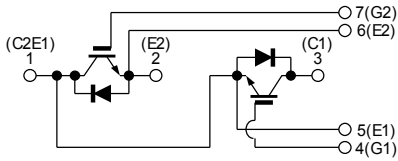
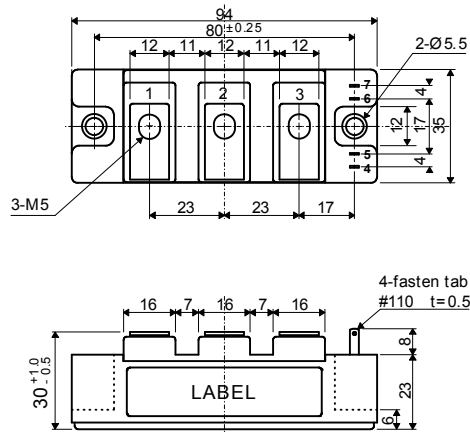


□ 回路図 : **CIRCUIT**



□ 外形寸法図 : **OUTLINE DRAWING**



Dimension: [mm]

□ 最大定格 : **MAXIMUM RATINGS** (at  $T_c=25^\circ\text{C}$  unless otherwise specified)

| Item   | Symbol                  | Rated Value     | Unit             |
|--|-------------------------|-----------------|------------------|
| コレクタ・エミッタ間電圧<br>Collector-Emitter Voltage                | $V_{CES}$               | 600             | V                |
| ゲート・エミッタ間電圧<br>Gate-Emitter Voltage                      | $V_{GES}$               | $\pm 20$        | V                |
| コレクタ電流<br>Collector Current                              | DC                      | 150             | A                |
|  | 1ms                     | 300             |                  |
| コレクタ損失<br>Collector Power Dissipation                    | $P_C$                   | 560             | W                |
| 接合温度<br>Junction Temperature Range                       | $T_j$                   | $-40 \sim +150$ | $^\circ\text{C}$ |
| 保存温度<br>Storage Temperature Range                        | $T_{stg}$               | $-40 \sim +125$ | $^\circ\text{C}$ |
| 絶縁耐圧 (Terminal to Base AC, 1minute)<br>Isolation Voltage | $V_{iso}$               | 2,500           | V (RMS)          |
| 締め付けトルク<br>Mounting Torque                               | Module Base to Heatsink | 2 (20.4)        | N·m<br>(kgf·cm)  |
|  | Busbar to Main Terminal |                 |                  |

□ 電気的特性 : **ELECTRICAL CHARACTERISTICS** (at  $T_j=25^\circ\text{C}$  unless otherwise specified)

| Characteristic   | Symbol                | Test Condition  | Min. | Typ.  | Max. | Unit          |
|--|-----------------------|---|------|-------|------|---------------|
| コレクタ遮断電流<br>Collector-Emitter Cut-Off Current          | $I_{CES}$             | $V_{CE} = 600\text{V}, V_{GE} = 0\text{V}$  | —    | —     | 1.0  | mA            |
| ゲート漏れ電流<br>Gate-Emitter Leakage Current                | $I_{GES}$             | $V_{GE} = \pm 20\text{V}, V_{CE} = 0\text{V}$   | —    | —     | 1.0  | $\mu\text{A}$ |
| コレクタ・エミッタ間飽和電圧<br>Collector-Emitter Saturation Voltage | $V_{CE(sat)}$         | $I_C = 150\text{A}, V_{GE} = 15\text{V}$  | —    | 2.1   | 2.6  | V             |
| ゲートしきい値電圧<br>Gate-Emitter Threshold Voltage            | $V_{GE(th)}$          | $V_{CE} = 5\text{V}, I_C = 150\text{mA}$  | 4.0  | —     | 8.0  | V             |
| 入力容量<br>Input Capacitance                              | $C_{ies}$             | $V_{CE} = 10\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$                                    | —    | 7,500 | —    | pF            |
| スイッチング時間<br>Switching Time                             | 上昇時間 Rise Time        | $V_{CC} = 300\text{V}$<br>$R_L = 2.0\Omega$<br>$R_G = 5.1\Omega$<br>$V_{GE} = \pm 15\text{V}$ | —    | 0.15  | 0.30 | $\mu\text{s}$ |
|  | ターンオン時間 Turn-on Time  |   | —    | 0.25  | 0.40 |               |
|  | 下降時間 Fall Time        |   | —    | 0.10  | 0.35 |               |
|  | ターンオフ時間 Turn-off Time |   | —    | 0.35  | 0.70 |               |

