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[7MBR75SB-060-50](#)

**EN**

This Datasheet is presented by  
the manufacturer

**DE**

Dieses Datenblatt wird vom  
Hersteller bereitgestellt

**FR**

Cette fiche technique est  
présentée par le fabricant

### IGBT MODULE (S series) 600V / 75A / PIM



#### ■ Features

- Low  $V_{CE(sat)}$
- Compact package
- P.C. board mount
- Converter diode bridge, Dynamic brake circuit

#### ■ Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply

#### ■ Maximum ratings and characteristics

● Absolute maximum ratings ( $T_c=25^\circ\text{C}$  unless without specified)

| Item      | Symbol                                        | Condition                                | Rating      | Unit                 |
|-----------|-----------------------------------------------|------------------------------------------|-------------|----------------------|
| Inverter  | Collector-Emitter voltage                     | $V_{CES}$                                | 600         | V                    |
|           | Gate-Emitter voltage                          | $V_{GES}$                                | $\pm 20$    | V                    |
|           | Collector current                             | $I_C$ Continuous                         | 75          | A                    |
|           |                                               | $I_{CP}$ 1ms                             | 150         | A                    |
|           |                                               | $-I_C$                                   | 75          | A                    |
|           | Collector power dissipation                   | $P_C$ 1 device                           | 300         | W                    |
| Brake     | Collector-Emitter voltage                     | $V_{CES}$                                | 600         | V                    |
|           | Gate-Emitter voltage                          | $V_{GES}$                                | $\pm 20$    | V                    |
|           | Collector current                             | $I_C$ Continuous                         | 50          | A                    |
|           |                                               | $I_{CP}$ 1ms                             | 100         | A                    |
|           | Collector power dissipation                   | $P_C$ 1 device                           | 200         | W                    |
| Converter | Repetitive peak reverse voltage               | $V_{RRM}$                                | 600         | V                    |
|           | Repetitive peak reverse voltage               | $V_{RRM}$                                | 800         | V                    |
|           | Average output current                        | $I_O$ 50Hz/60Hz sine wave                | 75          | A                    |
|           | Surge current (Non-Repetitive)                | $I_{FSM}$ $T_j=150^\circ\text{C}$ , 10ms | 525         | A                    |
|           | $I^2t$ (Non-Repetitive)                       | $I^2t$ half sine wave                    | 1378        | $\text{A}^2\text{s}$ |
|           | Operating junction temperature                | $T_j$                                    | +150        | $^\circ\text{C}$     |
|           | Storage temperature                           | $T_{stg}$                                | -40 to +125 | $^\circ\text{C}$     |
|           | Isolation between terminal and copper base *2 | AC : 1 minute                            | AC 2500     | V                    |
|           | voltage between thermistor and others *3      |                                          | AC 2500     | V                    |
|           | Mounting screw torque                         |                                          | 3.5 *1      | N·m                  |

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

\*2 All terminals should be connected together when isolation test will be done.

\*3 Terminal 8 and 9 should be connected together. Terminal 1 to 7 and 10 to 24 should be connected together and shorted to copper base.

