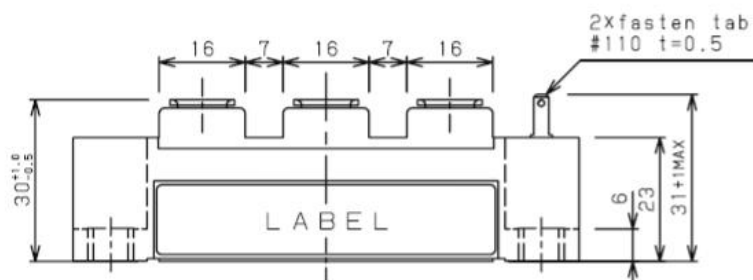
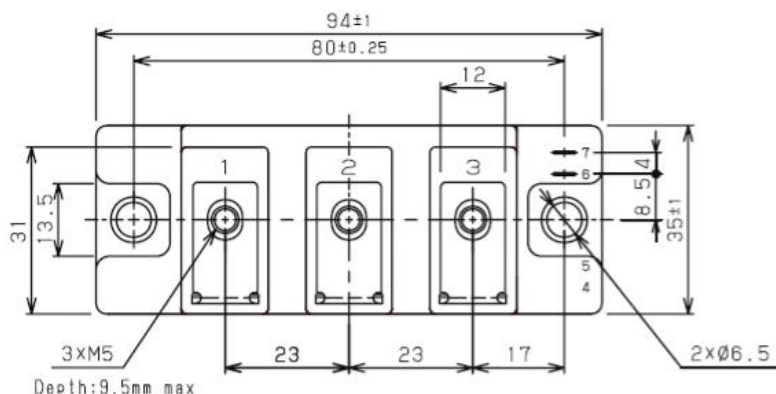
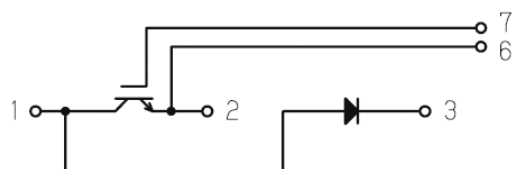


□ 回路図 : **CIRCUIT**

□ 概略図 : **SCHEMATIC DIAGRAM**

Dimension: [mm]


□ 最大定格 : **MAXIMUM RATINGS** (at Tc=25°C unless otherwise specified)

| Item                                   |                                               | Symbol            | Condition                           | Rated Value | Unit    |
|----------------------------------------|-----------------------------------------------|-------------------|-------------------------------------|-------------|---------|
| IGBT                                   | コレクタ・エミッタ間電圧<br>Collector-Emitter Voltage     | V <sub>CE</sub> S | G-E Short                           | 1200        | V       |
|                                        | ゲート・エミッタ間電圧<br>Gate-Emitter Voltage           | V <sub>GE</sub> S | C-E Short                           | ±20         | V       |
|                                        | コレクタ電流<br>Collector Current                   | I <sub>C</sub>    | DC T <sub>c</sub> =85°C             | 100         | A       |
|                                        |                                               | I <sub>CP</sub>   | Pulse ≤ 1ms                         | 200         |         |
| Diode                                  | 繰り返しピーク逆電圧<br>Repetitive peak reverse voltage | V <sub>RRM</sub>  |                                     | 1200        | V       |
|                                        |                                               | I <sub>F</sub>    |                                     | 100         | A       |
|                                        | 順電流<br>Forward Current                        | I <sub>FM</sub>   | Pulse ≤ 1ms                         | 200         |         |
| 最大接合温度<br>Maximum Junction Temperature |                                               | T <sub>JMAX</sub> | 瞬時動作(過負荷)<br>Instantaneous Overload | 175         | °C      |
| 接合温度範囲<br>Junction Temperature Range   |                                               | T <sub>J</sub>    |                                     | -40~+150    | °C      |
| 保存温度範囲<br>Storage Temperature Range    |                                               | T <sub>stg</sub>  |                                     | -40~+125    | °C      |
| 絶縁耐圧<br>Isolation Voltage              |                                               | V <sub>ISO</sub>  | Terminal to Base AC, 1minute        | 2,500       | V (RMS) |
| 締め付けトルク<br>Mounting Torque             | Module Base to Heatsink                       | F <sub>tor</sub>  | M6                                  | 3           | N・m     |
|                                        | Busbar to Main Terminal                       |                   | M5                                  | 2           |         |

