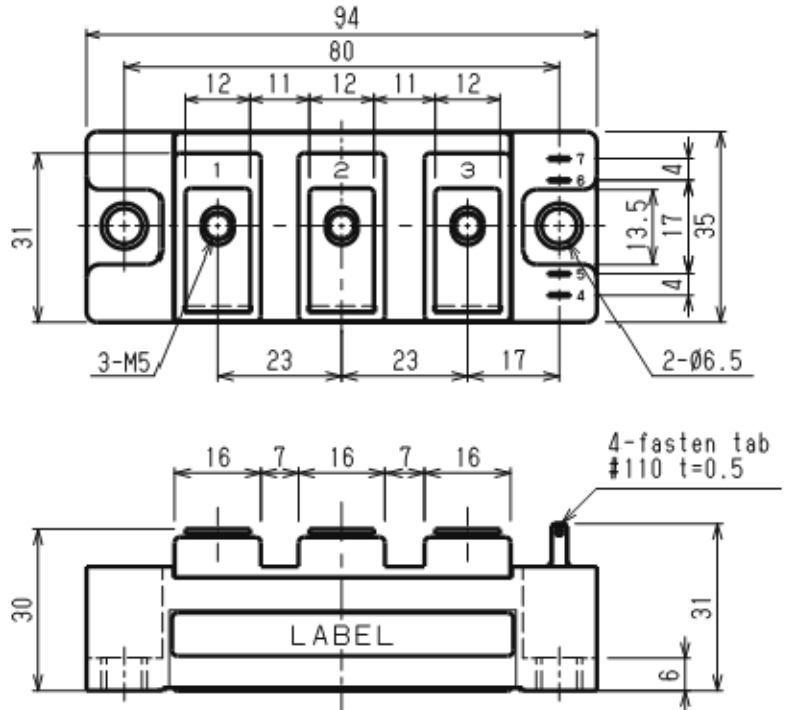
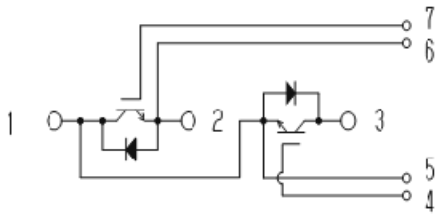


□ 回路図 : *CIRCUIT*

 □ 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-Emmitter Voltage    | $V_{CES}$               | G-E Short                           | 650             | V                |       |
|  | ゲート・エミッタ間電圧<br>Gate-Emmitter Voltage          | $V_{GES}$               | C-E Short                           | $\pm 20$        | V                |       |
|  | コレクタ電流<br>Collector Current                   | $I_C$                   | DC $T_c=85^\circ\text{C}$           | 50              | A                |       |
|  |   | $I_{CP}$                | Pulse $\leq 1\text{ms}$             | 100             |                  |       |
| コレクタ損失<br>Collector Power Dissipation  | $P_C$   | $T_j=175^\circ\text{C}$ | 217                                 | W               |                  |       |
|  |   | $T_j=150^\circ\text{C}$ | 181                                 |                 |                  |       |
| 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                        | $I_F$                   |                                     | 50              | A                |       |
|  |   | $I_{FM}$                | Pulse $\leq 1\text{ms}$             | 100             |                  |       |
| 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                |       |

