

2MBI300P-140

IGBT Modules

IGBT Modules P series

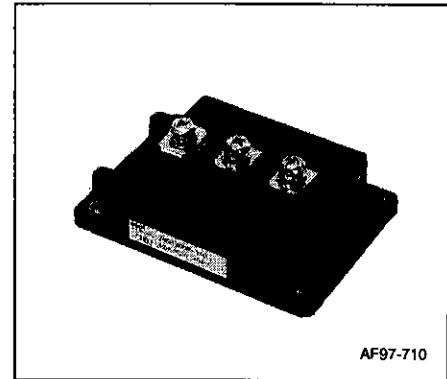
1400V / 300A 2 in one-package

■ Features

- Small temperature dependence of the turn-off switching loss
- Easy to connect in parallel
- Wide RBSOA (square up to 2 times of rated current) and high short-circuit withstand capability
- Low loss and soft-switching (reduction of EMI noise)

■ Applications

- General purpose inverters
- AC servo systems (Drive unit)
- UPS (Uninterruptible Power Supply)

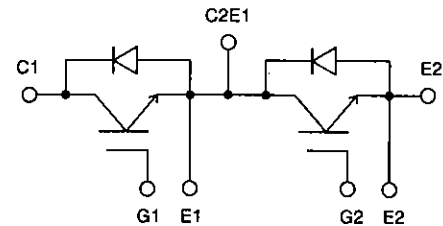


■ Maximum ratings and characteristics

● Absolute maximum ratings (Tc=25°C unless otherwise specified)

| Item | Symbol | Rating | Unit | |
|---------------------------|-----------------------|----------------------|--------------------------|---|
| Collector-Emitter voltage | V _{CE} S | 1400 | V | |
| Gate-Emitter voltage | V _{GE} S | ±20 | V | |
| Collector current | Continuous | T _c =25°C | I _c 400 | A |
| | | T _c =80°C | 300 | |
| | 1ms | T _c =25°C | I _c pulse 800 | |
| | | T _c =80°C | 600 | |
| | Continuous | -I _c | 300 | |
| 1ms | -I _c pulse | 600 | | |
| Max power dissipation | P _c | 2500 | W | |
| Operating temperature | T _J | +150 | °C | |
| Storage temperature | T _{stg} | -40 to +125 | °C | |
| Isolation voltage | V _{is} | 2500 AC (1min.) | V | |
| Screw torque | Mounting *1 | 3.5 | N·m | |
| | Terminals *2 | 4.5 | | |

■ Equivalent circuit



Recommendable value

*1 2.5 to 3.5 N·m (M5 or M6) *2 3.5 to 4.5 N·m (M6)

● Electrical ratings and characteristics (T_J =25°C unless otherwise specified)

