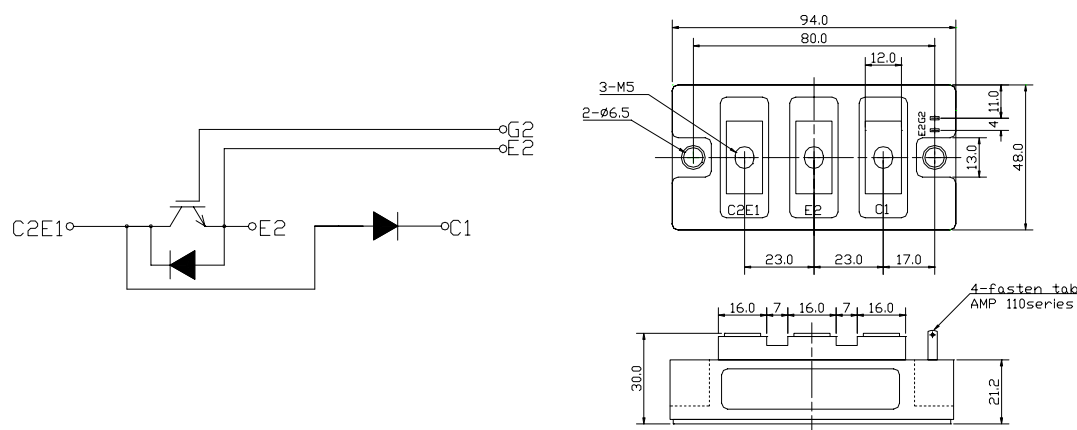


## CIRCUIT

## OUTLINE DRAWING



2- fasten- tab No 110

Dimension(mm)

Approximate Weight : 320g

## MAXIMUM RATINGS (Tc=25°C)

| Item  |                           | Symbol    | PRHMB150B12A | Unit |
|---|---------------------------|-----------|--------------|------|
| Collector-Emitter Voltage                       |                           | $V_{CES}$ | 1200         | V    |
| Gate - Emitter Voltage                          |                           | $V_{GES}$ | +/- 20       | V    |
| Collector Current                               | DC                        | $I_C$     | 150          | A    |
|   | 1 ms                      | $I_{CP}$  | 300          |      |
| Collector Power Dissipation                     |                           | $P_C$     | 730          | W    |
| Junction Temperature Range                      |                           | $T_j$     | -40 to +150  | °C   |
| Storage Temperature Range                       |                           | $T_{stg}$ | -40 to +125  | °C   |
| Isolation Voltage (Terminal to Base AC, 1 min.) |                           | $V_{ISO}$ | 2500         | V    |
| Mounting Torque                                 | Module Base to Heatsink   | $F_{TOR}$ | 3            | N•m  |
|   | Bus Bar to Main Terminals |           | 2            |      |

## ELECTRICAL CHARACTERISTICS (Tc=25°C)

| Characteristic                       |               | Symbol        | Test Condition                  | Min. | Typ.  | Max. | Unit    |
|--------------------------------------|---------------|---------------|---------------------------------|------|-------|------|---------|
| Collector-Emitter Cut-Off Current    |               | $I_{CES}$     | $V_{CE}=1200V, V_{GE}=0V$       | -    | -     | 3.0  | mA      |
| Gate-Emitter Leakage Current         |               | $I_{GES}$     | $V_{GE}=+/- 20V, V_{CE}=0V$     | -    | -     | 1.0  | $\mu A$ |
| Collector-Emitter Saturation Voltage |               | $V_{CE(sat)}$ | $I_C=150A, V_{GE}=15V$          | -    | 1.9   | 2.4  | V       |
| Gate-Emitter Threshold Voltage       |               | $V_{GE(th)}$  | $V_{CE}=5V, I_C=150mA$          | 4.0  | -     | 8.0  | V       |
| Input Capacitance                    |               | $C_{ies}$     | $V_{CE}=10V, V_{GE}=0V, f=1MHz$ | -    | 12600 | -    | pF      |
| Switching Time                       | Rise Time     | $t_r$         | $V_{CC}= 600V$                  | -    | 0.25  | 0.45 | $\mu s$ |
|                                      | Turn-on Time  | $t_{on}$      | $R_L= 4\ ohm$                   | -    | 0.40  | 0.70 |         |
|                                      | Fall Time     | $t_f$         | $R_G= 3.6\ ohm$                 | -    | 0.25  | 0.35 |         |
|                                      | Turn-off Time | $t_{off}$     | $V_{GE}= +/- 15V$               | -    | 0.80  | 1.10 |         |

