

IGBT MODULE (P-Series)

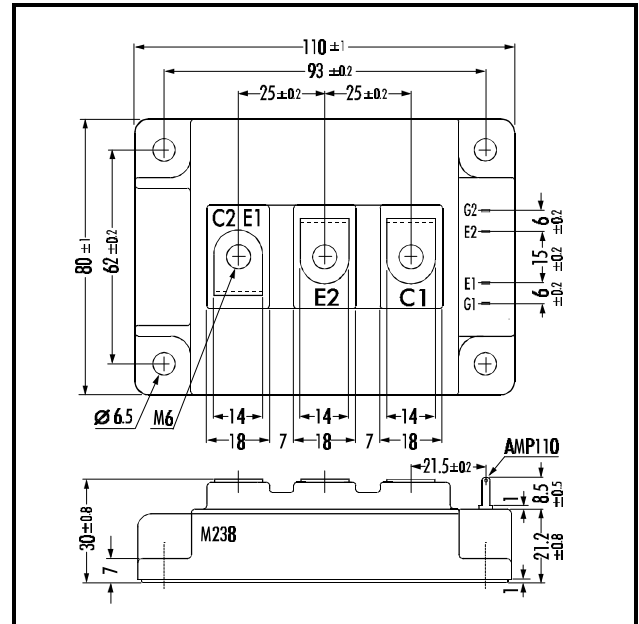
■ Outline Drawing

■ Features

- Square SC SOA at 10 x I_C
- Simplified Parallel Connection
- Narrow Distribution of Characteristics
- High Short Circuit Withstand-Capability

■ Applications

- High Power Switching
- A.C. Motor Controls
- D.C. Motor Controls
- Uninterruptible Power Supply



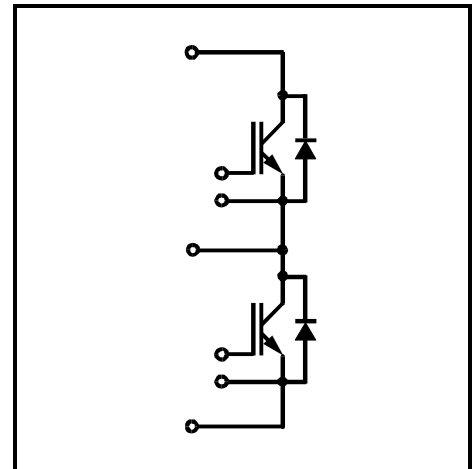
■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings (T_C=25°C)

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V _{CES}	1400	V
Gate -Emitter Voltage	V _{GES}	± 20	V
Collector Current	Continuous T _C =25°C	I _C	400
		I _C	300
	1ms T _C =25°C	I _{C PULSE}	800
		I _{C PULSE}	600
	1ms T _C =80°C	-I _C	300
	-I _{C PULSE}	600	
Max. Power Dissipation	P _C	2500	W
Operating Temperature	T _j	+150	°C
Storage Temperature	T _{stg}	-40 ~ +125	°C
Isolation Voltage	A.C. 1min. V _{is}	2500	V
Screw Torque	Mounting *1	3.5	Nm
	Terminals *2	4.5	

Note: *1:Recommendable Value; 2.5 - 3.5 Nm (M5) or (M6)
*2:Recommendable Value; 3.5 - 4.5 Nm (M6)