□ フリーホイールダイオードの特性 : **FREE WHEELING DIODE RATINGS & CHARACTERISTICS** (at  $T_c=25^\circ\text{C}$ ) & **CHARACTERISTICS** (at  $T_j=25^\circ\text{C}$ )

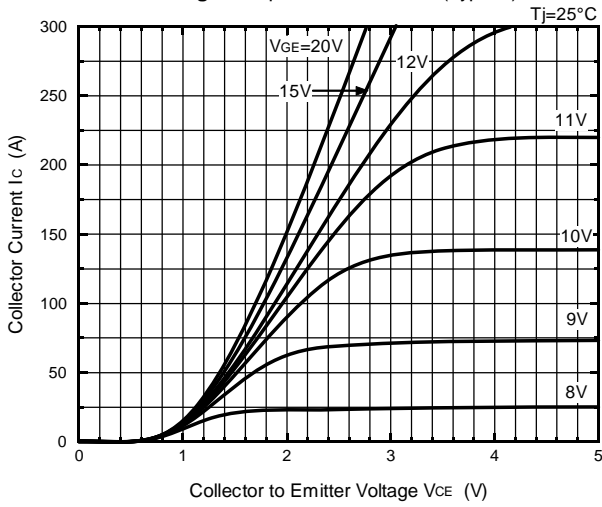
| Item                   | Symbol | Rated Value | Unit |
|------------------------|--------|-------------|------|
| 順電流<br>Forward Current | DC     | 150         | A    |
|                        | 1ms    | 300         |      |

| Characteristic                 | Symbol   | Test Condition   | Min. | Typ. | Max. | Unit          |
|--------------------------------|----------|--|------|------|------|---------------|
| 順電圧<br>Peak Forward Voltage    | $V_F$    | $I_F = 150\text{A}, V_{GE} = 0\text{V}$  | —    | 1.9  | 2.4  | V             |
| 逆回復時間<br>Reverse Recovery Time | $t_{rr}$ | $I_F = 150\text{A}, V_{GE} = -10\text{V}$<br>$di/dt = 300\text{A}/\mu\text{s}$ | —    | 0.15 | 0.25 | $\mu\text{s}$ |

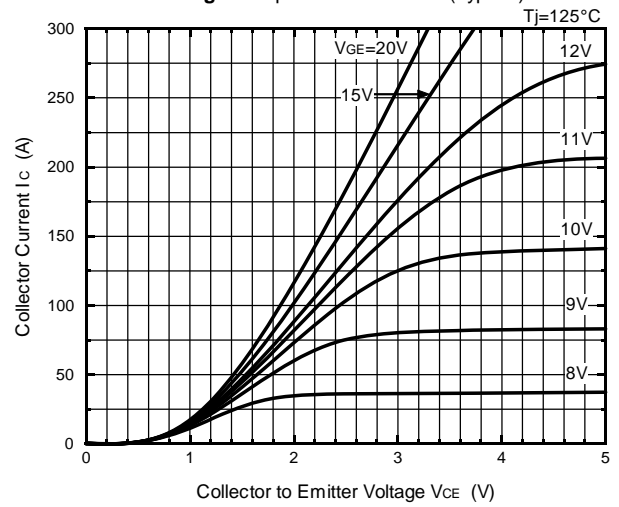
□ 熱的特性 : **THERMAL CHARACTERISTICS**

| Characteristic           | Symbol | Test Condition                          | Min. | Typ. | Max. | Unit                      |
|--------------------------|--------|---|------|------|------|---------------------------|
| 熱抵抗<br>Thermal Impedance | IGBT   | Junction to Case<br>( $T_c$ チップ直下での測定点) | —    | —    | 0.22 | $^\circ\text{C}/\text{W}$ |
|                          | Diode  |   | —    | —    | 0.45 |                           |

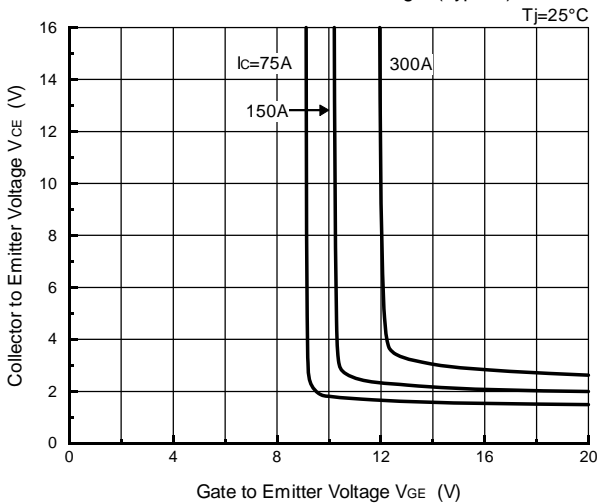
**Fig.1- Output Characteristics (Typical)**



