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# 2MBI200PB-140

FUJI

IGBT Modules P series

Any questions, please feel free to contact us.  
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# 2MBI200PB-140

## IGBT Module P-Series

### 1400V / 200A 2 in one-package



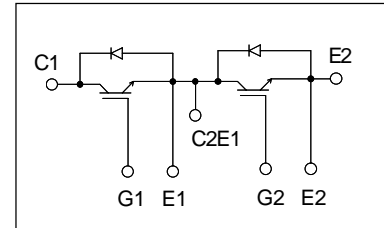
#### ■ Features

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

#### ■ Applications

- General purpose inverter
- AC and DC Servo drive amplifier
- Uninterruptible power supply

#### ■ Equivalent Circuit Schematic



#### ■ Maximum ratings and characteristics

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

| Item                        | Symbol           | Conditions | Rating               | Unit |   |
|-----------------------------|------------------|------------|----------------------|------|---|
| Collector-Emitter voltage   | V <sub>CES</sub> |            | 1400                 | V    |   |
| Gate-Emitter voltage        | V <sub>GES</sub> |            | ±20                  | V    |   |
| Collector current           | I <sub>c</sub>   | Continuous | T <sub>c</sub> =25°C | 300  | A |
|                             |                  |            | T <sub>c</sub> =80°C | 200  |   |
|                             | I <sub>cp</sub>  | 1ms        | T <sub>c</sub> =25°C | 600  |   |
|                             |                  |            | T <sub>c</sub> =80°C | 400  |   |
|                             | -I <sub>c</sub>  |            |                      | 200  |   |
| -I <sub>c</sub> pulse       |                  |            | 400                  |      |   |
| Collector Power Dissipation | P <sub>c</sub>   | 1 device   | 1500                 | W    |   |
| Junction temperature        | T <sub>j</sub>   |            | +150                 | °C   |   |
| Storage temperature         | T <sub>stg</sub> |            | -40 to +125          |      |   |
| Isolation voltage           | V <sub>iso</sub> | AC:1min.   | 2500                 | VAC  |   |
| Screw Torque                | Mounting *2      |            | 3.5                  | N·m  |   |
|                             | Terminals *3     |            | 4.5                  |      |   |

\*1: All terminals should be connected together when isolation test will be done.

\*2: Recommendable value : 2.5 to 3.5 N·m(M5) \*3: Recommendable value : 3.5 to 4.5 N·m(M6)