■ Equivalent Circuit

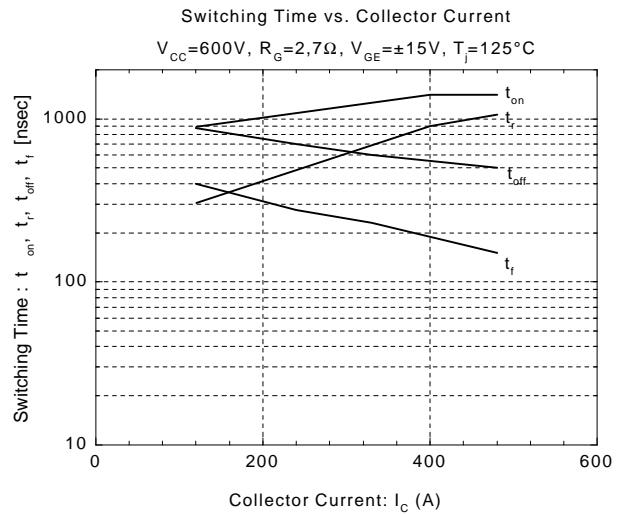
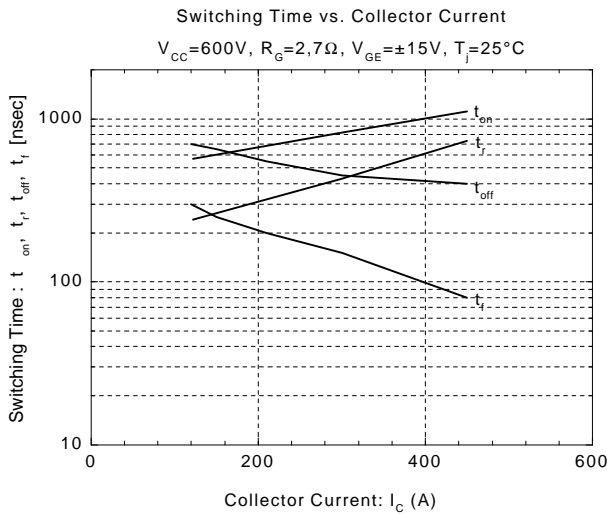
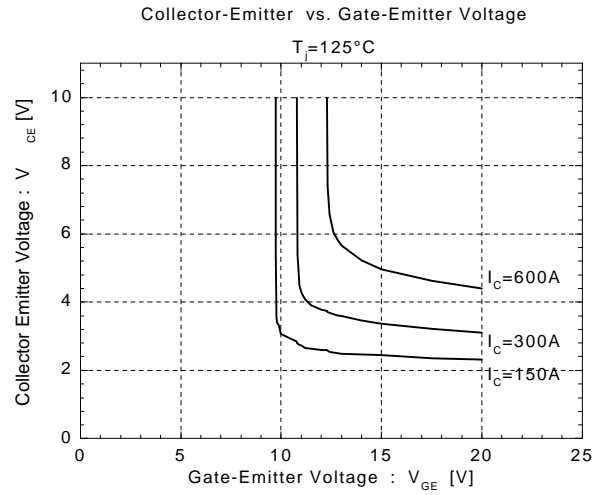
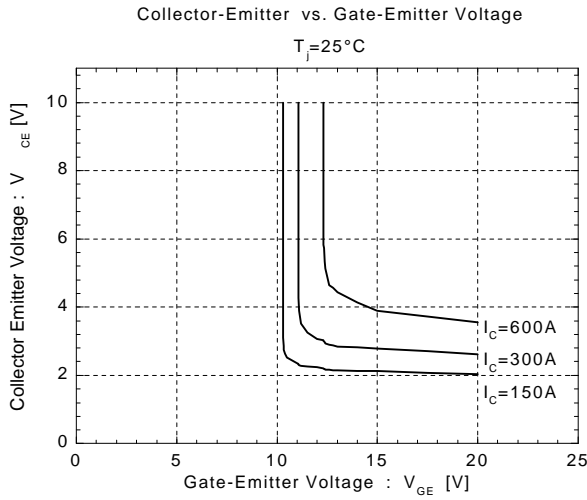
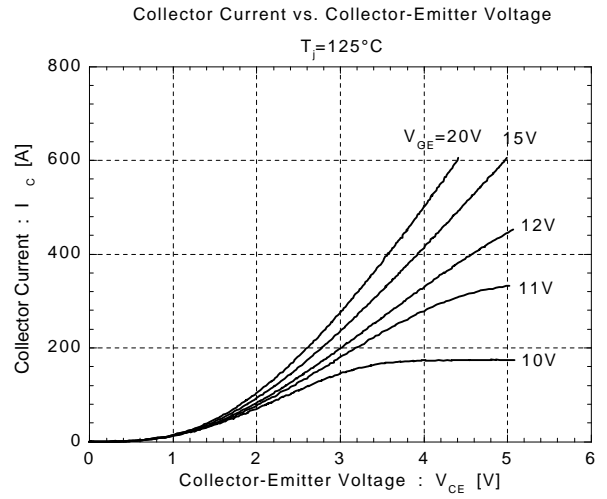
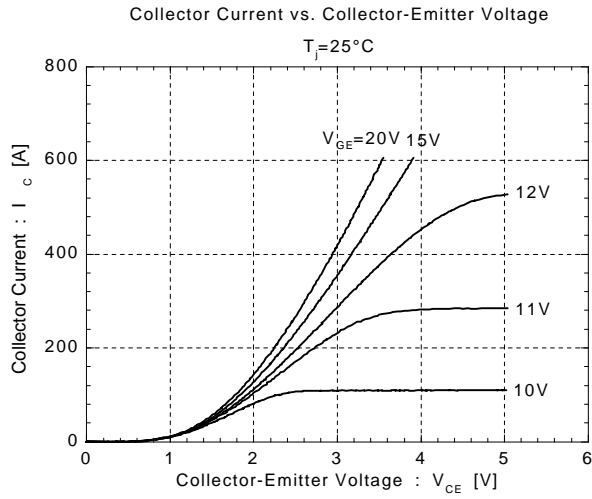


