

2MBI300N-060-04

IGBT Module

600V / 300A 2 in one-package

■ Features

- VCE(sat) classified for easy parallel connection
- High speed switching
- Voltage drive
- Low inductance module structure

■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply
- Industrial machines, such as Welding machines

■ Maximum ratings and characteristics

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

| Item | Symbol | Rating | Unit |
|---------------------------|------------------|-----------------------|------|
| Collector-Emitter voltage | V _{CES} | 600 | V |
| Gate-Emitter voltage | V _{GES} | ±20 | V |
| Collector current | Continuous | I _c | 300 |
| | 1ms | I _c pulse | 600 |
| | | -I _c | 300 |
| | 1ms | -I _c pulse | 600 |
| Max. power dissipation | P _c | 1100 | W |
| Operating temperature | T _j | +150 | °C |
| Storage temperature | T _{stg} | -40 to +125 | °C |
| Isolation voltage | V _{is} | AC 2500 (1min.) | V |
| Screw torque | Mounting *1 | 3.5 | N·m |
| | Terminals *1 | 3.5 | N·m |

*1: Recommendable value : 2.5 to 3.5 N·m(M5)

● Electrical characteristics (at Tj=25°C unless otherwise specified)

| Item | Symbol | Characteristics | | | Conditions | Unit |
|--------------------------------------|-----------------------|-----------------|-------|------|--|------|
| | | Min. | Typ. | Max. | | |
| Zero gate voltage collector current | I _{CES} | - | - | 2.0 | V _{GE} =0V, V _{CES} =600V | mA |
| Gate-Emitter leakage current | I _{GES} | - | - | 30 | V _{CES} =0V, V _{GE} =±20V | μA |
| Gate-Emitter threshold voltage | V _{GE(th)} | 4.5 | - | 7.5 | V _{CES} =20V, I _c =300mA | V |
| Collector-Emitter saturation voltage | V _{CES(sat)} | - | - | 2.8 | V _{GE} =15V, I _c =300A | V |
| Input capacitance | C _{ies} | - | 19800 | - | V _{GE} =0V | pF |
| Output capacitance | C _{oes} | - | 4400 | - | V _{CES} =10V | |
| Reverse transfer capacitance | C _{res} | - | 2000 | - | f=1MHz | |
| Turn-on time | t _{on} | - | 0.6 | 1.2 | V _{CC} =300V | μs |
| | t _r | - | 0.2 | 0.6 | I _c =300A | |
| Turn-off time | t _{off} | - | 0.6 | 1.0 | V _{GE} =±15V | μs |
| | t _f | - | 0.2 | 0.35 | R _G =6.8ohm | |
| Diode forward on voltage | V _F | - | - | 3.0 | I _F =300A, V _{GE} =0V | V |
| Reverse recovery time | t _{rr} | - | - | 0.3 | I _F =300A | μs |

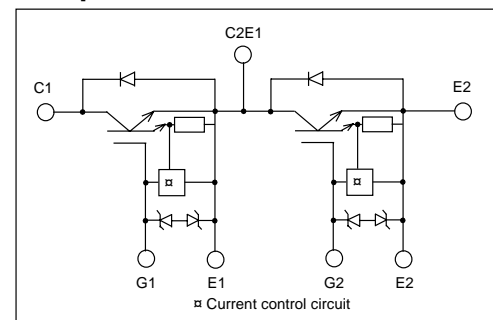
● Thermal resistance characteristics

| Item | Symbol | Characteristics | | | Conditions | Unit |
|--------------------|------------------------|-----------------|-------|------|-------------------------|------|
| | | Min. | Typ. | Max. | | |
| Thermal resistance | R _{th(j-c)} | - | - | 0.11 | IGBT | °C/W |
| | R _{th(j-c)} | - | - | 0.24 | Diode | °C/W |
| | R _{th(c-f)*2} | - | 0.025 | - | the base to cooling fin | °C/W |

