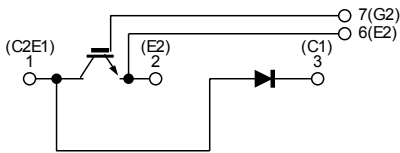
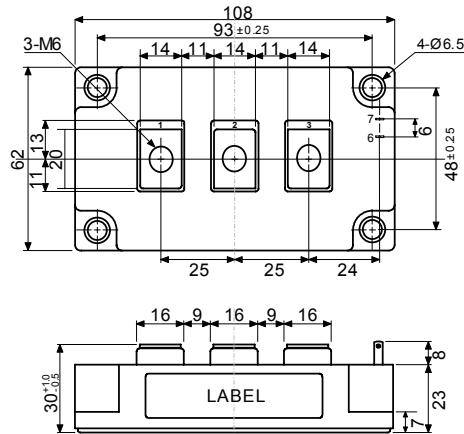


□ 回路図 : CIRCUIT



□ 外形寸法図 : OUTLINE DRAWING



Dimension: [mm]

□ 最大定格 : MAXIMUM RATINGS (T<sub>c</sub> = 25°C)

| Item                                                     | Symbol           | Rated Value           | 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> = 400  | A                  |
|                                                          | 1ms              | I <sub>CP</sub> = 800 |                    |
| コレクタ損失<br>Collector Power Dissipation                    | P <sub>C</sub>   | 1470                  | W                  |
| 接合温度<br>Junction Temperature Range                       | T <sub>j</sub>   | -40 ~ +150            | °C                 |
| 保存温度<br>Storage Temperature Range                        | T <sub>stg</sub> | -40 ~ +125            | °C                 |
| 絶縁耐圧(Terminal to Base AC, 1 minute)<br>Isolation Voltage | V <sub>ISO</sub> | 2,500                 | V <sub>(RMS)</sub> |
| 締め付けトルク<br>Mounting Torque                               | F <sub>tor</sub> | 3 (30.6)              | N·m<br>(kgf·cm)    |

□ 電気的特性 : ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25°C)

| Characteristic                                         | Symbol                | Test Condition                                                                                      | Min. | Typ.   | Max. | 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                                                        | —    | —      | 1.0  | 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                                                        | —    | —      | 1.0  | μA   |
| 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> = 400A, 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> = 400mA                                                        | 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                                               | —    | 20,000 | —    | pF   |
| スイッチング時間<br>Switching Time                             | 上昇時間 Rise Time        | V <sub>CC</sub> = 300V<br>R <sub>L</sub> = 0.75Ω<br>R <sub>G</sub> = 3.0Ω<br>V <sub>GE</sub> = ±15V | —    | 0.15   | 0.35 | μs   |
|                                                        | ターンオン時間 Turn-on Time  |                                                                                                     | —    | 0.30   | 0.85 |      |
|                                                        | 下降時間 Fall Time        |                                                                                                     | —    | 0.10   | 0.25 |      |
|                                                        | ターンオフ時間 Turn-off Time |                                                                                                     | —    | 0.40   | 0.80 |      |

□ フリーホイールダイオードの特性 : FREE WHEELING DIODE RATINGS & CHARACTERISTICS (T<sub>c</sub> = 25°C)

| Item                   | Symbol | Rated Value           | Unit |
|------------------------|--------|-----------------------|------|
| 順電流<br>Forward Current | DC     | I <sub>F</sub> = 400  | A    |
|                        | 1ms    | I <sub>FM</sub> = 800 |      |

| Characteristic                 | Symbol          | Test Condition                                                   | Min. | Typ. | Max. | Unit |
|--------------------------------|-----------------|------------------------------------------------------------------|------|------|------|------|
| 順電圧<br>Peak Forward Voltage    | V <sub>F</sub>  | I <sub>F</sub> = 400A, 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> = 400A, V <sub>GE</sub> = -10V<br>di/dt = 800A/μs | —    | 0.15 | 0.25 | μs   |

□ 熱的特性 : THERMAL CHARACTERISTICS

| Characteristic           | Symbol | Test Condition                                | Min. | Typ. | Max.  | Unit |
|--------------------------|--------|-----------------------------------------------|------|------|-------|------|
| 熱抵抗<br>Thermal Impedance | IGBT   | Junction to Case<br>(T <sub>c</sub> 測定点チップ直下) | —    | —    | 0.085 | °C/W |
|                          | Diode  |                                               | —    | —    | 0.20  |      |

