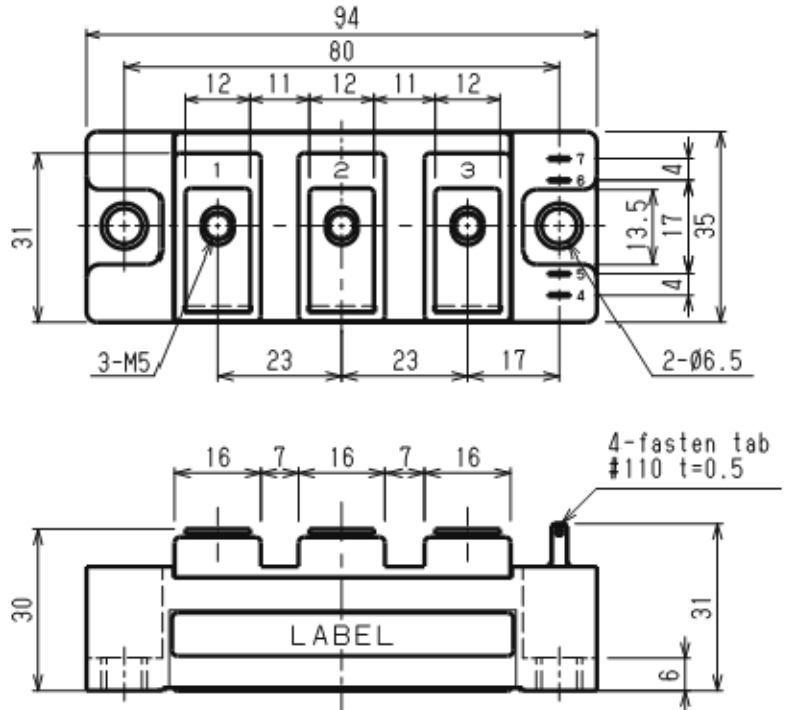
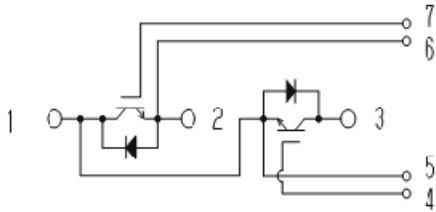


□ 回路図 : CIRCUIT

□ 概略図 : SCHEMATIC DIAGRAM

Dimension: [mm]



□ 最大定格 : MAXIMUM RATINGS (at  $T_c=25^\circ\text{C}$  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     | $V_{CES}$               | G-E Short                           | 650             | V                |
|  | ゲート・エミッタ間電圧<br>Gate-Emitter Voltage           | $V_{GES}$               | C-E Short                           | $\pm 20$        | V                |
|  | コレクタ電流<br>Collector Current                   | $I_C$                   | DC $T_c=85^\circ\text{C}$           | 150             | A                |
|  |   | $I_{CP}$                | Pulse $\leq 1\text{ms}$             | 300             |                  |
| コレクタ損失<br>Collector Power Dissipation  | $P_C$   | $T_j=175^\circ\text{C}$ | 536                                 | W               |                  |
|  |   | $T_j=150^\circ\text{C}$ | 446                                 |                 |                  |
| FWD                                    | 繰り返しピーク逆電圧<br>Repetitive peak reverse voltage | $V_{RRM}$               |                                     | 650             | V                |
|  | 順電流<br>Forward Current                        | $I_F$                   |                                     | 150             | A                |
|  |   | $I_{FM}$                | Pulse $\leq 1\text{ms}$             | 300             |                  |
| 最大接合温度<br>Maximum Junction Temperature |   | $T_{jMAX}$              | 瞬時動作(過負荷)<br>Instantaneous Overload | 175             | $^\circ\text{C}$ |
| 接合温度範囲<br>Junction Temperature Range   |   | $T_j$                   |                                     | $-40 \sim +150$ | $^\circ\text{C}$ |
| 保存温度範囲<br>Storage Temperature Range    |   | $T_{stg}$               |                                     | $-40 \sim +125$ | $^\circ\text{C}$ |
| 絶縁耐圧<br>Isolation Voltage              |   | $V_{ISO}$               | Terminal to Base AC, 1minute        | 2,500           | V (RMS)          |
| 締め付けトルク<br>Mounting Torque             | Module Base to Heatsink                       | $F_{tor}$               | M6                                  | 3               | N · m            |
|  | Busbar to Main Terminal                       |                         | M5                                  | 2               |                  |