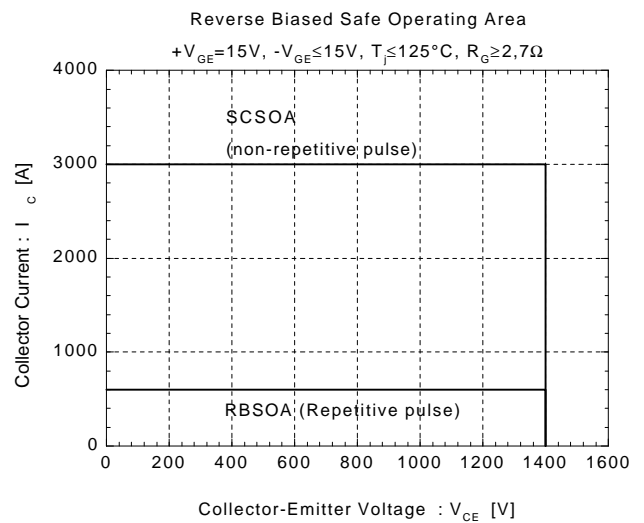
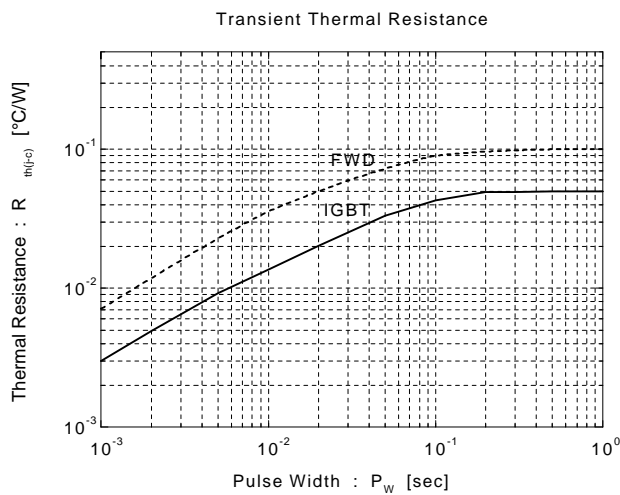
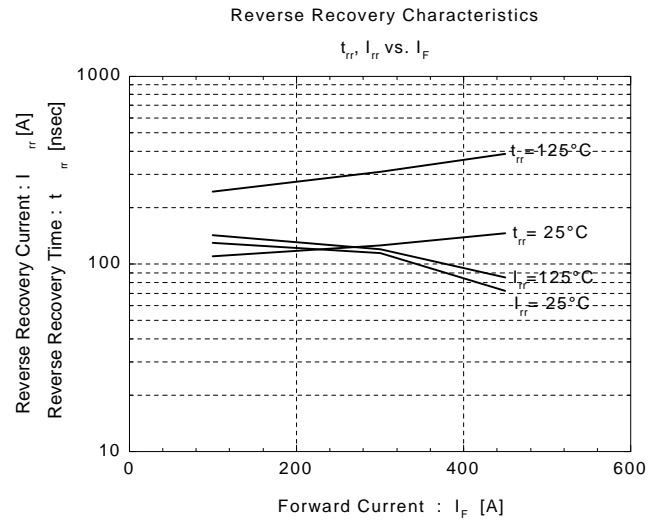
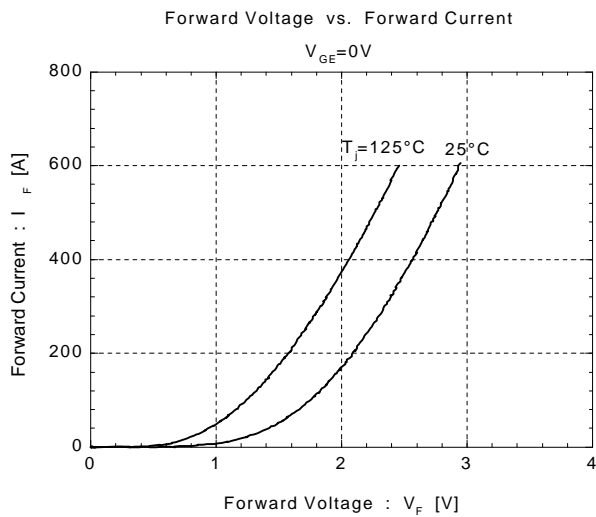