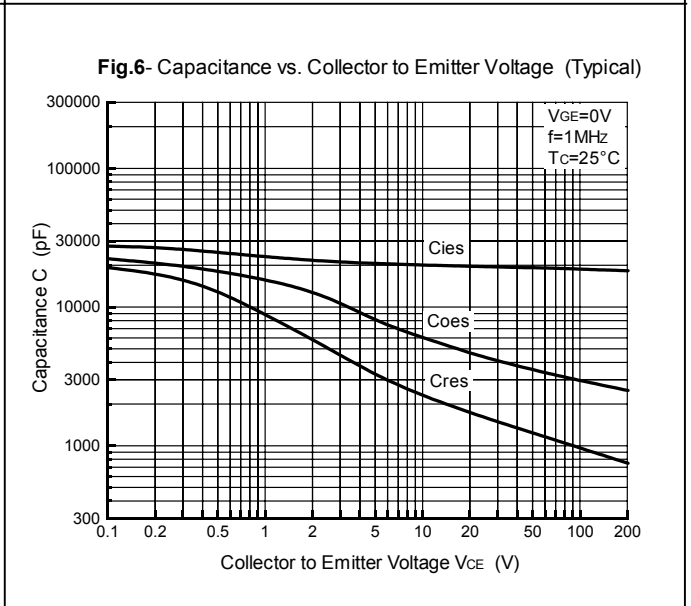
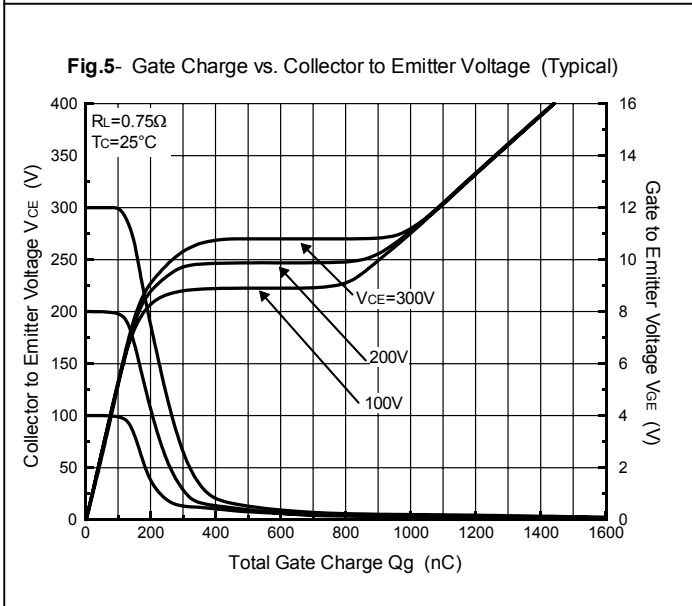
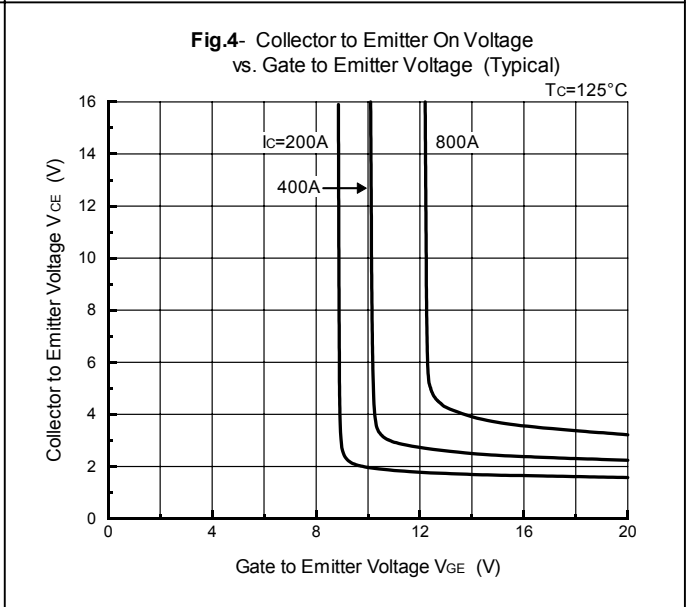