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



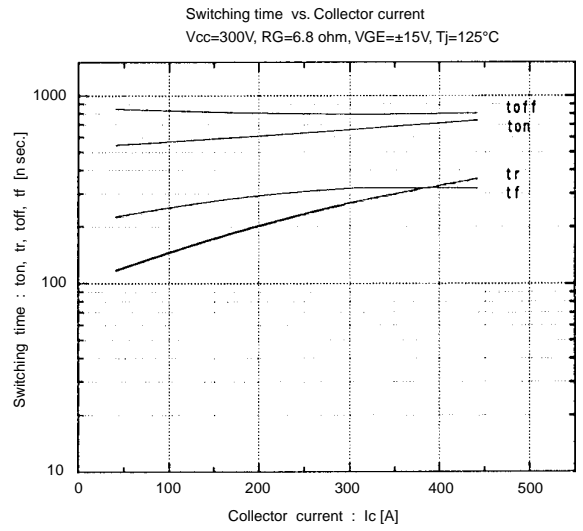
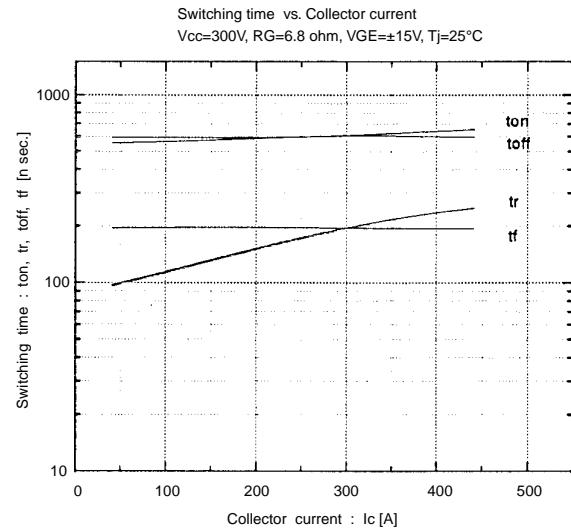
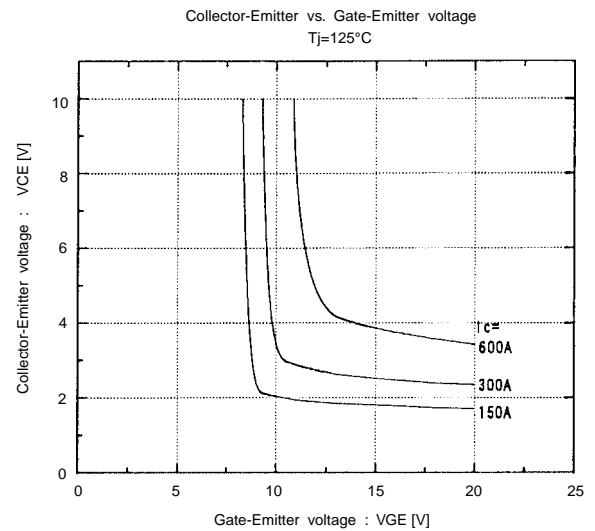
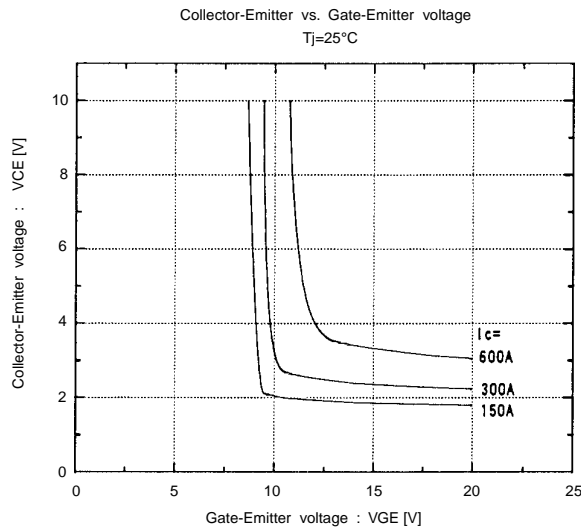
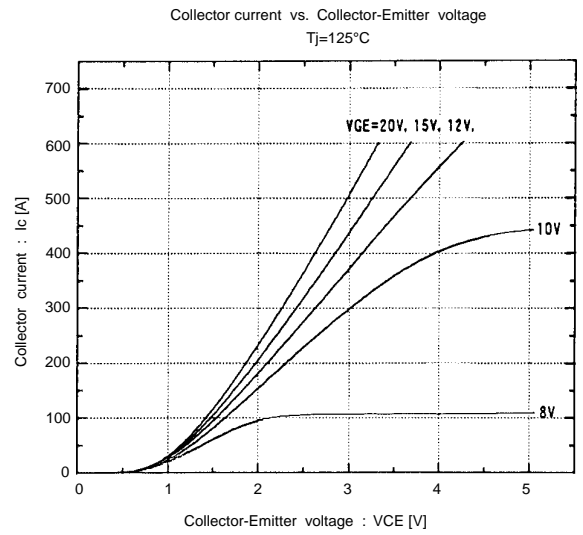
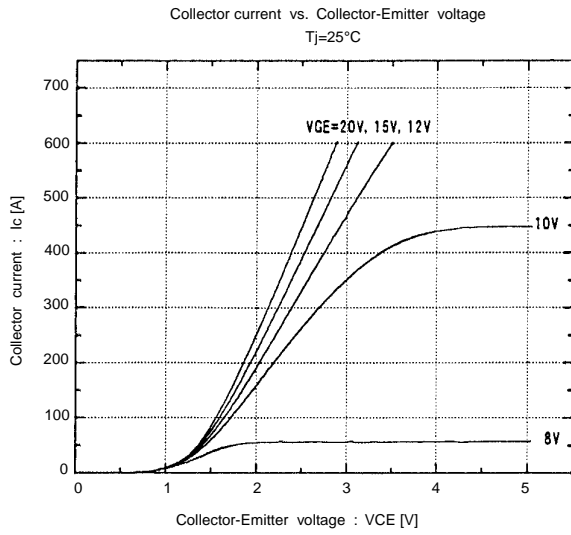
■ Equivalent Circuit Schematic

