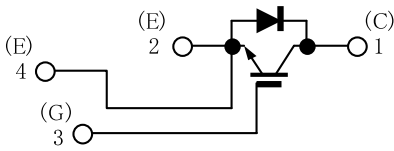


IGBT

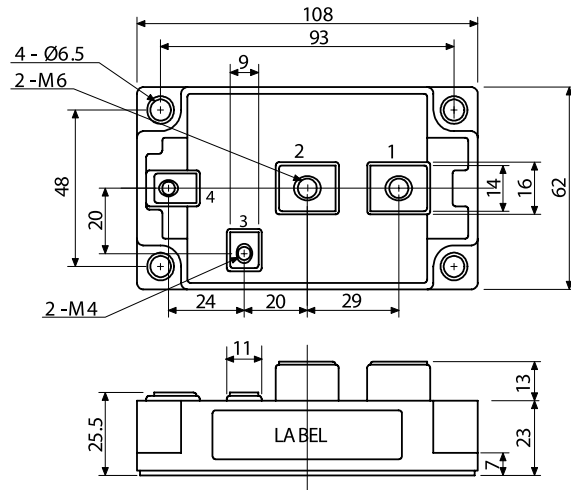
200 A 1200 V

PHMB200BS12

■回路図 CIRCUIT



■外形寸法図 OUTLINE DRAWING (単位 Dimension : mm)



■最大定格 Maximum Ratings (Tc=25°C)

| 項目 Item | 記号 Symbol | 定格値 Rated Value | 単位 Unit | |
|---|-----------------------------------|--------------------|--------------------|------------|
| コレクタ・エミッタ間電圧 Collector-Emitter Voltage | V _{CEs} | 1200 | V | |
| ゲート・エミッタ間電圧 Gate-Emitter Voltage | V _{GES} | ± 20 | V | |
| コレクタ電流 Collector Current | DC | I _c | A | |
| | 1ms | I _{CP} | | 400 |
| コレクタ損失 Collector Power Dissipation | P _c | 1200 | W | |
| 接合温度 Junction Temperature Range | T _j | - 40 ~ + 150 | °C | |
| 保存温度 Storage Temperature Range | T _{stg} | - 40 ~ + 125 | °C | |
| 絶縁耐圧(端子-ベース間, AC 1 分間) Isolation Voltage (Terminal to Base, AC 1 min.) | V _{iso} | 2500 | V _(RMS) | |
| 締付トルク Mounting Torque | ベース取付部 Module Base to Heatsink | 3 (30.6) | N・m (kgf・cm) | |
| | 端子部 Busbar to Terminal | M4 | | 1.4 (14.3) |
| | M6 | 3 (30.6) | | |

■電気的特性 Electrical Characteristics (Tc=25°C)

| 項目 Characteristic | 記号 Symbol | 条件 Test Conditions | 最小 Min. | 標準 Typ. | 最大 Max. | 単位 Unit |
|--|---------------------------|---|------------|------------|------------|------------|
| コレクタ遮断電流 Collector-Emitter Cut-Off Current | I _{CEs} | V _{CE} = 1200V, V _{GE} = 0V | — | — | 2.0 | mA |
| ゲート漏れ電流 Gate-Emitter Leakage Current | I _{GES} | V _{GE} = ± 20V, V _{CE} = 0V | — | — | 1.0 | μA |
| コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage | V _{CE(sat)} | I _c = 200A, V _{GE} = 15V | — | 2.3 | 2.7 | V |
| ゲートしきい値電圧 Gate-Emitter Threshold Voltage | V _{GE(th)} | V _{CE} = 5V, I _c = 200mA | 4.0 | — | 8.0 | V |
| 入力容量 Input Capacitance | C _{ies} | V _{CE} = 10V, V _{GE} = 0V, f = 1MHz | — | 12600 | — | pF |
| スイッチング時間 Switching Time | 上昇時間 Rise Time | V _{CC} = 600V R _L = 2.0Ω R _G = 7.5Ω V _{GE} = ± 15V | — | 0.25 | 0.45 | μs |
| | ターン・オン時間 Turn-On Time | | — | 0.40 | 0.70 | |
| | 下降時間 Fall Time | | — | 0.25 | 0.35 | |
| | ターン・オフ時間 Turn-Off Time | | — | 0.80 | 1.10 | |

