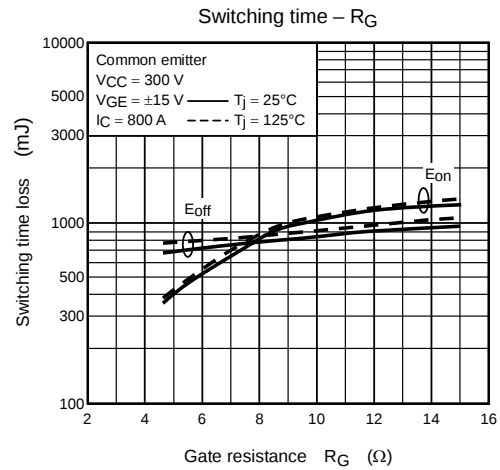
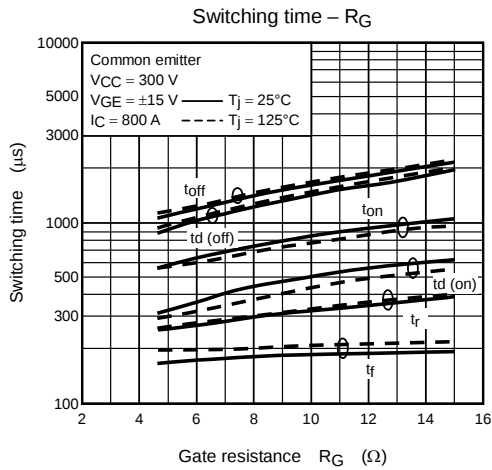
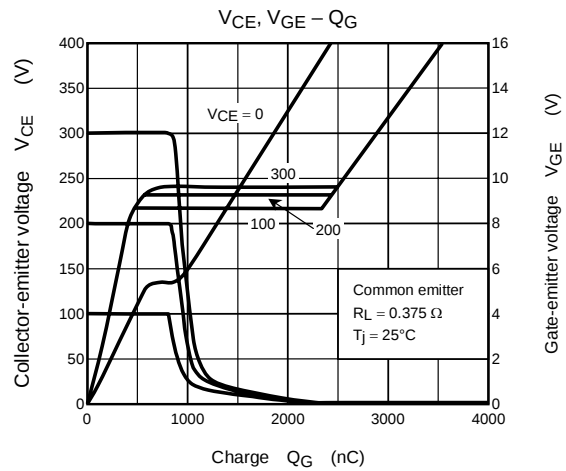
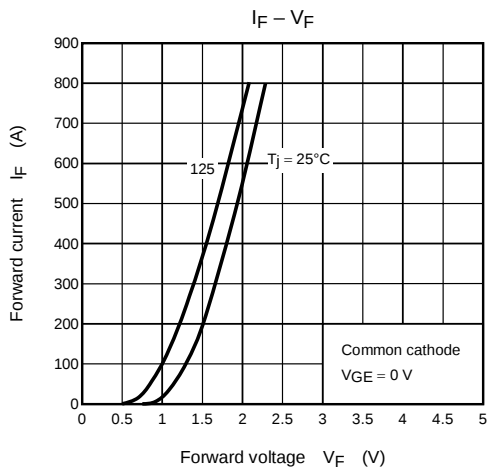
Thermistor