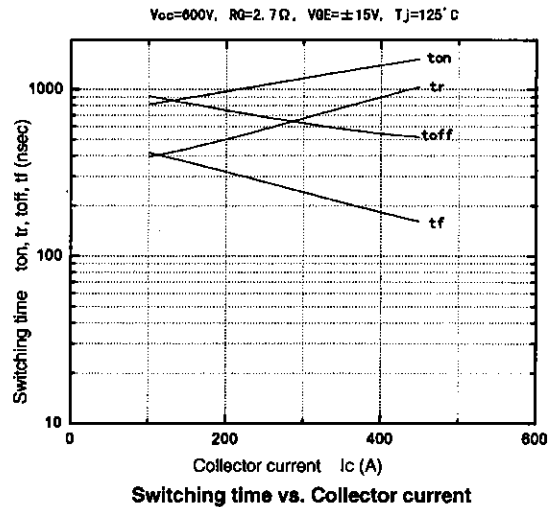
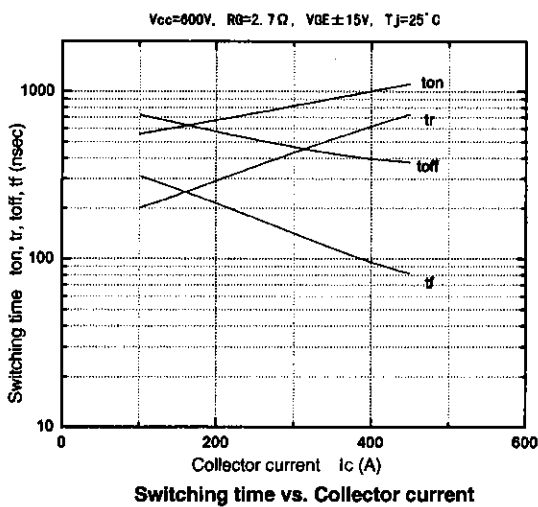
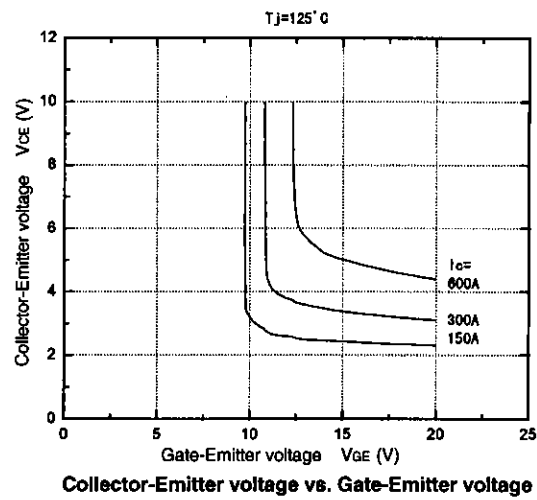
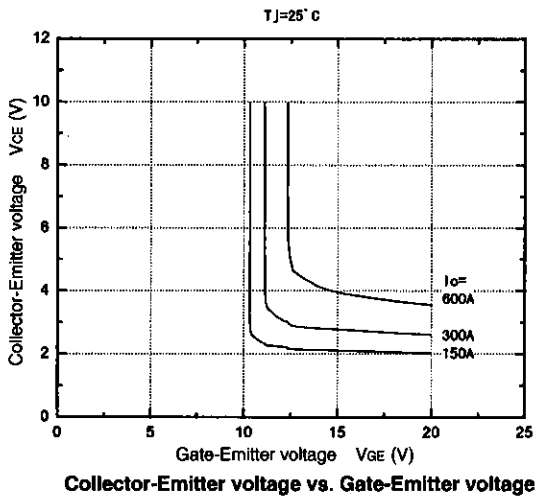
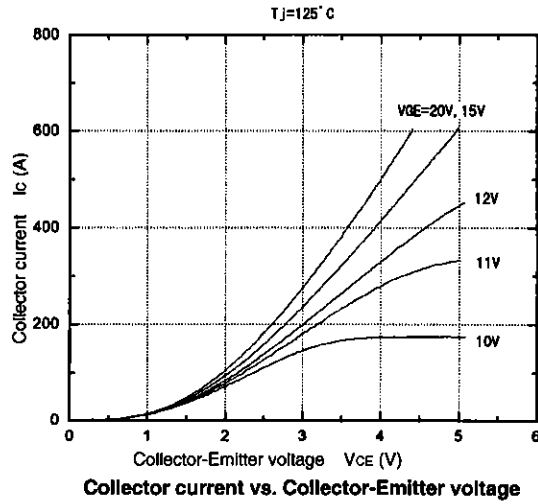
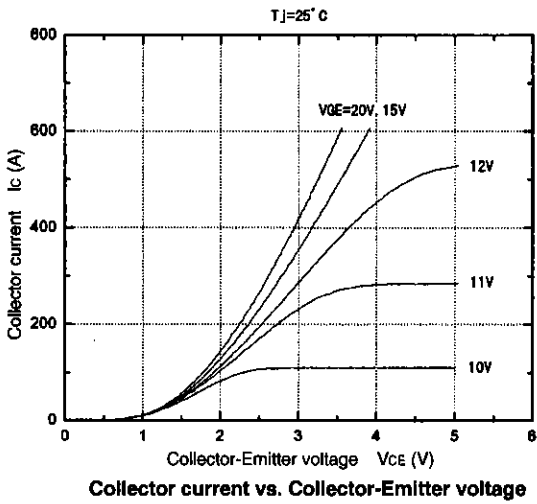
| Item | Symbol | Characteristics | | | Conditions | Unit |
|--------------------------------------|-----------------------|-----------------|-------|------|---|------|
| | | Min. | Typ. | Max. | | |
| Zero gate voltage collector current | I _{CES} | - | - | 3.0 | V _{GE} =0V, V _{CE} =1400V | mA |
| Gate-Emitter leakage current | I _{GES} | - | - | 600 | V _{CE} =0V, V _{GE} =±20V | nA |
| Gate-Emitter threshold voltage | V _{GE} (th) | 6.0 | 8.0 | 9.0 | V _{CE} =20V, I _c =300mA | V |
| Collector-Emitter saturation voltage | V _{CE} (sat) | - | 2.7 | 3.0 | T _J =25°C, V _{GE} =15V, I _c =300A | V |
| | | - | 3.3 | - | T _J =125°C, V _{GE} =15V, I _c =300A | |
| Input capacitance | C _{ies} | - | 30000 | - | V _{GE} =0V | pF |
| Output capacitance | C _{oes} | - | 4500 | - | V _{CE} =10V | |
| Reverse transfer capacitance | C _{res} | - | 2000 | - | f=1MHz | |
| Turn-on time | t _{on} | - | - | 1.20 | V _{CC} =600V | μs |
| | t _r | - | - | 0.60 | I _c =300A | |
| Turn-off time | t _{off} | - | - | 1.00 | V _{GE} =±15V | μs |
| | t _f | - | - | 0.30 | R _G =2.7Ω | |
| Diode forward on voltage | V _F | - | 2.4 | 3.3 | I _F =300A, V _{GE} =0V | V |
| Reverse recovery time | t _{rr} | - | - | 0.35 | I _F =300A | μs |