##### ● Electrical characteristics (at T<sub>j</sub>=25°C unless otherwise specified)

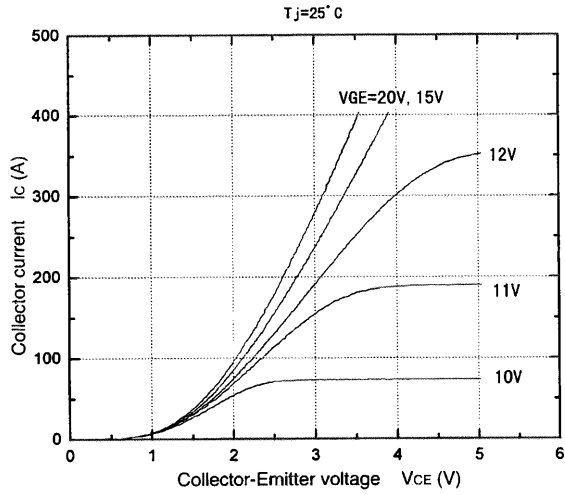
| Item                                 | Symbols              | Conditions  | Characteristics |       |      | Unit |
|--------------------------------------|----------------------|---|-----------------|-------|------|------|
|                                      |                      |   | Min.            | Typ.  | Max. |      |
| Zero gate voltage collector current  | I <sub>CES</sub>     | V <sub>GE</sub> =0V, V <sub>CE</sub> =1400V                       | -               | -     | 2.0  | mA   |
| Gate-Emitter leakage current         | I <sub>GES</sub>     | V <sub>CE</sub> =0V, V <sub>GE</sub> =±20V                        | -               | -     | 400  | nA   |
| Gate-Emitter threshold voltage       | V <sub>GE(th)</sub>  | V <sub>CE</sub> =20V, I <sub>c</sub> =200mA                       | 6.0             | 8.0   | 9.0  | V    |
| Collector-Emitter saturation voltage | V <sub>CE(sat)</sub> | V <sub>GE</sub> =15V, I <sub>c</sub> =200A, T <sub>j</sub> =25°C  | -               | 2.7   | 3.0  | V    |
|                                      |                      | V <sub>GE</sub> =15V, I <sub>c</sub> =200A, T <sub>j</sub> =125°C | -               | 3.3   | -    |      |
| Input capacitance                    | C <sub>ies</sub>     | V <sub>CE</sub> =10V  | -               | 20000 | -    | pF   |
| Output capacitance                   | C <sub>oes</sub>     | V <sub>GE</sub> =0V   | -               | 3000  | -    |      |
| Reverse transfer capacitance         | C <sub>res</sub>     | f=1MHz  | -               | 1300  | -    |      |
| Turn-on time                         | t <sub>on</sub>      | V <sub>CC</sub> =600V   | -               | -     | 1.20 | μs   |
|                                      | t <sub>r</sub>       | I <sub>c</sub> =200A  | -               | -     | 0.60 |      |
| Turn-off time                        | t <sub>off</sub>     | V <sub>GE</sub> =±15V   | -               | -     | 1.00 | μs   |
|                                      | t <sub>f</sub>       | R <sub>G</sub> = 4.7 Ω  | -               | -     | 0.30 |      |
| Diode forward on voltage             | V <sub>F</sub>       | I <sub>F</sub> =200A, V <sub>GE</sub> =0V                         | -               | 2.4   | 3.3  | V    |
| Reverse recovery time                | t <sub>rr</sub>      | I <sub>F</sub> =200A  | -               | -     | 0.35 | μs   |

##### ● Thermal resistance characteristics

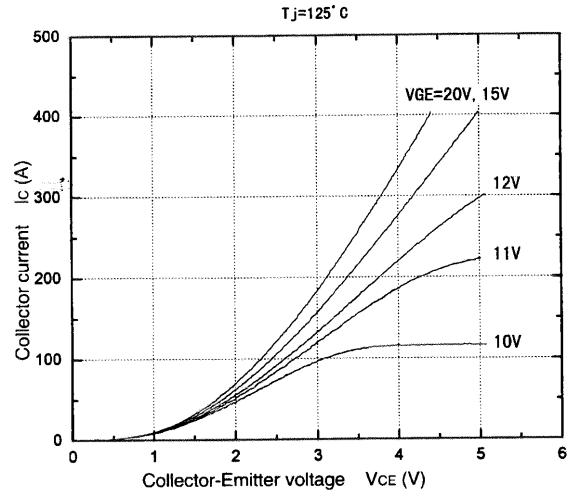
| Items                      | Symbols                 | Conditions              | Characteristics |       |       | Unit |
|----------------------------|-------------------------|-------------------------|-----------------|-------|-------|------|
|                            |                         |                         | Min.            | Typ.  | Max.  |      |
| Thermal resistance         | R <sub>th(j-c)</sub>    | IGBT                    | -               | -     | 0.085 | °C/W |
|                            | R <sub>th(j-c)</sub>    | Diode                   | -               | -     | 0.180 |      |
| Contact Thermal resistance | R <sub>th(c-f)</sub> *4 | the base to cooling fin | -               | 0.025 | -     | °C/W |

\*4: This is the value which is defined mounting on the additional cooling fin with thermal compound.

