

IGBT MODULE (P-Series)

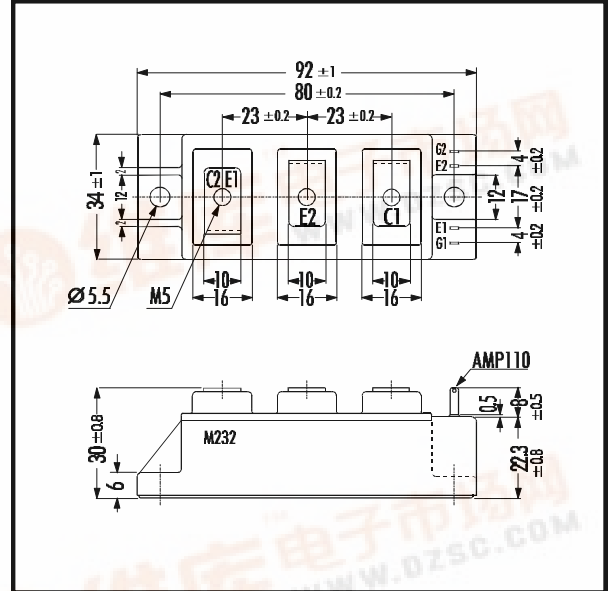
■ Outline Drawing

■ 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



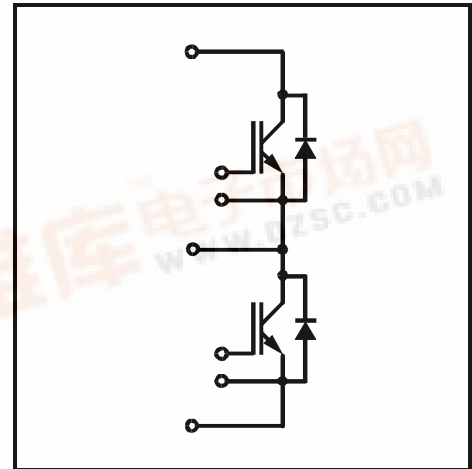
■ Maximum Ratings and Characteristics

• 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	75	
		I _C	50	
	1ms T _C =25°C	I _{C PULSE}	150	
		1ms T _C =80°C	I _{C PULSE}	100
			-I _C	50
1ms	-I _{C PULSE}	100		
Max. Power Dissipation	P _C	400	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	3.5		

Note: *1:Recommendable Value; 2.5 ~ 3.5 Nm (M5)