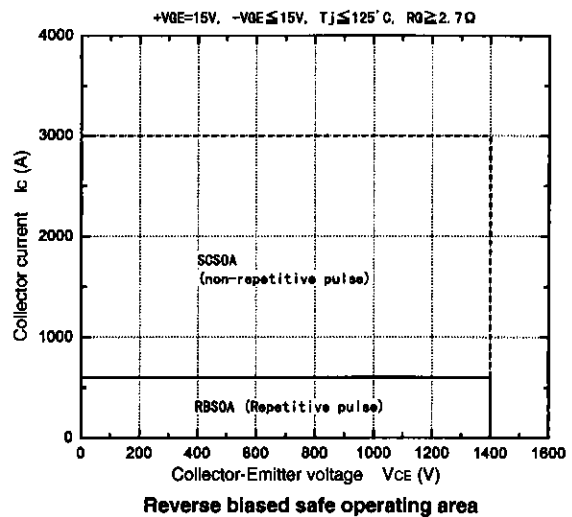
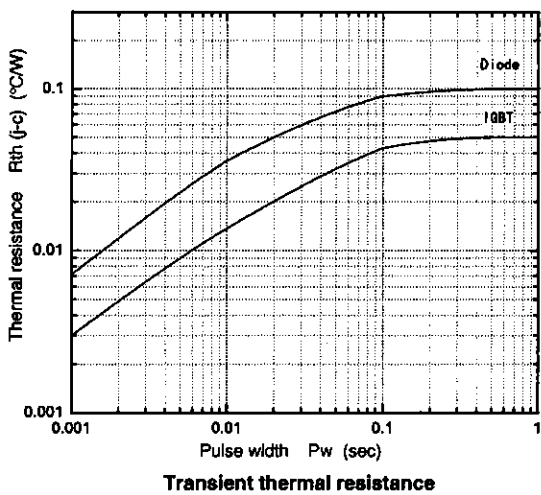
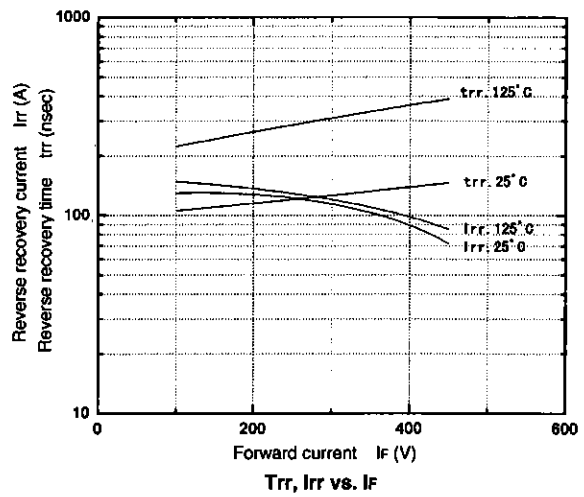
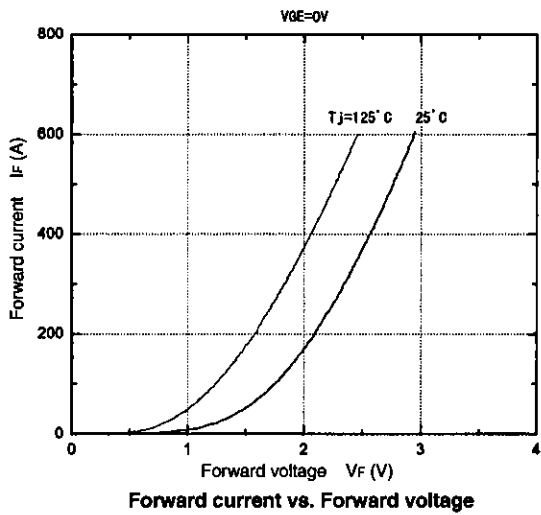
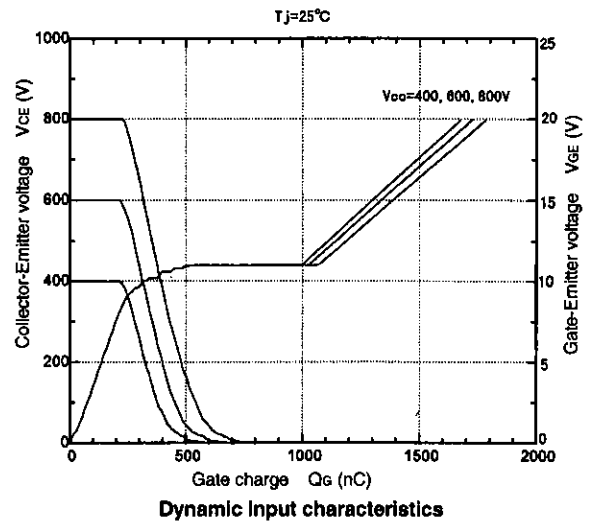
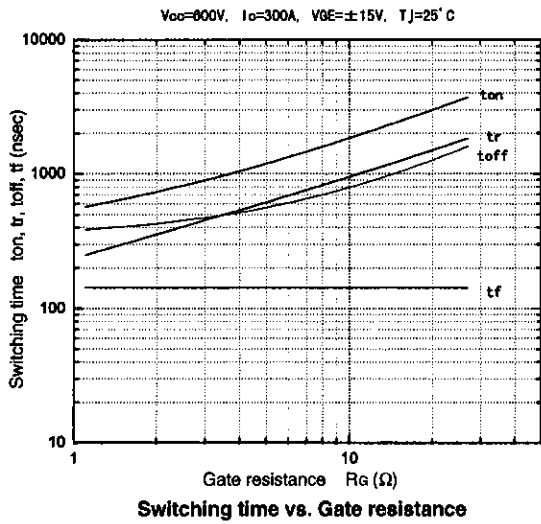
● Thermal resistance characteristics