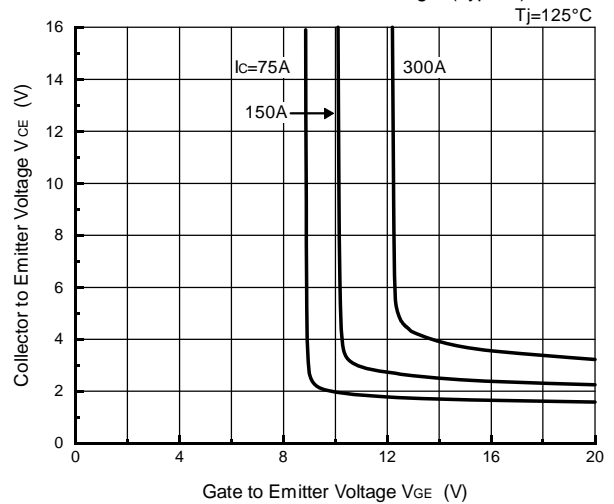
**Fig.2- Output Characteristics (Typical)**



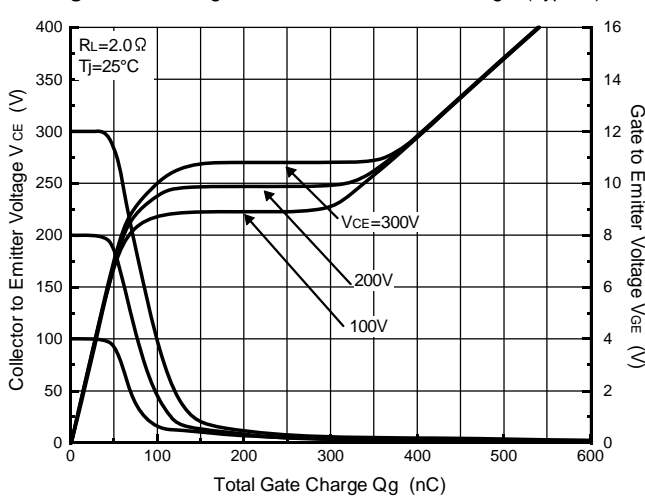
**Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)**



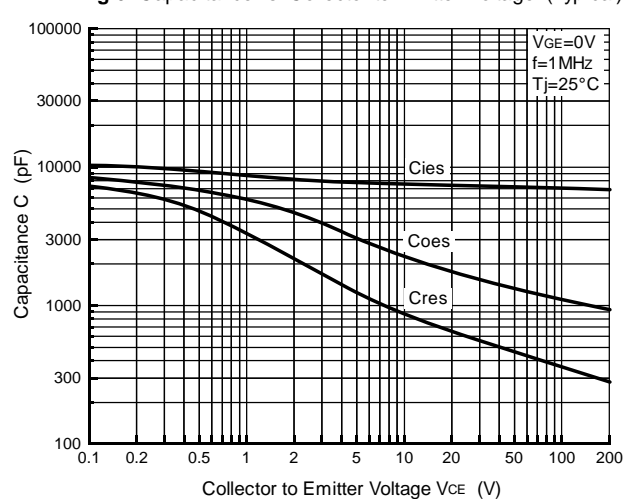
**Fig.4- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)**



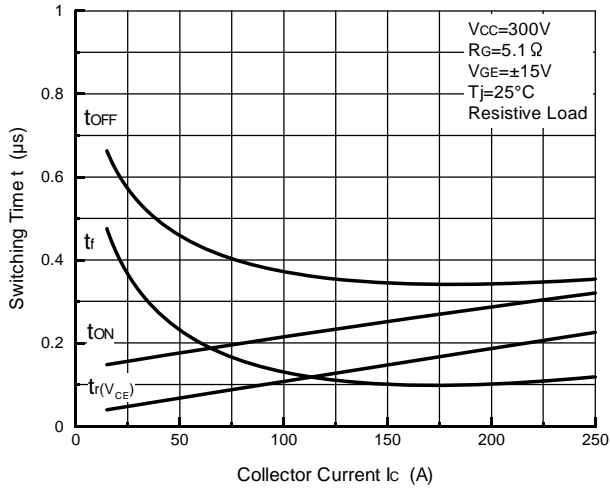
**Fig.5- Gate Charge vs. Collector to Emitter Voltage (Typical)**