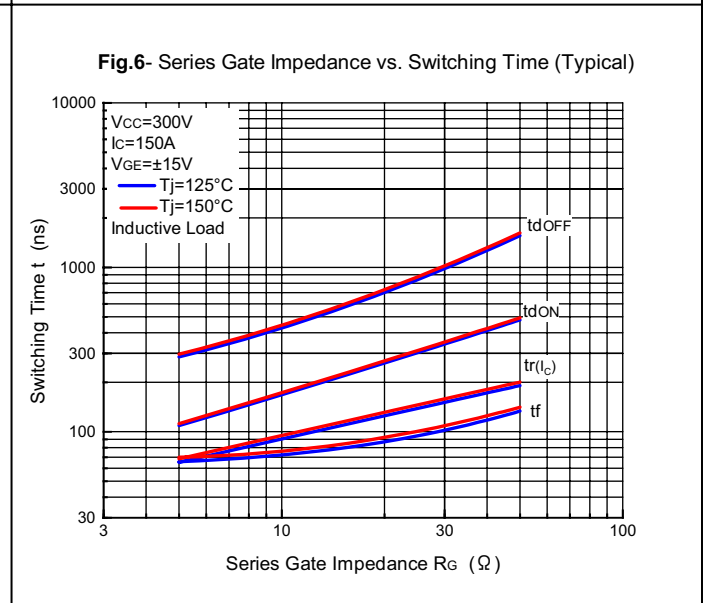
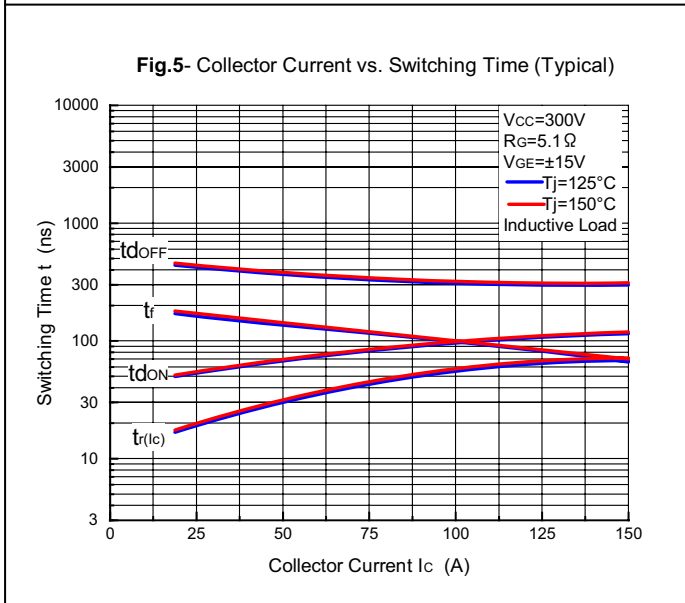
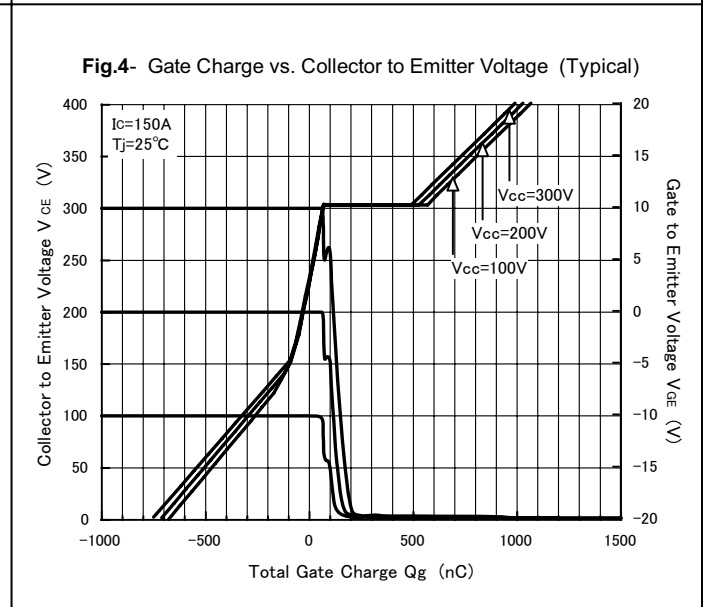
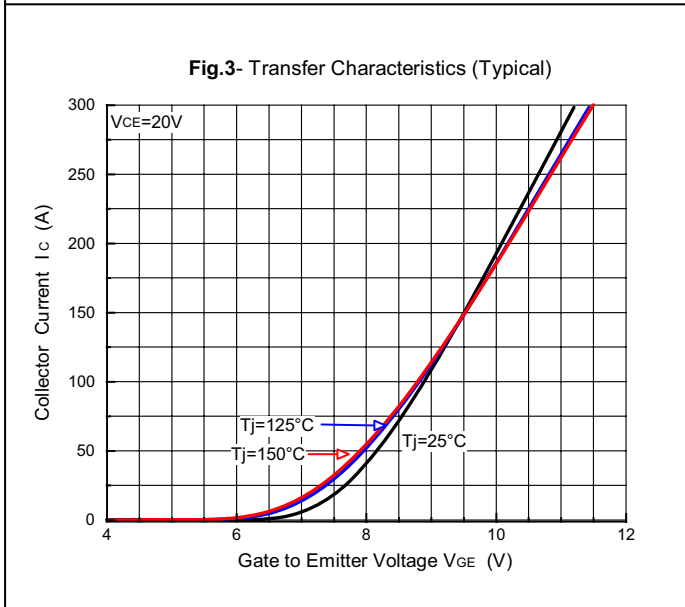