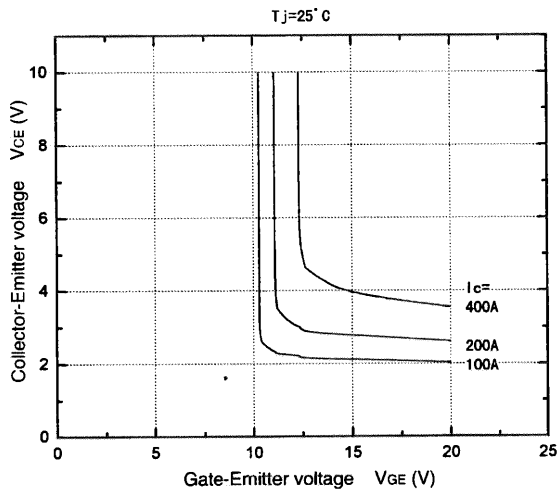
■ Characteristics (Representative)



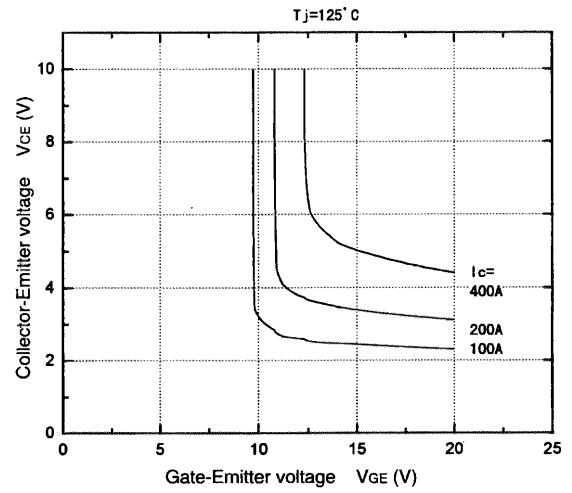
Collector current vs. Collector-Emittor voltage



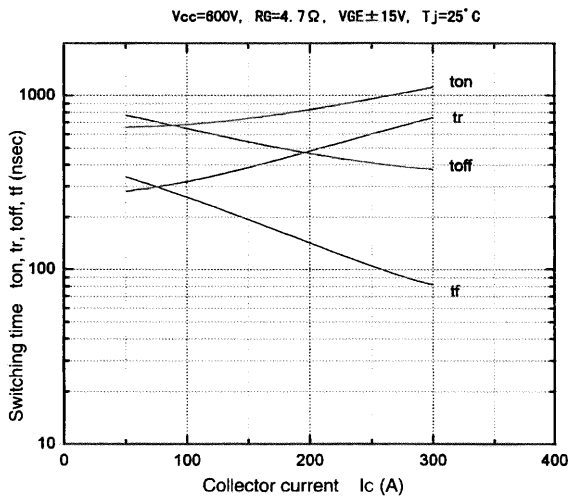
Collector current vs. Collector-Emittor voltage



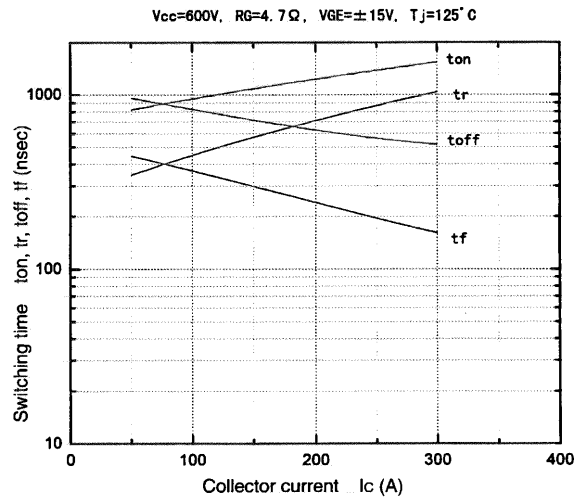
Collector-Emittor voltage vs. Gate-Emittor voltage



