

IGBT MODULE (P-Series)

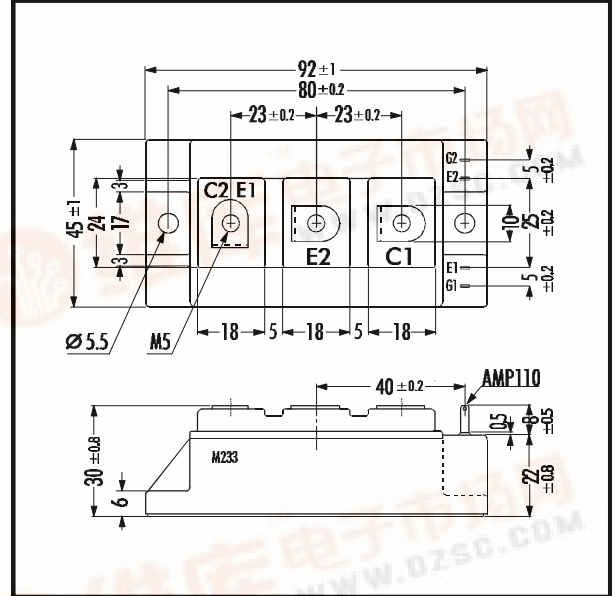
■ Features

- 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

■ Outline Drawing



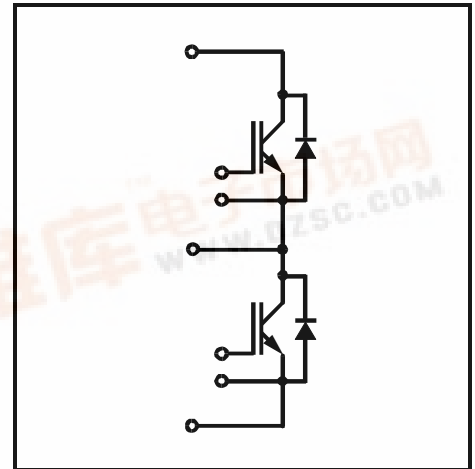
■ Maximum Ratings and Characteristics

• 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 | 150 | |
| | | I _C | 100 | |
| | 1ms T _C =25°C | I _{C PULSE} | 300 | |
| | | 1ms T _C =80°C | I _{C PULSE} | 200 |
| | | | -I _C | 100 |
| Max. Power Dissipation | P _C | 780 | 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