□ 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 |    |
|------------------------------------|--------------------------------------------------------|---------|-----------------------------------------------------------------------------------------|----------------------------------------------------|----------|------|------|------|----|
| IGBT                               | コレクタ遮断電流<br>Collector-Emitter Cut-Off Current          |         | ICES                                                                                    | VCE= 1200V,VGE= 0V                                 |          | —    | —    | 1.0  | mA |
|                                    | ゲート漏れ電流<br>Gate-Emitter Leakage Current                |         | IGES                                                                                    | VGE= ±20V,VCE= 0V                                  |          | —    | —    | 1.0  | μA |
|                                    | コレクタ・エミッタ間飽和電圧<br>Collector-Emitter Saturation Voltage |         | VCE(sat.)                                                                               | IC= 100A,VGE= 15V<br>(chip level)                  | TJ=25°C  | —    | 1.50 | 2.00 | V  |
|                                    |                                                        |         |                                                                                         |                                                    | TJ=125°C | —    | 1.70 | —    |    |
|                                    |                                                        |         |                                                                                         |                                                    | TJ=150°C | —    | 1.80 | —    |    |
|                                    | ゲートしきい値電圧<br>Gate-Emitter Threshold Voltage            |         | VGE(th.)                                                                                | VCE= 10V,IC= 3.3mA                                 |          | 4.8  | —    | 7.0  | V  |
|                                    | 入力容量 Input Capacitance                                 |         | Cies                                                                                    | VCE= 25V,VGE= 0V,f= 1MHz                           |          | —    | 10.0 | —    | nF |
|                                    | 出力容量 Output Capacitance                                |         | Coes                                                                                    |                                                    |          | —    | 0.30 | —    |    |
|                                    | 帰還容量 Reverse Transfer Capacitance                      |         | Cres                                                                                    |                                                    |          | —    | 0.23 | —    |    |
|                                    | ゲート電荷量<br>Gate Charge                                  |         | Qg                                                                                      | VCC=600V, IC=100A, VGE=-15~+15V                    |          | —    | 1100 | —    | nC |
| スイッチング時間<br>Switching Time         | 上昇時間 Rise Time                                         | tr      | VCC= 600V    LS=38nH<br>IC= 100A    Inductive Load<br>RG= 75Ω<br>VGE= ±15V<br>TJ= 150°C |                                                    | —        | 60   | —    | ns   |    |
|                                    | ターンオン遅延時間 Turn-on Delay Time                           | td(on)  |                                                                                         |                                                    | —        | 110  | —    |      |    |
|                                    | 下降時間 Fall Time                                         | tf      |                                                                                         |                                                    | —        | 190  | —    |      |    |
|                                    | ターンオフ遅延時間 Turn-off Delay Time                          | td(off) |                                                                                         |                                                    | —        | 500  | —    |      |    |
| Diode                              | 順電圧<br>Peak Forward Voltage                            |         | VF                                                                                      | IF= 100A,VGE=0V<br>(chip level)                    | TJ=25°C  | —    | 2.00 | 2.60 | V  |
|                                    |                                                        |         |                                                                                         |                                                    | TJ=125°C | —    | 1.98 | —    |    |
|                                    |                                                        |         |                                                                                         |                                                    | TJ=150°C | —    | 1.95 | —    |    |
| 逆回復時間<br>Reverse Recovery Time     |                                                        | trr     | VCC= 600V    LS=38nH<br>IC= 100A    Inductive Load<br>RG= 75Ω<br>VGE= ±15V<br>TJ= 150°C |                                                    | —        | 170  | —    | ns   |    |
| 内部配線抵抗<br>Internal Lead Resistance |                                                        |         | RCC+EE'                                                                                 | 主端子—チップ間 / 1素子<br>Main Terminal - Chip / Per 1 Arm |          | —    | —    | 1    | mΩ |
| 内部インダクタンス<br>Stray Inductance      |                                                        |         | LSCE                                                                                    | メイン端子3—2間<br>Main Terminal3 - Main Terminal2       |          | —    | 30   | —    | nH |

□ 熱 的 特 性 : **THERMAL CHARACTERISTICS**

| Characteristic              |       | Symbol        | Test Condition                                                      | Min. | Typ. | Max. | Unit                      |
|-----------------------------|-------|---------------|---------------------------------------------------------------------|------|------|------|---------------------------|
| 熱抵抗<br>Thermal Resistance   | IGBT  | $R_{th(j-c)}$ | Junction to Case<br>Per 1 Arm (Tc測定点:チップ直下)                         | —    | —    | 0.31 | $^\circ\text{C}/\text{W}$ |
|                             | Diode |               |                                                                     | —    | —    | 0.72 |                           |
| 接触熱抵抗<br>Thermal Resistance | IGBT  | $R_{th(c-f)}$ | Case to heatsink<br>Per 1 Arm Paste=1W/(m $^2$ · $^\circ\text{C}$ ) | —    | 0.10 | —    |                           |
|                             | Diode |               |                                                                     | —    | 0.17 | —    |                           |