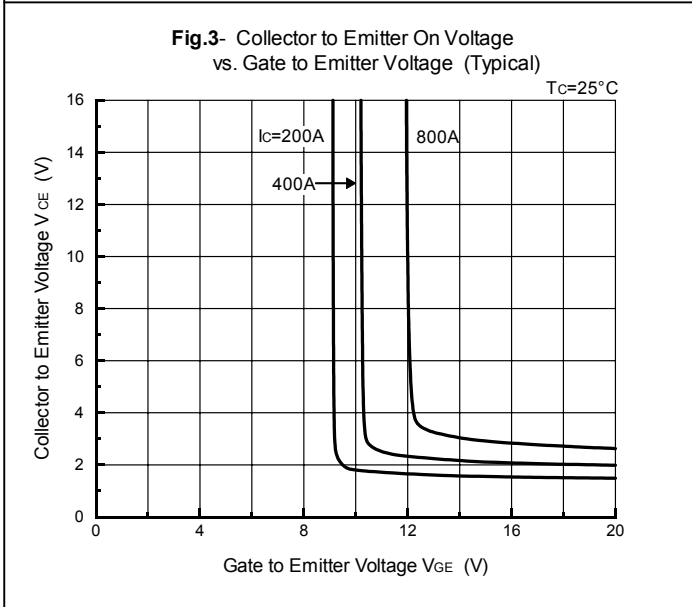
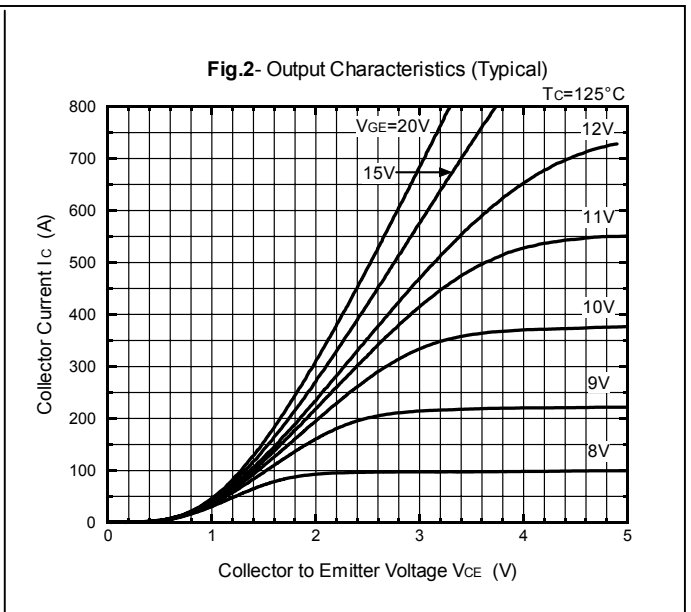
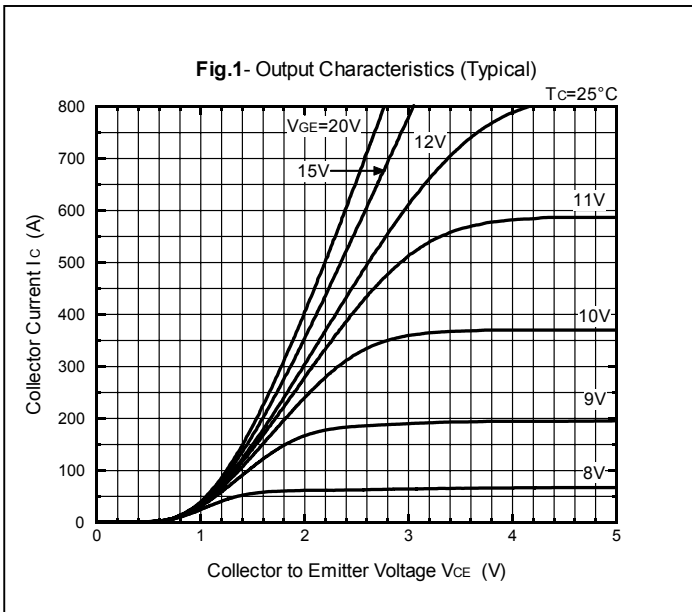


