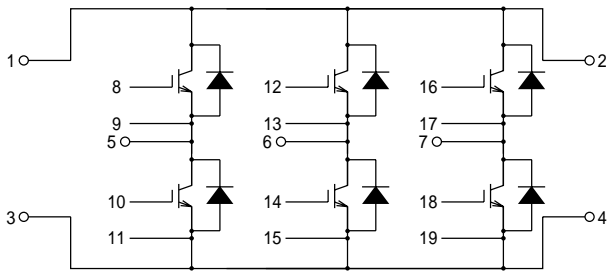


IGBT

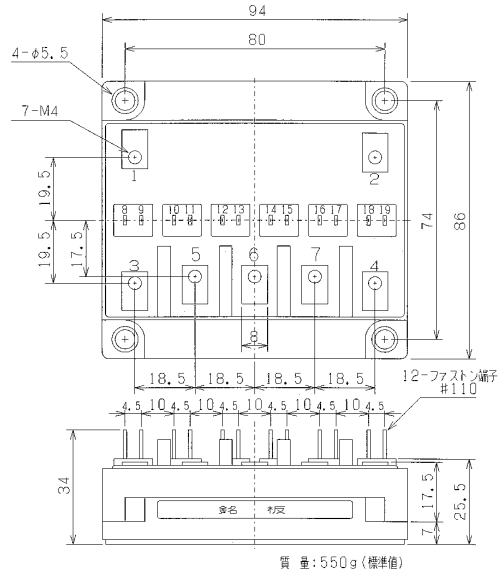
150 A 600 V

PTMB150A6

回路図 CIRCUIT



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



最大定格 Maximum Ratings (Tc = 25 )

| 項目<br>Item   | 記号<br>Symbol                      | 定格値<br>Rated Value | 単位<br>Unit        |
|--|-----------------------------------|--------------------|-------------------|
| コレクタ・エミッタ間電圧<br>Collector-Emitter Voltage                                    | V <sub>CEs</sub>                  | 600                | V                 |
| ゲート・エミッタ間電圧<br>Gate-Emitter Voltage  | V <sub>GES</sub>                  | ± 20               | V                 |
| コレクタ電流<br>Collector Current  | DC                                | I <sub>c</sub>     | A                 |
|  | 1ms                               | I <sub>cP</sub>    |                   |
| コレクタ損失<br>Collector Power Dissipation  | P <sub>c</sub>                    | 560                | W                 |
| 接合温度<br>Junction Temperature Range   | T <sub>j</sub>                    | - 40 ~ + 150       |                   |
| 保存温度<br>Storage Temperature Range  | T <sub>stg</sub>                  | - 40 ~ + 125       |                   |
| 絶縁耐圧 端子 - ベース間, AC 1 分間<br>Isolation Voltage ( Terminal to Base, AC 1 min. ) | V <sub>iso</sub>                  | 2500               | V (RMS)           |
| 締付トルク<br>Mounting Torque   | ベース取付部<br>Module Base to Heatsink | F <sub>tor</sub>   | N・m<br>( kgf・cm ) |
|  | 端子部<br>Busbar to Terminal         |                    |                   |

電気的特性 Electrical Characteristics ( Tc = 25 )

| 項目<br>Characteristic                                   | 記号<br>Symbol              | 条件<br>Test Conditions   | 最小<br>Min. | 標準<br>Typ. | 最大<br>Max. | 単位<br>Unit |
|--|---------------------------|---|------------|------------|------------|------------|
| コレクタ遮断電流<br>Collector-Emitter Cut-Off Current          | I <sub>CEs</sub>          | V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0V                            |            |            | 2.0        | mA         |
| ゲート漏れ電流<br>Gate-Emitter Leakage Current                | I <sub>GES</sub>          | V <sub>GE</sub> = ± 20V, V <sub>CE</sub> = 0V                           |            |            | 500        | nA         |
| コレクタ・エミッタ間飽和電圧<br>Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub>      | I <sub>c</sub> = 150A, V <sub>GE</sub> = 15V                            |            | 2.1        | 2.6        | V          |
| ゲートしきい値電圧<br>Gate-Emitter Threshold Voltage            | V <sub>GE(th)</sub>       | V <sub>CE</sub> = 5V, I <sub>c</sub> = 150mA                            | 4.0        |            | 8.0        | V          |
| 入力容量<br>Input Capacitance                              | C <sub>ies</sub>          | V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0V, f = 1MHz                   |            | 15000      |            | pF         |
| スイッチング時間<br>Switching Time                             | 上昇時間<br>Rise Time         | V <sub>CC</sub> = 300V<br>RL = 2<br>Re = 5.1<br>V <sub>GE</sub> = ± 15V |            | 0.15       | 0.3        | μs         |
|  | ターン・オン時間<br>Turn-On Time  |   |            | 0.25       | 0.4        |            |
|  | 下降時間<br>Fall Time         |   |            | 0.2        | 0.35       |            |
|  | ターン・オフ時間<br>Turn-Off Time |   |            | 0.45       | 0.7        |            |