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

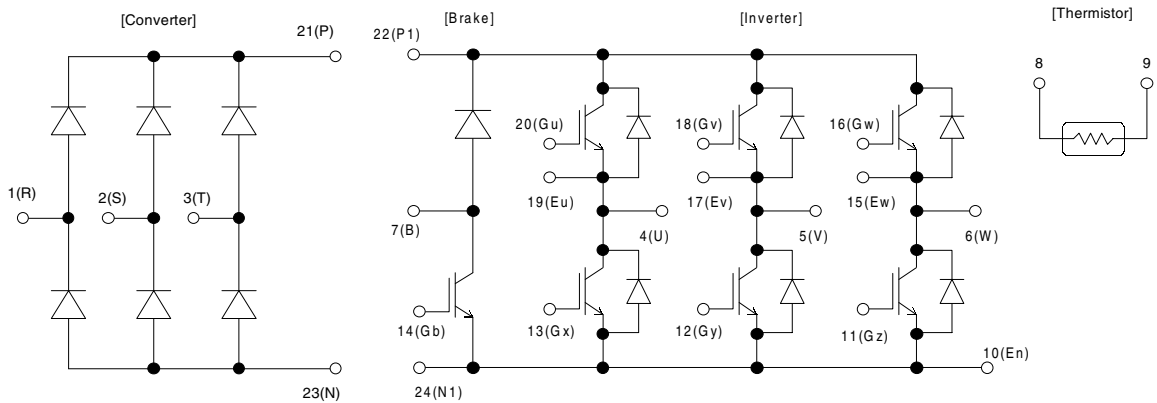
| Item                         |                                      | Symbol   | Condition                                |          | Characteristics |      |      | Unit |
|------------------------------|--------------------------------------|----------|------------------------------------------|----------|-----------------|------|------|------|
|                              |                                      |          |                                          |          | Min.            | Typ. | Max. |      |
| Inverter                     | Zero gate voltage collector current  | ICES     | VCE=600V, VGE=0V                         |          |                 |      | 1.0  | mA   |
|                              | Gate-Emitter leakage current         | IGES     | VCE=0V, VGE=±20V                         |          |                 |      | 0.2  | μA   |
|                              | Gate-Emitter threshold voltage       | VGE(th)  | VCE=20V, IC=75mA                         |          | 5.5             | 7.8  | 8.5  | V    |
|                              | Collector-Emitter saturation voltage | VCE(sat) | VGE=15V, IC=75A                          | chip     |                 | 1.8  |      | V    |
|                              |                                      |          |                                          | terminal |                 | 2.1  | 2.55 |      |
|                              | Input capacitance                    | Cies     | VGE=0V, VCE=10V, f=1MHz                  |          |                 | 7500 |      | pF   |
|                              | Turn-on time                         | ton      | VCC=300V<br>IC=75A<br>VGE=±15V<br>RG=33Ω |          |                 | 0.45 | 1.2  | μs   |
|                              |                                      | tr       |                                          |          |                 | 0.25 | 0.6  |      |
|                              |                                      | tr(i)    |                                          |          |                 | 0.08 |      |      |
|                              | Turn-off                             | toff     |                                          |          |                 | 0.40 | 1.0  |      |
|                              |                                      | tf       |                                          | 0.05     | 0.35            |      |      |      |
|                              | Forward on voltage                   | VF       | IF=75A                                   | chip     |                 | 1.7  |      | V    |
| terminal                     |                                      |          |                                          |          | 2.0             | 2.7  |      |      |
| Reverse recovery time of FRD | trr                                  | IF=75A   |                                          |          |                 | 0.3  | μs   |      |
| Brake                        | Zero gate voltage collector current  | ICES     | VCES=600V, VGE=0V                        |          |                 |      | 1.0  | mA   |
|                              | Gate-Emitter leakage current         | IGES     | VCE=0V, VGE=±20V                         |          |                 |      | 0.2  | μA   |
|                              | Collector-Emitter saturation voltage | VCE(sat) | IC=50A, VGE=15V                          | chip     |                 | 1.8  |      | V    |
|                              |                                      |          |                                          | terminal |                 | 2.05 | 2.5  |      |
|                              | Turn-on time                         | ton      | VCC=300V<br>IC=50A<br>VGE=±15V<br>RG=51Ω |          |                 | 0.45 | 1.2  | μs   |
|                              |                                      | tr       |                                          |          |                 | 0.25 | 0.6  |      |
|                              | Turn-off time                        | toff     |                                          |          |                 | 0.40 | 1.0  |      |
|                              |                                      | tf       |                                          |          |                 | 0.05 | 0.35 |      |
| Reverse current              | IRRM                                 | VR=600V  |                                          |          |                 | 1.0  | mA   |      |
| Converter                    | Forward on voltage                   | VFM      | IF=75A                                   | chip     |                 | 1.1  | V    |      |
|                              |                                      |          |                                          | terminal |                 | 1.2  |      | 1.5  |
|                              | Reverse current                      | IRRM     | VR=800V                                  |          |                 |      | 1.0  | mA   |
| Thermistor                   | Resistance                           | R        | T=25°C                                   |          |                 | 5000 |      | Ω    |
|                              |                                      |          | T=100°C                                  |          | 465             | 495  | 520  |      |
|                              | B value                              | B        | T=25/50°C                                |          | 3305            | 3375 | 3450 | K    |