■ Equivalent Circuit



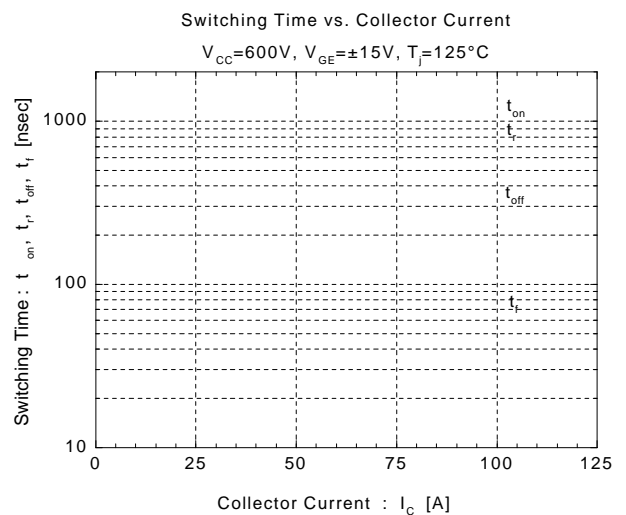
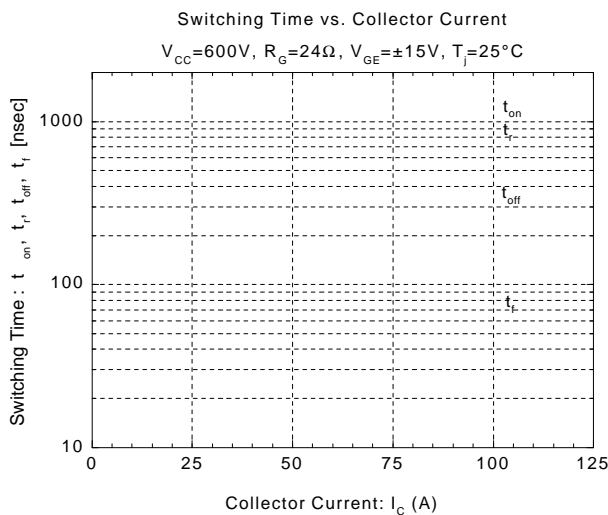
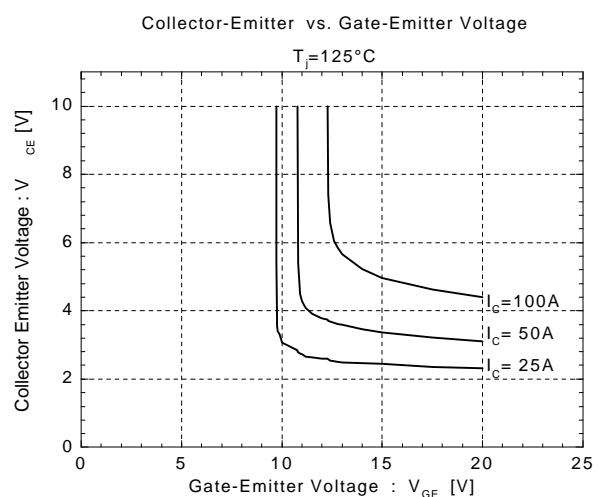
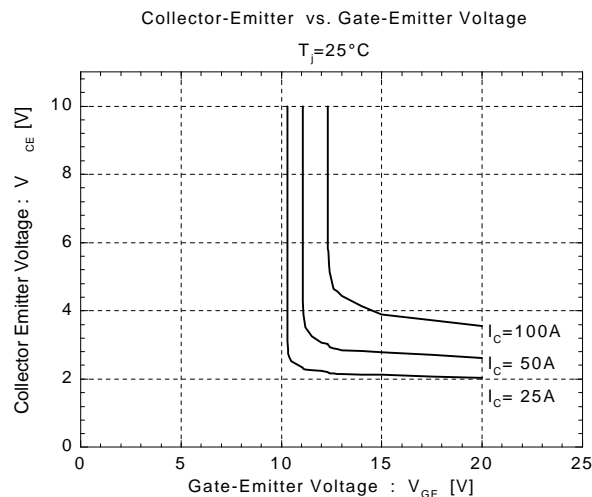
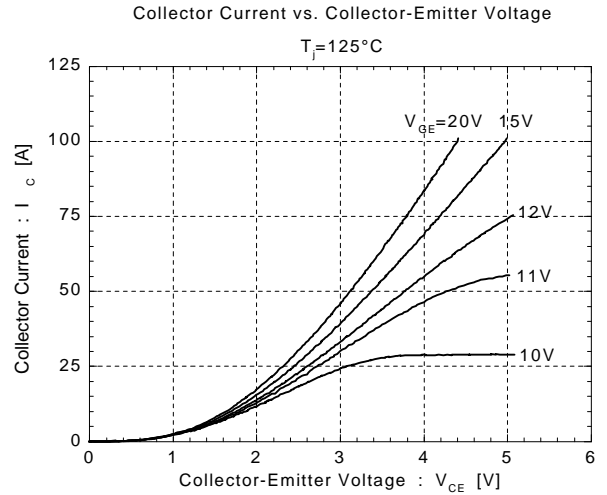
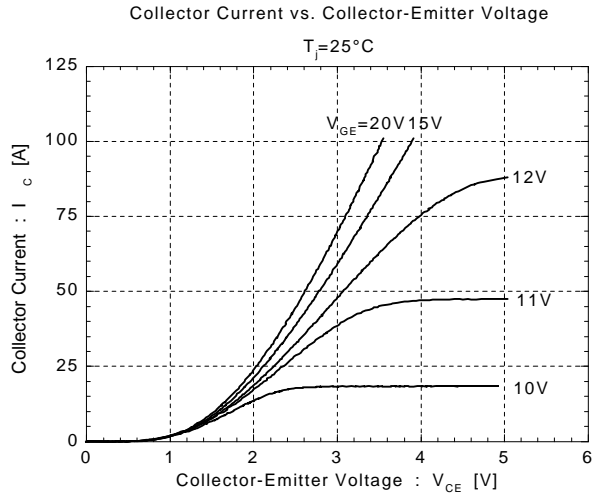
• Electrical Characteristics (at T_J=25°C)