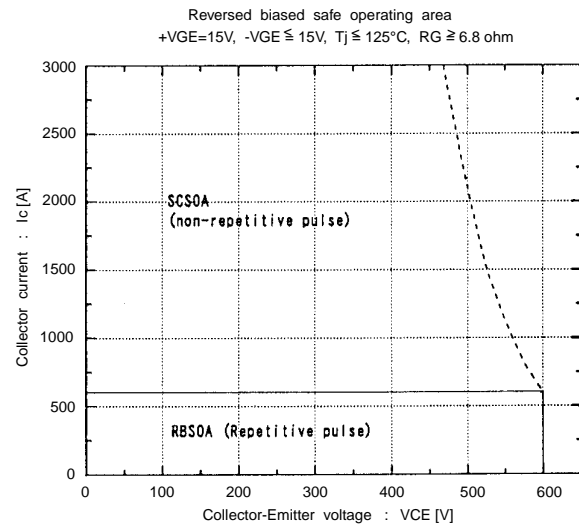
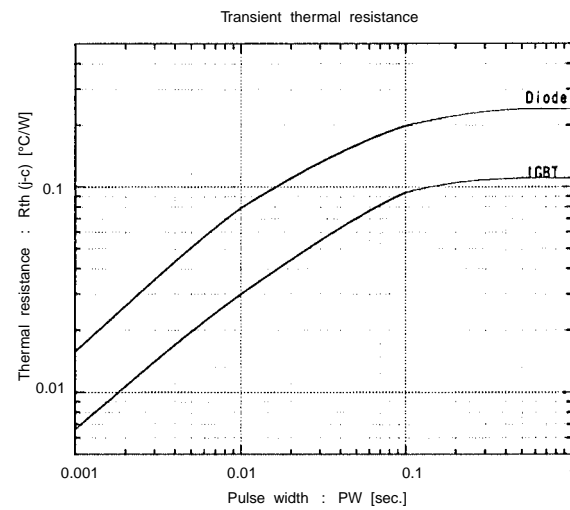
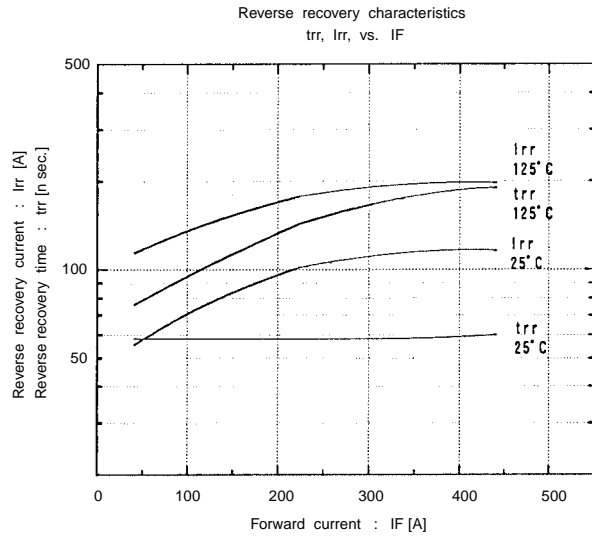
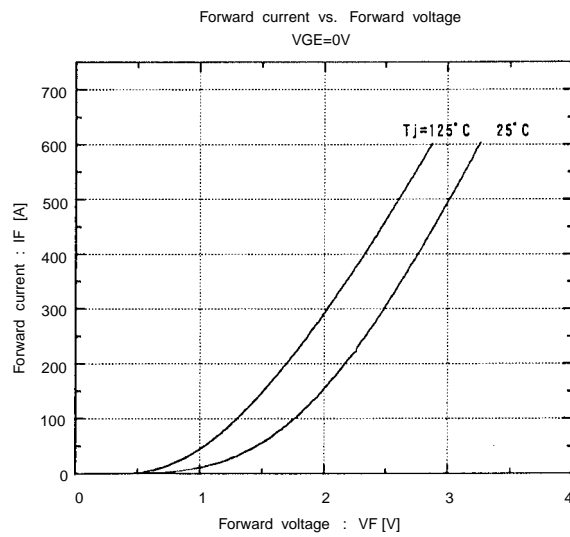
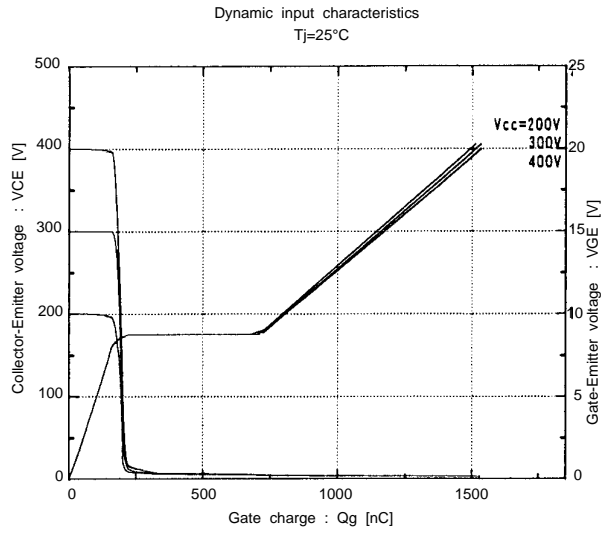
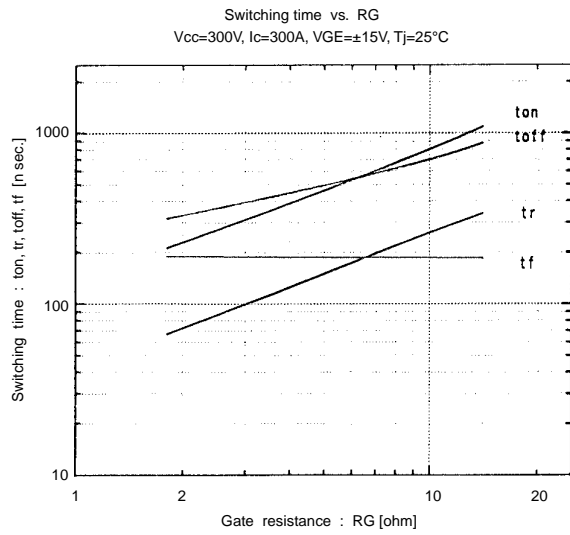