● Thermal resistance Characteristics

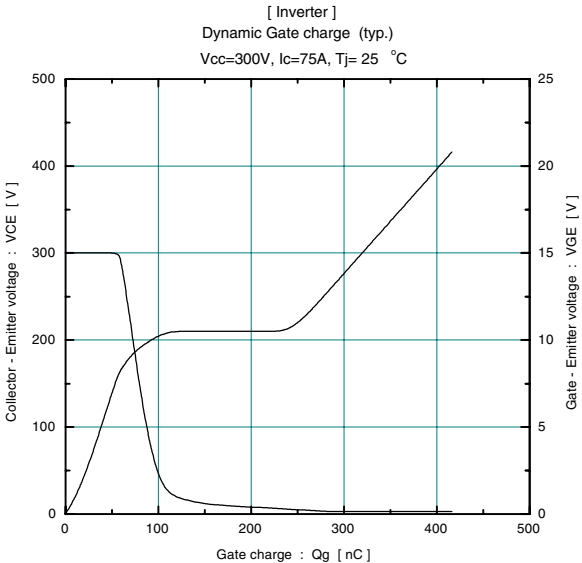
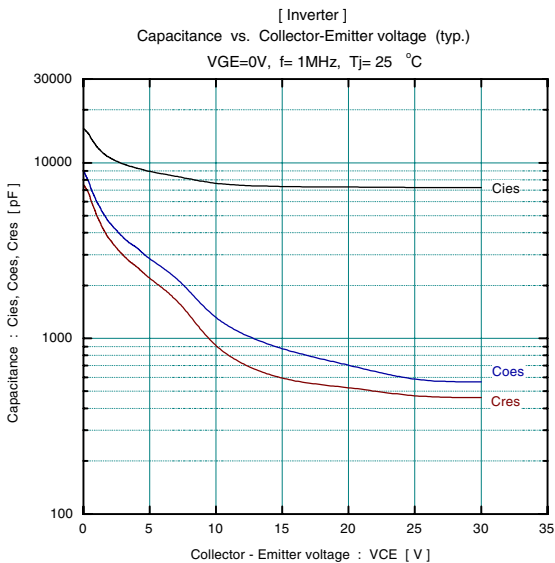
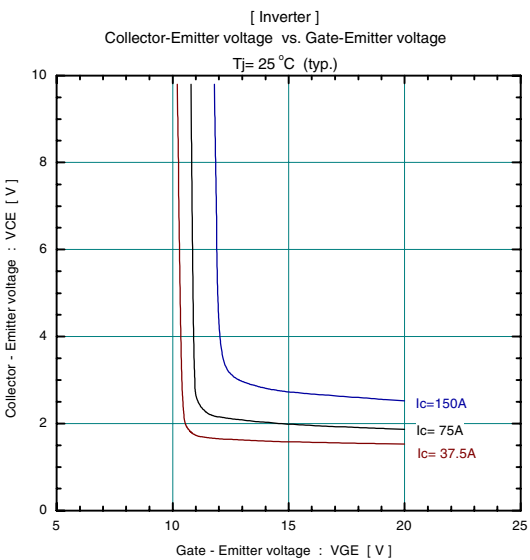
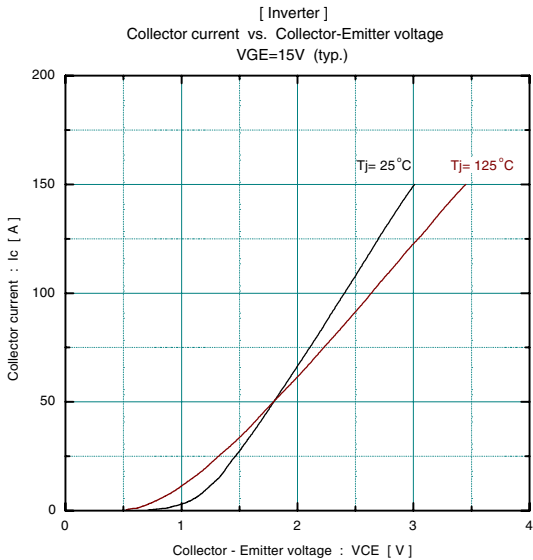
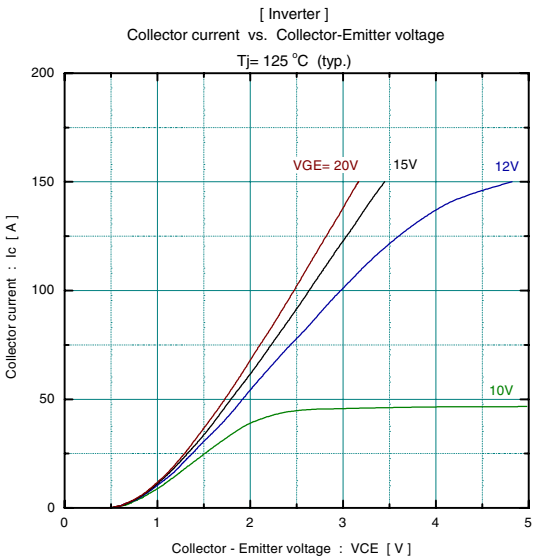
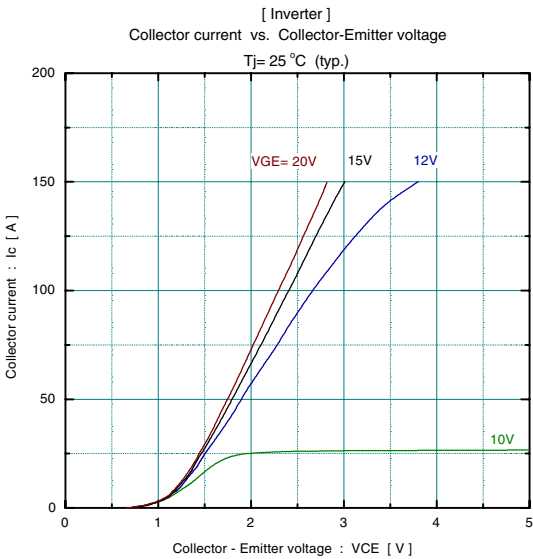
| Item                            | Symbol   | Condition             | Characteristics |      |      | Unit |
|---------------------------------|----------|-----------------------|-----------------|------|------|------|
|                                 |          |                       | Min.            | Typ. | Max. |      |
| Thermal resistance ( 1 device ) | Rth(j-c) | Inverter IGBT         |                 |      | 0.42 | °C/W |
|                                 |          | Inverter FWD          |                 |      | 0.90 |      |
|                                 |          | Brake IGBT            |                 |      | 0.63 |      |
|                                 |          | Converter Diode       |                 |      | 0.70 |      |
| Contact thermal resistance *    | Rth(c-f) | With thermal compound |                 | 0.05 |      |      |