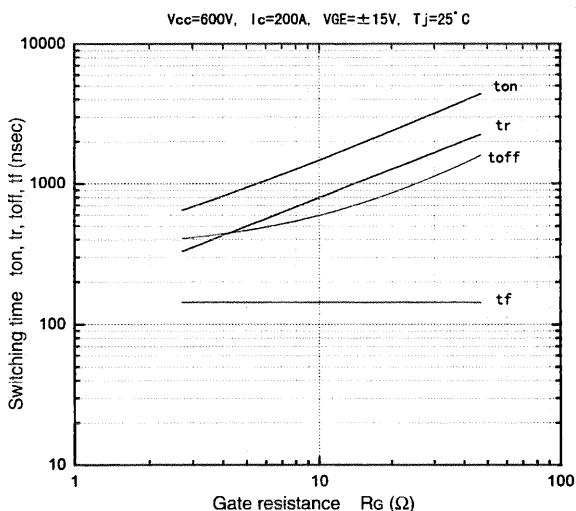
Collector-Emittor voltage vs. Gate-Emittor voltage



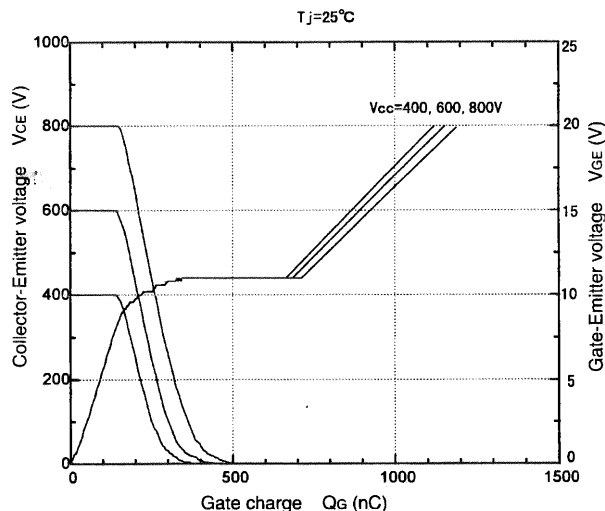
Switching time vs. Collector current



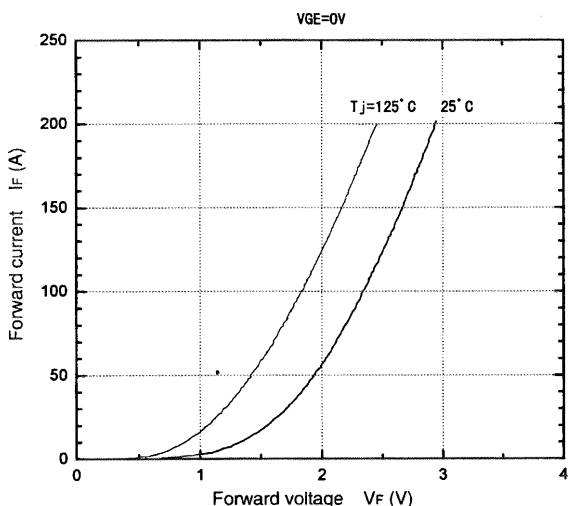
Switching time vs. Collector current



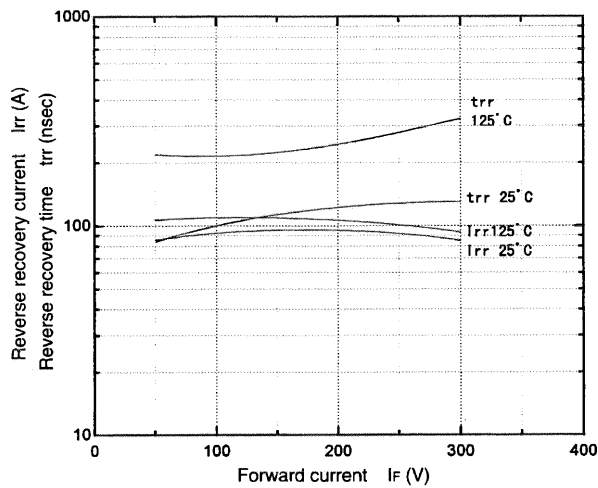
Switching time vs. Gate resistance