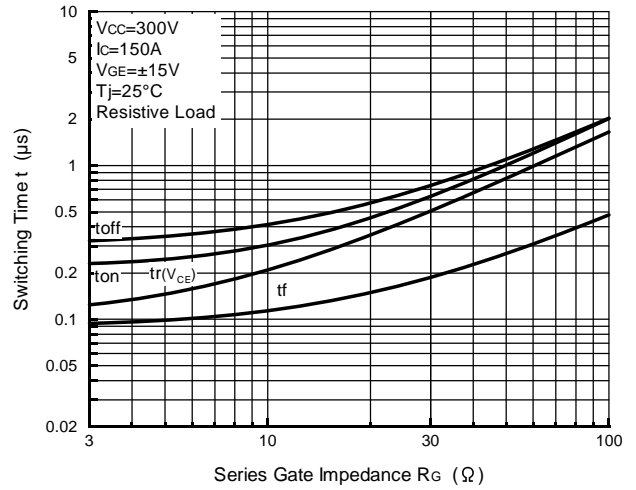
**Fig.6- Capacitance vs. Collector to Emitter Voltage (Typical)**



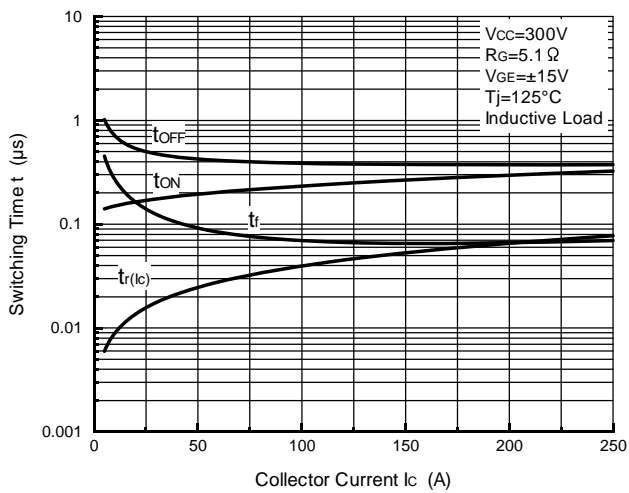
**Fig.7- Collector Current vs. Switching Time (Typical)**



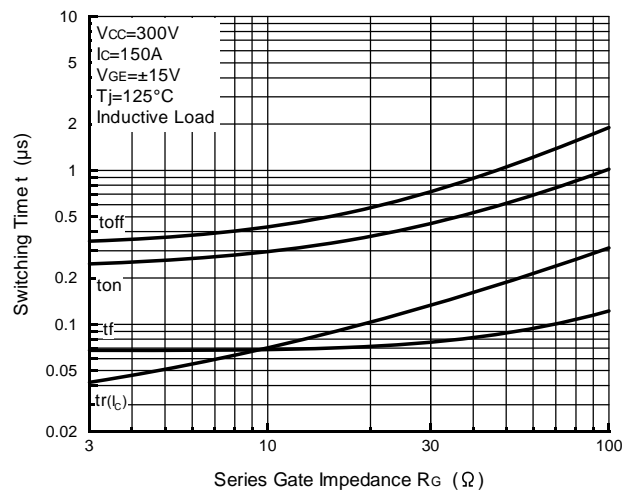
**Fig.8- Series Gate Impedance vs. Switching Time (Typical)**



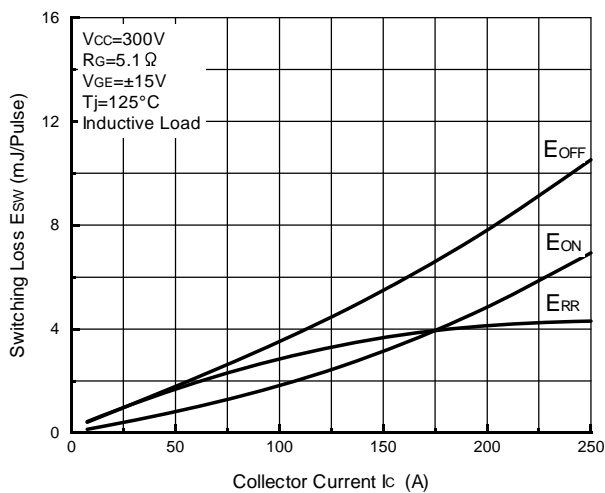
**Fig.9- Collector Current vs. Switching Time**