IGBTモジュール

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

| 項目<br>Item             |     | 記号<br>Symbol    | 定格値<br>Rated Value | 単位<br>Unit |
|------------------------|-----|-----------------|--------------------|------------|
| 順電流<br>Forward Current | DC  | I <sub>F</sub>  | 150                | A          |
|                        | 1ms | I <sub>FM</sub> | 300                |            |

| 項目<br>Characteristic           | 記号<br>Symbol    | 条件<br>Test Conditions  | 最小<br>Min. | 標準<br>Typ. | 最大<br>Max. | 単位<br>Unit |
|--------------------------------|-----------------|--|------------|------------|------------|------------|
| 順電圧<br>Peak Forward Voltage    | V <sub>F</sub>  | I <sub>F</sub> = 150A, V <sub>GE</sub> = 0V                      |            | 1.9        | 2.4        | V          |
| 逆回復時間<br>Reverse Recovery Time | t <sub>rr</sub> | I <sub>F</sub> = 150A, V <sub>GE</sub> = -10V<br>di/dt = 150A/μs |            | 0.15       | 0.25       | μs         |

## 熱的特性 Thermal Characteristics

| 項目<br>Characteristic     | 記号<br>Symbol | 条件<br>Test Conditions          | 最小<br>Min. | 標準<br>Typ. | 最大<br>Max. | 単位<br>Unit |
|--------------------------|--------------|--------------------------------|------------|------------|------------|------------|
| 熱抵抗<br>Thermal Impedance | IGBT         | 接合部 - ケース間<br>Junction to Case |            |            | 0.22       | /W         |
|                          | Diode        |                                |            |            | 0.45       |            |

定格・特性曲線

Fig. 1 Output Characteristics (Typical)

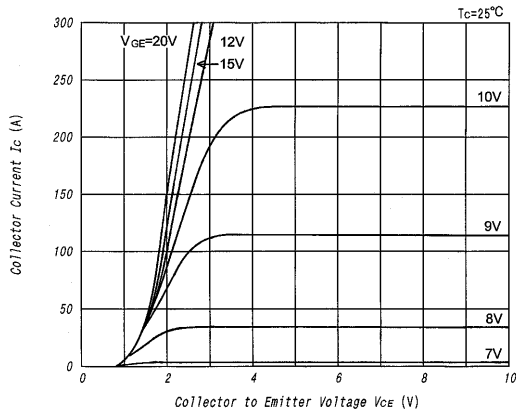


Fig. 2 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

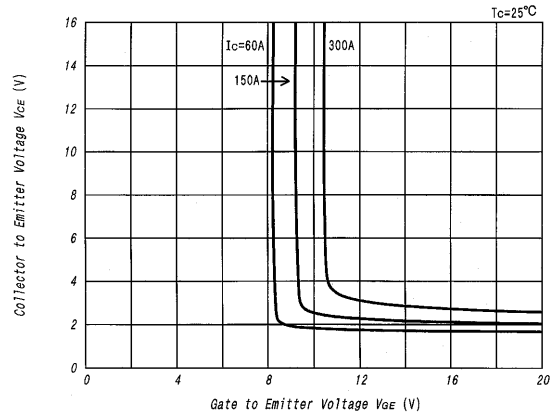


Fig. 3 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

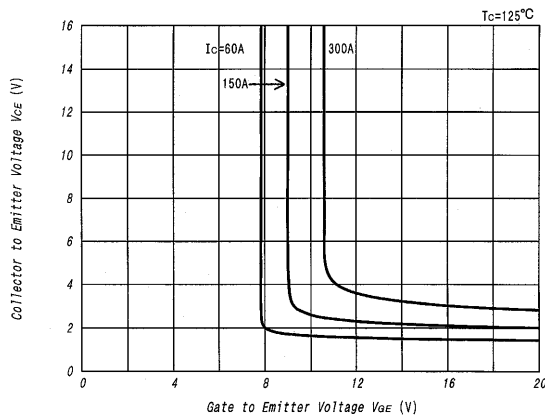


Fig. 4 Gate Charge vs. Collector to Emitter Voltage (Typical)

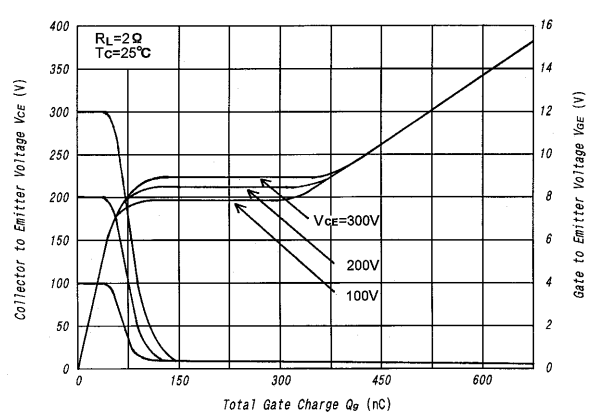


Fig. 5 Capacitance vs. Collector to Emitter Voltage (Typical)