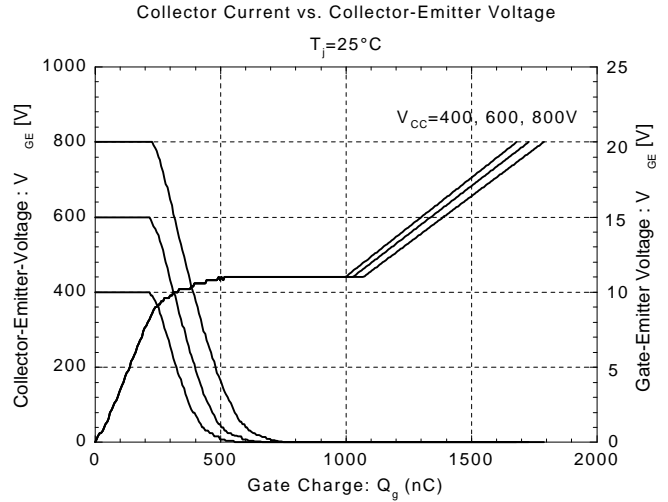
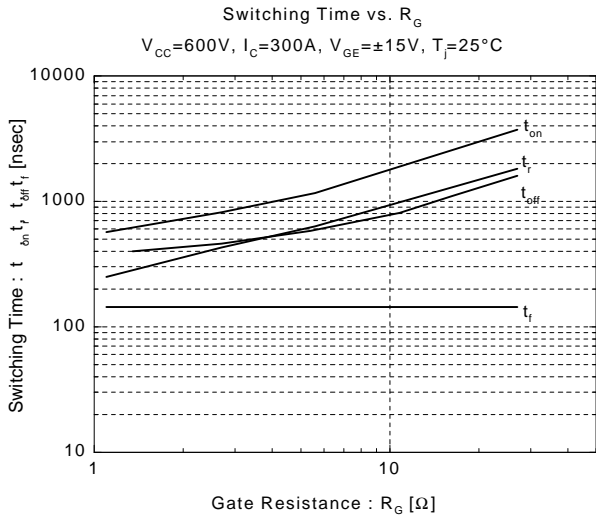
• Electrical Characteristics (at T_J=25°C)