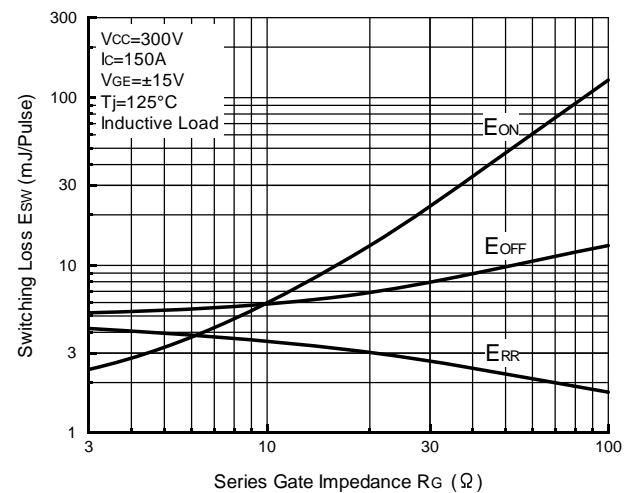
**Fig.10- Series Gate Impedance vs. Switching Time**



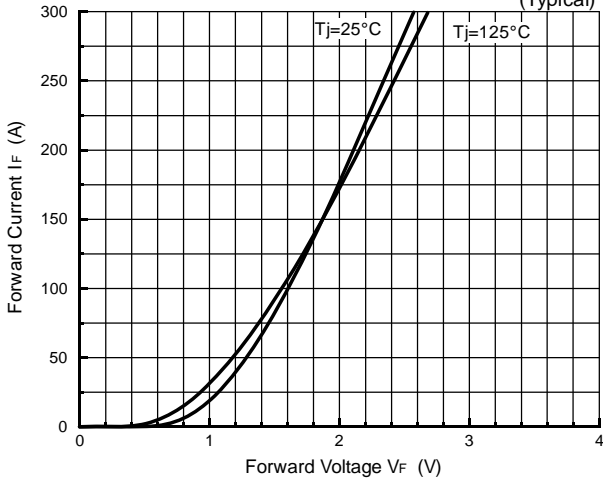
**Fig.11- Collector Current vs. Switching Loss**



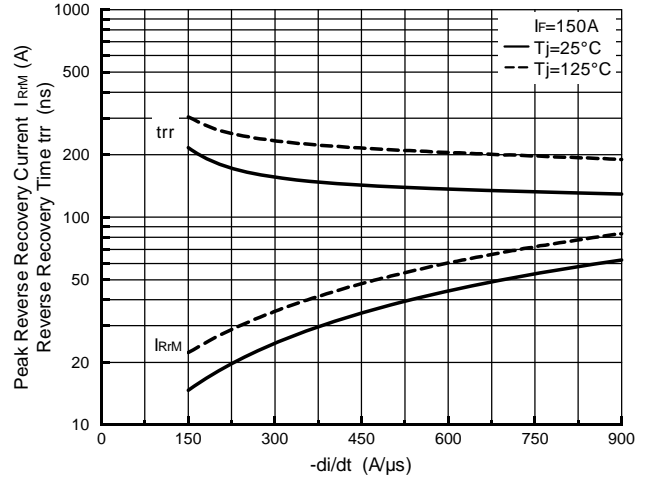
**Fig.12- Series Gate Impedance vs. Switching Loss**



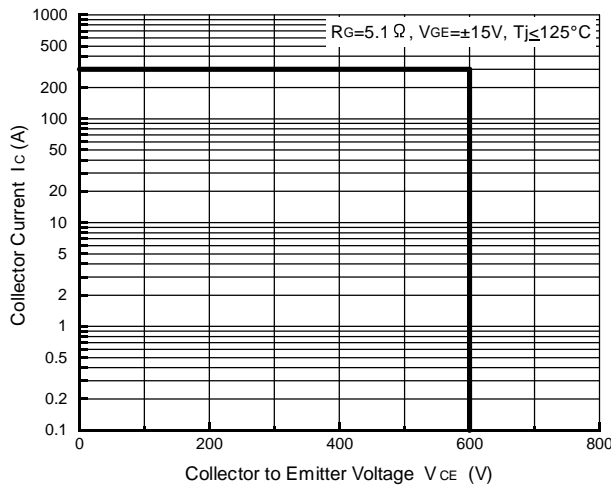
**Fig.13- Forward Characteristics of Free Wheeling Diode (Typical)**



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



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



**Fig.16- Transient Thermal Impedance**