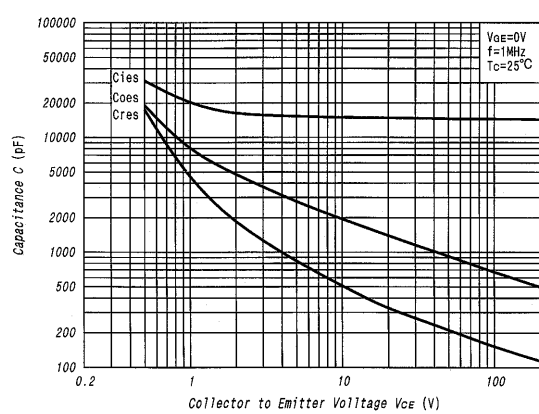


Fig. 6 Collector Current vs. Switching Time (Typical)

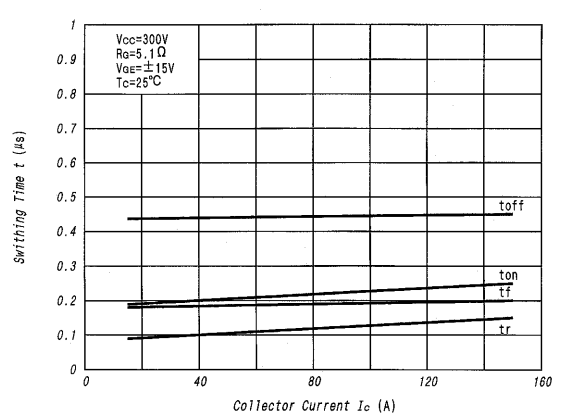


Fig. 7 Series Gate Impedance vs. Switching Time (Typical)

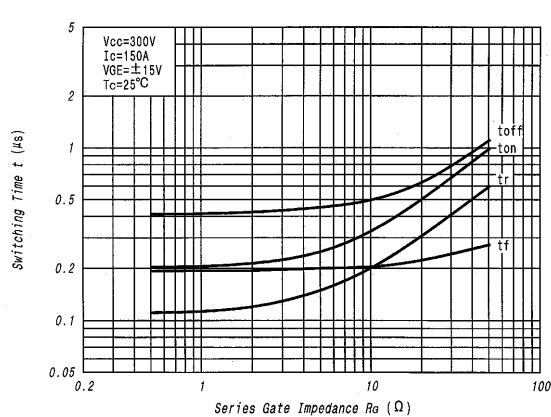


Fig. 8 Forward Characteristics of Free Wheeling Diode (Typical)

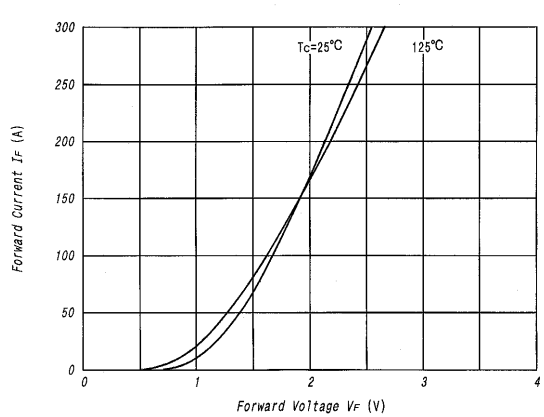


Fig. 9 Reverse Recovery Capacitance (Typical)

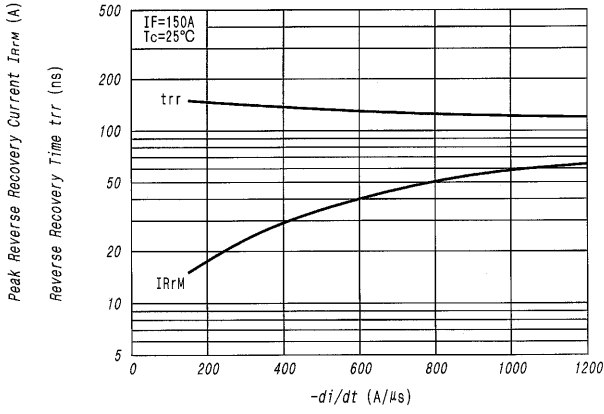


Fig. 10 Reverse Bias Safe Operating Area

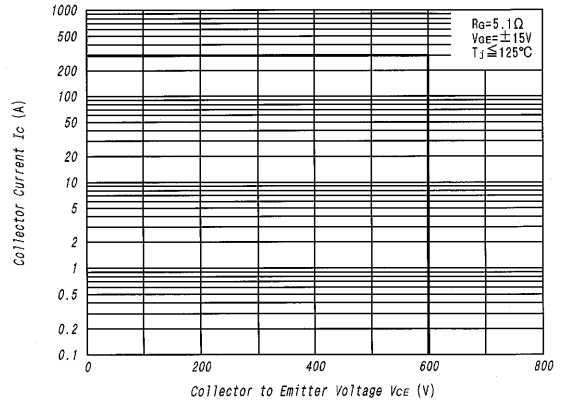


Fig. 11 Transient Thermal Impedance