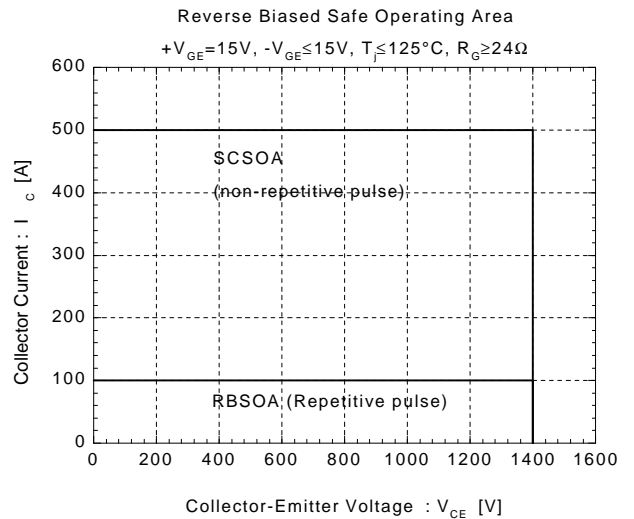
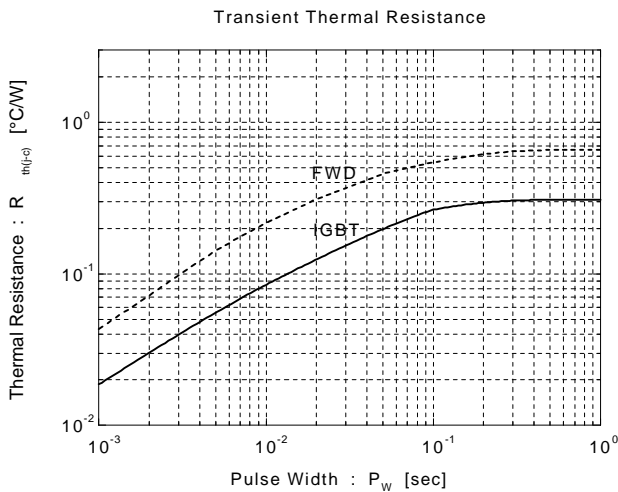
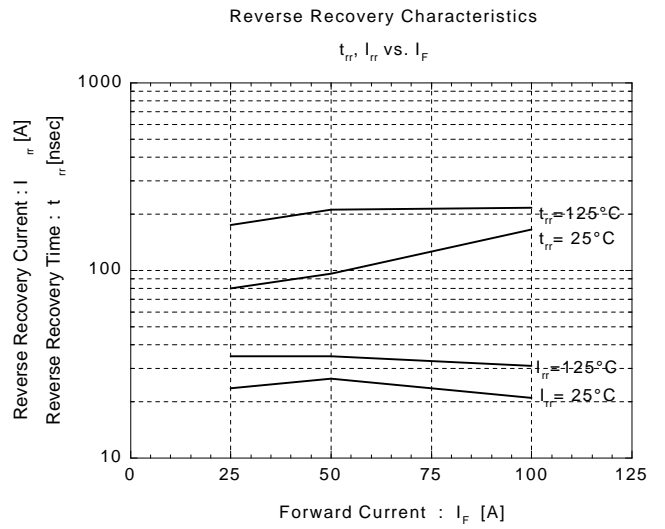
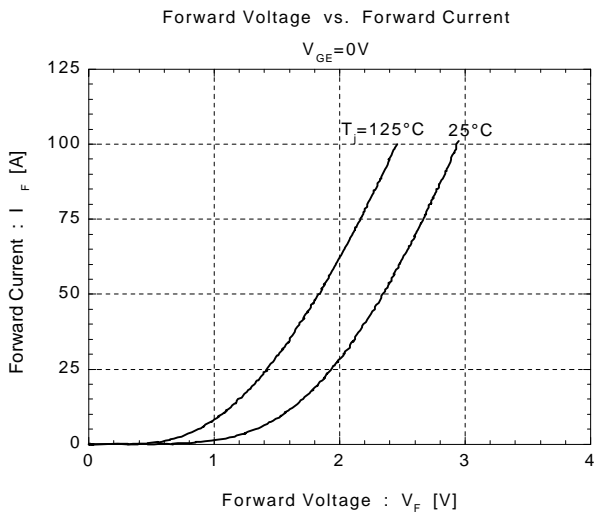
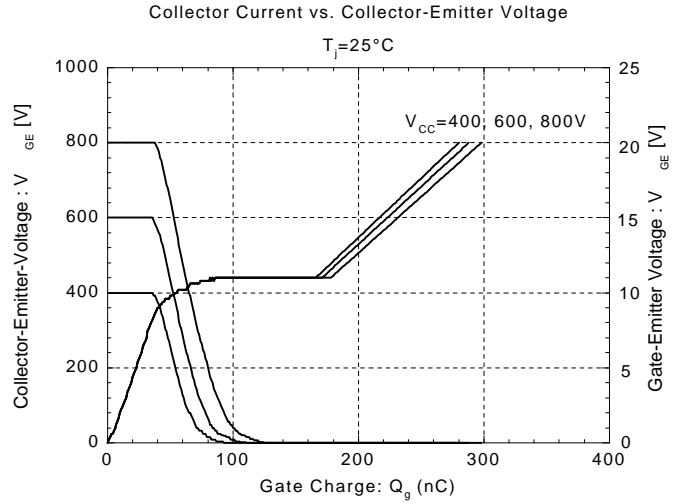
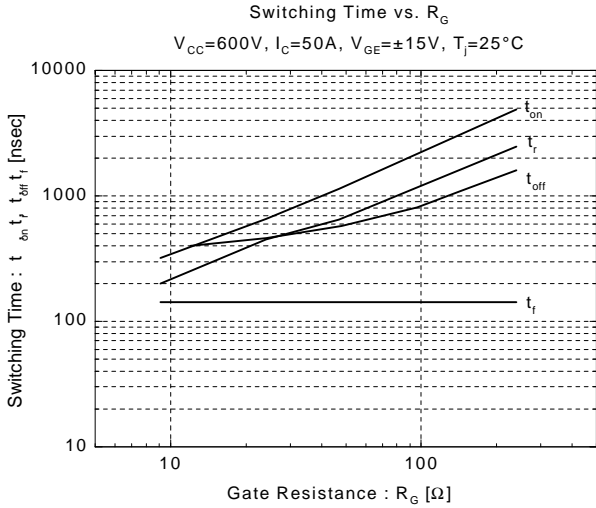
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I _{CEs}	V _{GE} =0V V _{CE} =1400V			1.0	mA
Gate-Emitter Leakage Current	I _{GES}	V _{CE} =0V V _{GE} =± 20V			200	μA
Gate-Emitter Threshold Voltage	V _{GE(th)}	V _{GE} =20V I _C =50mA	6.0	8.0	9.0	V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	T _J = 25°C V _{GE} =15V I _C =50A		2.7	3.0	V
		T _J =125°C V _{GE} =15V I _C =50A		3.3		
Input capacitance	C _{ies}	V _{GE} =0V		5000		pF
Output capacitance	C _{oes}	V _{CE} =10V		750		
Reverse Transfer capacitance	C _{res}	f=1MHz		330		
Turn-on Time	t _{ON}	V _{CC} =600V			1.2	μs
	t _r	I _C =50A			0.6	
Turn-off Time	t _{OFF}	V _{GE} =± 15V			1.0	
	t _f	R _G =2.4Ω			0.3	
Diode Forward On-Voltage	V _F	I _F =50A V _{GE} =0V		2.4	3.3	V
Reverse Recovery Time	t _{rr}	I _F =50A			350	ns