## FREE WHEELING DIODES RATINGS & CHARACTERISTICS (Tc=25°C)

| Item            | Symbol | Rated Value | Unit |
|-----------------|--------|-------------|------|
| Forward Current | DC     | 150         | A    |
|                 | 1 ms   | 300         |      |

| Characteristic        | Symbol   | Test Condition                            | Min. | Typ. | Max. | Unit    |
|-----------------------|----------|---|------|------|------|---------|
| Peak Forward Voltage  | $V_F$    | $I_F=150A, V_{GE}=0V$                     | -    | 1.9  | 2.4  | V       |
| Reverse Recovery Time | $t_{rr}$ | $I_F=150A, V_{GE}=-10V, di/dt=300A/\mu s$ | -    | 0.2  | 0.3  | $\mu s$ |

## THERMAL CHARACTERISTICS

| Characteristic    |       | Symbol        | Test Condition   | Min. | Typ. | Max. | Unit |
|-------------------|-------|---------------|------------------|------|------|------|------|
| Thermal Impedance | IGBT  | $R_{th(j-c)}$ | Junction to Case | -    | -    | 0.16 | °C/W |
|                   | DIODE |               |                  | -    | -    | 0.32 |      |

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Fig.1- Output Characteristics (Typical)

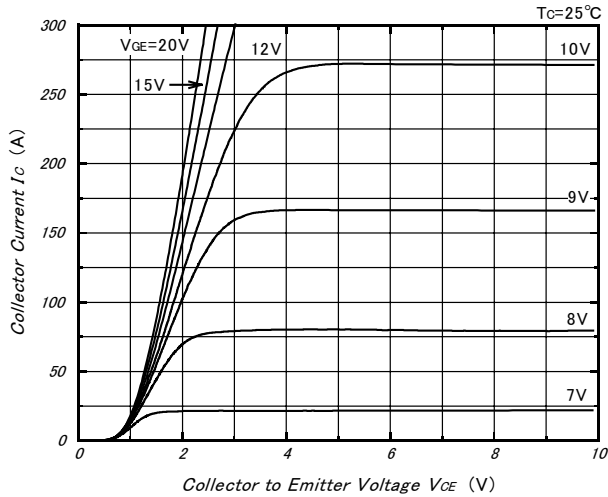


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

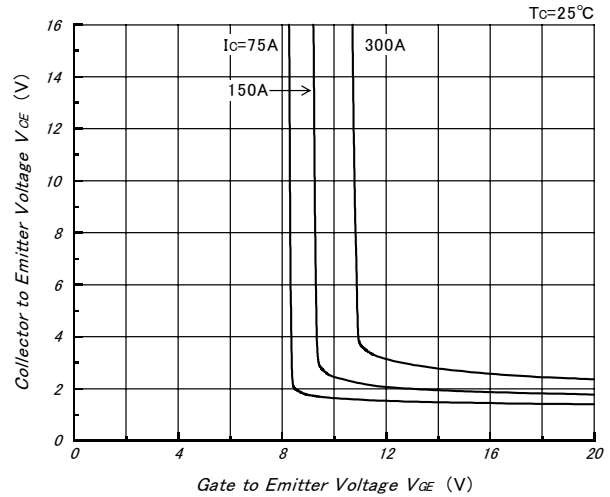


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

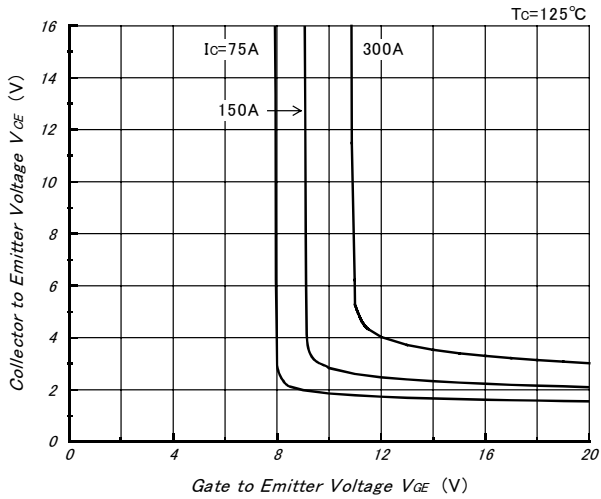


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

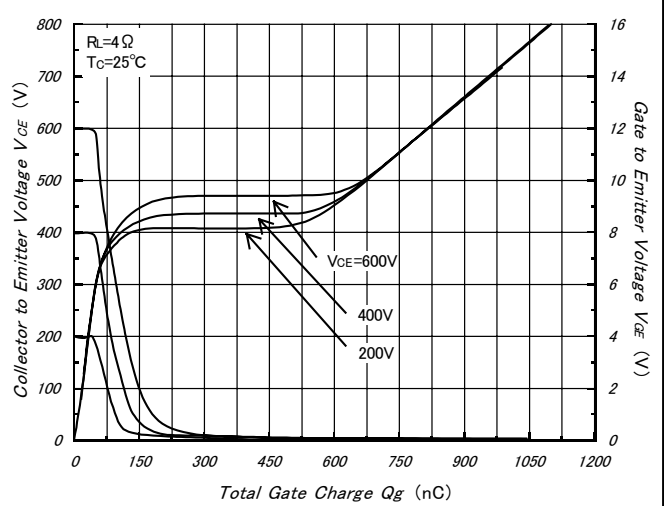


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

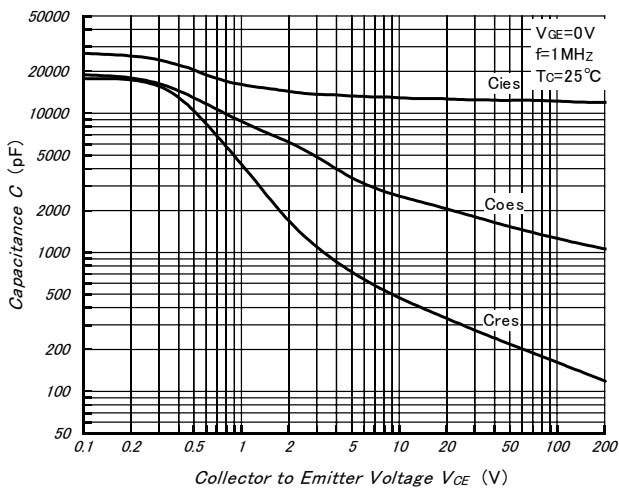
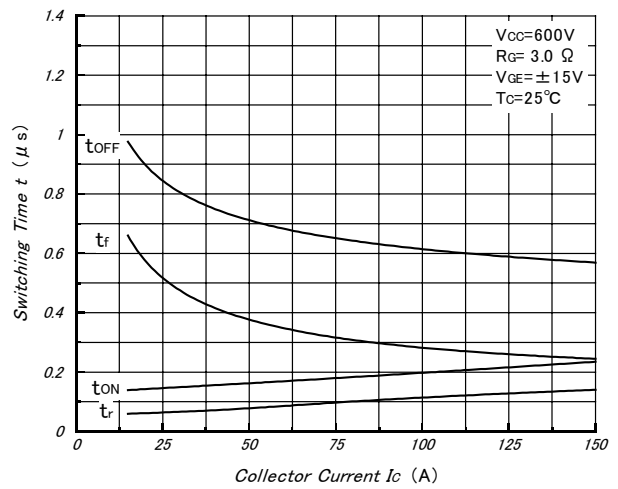


Fig.6- Collector Current vs. Switching Time (Typical)



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Fig.7- Series Gate Impedance vs. Switching Time (Typical)

