

TOSHIBA IGBT MODULE SILICON N CHANNEL IGBT

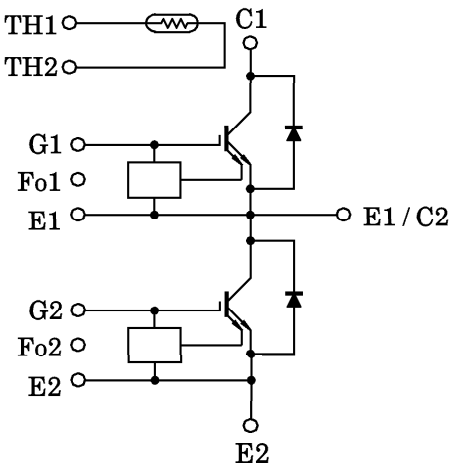
MG400V2YS60A

HIGH POWER SWITCHING APPLICATIONS

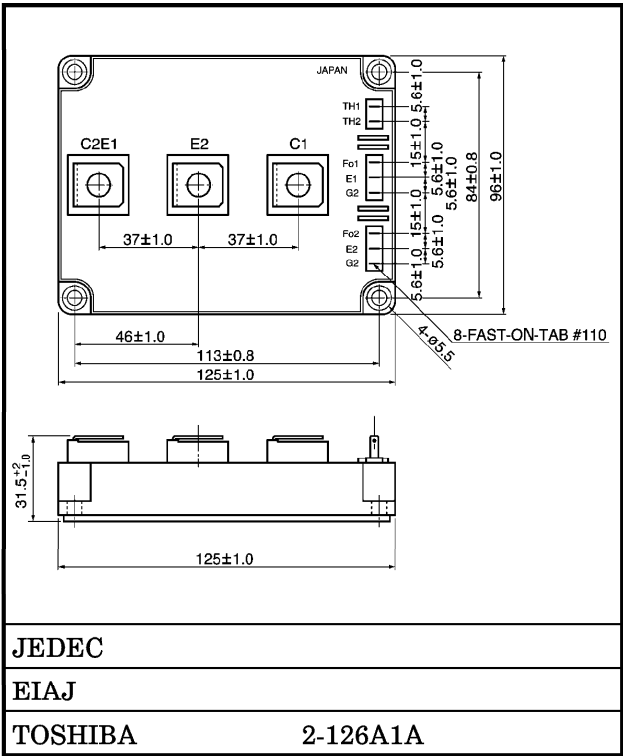
MOTOR CONTROL APPLICATIONS

- The Electrodes are Isolated from Case.
- Enhancement-Mode
- Thermal Output Terminal (TH)

EQUIVALENT CIRCUIT



Unit in mm



Weight : 680 g

000707EAA1

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V _{CE}	1700	V
Gate-Emitter Voltage		V _{GE}	±20	V
Collector Current	DC	I _C	400	A
Forward Current	DC	I _F	400	A
Collector Power Dissipation (T _c = 25°C)		P _C	4300	W
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	−40~125	°C
Isolation Voltage		V _{Isol}	4000 (AC 1 min)	V
Screw Torque	Terminal : M8	—	10	N·m
	Mounting : M5	—	3	N·m

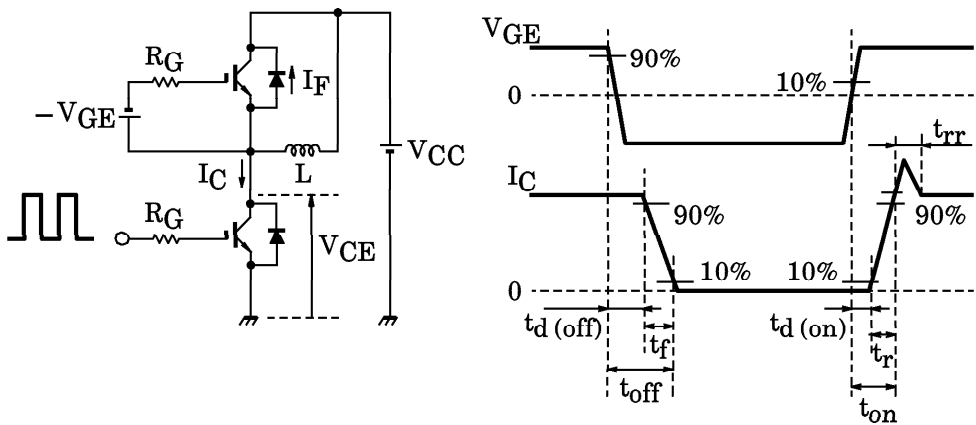
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