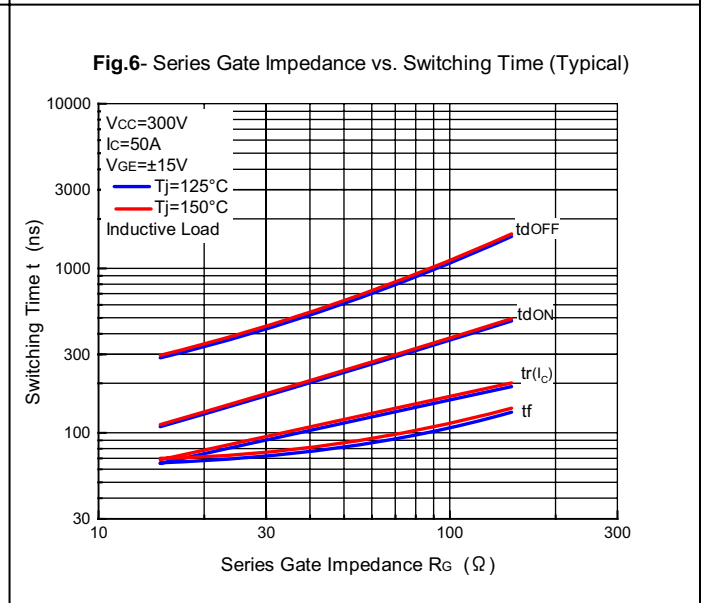
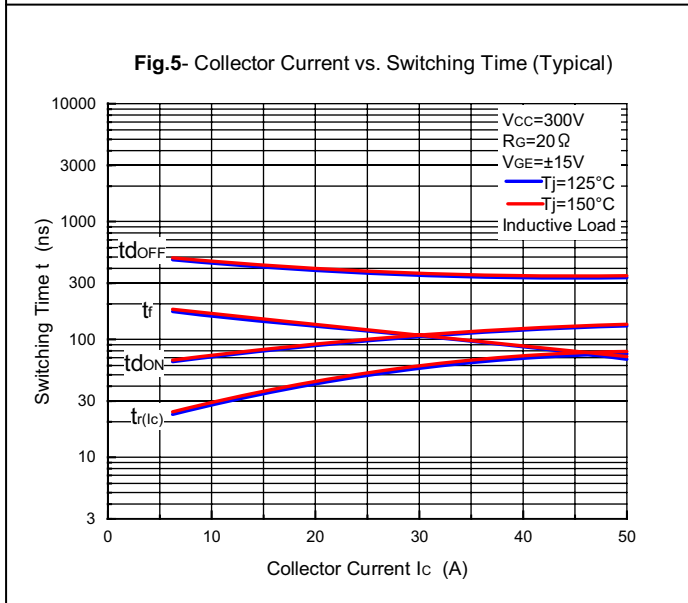
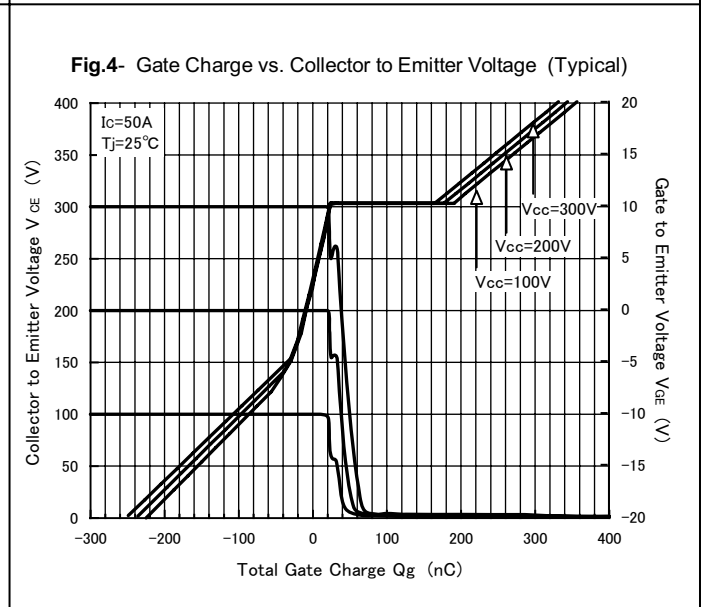
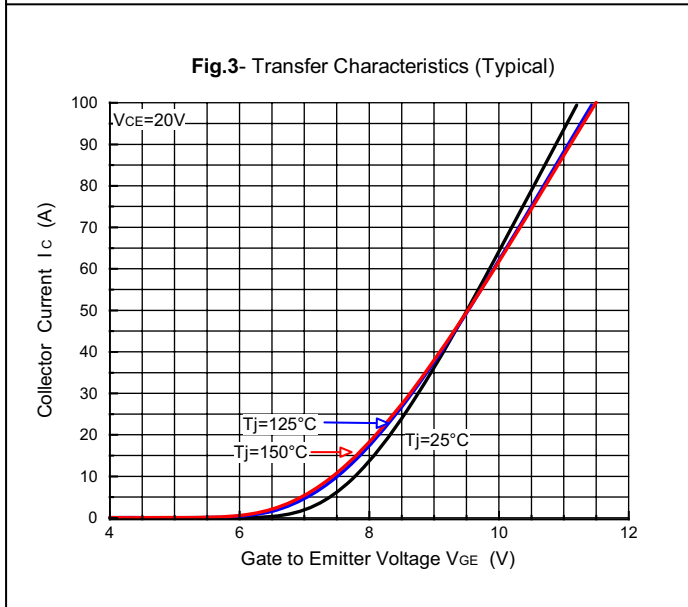
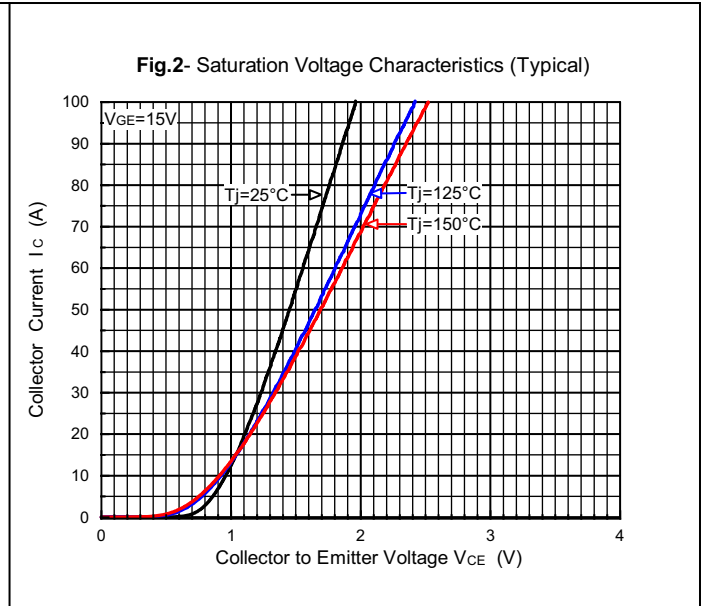
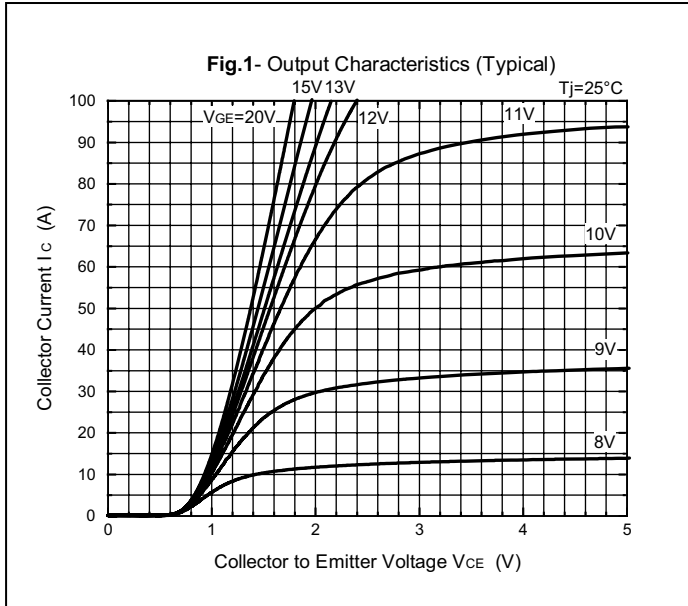
□ 電 氣 的 特 性 : **ELECTRICAL CHARACTERISTICS** (at  $T_J=25^\circ\text{C}$  unless otherwise specified)