■フリーホイーリングダイオードの特性 Free Wheeling Diode Ratings & Characteristics (Tc=25°C)

| 項目 Item | | 記号 Symbol | 定格値 Rated Value | 単位 Unit |
|------------------------|-----|-----------------|--------------------|------------|
| 順電流 Forward Current | DC | I _F | 200 | A |
| | 1ms | I _{FM} | 400 | |

| 項目 Characteristic | 記号 Symbol | 条件 Test Conditions | 最小 Min. | 標準 Typ. | 最大 Max. | 単位 Unit |
|--------------------------------|-----------------|--|------------|------------|------------|------------|
| 順電圧 Peak Forward Voltage | V _F | I _F = 200A, V _{GE} = 0V | — | 2.2 | 2.6 | V |
| 逆回復時間 Reverse Recovery Time | t _{rr} | I _F = 200A, V _{GE} = -10V di/dt = 400A/μs | — | 0.2 | 0.3 | μs |

■熱的特性 Thermal Characteristics

| 項目 Characteristic | 記号 Symbol | 条件 Test Conditions | 最小 Min. | 標準 Typ. | 最大 Max. | 単位 Unit |
|--------------------------|--------------|---|------------|------------|------------|------------|
| 熱抵抗 Thermal Impedance | IGBT | T _c 測定点チップ直下 Junction to Case | — | — | 0.104 | °C/W |
| | Diode | | — | — | 0.214 | |

■定格・特性曲線

Fig. 1 Output Characteristics (Typical)

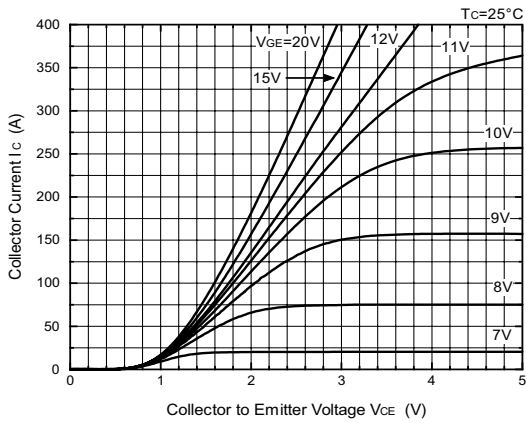


Fig. 2 Output Characteristics (Typical)

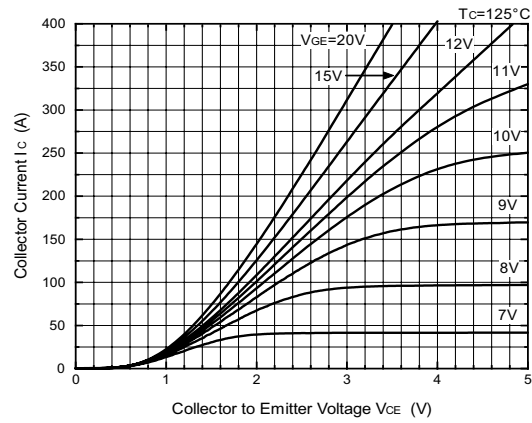


Fig. 3 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

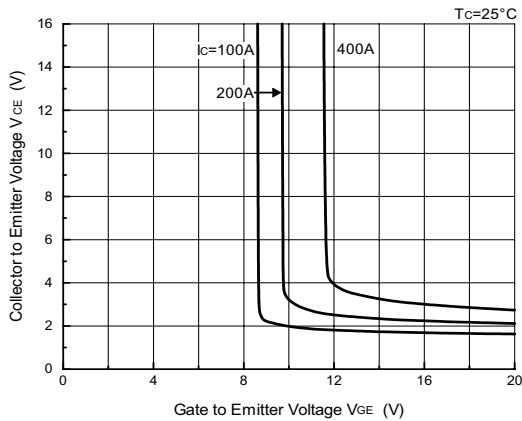


Fig. 4 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

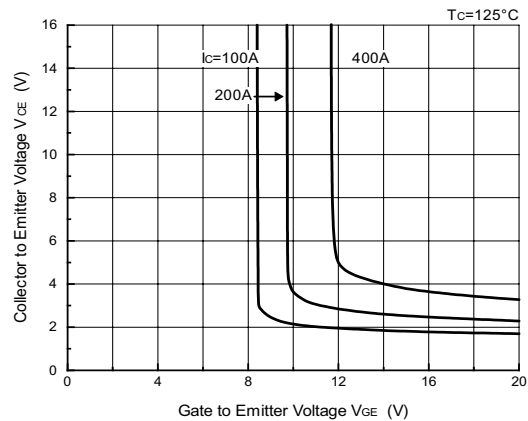


Fig. 5 Gate Charge vs. Collector to Emitter Voltage (Typical)