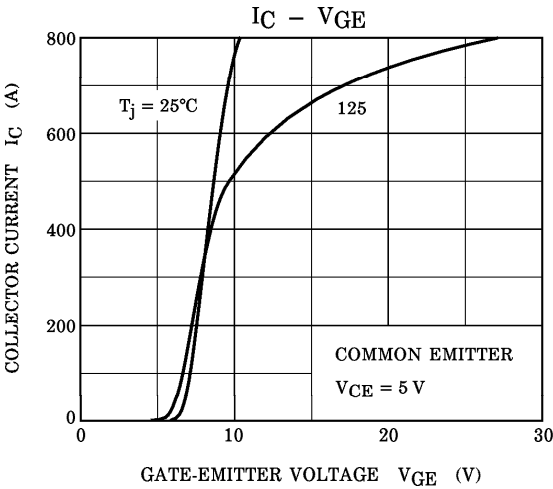
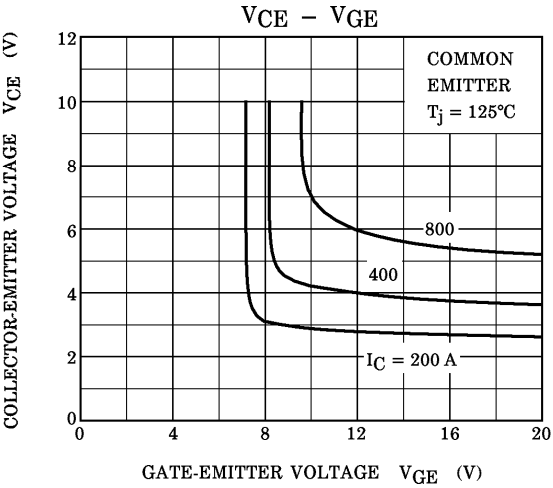
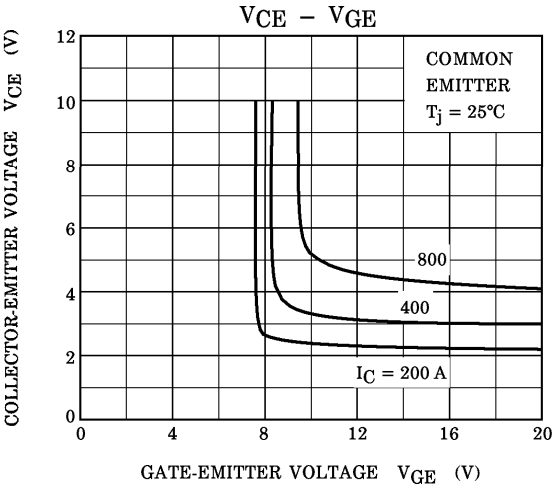
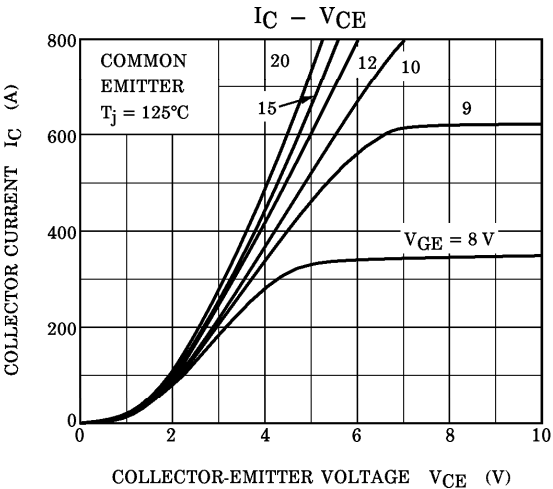
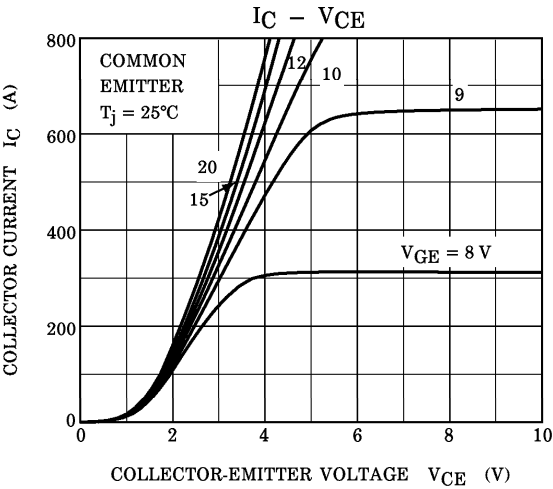
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GES}	V _{GE} = ±20 V, V _{CE} = 0 V	—	—	±10	μA
Collector Cut-Off Current		I _{CES}	V _{CE} = 1700 V, V _{GE} = 0 V	—	—	1	mA
Gate-Emitter Cut-Off Voltage		V _{GE (off)}	I _C = 400 mA, V _{CE} = 5 V	—	5.5	—	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 400 A, V _{GE} = 15 V	—	3.0	3.4	V
			T _j = 25°C T _j = 125°C	—	3.8	4.2	
Input Capacitance		C _{ies}	V _{CE} = 10 V, V _{GE} = 0 V, f = 1 MHz	—	45000	—	pF
Gate-Emitter Voltage		V _{GE}	—	13	15	17	V
Gate Resistance		R _G	—	8.2	—	15	Ω
Switching Time	Turn-On Delay Time	t _{d (on)}	Inductive Load V _{CC} = 900 V I _C = 400 A V _{GE} = ±15 V R _G = 8.2 Ω (Note)	—	0.35	—	μs
	Rise Time	t _r		—	0.2	—	
	Turn-On Time	t _{on}		—	0.55	—	
	Turn-Off Delay Time	t _{d (off)}		—	0.9	—	
	Fall Time	t _f		—	0.4	0.6	
	Turn-Off Time	t _{off}		—	1.3	—	
Forward Voltage		V _F	I _F = 400 A, V _{GE} = 0 V	—	3.2	4.2	V
			T _j = 25°C T _j = 125°C	—	2.4	—	
Reverse Recovery Time		t _{rr}	I _F = 400 A, V _{GE} = −15 V di / dt = 2000 A / μs	—	0.20	0.40	μs
Thermal Resistance		R _{th (j-c)}	Transistor Stage	—	—	0.029	°C / W
			Diode Stage	—	—	0.056	
RTC Operating Current		I _{rtc}	T _j = 25°C	800	—	—	A