| 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.) | $I_C=50A, V_{GE}=15V$<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.)  | $V_{CE}=10V, I_C=1mA$  | 4.8                     | —    | 7.0  | V             |   |
|                                    | 入力容量<br>Input Capacitance                              | Cies      | $V_{CE}=25V, V_{GE}=0V, f=1MHz$  | —                       | 4.5  | —    | nF            |   |
|                                    | 出力容量<br>Output Capacitance                             | Coes      |  | —                       | 0.2  | —    |               |   |
|                                    | 帰還容量<br>Reverse Transfer Capacitance                   | Cres      |  | —                       | 0.15 | —    |               |   |
|                                    | ゲート電荷量<br>Gate Charge                                  | Qg        | $V_{CC}=300V, I_C=50A, V_{GE}=-15\sim+15V$   | —                       | 425  | —    | nC            |   |
| スイッチング時間<br>Switching Time         | 上昇時間<br>Rise Time                                      | tr        | $V_{CC}=300V, L_s=38nH$<br>$I_C=50A$ Inductive Load<br>$R_G=20\Omega$<br>$V_{GE}=\pm 15V$<br>$T_J=150^\circ\text{C}$ | —                       | 78   | —    | ns            |   |
|                                    | ターンオン遅延時間<br>Turn-on Delay Time                        | td(on)    |  | —                       | 134  | —    |               |   |
|                                    | 下降時間<br>Fall Time                                      | tf        |  | —                       | 72   | —    |               |   |
|                                    | ターンオフ遅延時間<br>Turn-off Delay Time                       | td(off)   |  | —                       | 347  | —    |               |   |
| FWD                                | 順電圧<br>Peak Forward Voltage                            | $V_F$     | $I_F=50A, V_{GE}=0V$<br>(chip level)   | $T_J=25^\circ\text{C}$  | —    | 1.70 | 2.20          | V |
|                                    | 逆回復時間<br>Reverse Recovery Time                         | trr       |  | $T_J=125^\circ\text{C}$ | —    | 1.60 | —             |   |
| $T_J=150^\circ\text{C}$            |  |           |  | —                       | 1.55 | —    |               |   |
| 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    | 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 (Tc測定点: チップ直下)                        | —    | —    | 0.69 | $^\circ\text{C}/\text{W}$ |
|                                 | FWD  |          |   | —    | —    | 1.66 |                           |
| 接 触 熱 抵 抗<br>Thermal Resistance | IGBT | Rth(c-f) | Case to heatsink<br>Per 1 Arm Paste=1W/(m $^2$ · $^\circ\text{C}$ ) | —    | 0.10 | —    |                           |
|                                 | FWD  |          |   | —    | 0.17 | —    |                           |

特性 : CHARACTERISTICS CURVES



特性图 : CHARACTERISTICS CURVES

