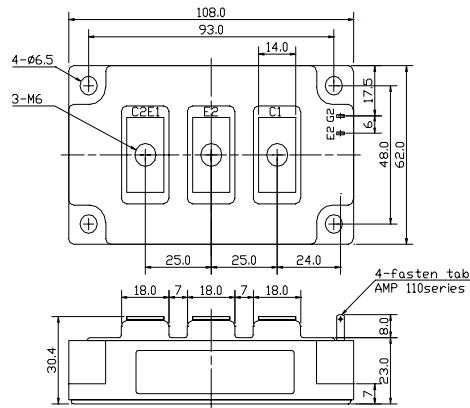
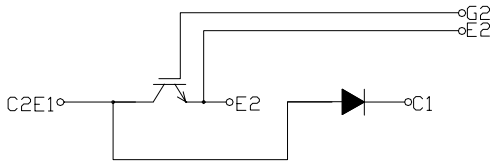


IGBT MODULE Chopper 400A 1200V

PRHMB400B12

CIRCUIT

OUTLINE DRAWING



2- fasten- tab No 110

Dimension(mm)

Approximate Weight : 450g

MAXMUM RATINGS (Tc=25°C)

| Item | Symbol | PRHMB400B12 | Unit |
|--|---------------------------|------------------|------|
| Collector-Emitter Voltage | V _{CEs} | 1200 | V |
| Gate - Emitter Voltage | V _{GEs} | +/- 20 | V |
| Collector Current | DC | I _C | 400 |
| | 1 ms | I _{CP} | 800 |
| Collector Power Dissipation | P _C | 1900 | 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 |
| | 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 | - | - | 8.0 | mA |
| Gate-Emitter Leakage Current | I _{GES} | V _{GE} =+/- 20V, V _{CE} =0V | - | - | 1.0 | μA |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | I _C =400A, V _{GE} =15V | - | 1.9 | 2.4 | V |
| Gate-Emitter Threshold Voltage | V _{GE(th)} | V _{CE} =5V, I _C =400mA | 4.0 | - | 8.0 | V |
| Input Capacitance | C _{ies} | V _{CE} =10V, V _{GE} =0V, f=1MHz | - | 33000 | - | pF |
| Switching Time | Rise Time | V _{CC} = 600V R _L = 1.5 ohm R _G = 1.0 ohm V _{GE} = +/- 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 | 400 |
| | 1 ms | I _{FM} | 800 |
| | | | A |

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|-----------------------|-----------------|--|------|------|------|------|
| Peak Forward Voltage | V _F | I _F =400A, V _{GE} =0V | - | 1.9 | 2.4 | V |
| Reverse Recovery Time | t _{rr} | I _F =400A, V _{GE} =-10V, di/dt=800A/μs | - | 0.20 | 0.30 | μs |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|-------------------|--------|------------------|------|------|-------|------|
| Thermal Impedance | IGBT | Junction to Case | - | - | 0.065 | °C/W |
| | DIODE | | - | - | 0.12 | |

PRHMB400B12

Fig.1- Output Characteristics (Typical)