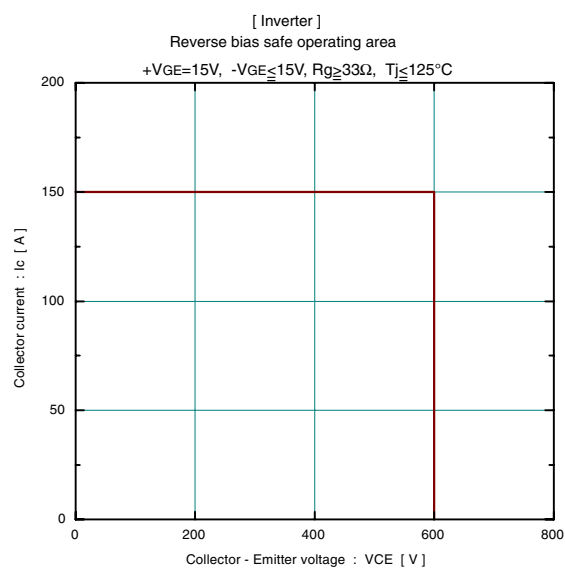
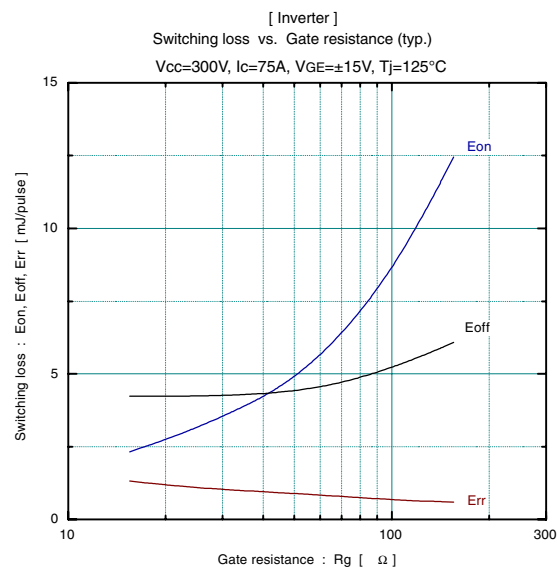
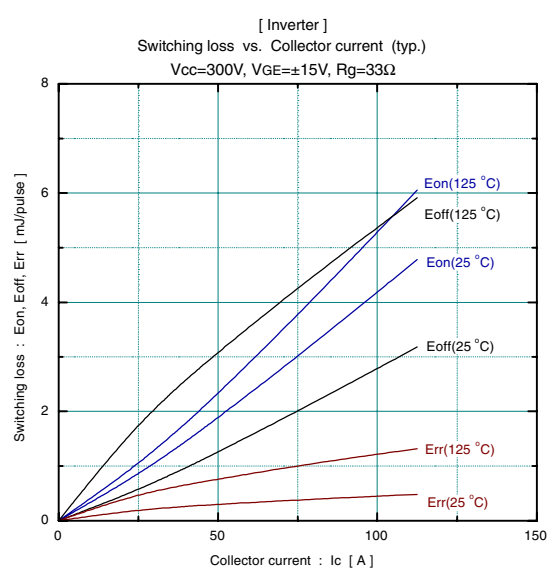
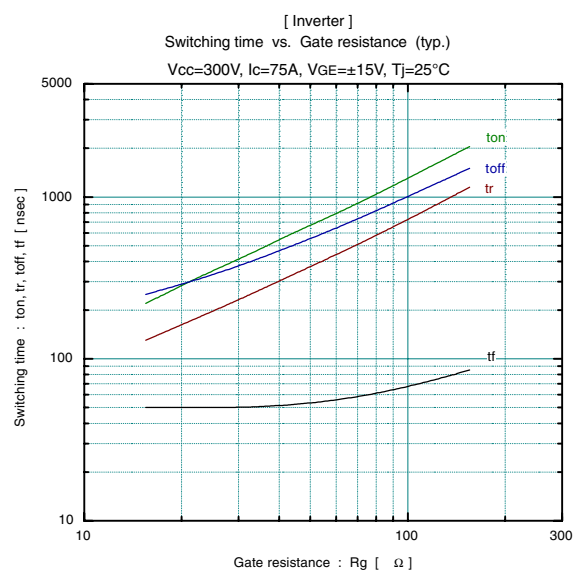
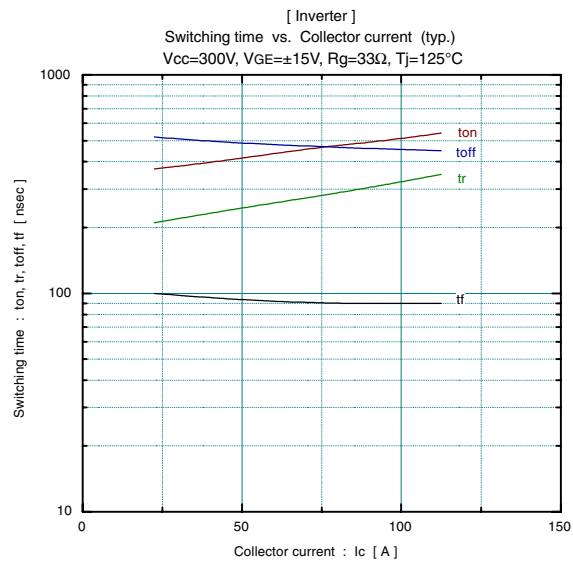
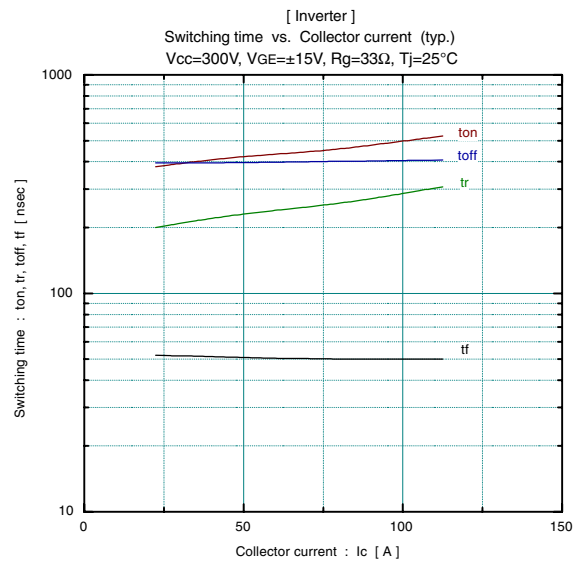
\* This is the value which is defined mounting on the additional cooling fin with thermal compound