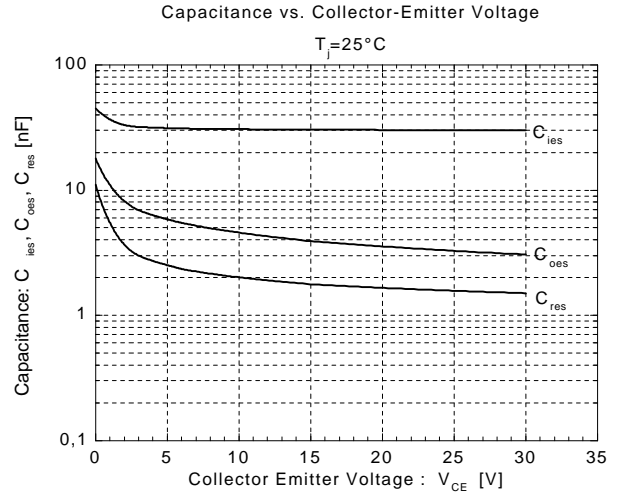
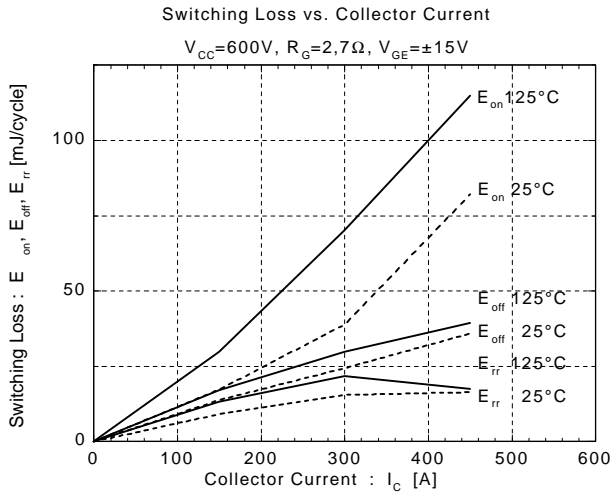
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I _{CES}	V _{GE} =0V V _{CE} =1400V			3.0	mA
Gate-Emitter Leakage Current	I _{GES}	V _{CE} =0V V _{GE} =± 20V			600	μA
Gate-Emitter Threshold Voltage	V _{GE(th)}	V _{GE} =20V I _C =300mA	6.0	8.0	9.0	V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	T _J = 25°C V _{GE} =15V I _C =300A		2.7	3.0	V
		T _J =125°C V _{GE} =15V I _C =300A		3.3		
Input capacitance	C _{ies}	V _{GE} =0V V _{CE} =10V f=1MHz		30000		pF
Output capacitance	C _{oes}			4500		
Reverse Transfer capacitance	C _{res}			2000		
Turn-on Time	t _{ON}	V _{CC} =600V I _C =300A V _{GE} =± 15V R _G =2.7Ω			1.2	μs
	t _r				0.6	
Turn-off Time	t _{OFF}				1.0	
	t _f				0.3	
Diode Forward On-Voltage	V _F	I _F =300A V _{GE} =0V		2.4	3.3	V
Reverse Recovery Time	t _{rr}	I _F =300A			350	ns

• Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(j-c)}	IGBT			0.05	°C/W
	R _{th(j-e)}	Diode			0.10	
	R _{th(c-f)}	With Thermal Compound		0.0167		







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