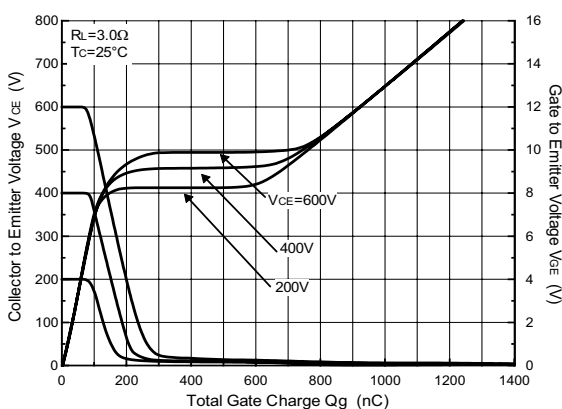


Fig. 6 Capacitance vs. Collector to Emitter Voltage (Typical)

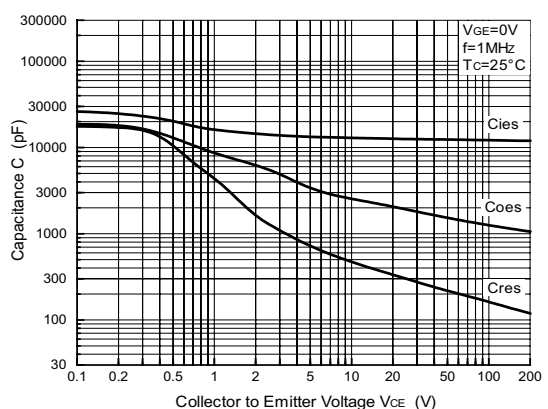


Fig. 7 Collector Current vs. Switching Time (Typical)

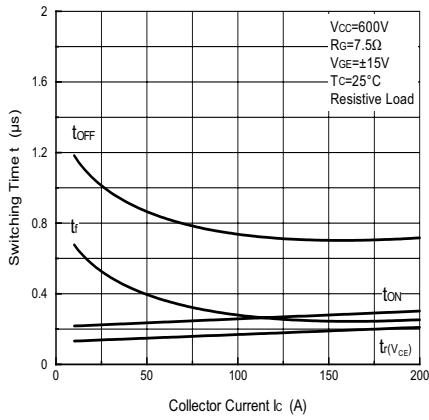


Fig. 8 Series Gate Impedance vs. Switching Time (Typical)