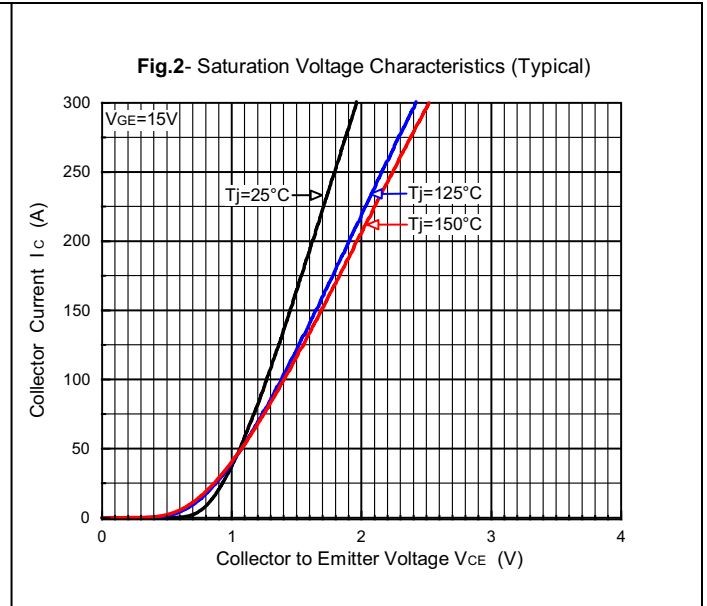
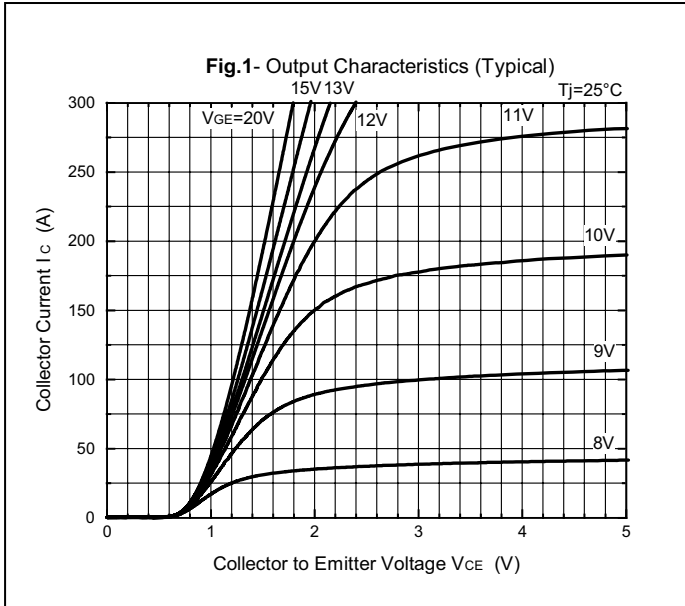
□ 電 氣 的 特 性 : **ELECTRICAL CHARACTERISTICS** (at  $T_J=25^\circ\text{C}$  unless otherwise specified)

