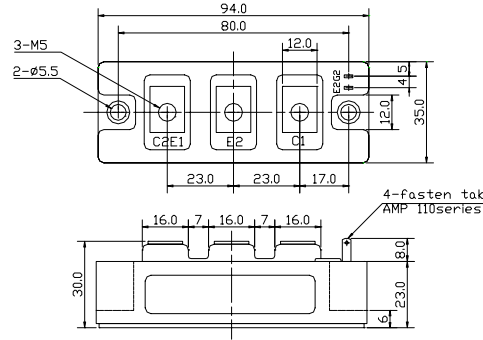
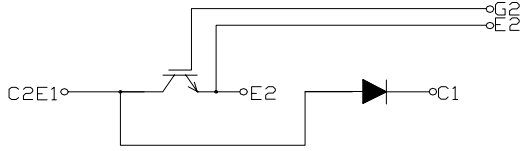


IGBT MODULE Chopper 50A 1200V

PRHMB50B12

CIRCUIT

OUTLINE DRAWING



2- fasten- tab No 110

Dimension(mm)

Approximate Weight : 220g

MAXMUM RATINGS (Tc=25°C)

| Item | Symbol | PRHMB50B12 | Unit |
|--|---------------------------|-------------|------|
| Collector-Emitter Voltage | V_{CES} | 1200 | V |
| Gate - Emitter Voltage | V_{GES} | +/- 20 | V |
| Collector Current | DC | I_C | 50 |
| | 1 ms | I_{CP} | 100 |
| Collector Power Dissipation | P_C | 250 | 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} | 2 |
| | Bus Bar to Main Terminals | | |
| | | | N•m |

ELECTRICAL CHARACTERISTICS (Tc=25°C)

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|---|------|------|------|---------|
| Collector-Emitter Cut-Off Current | I_{CES} | $V_{CE}=1200V, V_{GE}=0V$ | - | - | 1.0 | mA |
| Gate-Emitter Leakage Current | I_{GES} | $V_{GE}=\pm 20V, V_{CE}=0V$ | - | - | 1.0 | μA |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=50A, V_{GE}=15V$ | - | 1.9 | 2.4 | V |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | $V_{CE}=5V, I_C=50mA$ | 4.0 | - | 8.0 | V |
| Input Capacitance | C_{ies} | $V_{CE}=10V, V_{GE}=0V, f=1MHz$ | - | 4200 | - | pF |
| Switching Time | Rise Time | $V_{CC}=600V$ $R_L=12\text{ ohm}$ $R_C=20\text{ ohm}$ $V_{GE}=\pm 15V$ | - | 0.25 | 0.45 | μs |
| | Turn-on Time | | - | 0.40 | 0.70 | |
| | Fall Time | | - | 0.25 | 0.35 | |
| | Turn-off Time | | - | 0.80 | 1.10 | |

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

| Item | Symbol | Rated Value | Unit |
|-----------------|--------|-------------|------|
| Forward Current | DC | I_F | 50 |
| | 1 ms | I_{FM} | 100 |

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|-----------------------|----------|--|------|------|------|---------|
| Peak Forward Voltage | V_F | $I_F=50A, V_{GE}=0V$ | - | 1.9 | 2.4 | V |
| Reverse Recovery Time | t_{rr} | $I_F=50A, V_{GE}=-10V, di/dt=100A/\mu s$ | - | 0.2 | 0.3 | μs |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit | |
|-------------------|--------|----------------|------------------|------|------|------|------|
| Thermal Impedance | IGBT | $R_{th(j-c)}$ | Junction to Case | - | - | 0.43 | °C/W |
| | DIODE | | | - | - | 0.7 | |

PRHMB50B12

Fig.1- Output Characteristics (Typical)