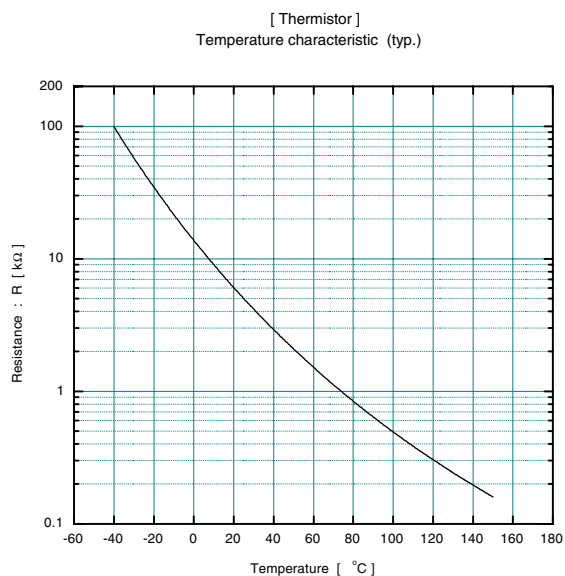
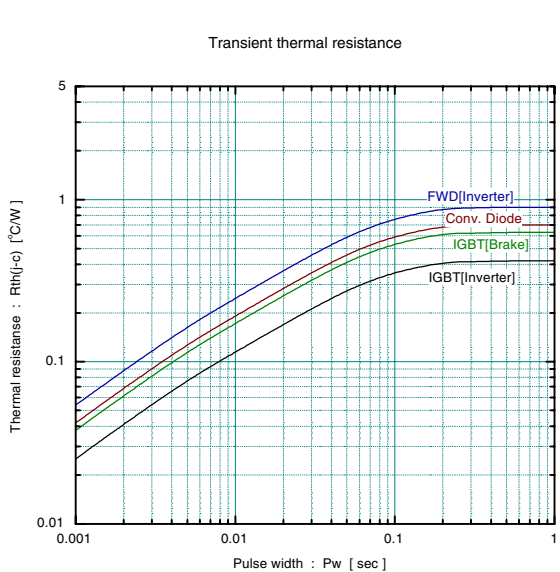
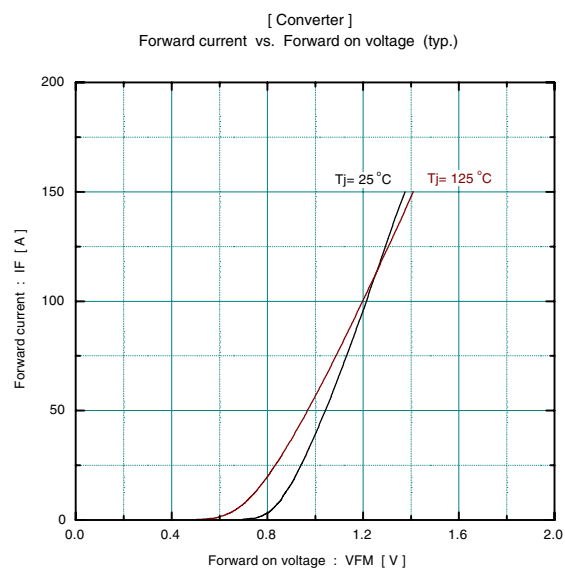
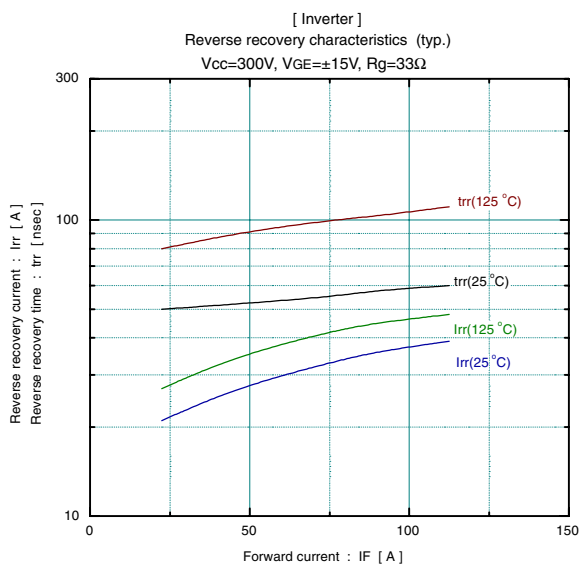
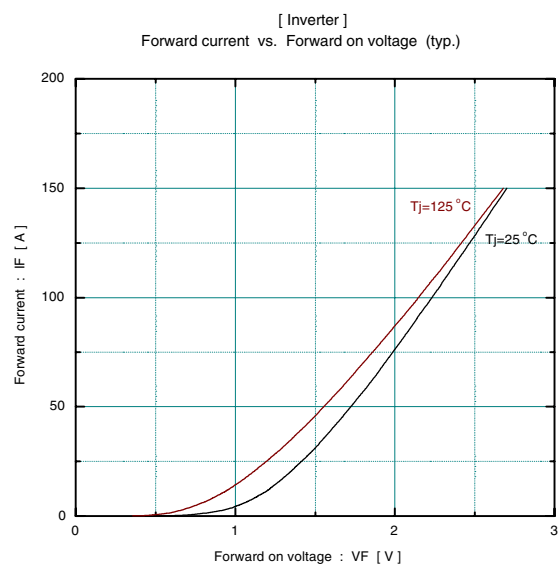
■ Equivalent Circuit Schematic