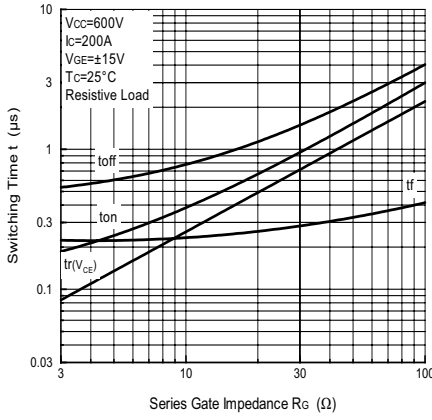


Fig. 9 Collector Current vs. Switching Time

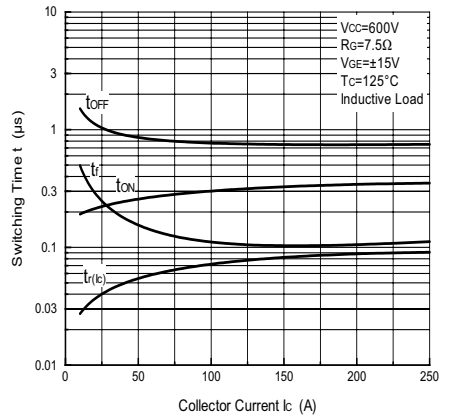


Fig. 10 Series Gate Impedance vs. Switching Time

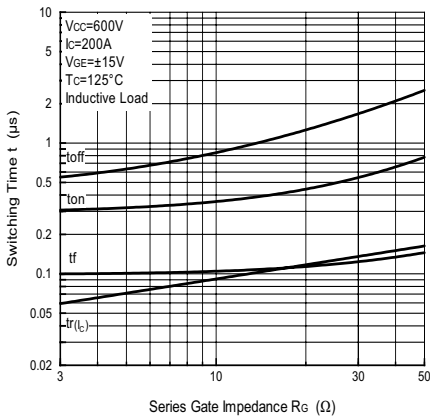


Fig. 11 Collector Current vs. Switching Loss

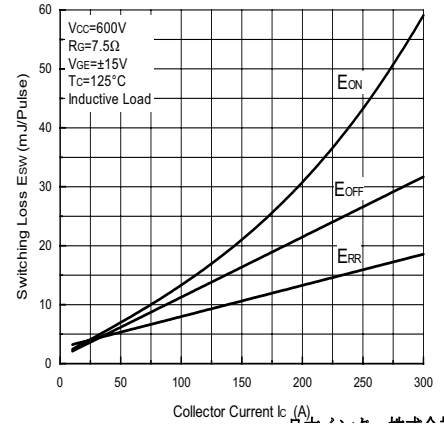


Fig. 12 Series Gate Impedance vs. Switching Loss

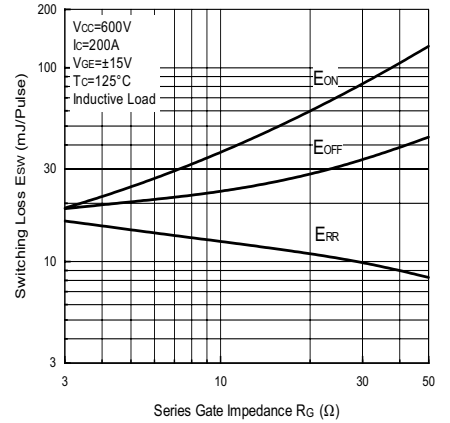


Fig. 13 Forward Characteristics of Free Wheeling Diode (Typical)

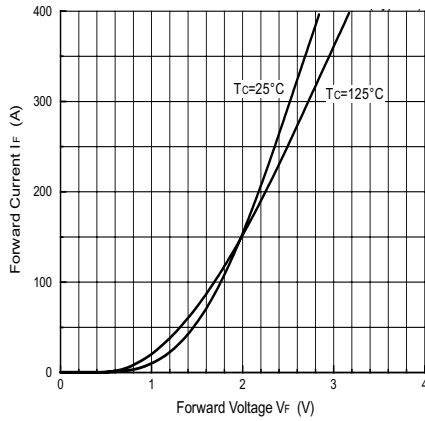


Fig. 14 Reverse Recovery Characteristics (Typical)

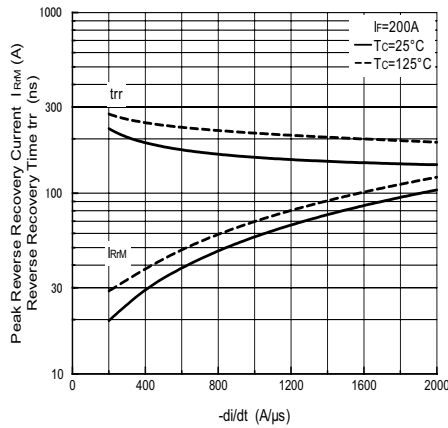


Fig. 15 Reverse Bias Safe Operating Area

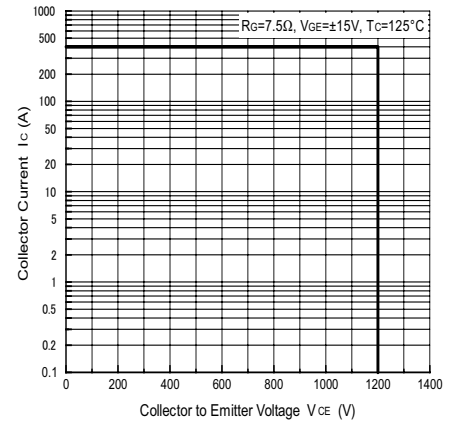
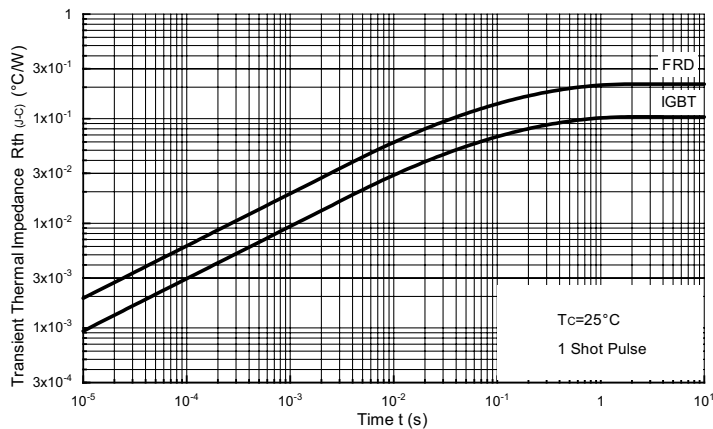


Fig. 16 Transient Thermal Impedance



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