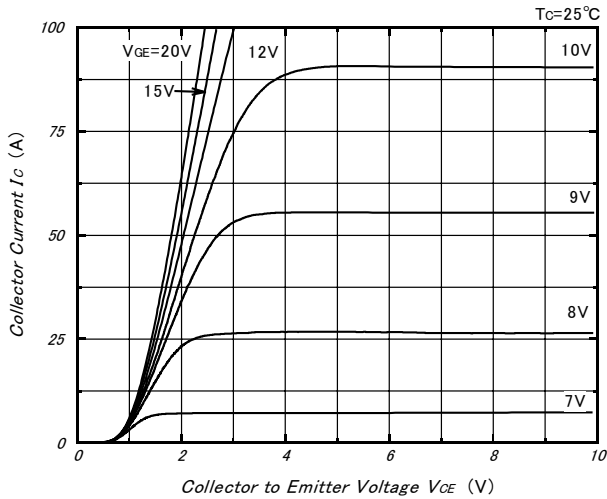


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

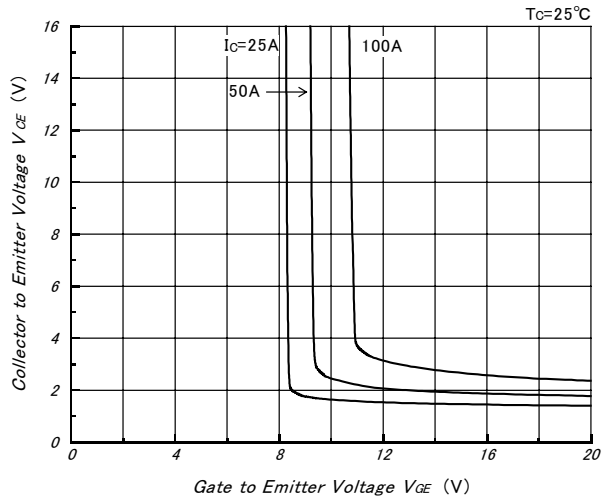


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

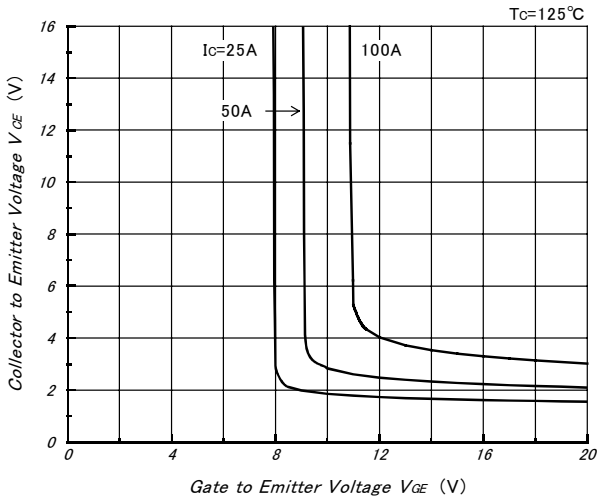


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

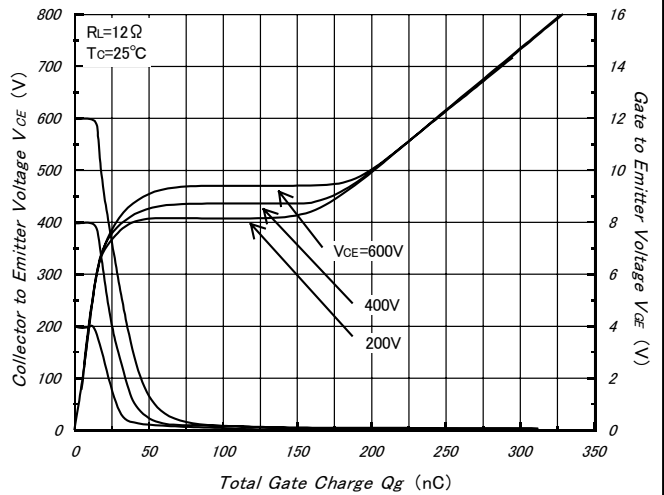


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

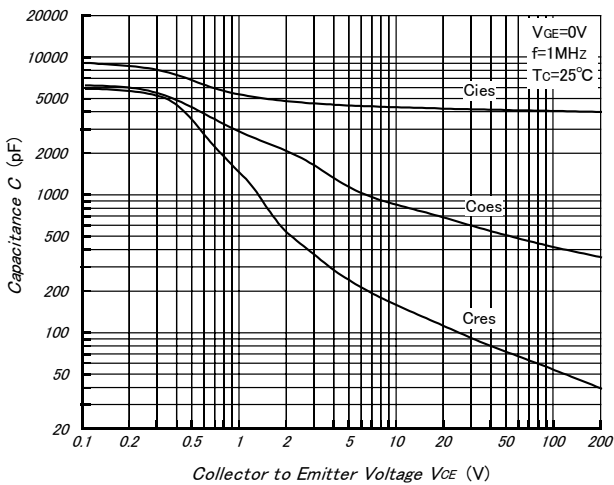
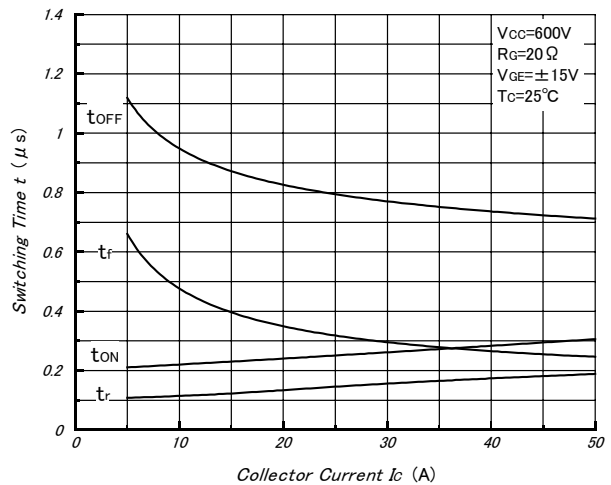