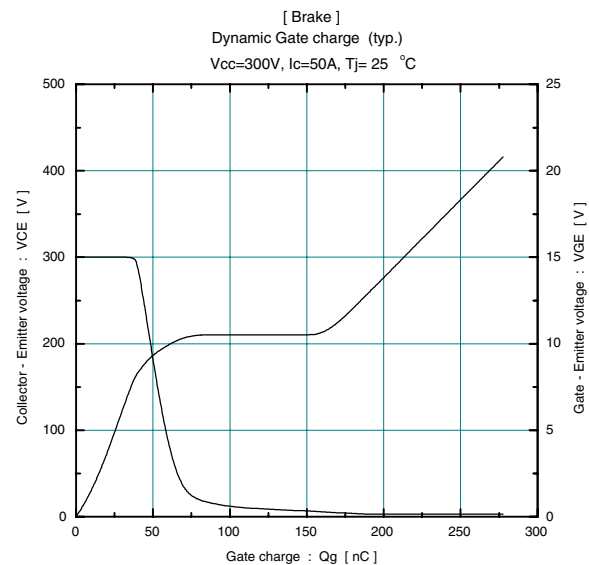
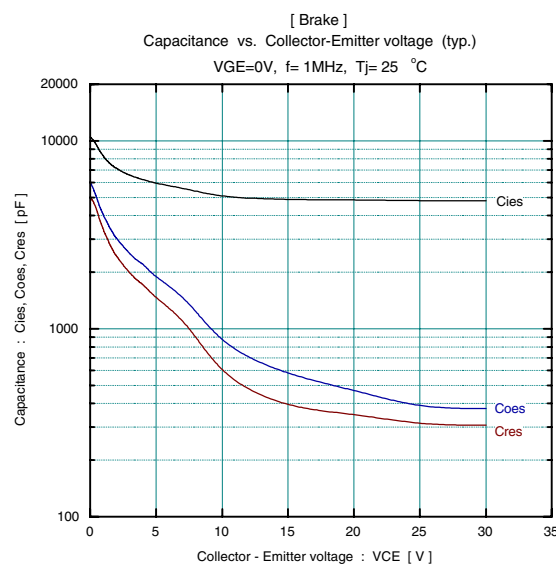
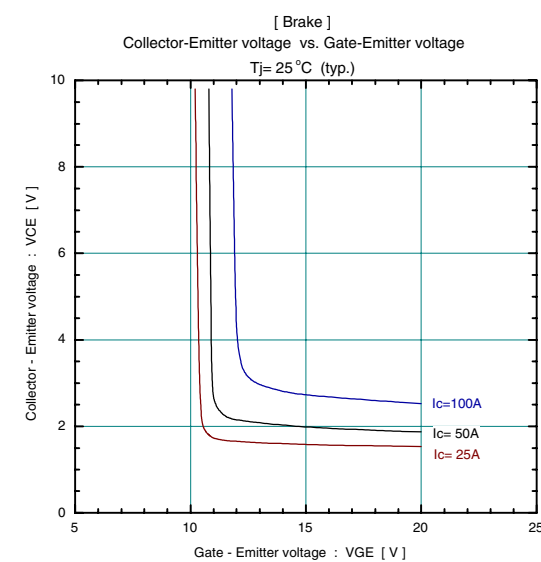
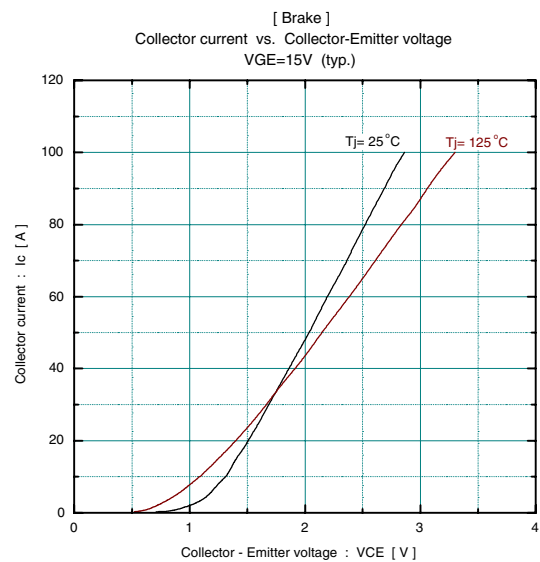
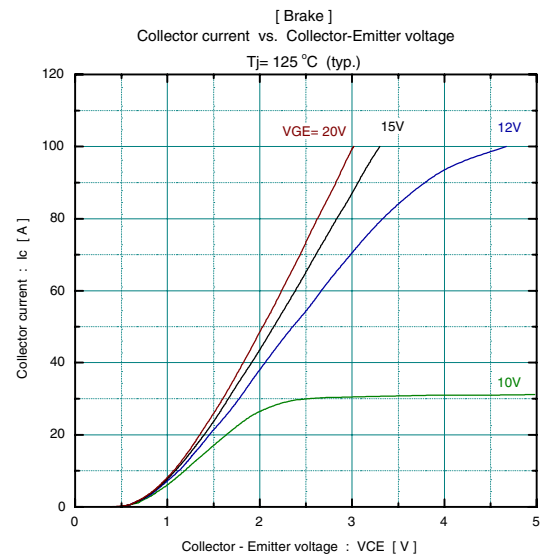
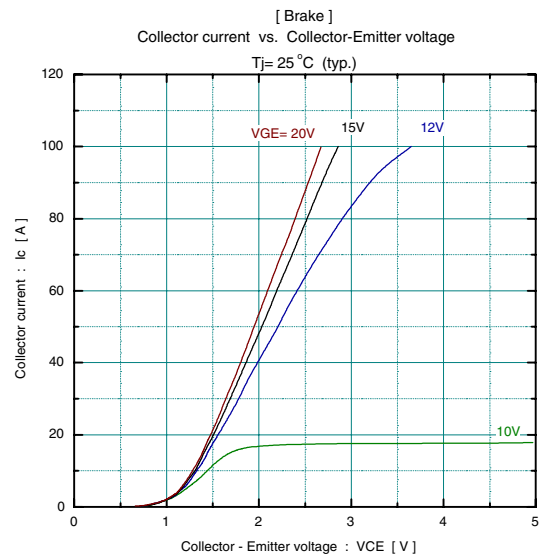