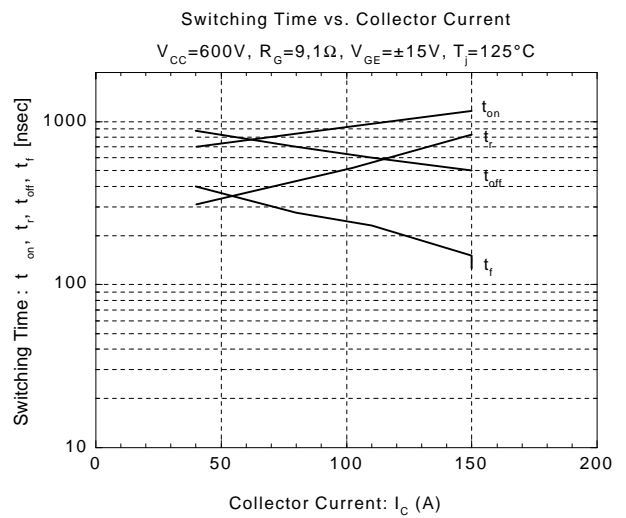
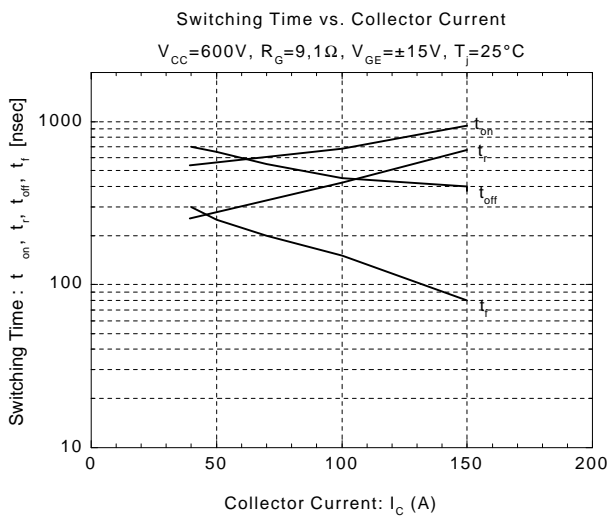
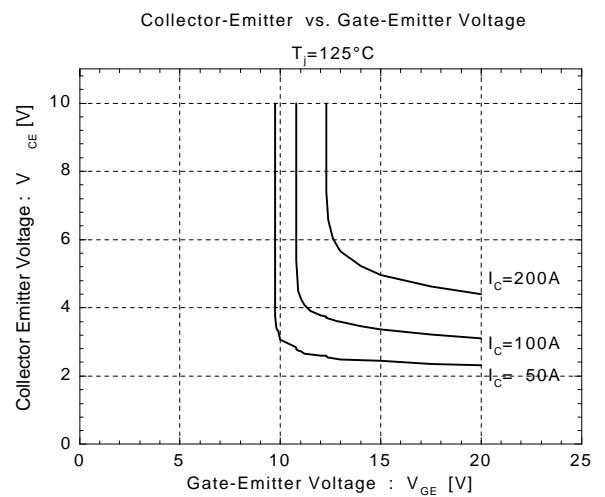
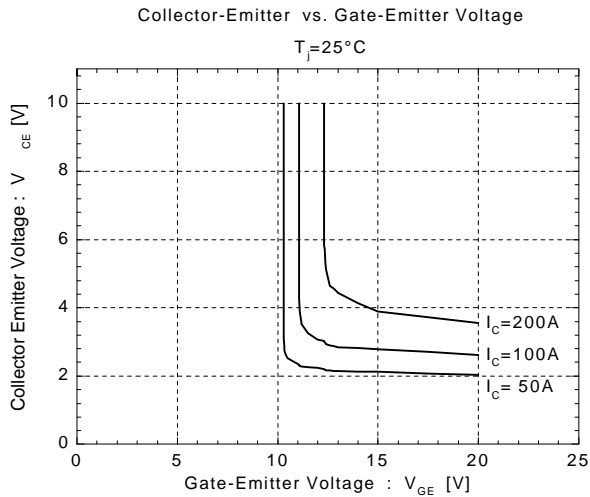
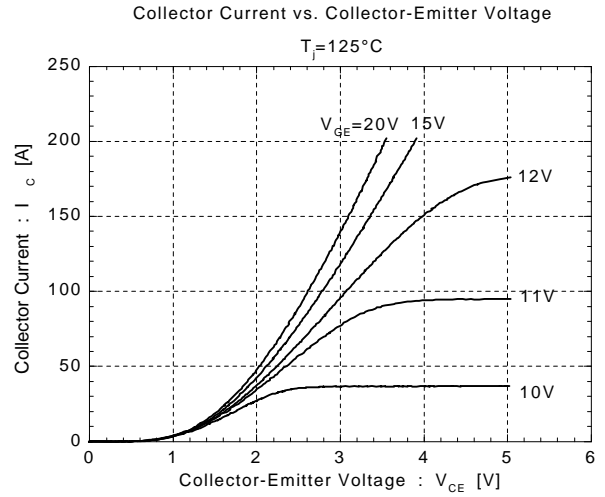
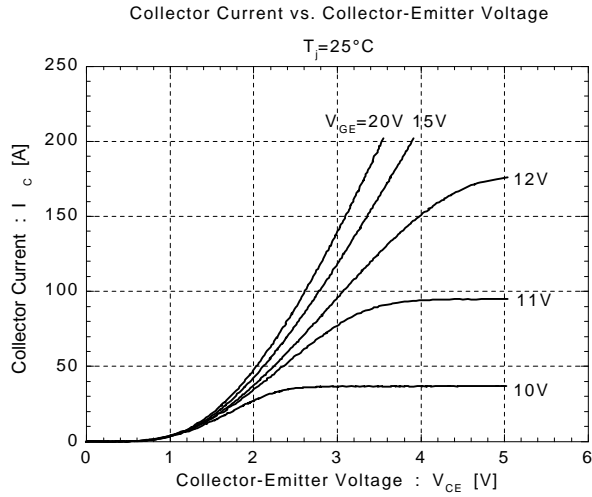
• Electrical Characteristics (at T_f=25°C)