Fig.6- Collector Current vs. Switching Time (Typical)



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

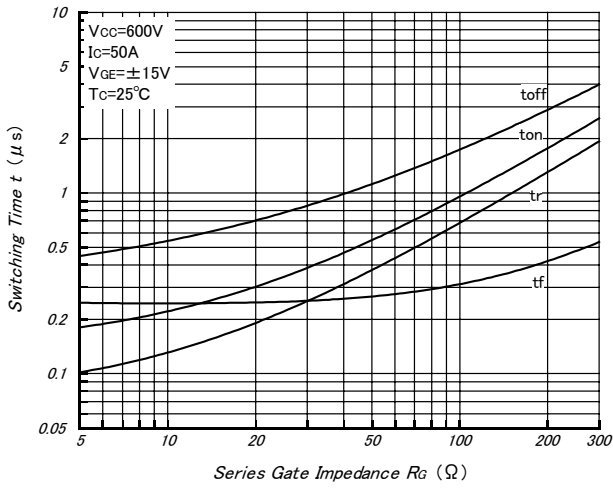


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

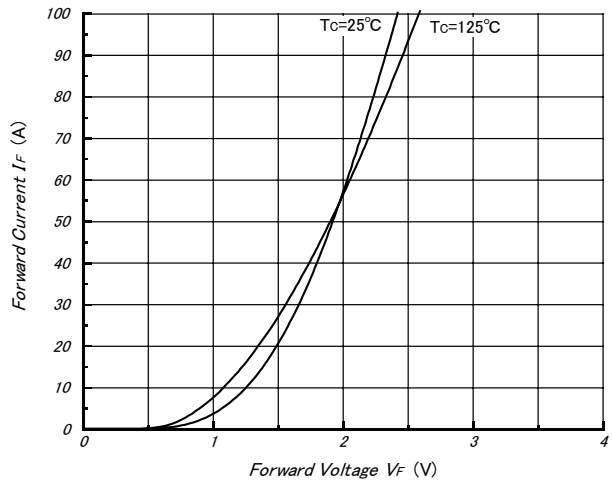


Fig.9- Reverse Recovery Characteristics (Typical)

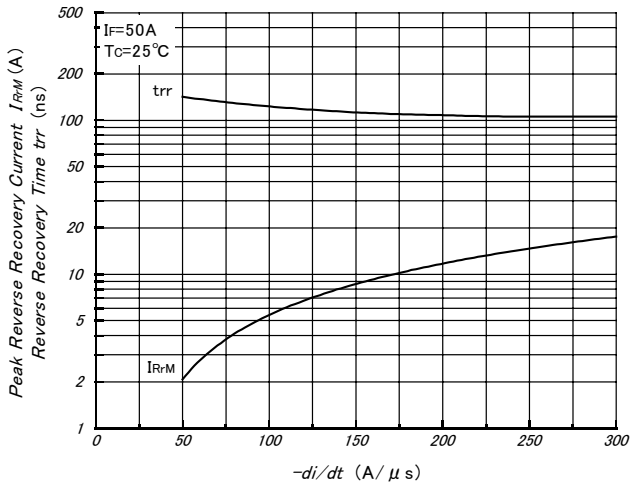


Fig.10- Reverse Bias Safe Operating Area (Typical)

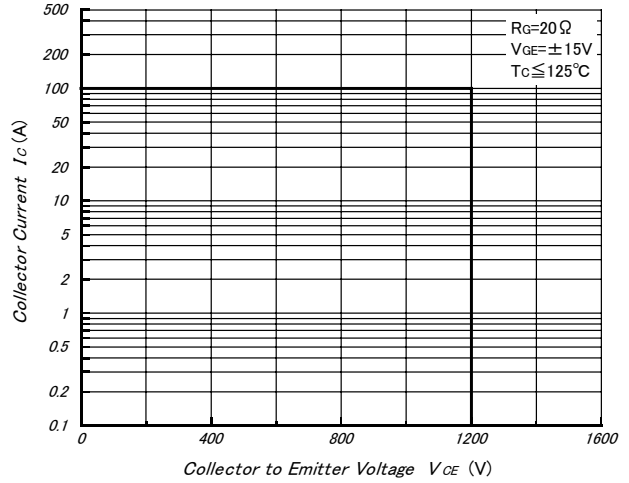


fig11-Transient Thermal Impedance