| Characteristic                     |  | Symbol   | Test Condition   | Min.                    | Typ. | Max.       | Unit          |   |
|------------------------------------|--|--|--|-------------------------|------|------------|---------------|---|
| IGBT                               | コレクタ遮断電流<br>Collector-Emitter Cut-Off Current          | ICES   | $V_{CE}=650V, V_{GE}=0V$   | —                       | —    | 1.0        | mA            |   |
|                                    | ゲート漏れ電流<br>Gate-Emitter Leakage Current                | IGES   | $V_{GE}=\pm 20V, V_{CE}=0V$  | —                       | —    | 1.0        | $\mu\text{A}$ |   |
|                                    | コレクタ・エミッタ間飽和電圧<br>Collector-Emitter Saturation Voltage | VCE(sat.)  | $I_C=150A, V_{GE}=15V$<br>(chip level)   | $T_J=25^\circ\text{C}$  | —    | 1.45       | 1.95          | V |
|                                    |  |  |  | $T_J=125^\circ\text{C}$ | —    | 1.65       | —             |   |
|                                    |  |  |  | $T_J=150^\circ\text{C}$ | —    | 1.70       | —             |   |
|                                    | ゲートしきい値電圧<br>Gate-Emitter Threshold Voltage            | VGE(th.)   | $V_{CE}=10V, I_C=3mA$  | 4.8                     | —    | 7.0        | V             |   |
|                                    | 入力容量 Input Capacitance                                 | Cies   | $V_{CE}=25V, V_{GE}=0V, f=1MHz$  | —                       | 12.5 | —          | nF            |   |
|                                    | 出力容量 Output Capacitance                                | Coes   |  | —                       | 0.5  | —          |               |   |
|                                    | 帰還容量 Reverse Transfer Capacitance                      | Cres   |  | —                       | 0.4  | —          |               |   |
|                                    | ゲート電荷量<br>Gate Charge                                  | Qg   | $V_{CC}=300V, I_C=150A, V_{GE}=-15\sim+15V$  | —                       | 1275 | —          | nC            |   |
| スイッチング時間<br>Switching Time         | 上昇時間 Rise Time   | tr   | $V_{CC}=300V, L_s=38nH$<br>$I_C=150A$ Inductive Load<br>$R_G=5.1\Omega$<br>$V_{GE}=\pm 15V$<br>$T_J=150^\circ\text{C}$ | —                       | 71   | —          | ns            |   |
|                                    | ターンオン遅延時間 Turn-on Delay Time                           | td(on)   |  | —                       | 119  | —          |               |   |
|                                    | 下降時間 Fall Time   | tf   |  | —                       | 70   | —          |               |   |
|                                    | ターンオフ遅延時間 Turn-off Delay Time                          | td(off)  |  | —                       | 300  | —          |               |   |
| 順電圧<br>Peak Forward Voltage        | V <sub>F</sub>   | $I_F=150A, V_{GE}=0V$<br>(chip level)  | $T_J=25^\circ\text{C}$   | —                       | 1.70 | 2.20       | V             |   |
|                                    |  |  | $T_J=125^\circ\text{C}$  | —                       | 1.60 | —          |               |   |
|                                    |  |  | $T_J=150^\circ\text{C}$  | —                       | 1.55 | —          |               |   |
| 逆回復時間<br>Reverse Recovery Time     | t <sub>rr</sub>  | $V_{CC}=300V, L_s=38nH$<br>$I_C=150A$ Inductive Load<br>$R_G=5.1\Omega$<br>$V_{GE}=\pm 15V$<br>$T_J=150^\circ\text{C}$ | —  | 140                     | —    | ns         |               |   |
| 内部配線抵抗<br>Internal Lead Resistance | R <sub>CC+EE'</sub>                                    | 主端子—チップ間 / 1素子<br>Main Terminal - Chip / Per 1 Arm   | —  | —                       | 1    | m $\Omega$ |               |   |
| 内部インダクタンス<br>Stray Inductance      | LSCE   | メイン端子3—2間<br>Main Terminal 3 - Main Terminal 2   | —  | 30                      | —    | nH         |               |   |

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

| Characteristic                  |      | Symbol   | Test Condition   | Min. | Typ. | Max. | Unit |
|---------------------------------|------|----------|--|------|------|------|------|
| 熱 抵 抗<br>Thermal Resistance     | IGBT | Rth(j-c) | Junction to Case<br>Per 1 Arm (T <sub>c</sub> 測定点: チップ直下)  | —    | —    | 0.28 | °C/W |
|                                 | FWD  |          |  | —    | —    | 0.67 |      |
| 接 触 熱 抵 抗<br>Thermal Resistance | IGBT | Rth(c-f) | Case to heatsink<br>Per 1 Arm Paste=1W/(m <sup>2</sup> °C) | —    | 0.10 | —    |      |
|                                 | FWD  |          |  | —    | 0.17 | —    |      |

特性图 : CHARACTERISTICS CURVES



特性 : CHARACTERISTICS CURVES