Fig.7- Collector Current vs. Switching Time (Typical)

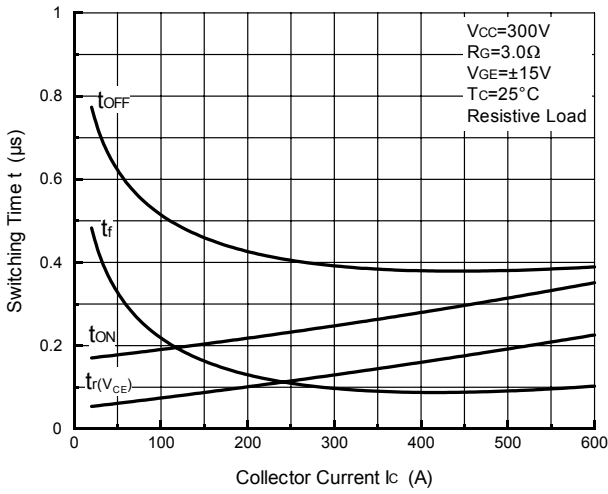


Fig.8- Series Gate Impedance vs. Switching Time (Typical)

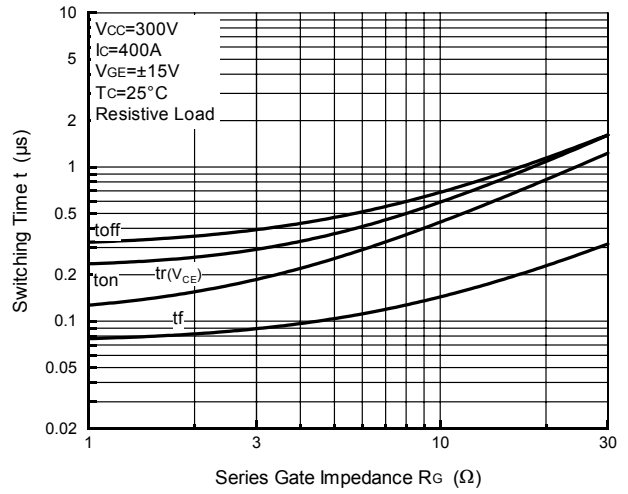


Fig.9- Collector Current vs. Switching Time

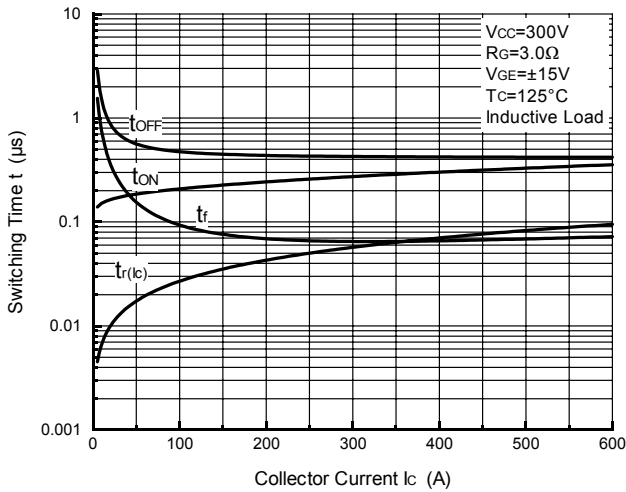


Fig.10- Series Gate Impedance vs. Switching Time

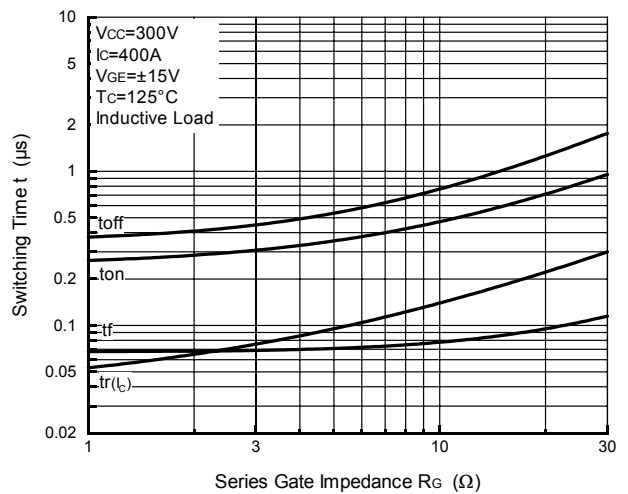


Fig.11- Collector Current vs. Switching Loss

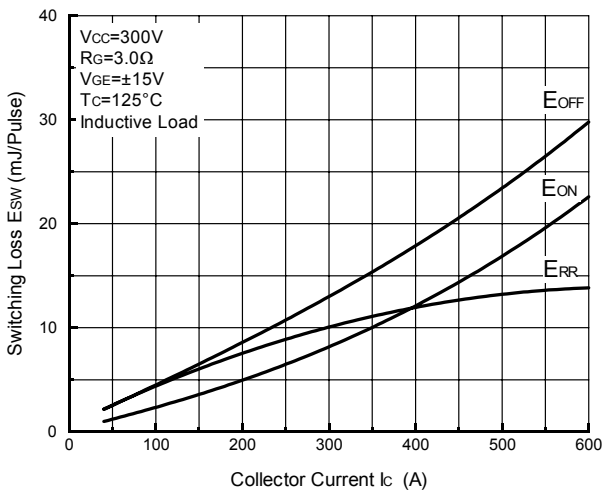