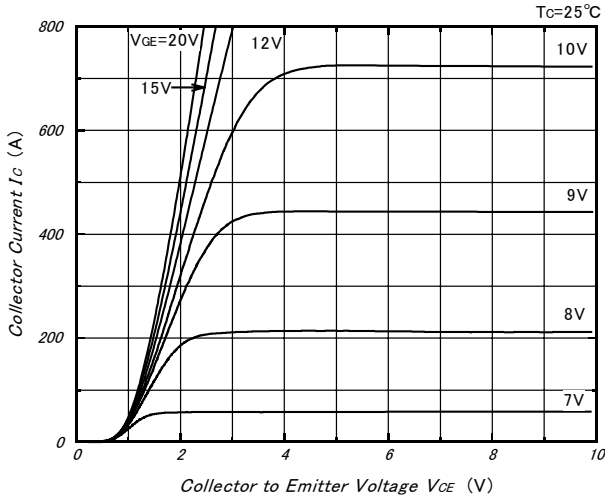


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

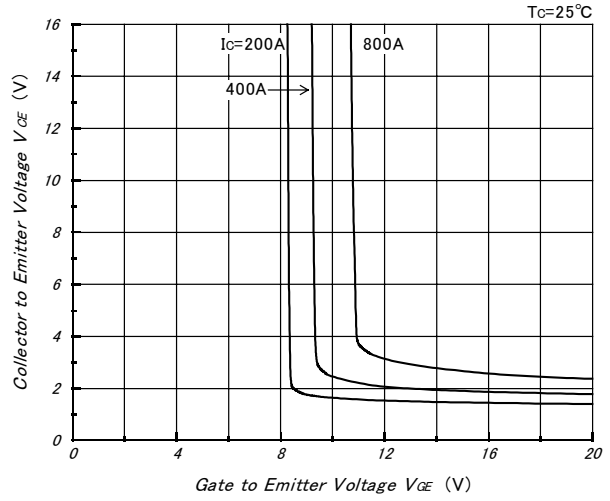


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

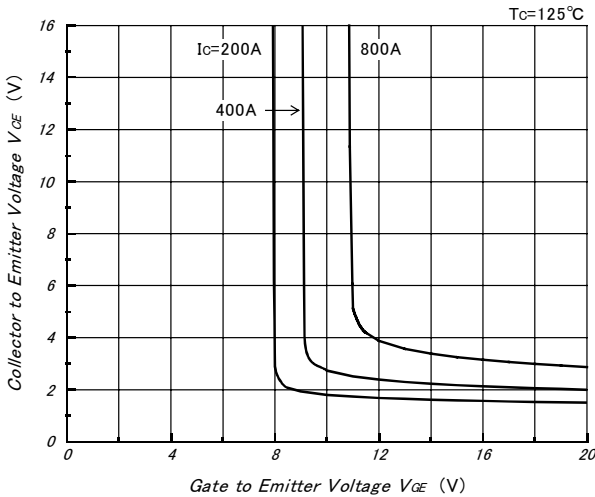


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

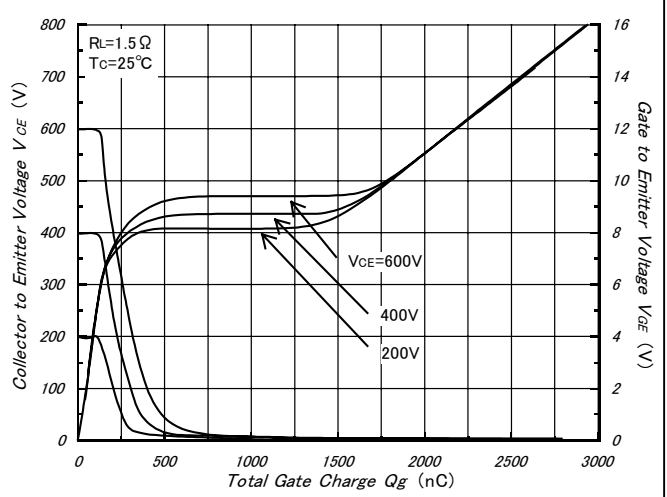


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

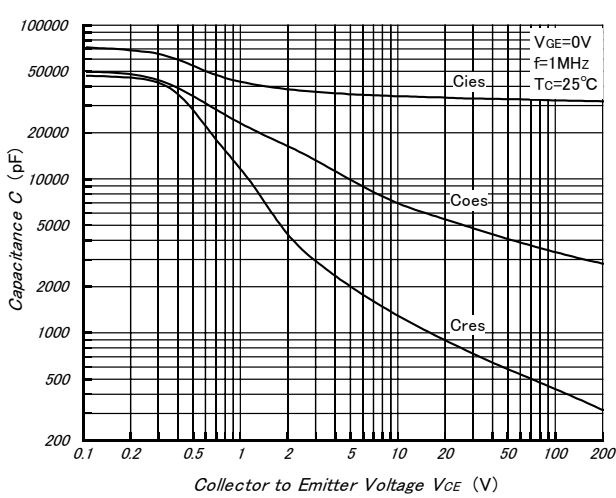
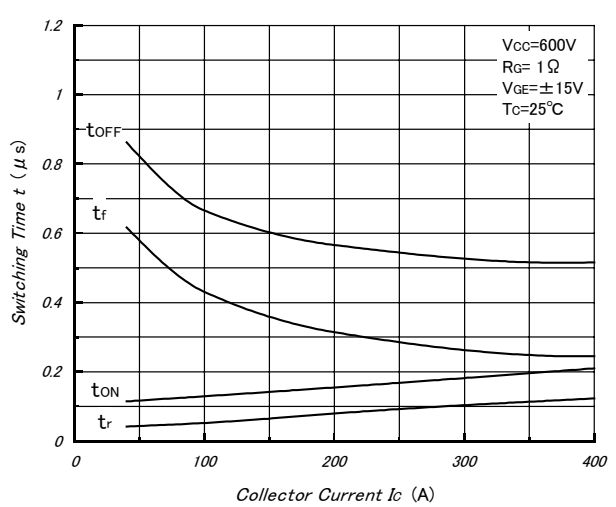