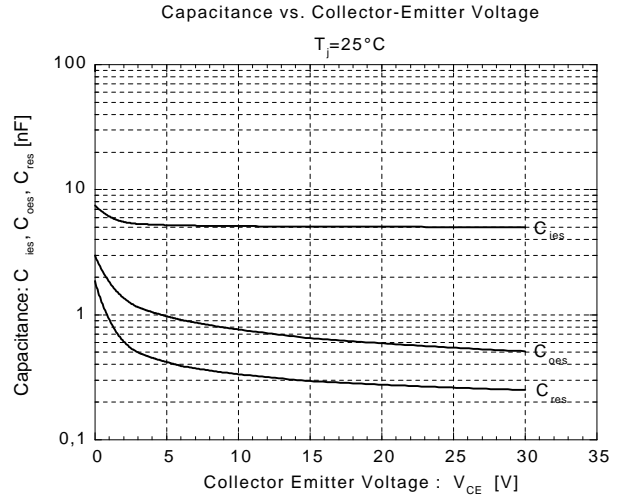
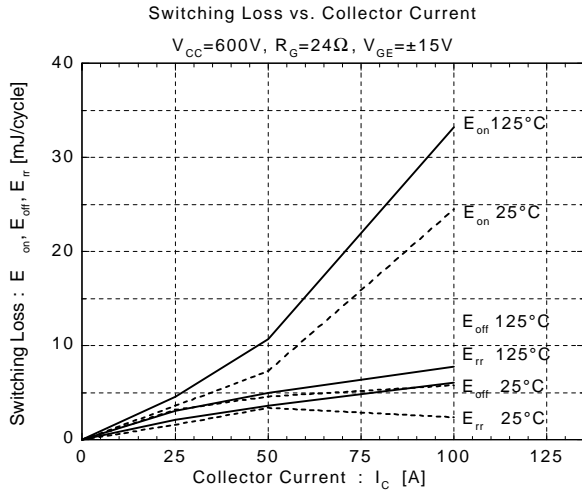
• Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(j-c)}	IGBT			0.31	°C/W
	R _{th(j-e)}	Diode			0.66	
	R _{th(c-f)}	With Thermal Compound		0.05		









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