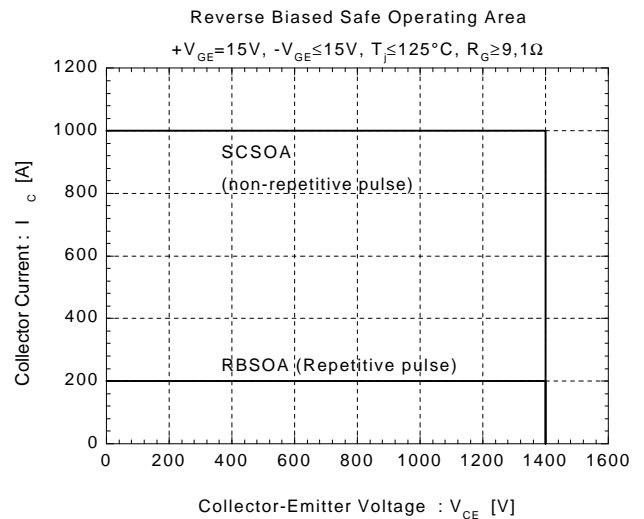
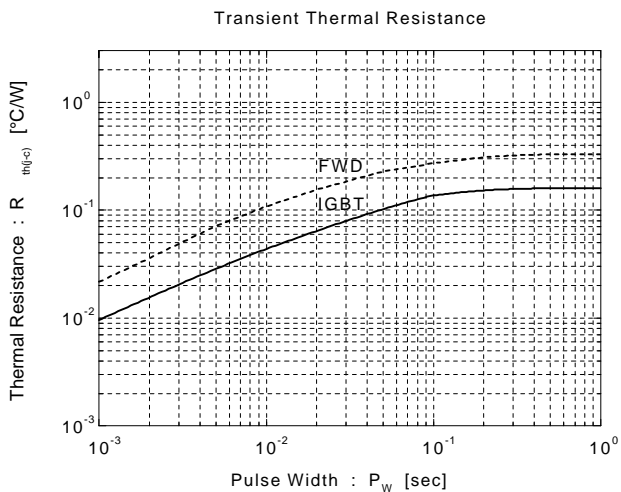
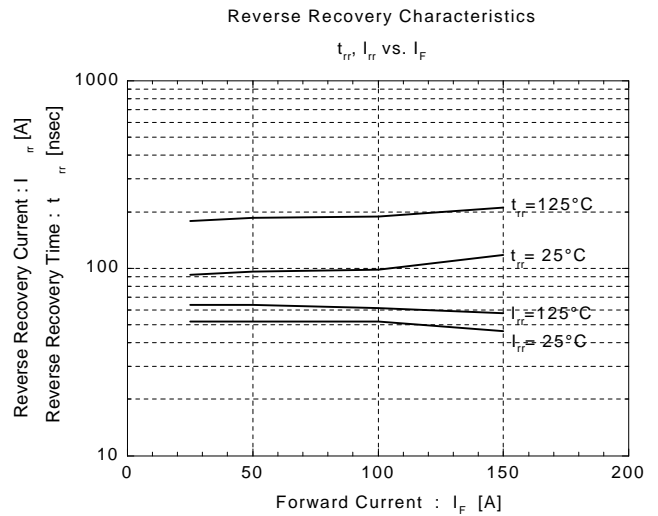
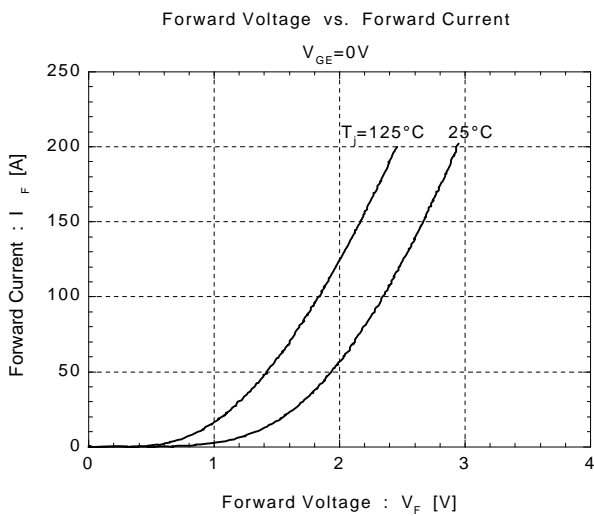
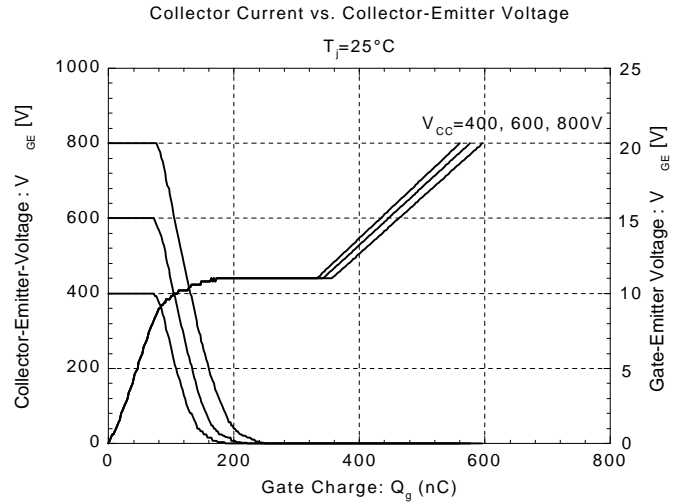
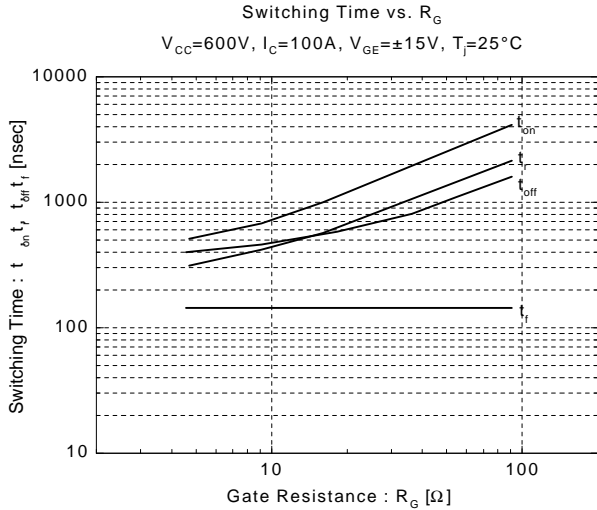
| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|----------------------|---|------|-------|------|-------|
| Zero Gate Voltage Collector Current | I _{CEs} | V _{GE} =0V V _{CE} =1400V | | | 2.0 | mA |
| Gate-Emitter Leakage Current | I _{GES} | V _{CE} =0V V _{GE} =± 20V | | | 400 | μA |
| Gate-Emitter Threshold Voltage | V _{GE(th)} | V _{GE} =20V I _C =100mA | 6.0 | 8.0 | 9.0 | V |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | T _f = 25°C V _{GE} =15V I _C =100A | | 2.7 | 3.0 | V |
| | | T _f =125°C V _{GE} =15V I _C =100A | | 3.3 | | |
| Input capacitance | C _{ies} | V _{GE} =0V | | 10000 | | pF |
| Output capacitance | C _{oes} | V _{CE} =10V | | 1500 | | |
| Reverse Transfer capacitance | C _{res} | f=1MHz | | 650 | | |
| Turn-on Time | t _{ON} | V _{CC} =600V | | | 1.2 | μs |
| | t _r | I _C =100A | | | 0.6 | |
| Turn-off Time | t _{OFF} | V _{GE} =± 15V | | | 1.0 | |
| | t _f | R _G =9.1Ω | | | 0.3 | |
| Diode Forward On-Voltage | V _F | I _F =100A V _{GE} =0V | | 2.4 | 3.3 | V |
| Reverse Recovery Time | t _{rr} | I _F =100A | | | 350 | ns |