■ Characteristics (Representative)

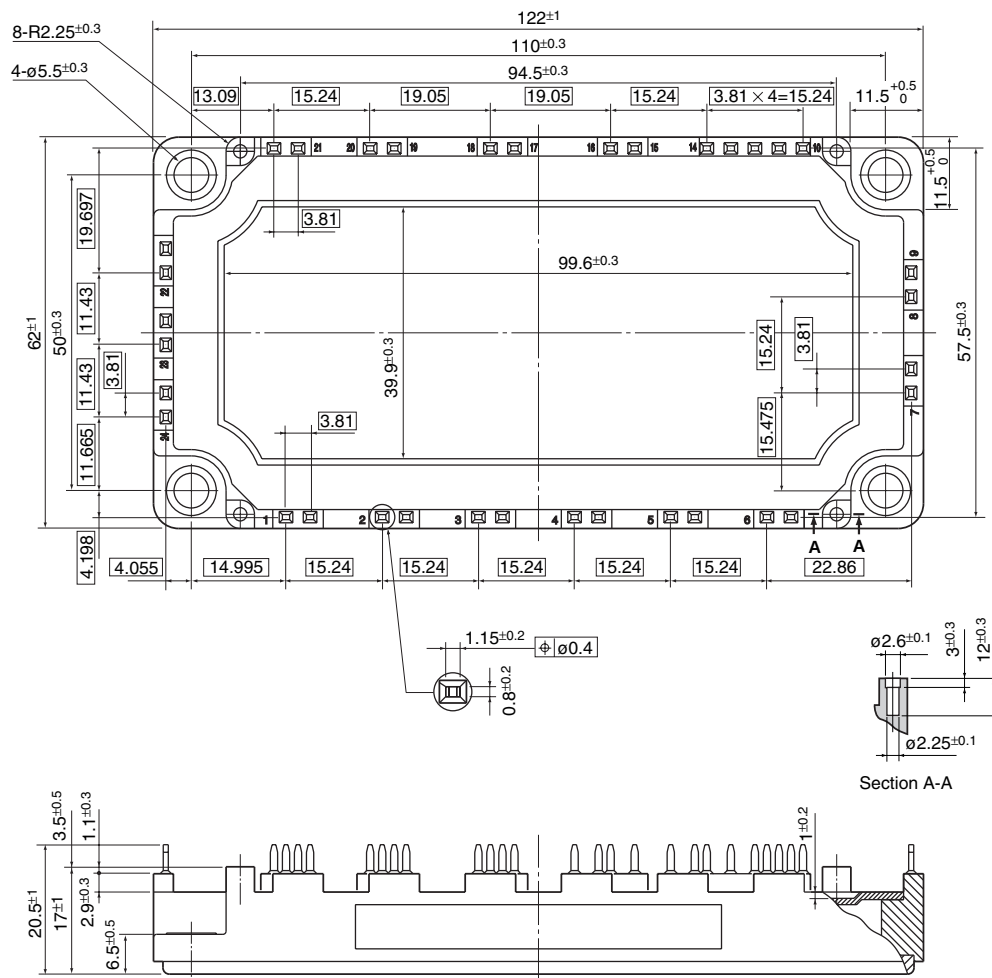








■ Outline Drawings, mm



□ Shows theory dimensions

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