特性図 : CHARACTERISTICS CURVES

Fig.1- Output Characteristics (Typical)

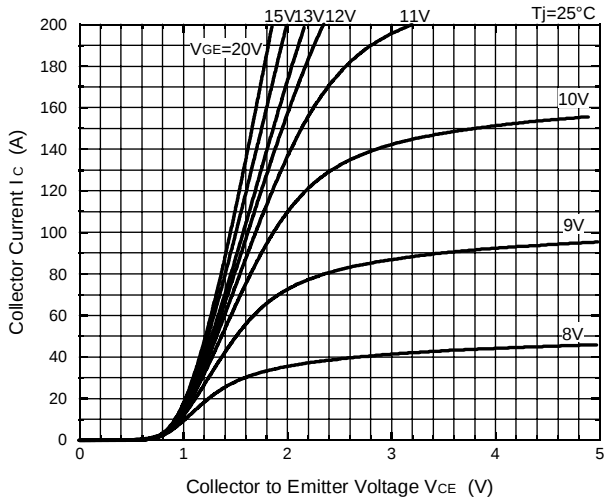


Fig.2- Saturation Voltage Characteristics (Typical)

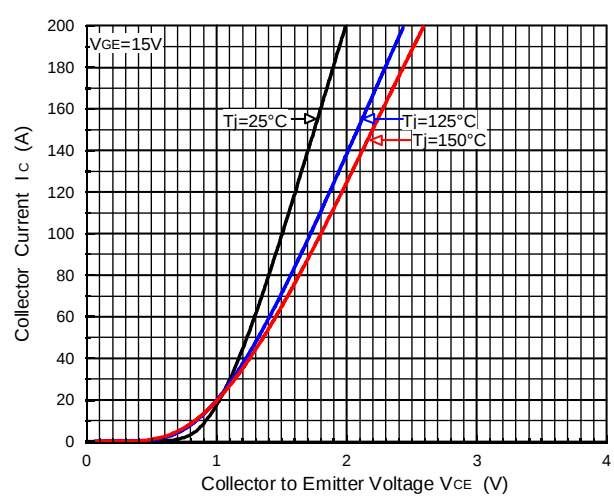


Fig.3- Transfer Characteristics (Typical)