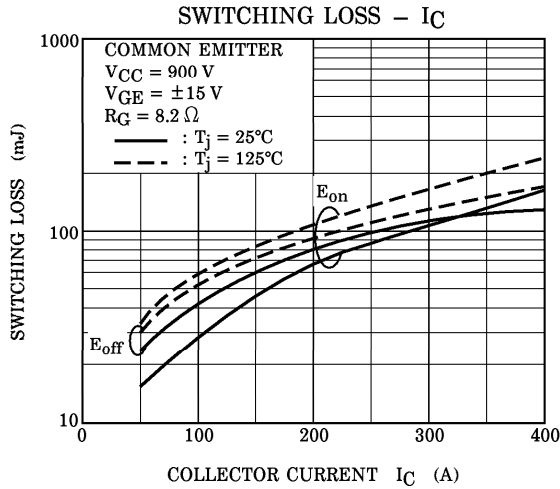
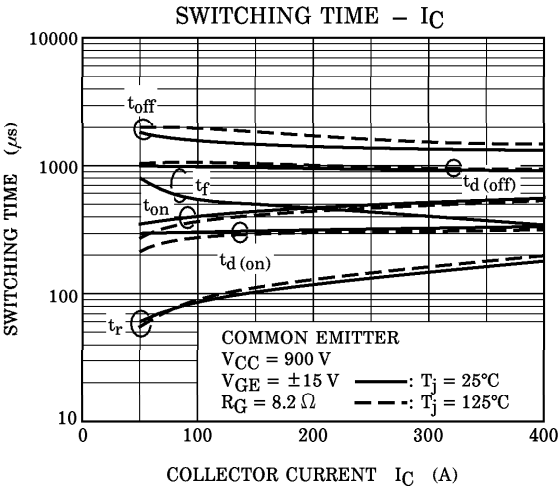
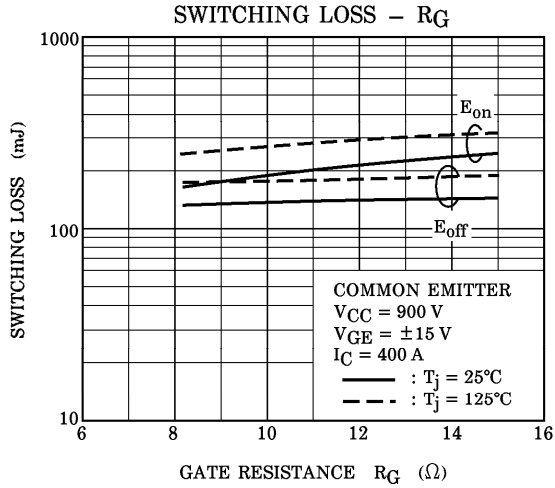
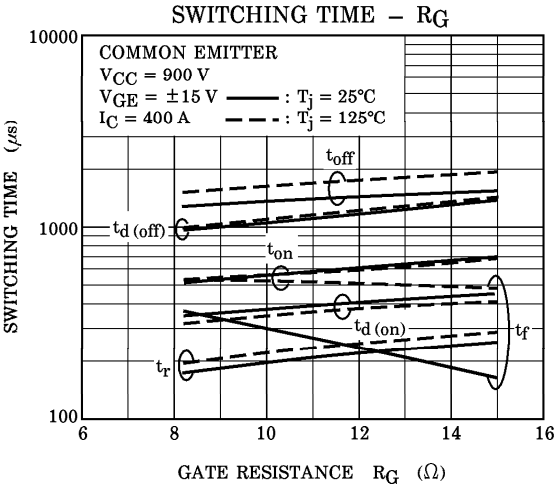
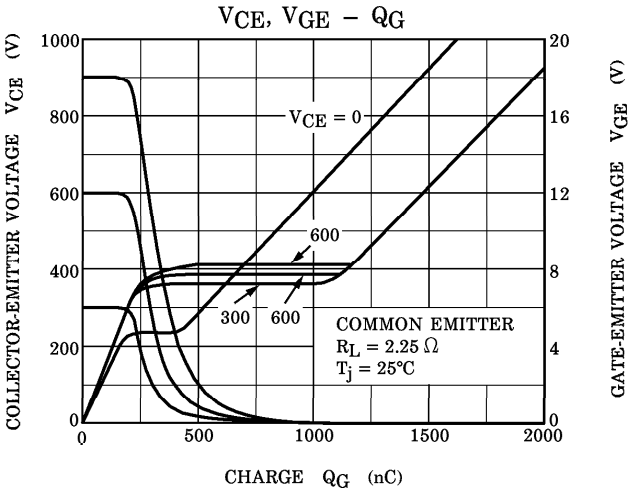
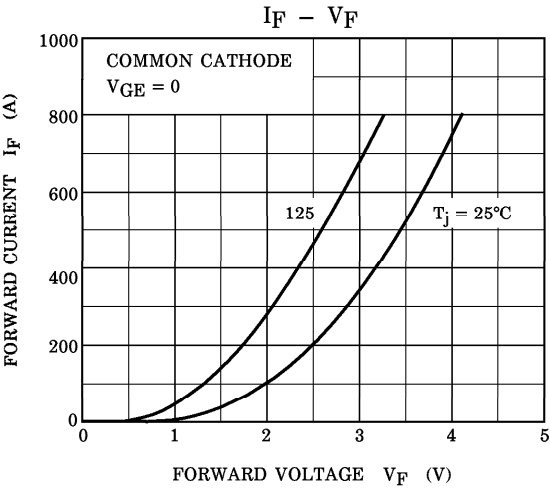
THERMISTOR