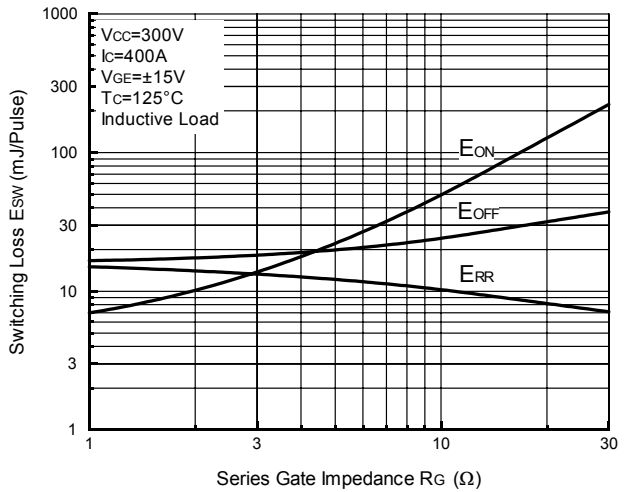
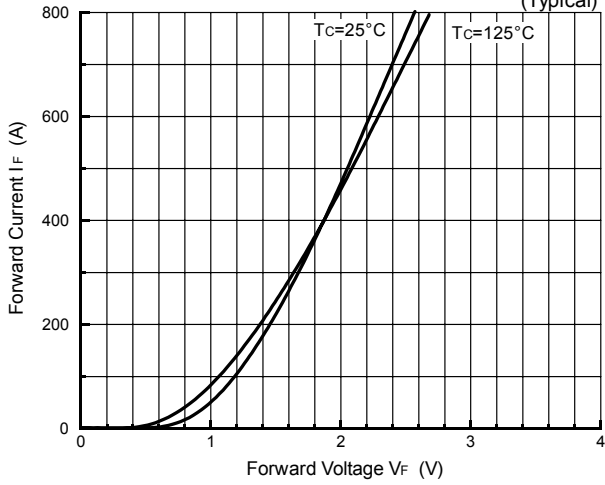


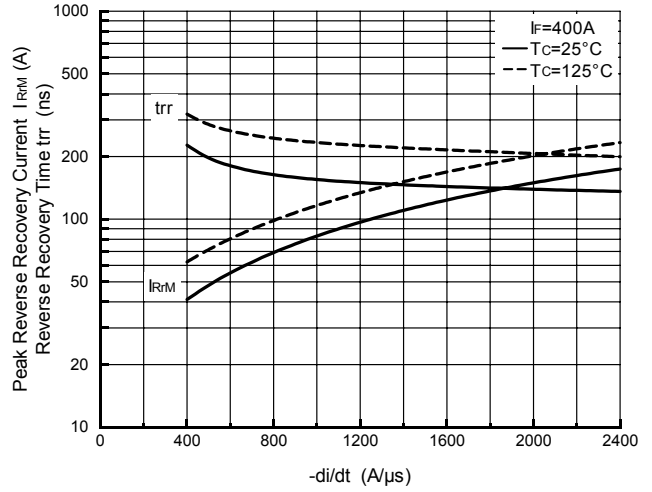
Fig.12- Series Gate Impedance vs. Switching Loss



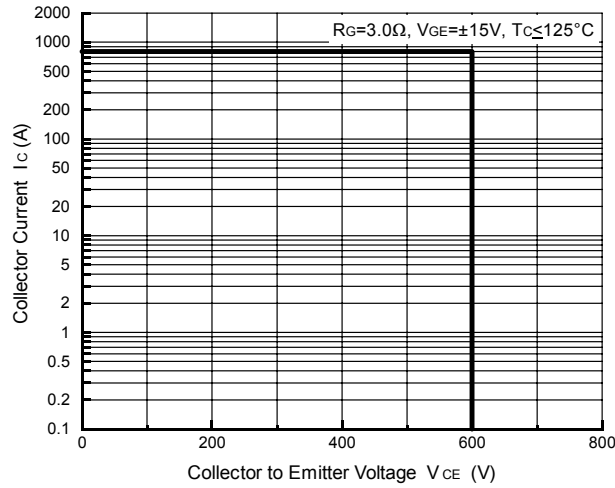
**Fig.13- Forward Characteristics of Free Wheeling Diode (Typical)**



**Fig.14- Reverse Recovery Characteristics (Typical)**



**Fig.15- Reverse Bias Safe Operating Area**



**Fig.16- Transient Thermal Impedance**