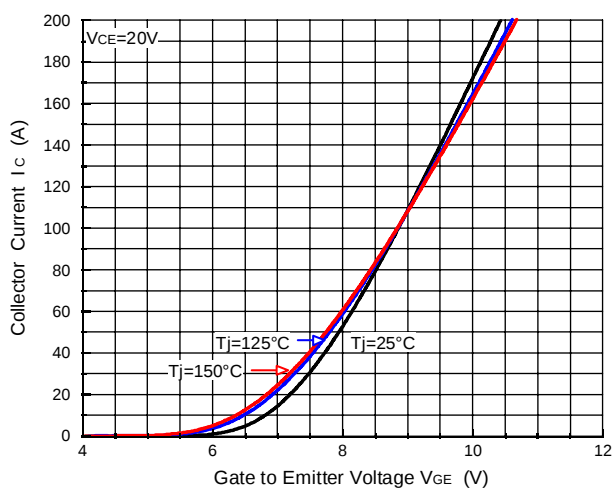


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

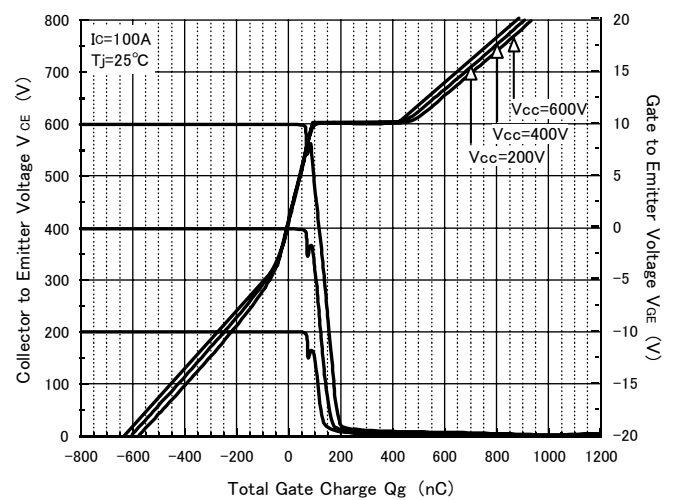


Fig.5- Collector Current vs. Switching Time

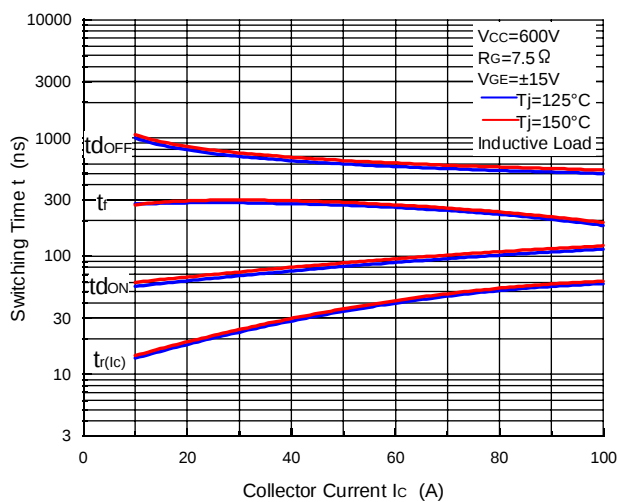
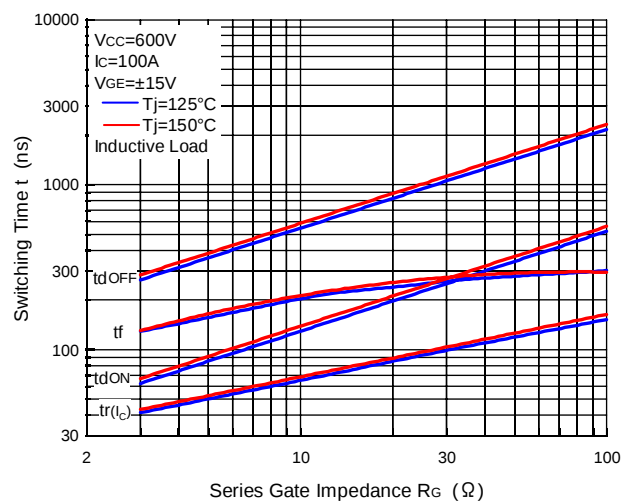


Fig.6- Series Gate Impedance vs. Switching Time



### 特性図 : CHARACTERISTICS CURVES

Fig.7- Collector Current vs. Switching Loss

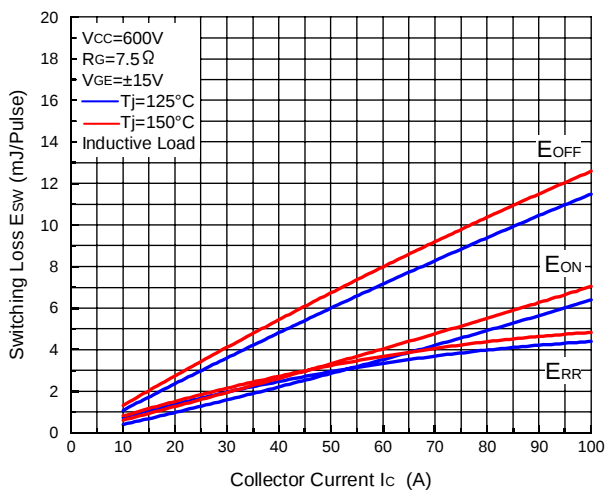


Fig.8- Series Gate Impedance vs. Switching Loss

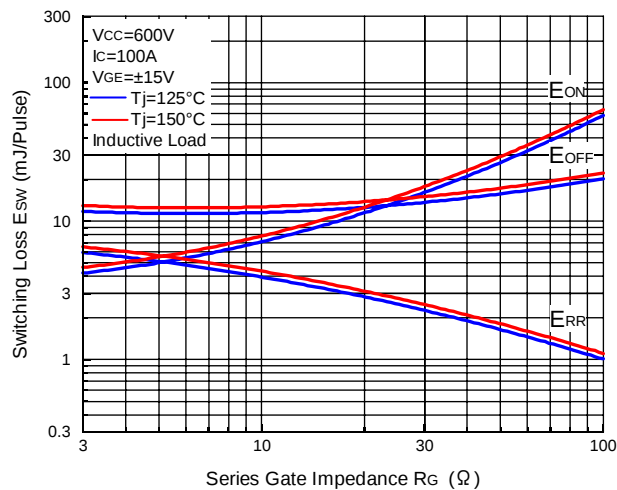


Fig.9- Forward Characteristics of FWD (Typical)