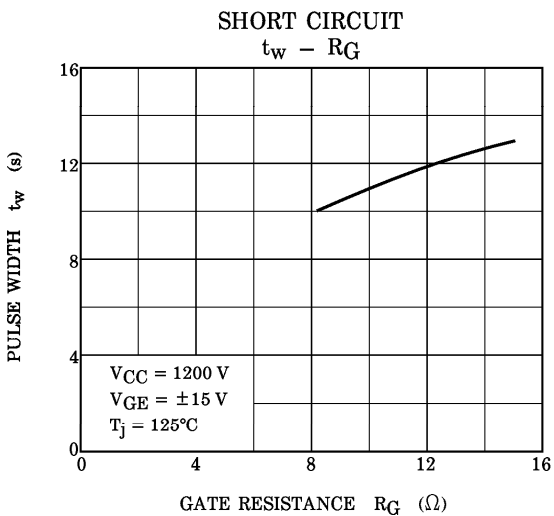
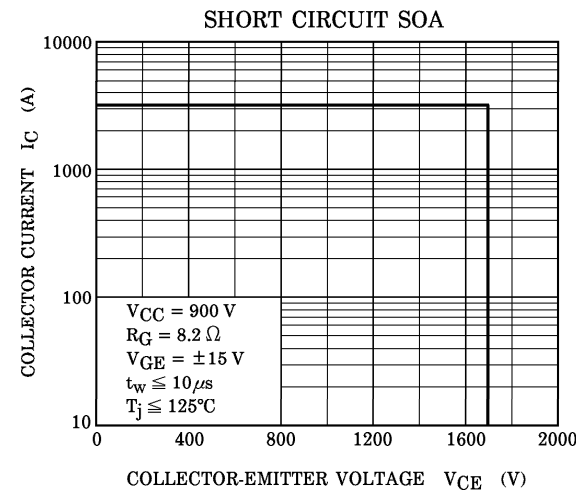
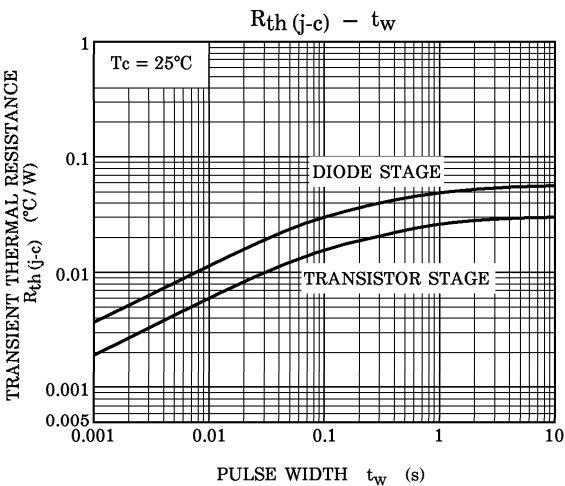
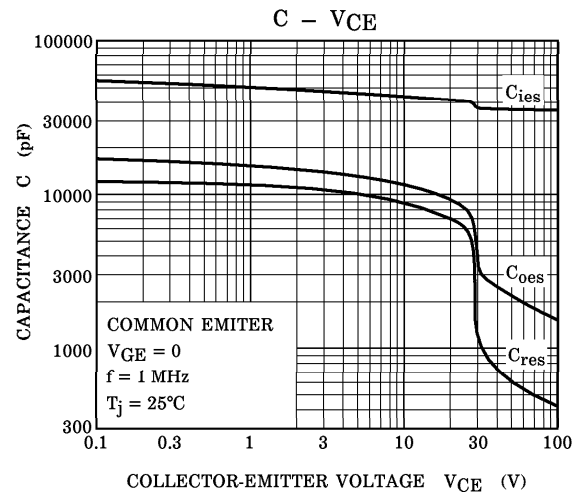
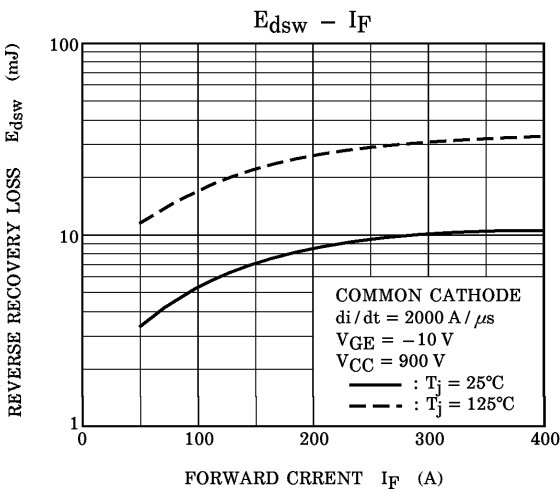
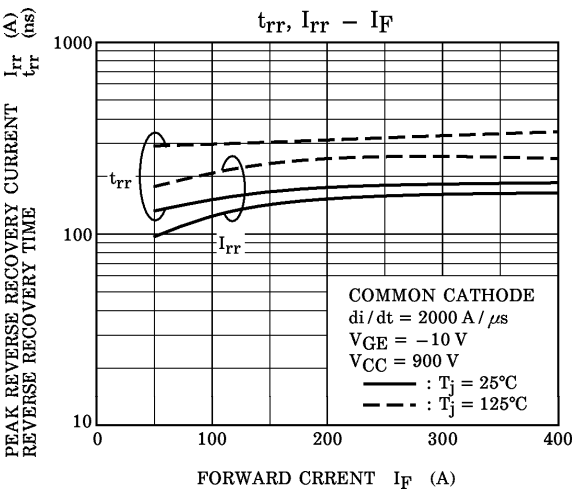
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Zero Power Resistance	R25	Tc = 25°C	—	100	—	kΩ
B Value	B25 / 85	Tc = 25°C / Tc = 85°C	—	4390	—	K
Isolation Voltage		Tc = 25°C	2500	—	—	Vrms