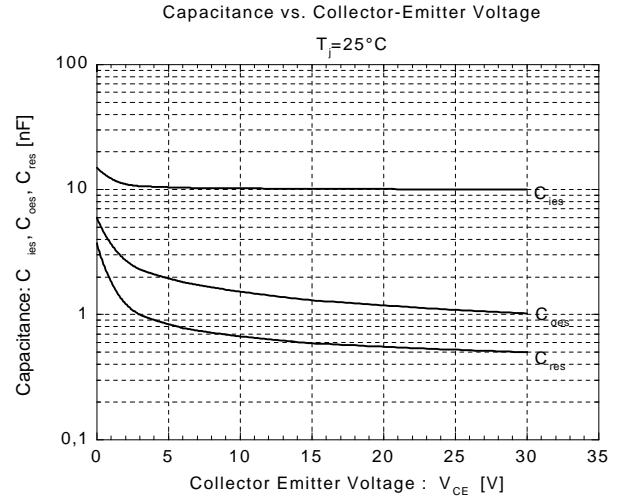
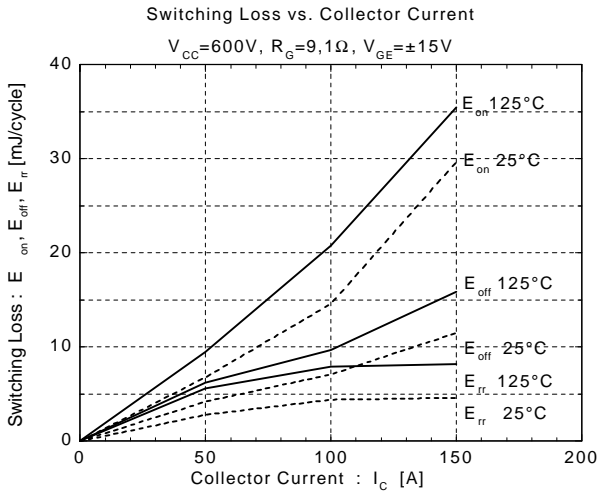
• Thermal Characteristics

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|----------------------|-----------------------|------|-------|------|-------|
| Thermal Resistance | R _{th(j-c)} | IGBT | | | 0.16 | °C/W |
| | R _{th(j-e)} | Diode | | | 0.33 | |
| | R _{th(c-f)} | With Thermal Compound | | 0.025 | | |









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