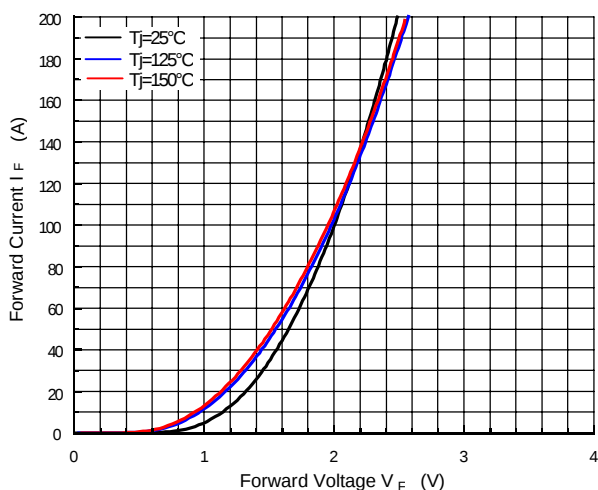


Fig.10- FWD Reverse Recovery Characteristics (Typical)

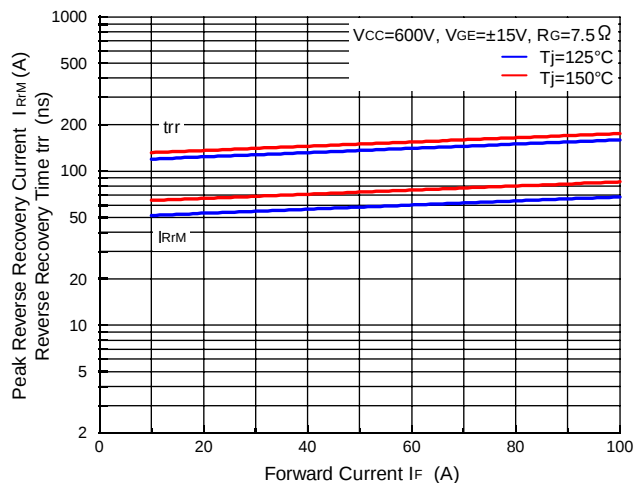


Fig.11- Reverse Bias Safe Operating Area

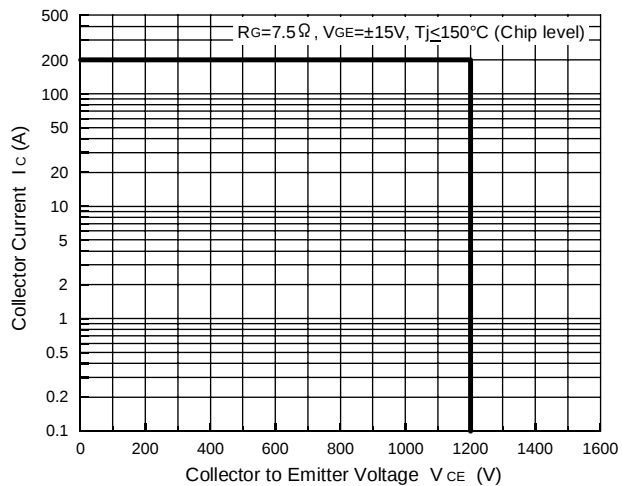
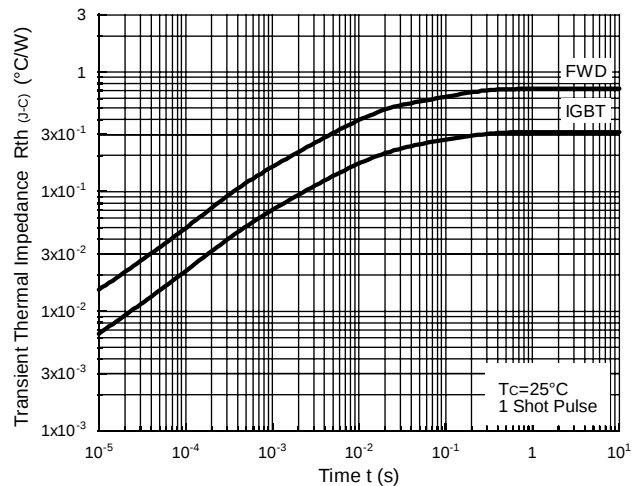


Fig.12- Transient Thermal Impedance



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