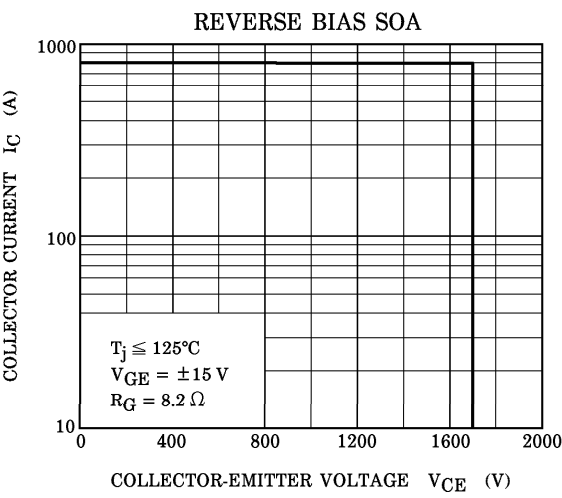
(Note) : Switching time measurement circuit and input/output waveforms











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

RANK SYMBOL	MIN.	MAX.
29	2.6	2.9
30	2.7	3.0
31	2.8	3.1
32	2.9	3.2
33	3.0	3.3
34	3.1	3.4

<V_F RANK>
V_F

RANK SYMBOL	MIN.	MAX.
G	2.5	2.8
H	2.7	3.0
I	2.9	3.2
J	3.1	3.4
K	3.3	3.6
L	3.5	3.8
M	3.7	4.0
N	3.9	4.2

<MARK POSITION>