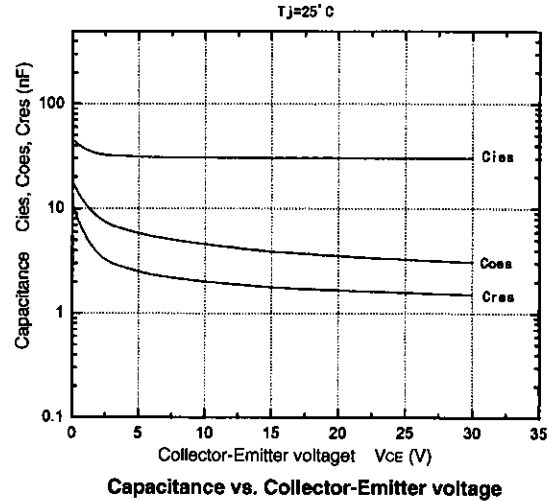
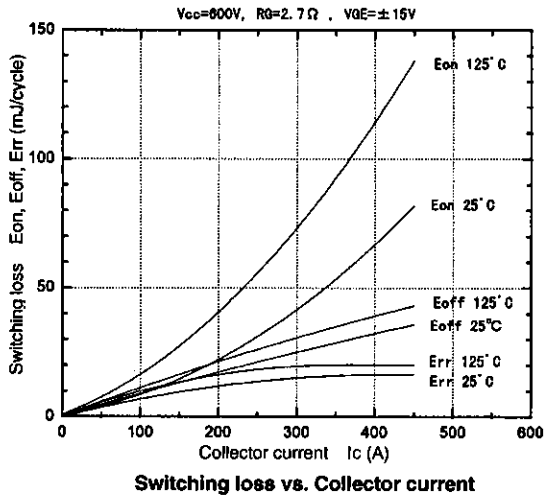
| Item | Symbol | Characteristics | | | Conditions | Unit |
|--------------------|------------------------|-----------------|--------|------|-------------------------|------|
| | | Min. | Typ. | Max. | | |
| Thermal resistance | R _{th} (j-c) | - | - | 0.05 | IGBT | °C/W |
| | R _{th} (j-c) | - | - | 0.1 | Diode | |
| | R _{th} (c-f)* | - | 0.0167 | - | the base to cooling fin | |

* This is the value which is defined mounting on the additional cooling fin with thermal compound.

■ Characteristics







■ Outline drawings, mm

M238