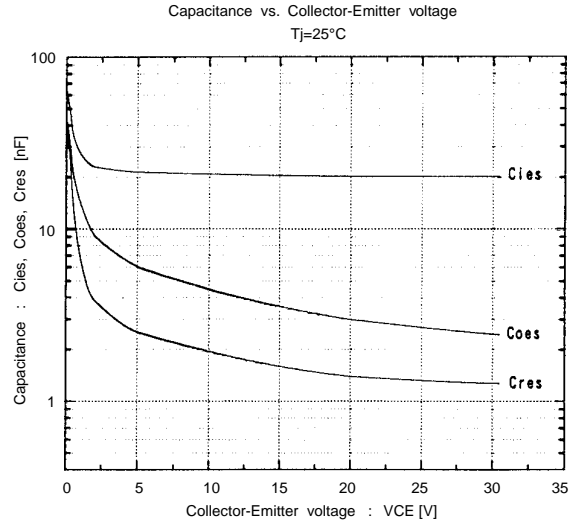
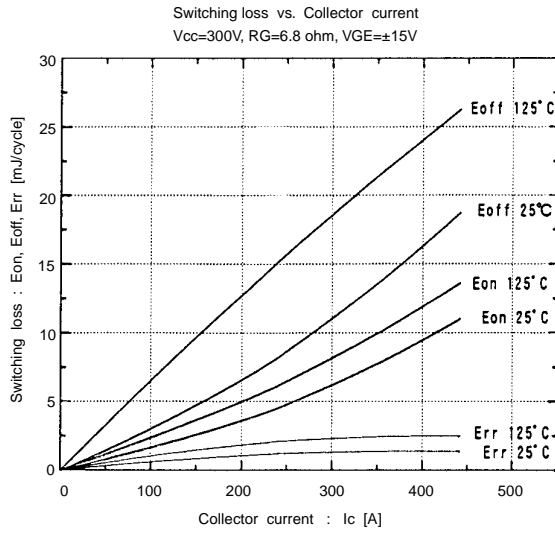
● VCE(sat) classification