Fig.6- Collector Current vs. Switching Time (Typical)



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

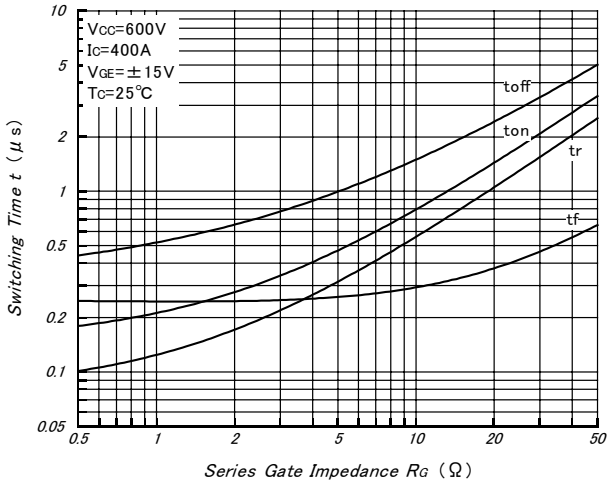


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

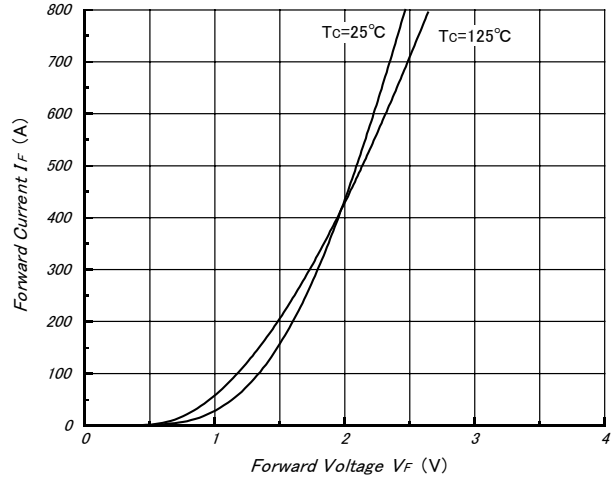


Fig.9- Reverse Recovery Characteristics (Typical)

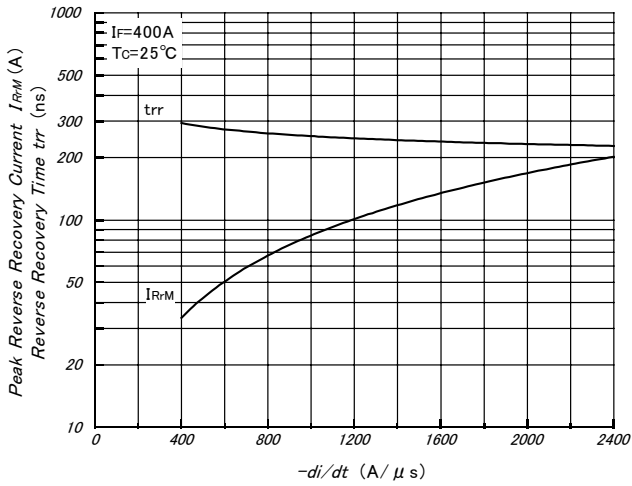


Fig.10- Reverse Bias Safe Operating Area (Typical)

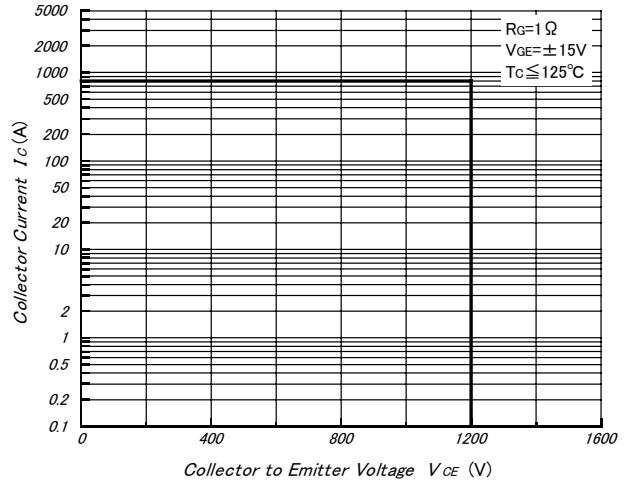


Fig.11- Transient Thermal Impedance