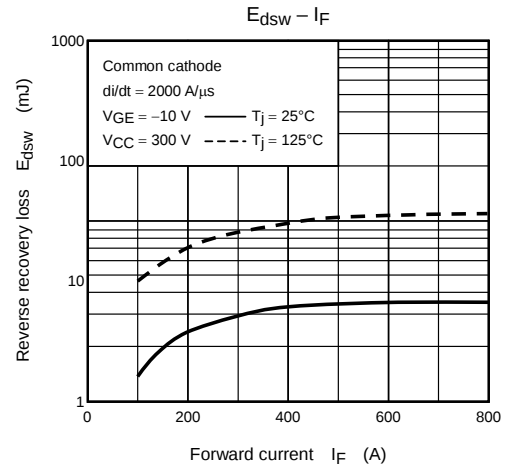
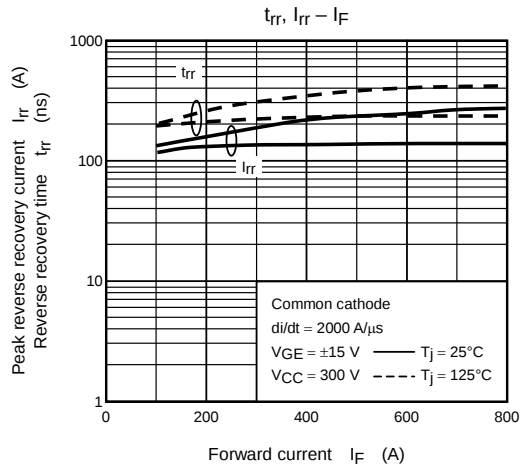
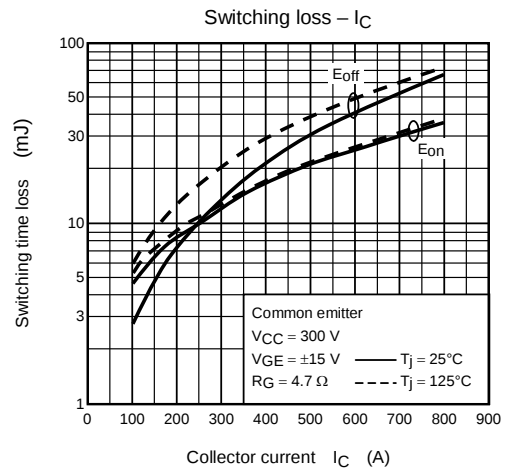
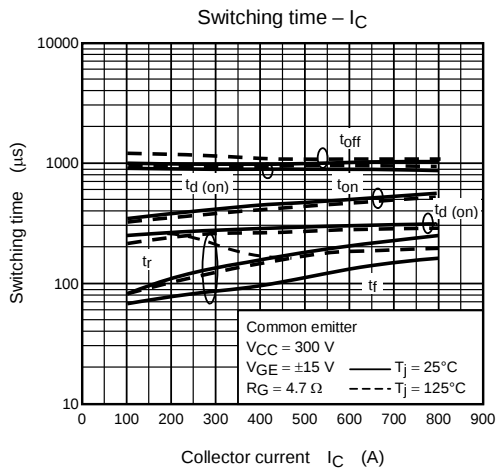
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Zero power resistance	R25	$T_c = 25^\circ\text{C}$	—	100	—	$\text{k}\Omega$
B value	R25/85	$T_c = 25^\circ\text{C}/T_c = 85^\circ\text{C}$	—	4390	—	K
Isolation voltage		$T_c = 25^\circ\text{C}$	2500	—	—	V_{rms}

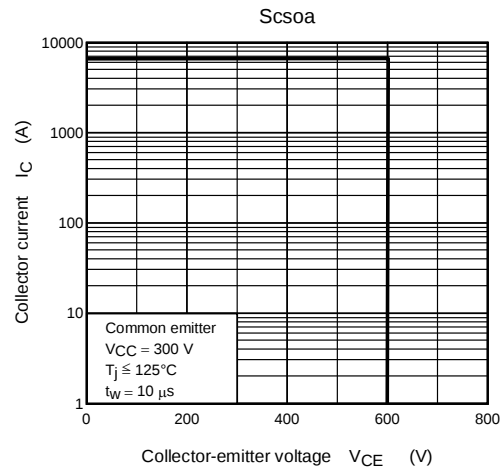
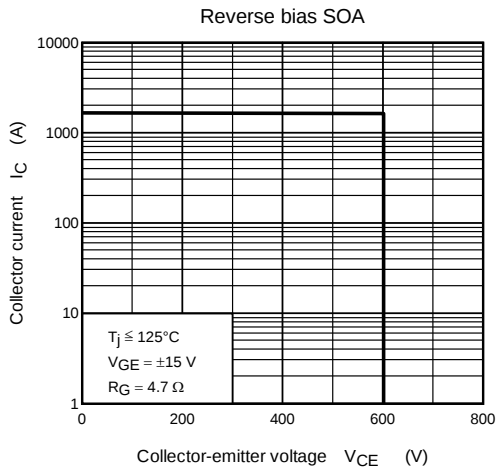
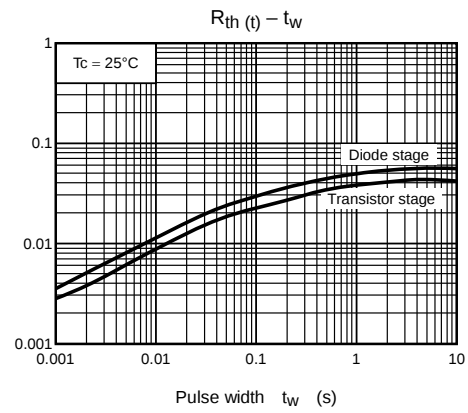
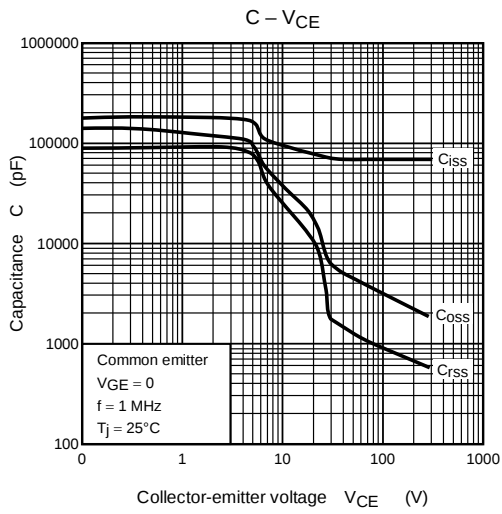
Note: Switching time measurement circuit and input/output waveforms











<V_{CE(sat)} Rank>V_{CE(sat)}

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_F Rank>V_F

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>