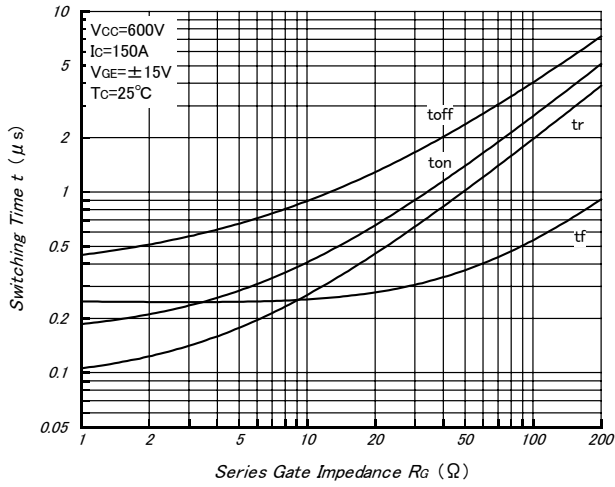


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

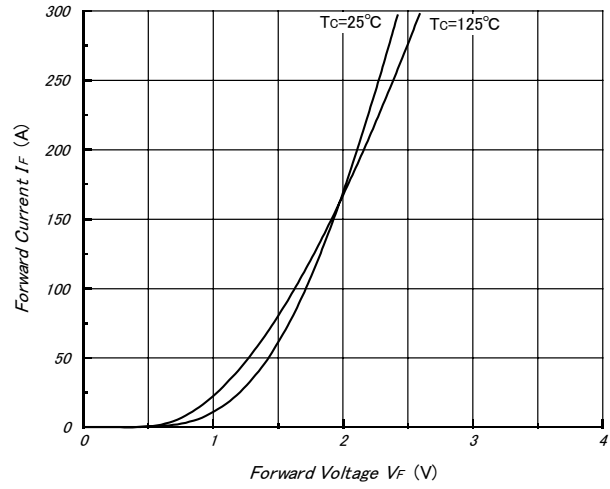


Fig.9- Reverse Recovery Characteristics (Typical)

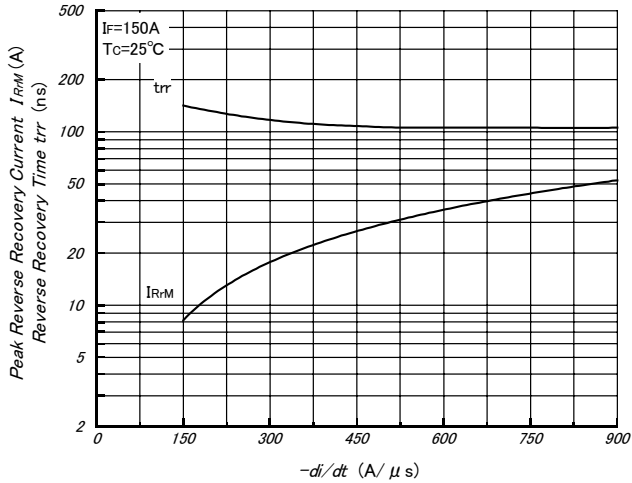


Fig.10- Reverse Bias Safe Operating Area (Typical)

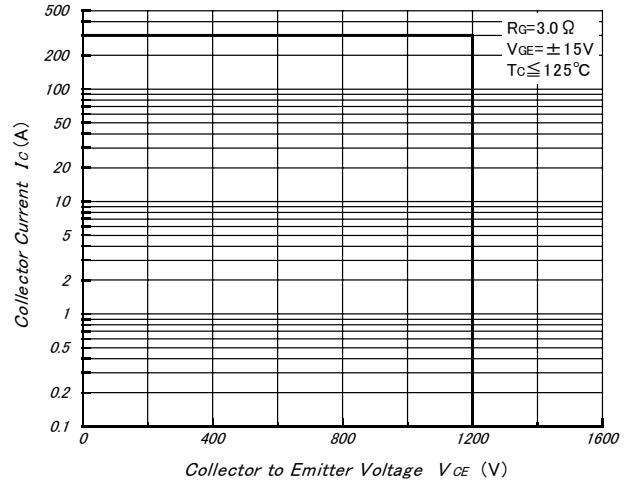


Fig.11- Transient Thermal Impedance