| Rank | Lenge | Conditions |
|------|---------------|---|
| F | 1.85 to 2.10V | I _c = 300A V _{GE} = 15V T _j = 25°C |
| A | 2.00 to 2.25V | |
| B | 2.15 to 2.40V | |
| C | 2.30 to 2.60V | |
| D | 2.50 to 2.80V | |

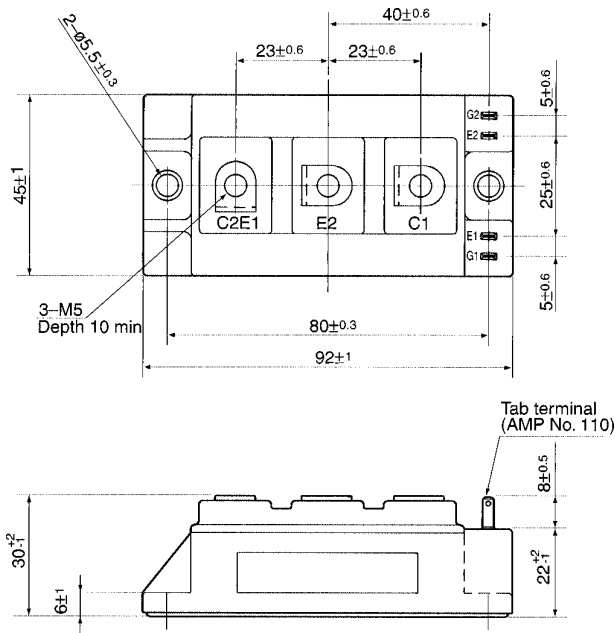
■ Characteristics (Representative)







■ Outline Drawings, mm



Mass : 240g