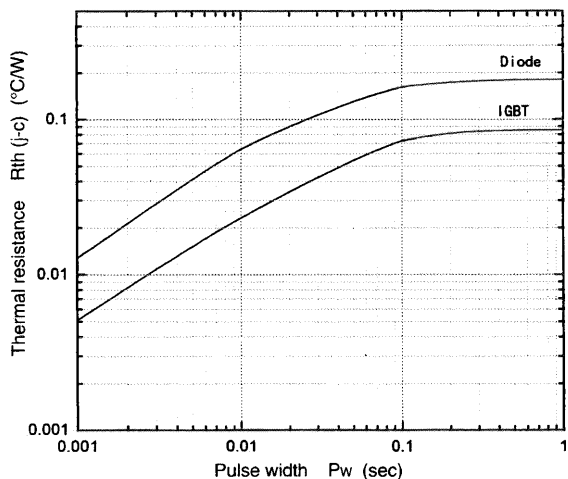
Dynamic input characteristics



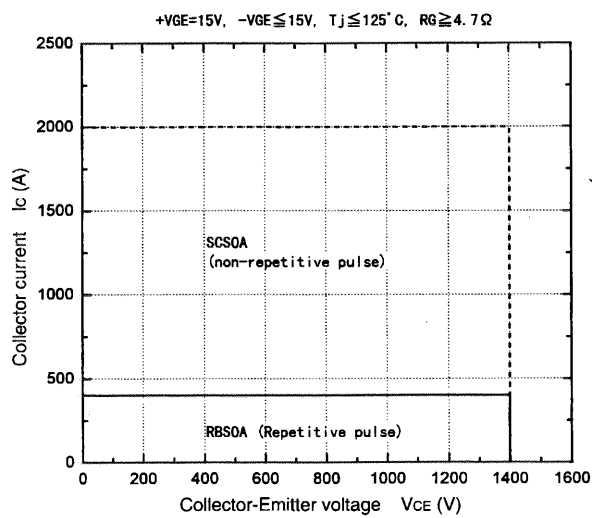
Forward current vs. Forward voltage



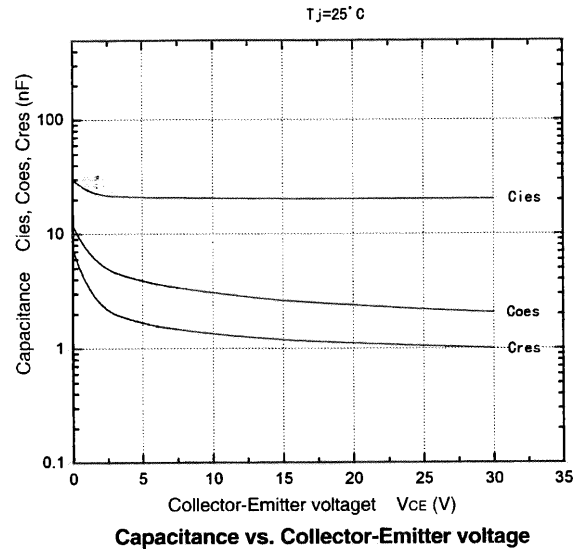
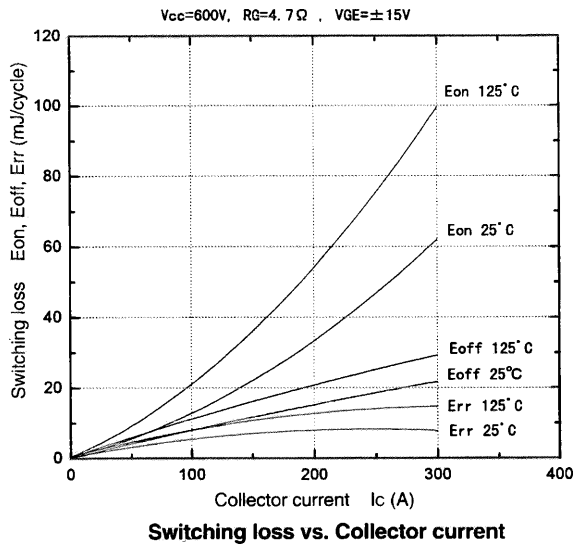
Trr, Irr vs. If



Transient thermal resistance



Reverse biased safe operating area



■ Outline Drawings, mm

M235

