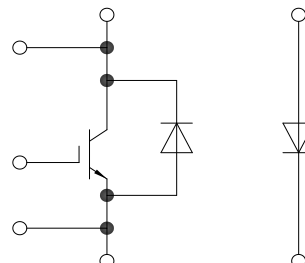


IHM-B モジュール チョッパ内蔵  
IHM-B module with chopper configuration



$V_{CES} = 1700V$   
 $I_{C\ nom} = 800A / I_{CRM} = 1600A$

**一般応用**

- チョッパアプリケーション
- ハイパワーコンバータ
- 電鉄駆動
- 風力タービン

**Typical Applications**

- Chopper applications
- High power converters
- Traction drives
- Wind turbines

**電気的特性**

- 拡張された動作温度  $T_{vj\ op}$
- 低  $V_{CEsat}$  飽和電圧

**Electrical Features**

- Extended operating temperature  $T_{vj\ op}$
- Low  $V_{CEsat}$

**機械的特性**

- 4 kV AC 1分 絶縁耐圧
- サーマルサイクル耐量を増加するAlSiCベースプレート
- CTI(比較トラッキング指数) >400のモジュールパッケージ
- 長い縁面/空間距離
- 高いパワー/サーマルサイクル耐量
- 高いパワー密度
- IHM Bハウジング

**Mechanical Features**

- 4 kV AC 1min insulation
- AlSiC base plate for increased thermal cycling capability
- Package with CTI > 400
- High creepage and clearance distances
- High power and thermal cycling capability
- High power density
- IHM B housing

**Module Label Code**

**Barcode Code 128**



**DMX - Code**



**Content of the Code**

| Content of the Code        | Digit   |
|----------------------------|---------|
| Module Serial Number       | 1 - 5   |
| Module Material Number     | 6 - 11  |
| Production Order Number    | 12 - 19 |
| Datecode (Production Year) | 20 - 21 |
| Datecode (Production Week) | 22 - 23 |

|                 |                                 |                      |
|-----------------|---------------------------------|----------------------|
| prepared by: WB | date of publication: 2016-01-21 |                      |
| approved by: IB | revision: V3.1                  | UL approved (E83335) |



**IGBT-ブレーキチョッパー / IGBT, Brake-Chopper**  
**最大定格 / Maximum Rated Values**

|  |   |                   |                      |    |
|--|---|-------------------|----------------------|----|
| コレクタ・エミッタ間電圧<br>Collector-emitter voltage          | $T_{vj} = -40^{\circ}\text{C}$<br>$T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $V_{CES}$         | 1570<br>1700<br>1700 | V  |
| 連続DCコレクタ電流<br>Continuous DC collector current      | $T_C = 100^{\circ}\text{C}$ , $T_{vj\max} = 175^{\circ}\text{C}$                                  | $I_{C\text{nom}}$ | 800                  | A  |
| 繰り返しピークコレクタ電流<br>Repetitive peak collector current | $t_P = 1\text{ ms}$   | $I_{CRM}$         | 1600                 | A  |
| トータル損失<br>Total power dissipation                  | $T_C = 25^{\circ}\text{C}$ , $T_{vj\max} = 175^{\circ}\text{C}$                                   | $P_{\text{tot}}$  | 5,20                 | kW |
| ゲート・エミッタ間ピーク電圧<br>Gate-emitter peak voltage        |   | $V_{GES}$         | +/-20                | V  |

**電気的特性 / Characteristic Values**

|   |  |   | min.               | typ.                 | max. |             |   |
|---|--|---|--------------------|----------------------|------|-------------|---|
| コレクタ・エミッタ間飽和電圧<br>Collector-emitter saturation voltage  | $I_C = 800\text{ A}$ , $V_{GE} = 15\text{ V}$<br>$I_C = 800\text{ A}$ , $V_{GE} = 15\text{ V}$<br>$I_C = 800\text{ A}$ , $V_{GE} = 15\text{ V}$                        | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $V_{CE\text{sat}}$ | 1,90<br>2,30<br>2,40 | 2,25 | V<br>V<br>V |   |
| ゲート・エミッタ間しきい値電圧<br>Gate threshold voltage               | $I_C = 48,0\text{ mA}$ , $V_{CE} = V_{GE}$ , $T_{vj} = 25^{\circ}\text{C}$   |   | $V_{GEth}$         | 5,20                 | 5,80 | 6,40        | V   |
| ゲート電荷量<br>Gate charge                                   | $V_{GE} = -15\text{ V} \dots +15\text{ V}$   |   | $Q_G$              | 8,50                 |      |             | $\mu\text{C}$                                   |
| 内蔵ゲート抵抗<br>Internal gate resistor                       | $T_{vj} = 25^{\circ}\text{C}$  |   | $R_{Gint}$         | 1,9                  |      |             | $\Omega$  |
| 入力容量<br>Input capacitance                               | $f = 1\text{ MHz}$ , $T_{vj} = 25^{\circ}\text{C}$ , $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$  |   | $C_{ies}$          | 65,0                 |      |             | nF  |
| 帰還容量<br>Reverse transfer capacitance                    | $f = 1\text{ MHz}$ , $T_{vj} = 25^{\circ}\text{C}$ , $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$  |   | $C_{res}$          | 2,10                 |      |             | nF  |
| コレクタ・エミッタ間遮断電流<br>Collector-emitter cut-off current     | $V_{CE} = 1570\text{ V}$ , $V_{GE} = 0\text{ V}$ , $T_{vj} = 25^{\circ}\text{C}$   |   | $I_{CES}$          |                      |      | 5,0         | mA  |
| ゲート・エミッタ間漏れ電流<br>Gate-emitter leakage current           | $V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$ , $T_{vj} = 25^{\circ}\text{C}$   |   | $I_{GES}$          |                      |      | 400         | nA  |
| ターンオン遅れ時間 (誘導負荷)<br>Turn-on delay time, inductive load  | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Gon} = 0,39\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $t_{don}$          | 0,50<br>0,55<br>0,55 |      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| ターンオン上昇時間 (誘導負荷)<br>Rise time, inductive load           | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Gon} = 0,39\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $t_r$              | 0,10<br>0,12<br>0,12 |      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| ターンオフ遅れ時間 (誘導負荷)<br>Turn-off delay time, inductive load | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Goff} = 2,2\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $t_{doff}$         | 1,10<br>1,20<br>1,25 |      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| ターンオフ下降時間 (誘導負荷)<br>Fall time, inductive load           | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Goff} = 2,2\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $t_f$              | 0,40<br>0,70<br>0,75 |      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| ターンオンスイッチング損失<br>Turn-on energy loss per pulse          | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$ , $L_S = 50\text{ nH}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Gon} = 0,39\ \Omega$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $E_{on}$           | 180<br>245<br>265    |      |             | mJ<br>mJ<br>mJ                                  |
| ターンオフスイッチング損失<br>Turn-off energy loss per pulse         | $I_C = 800\text{ A}$ , $V_{CE} = 900\text{ V}$ , $L_S = 50\text{ nH}$<br>$V_{GE} = \pm 15\text{ V}$<br>$R_{Goff} = 2,2\ \Omega$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $E_{off}$          | 240<br>325<br>345    |      |             | mJ<br>mJ<br>mJ                                  |
| 短絡電流<br>SC data   | $V_{GE} \leq 15\text{ V}$ , $V_{CC} = 1000\text{ V}$<br>$V_{CE\text{max}} = V_{CES} - L_{sCE} \cdot di/dt$ $t_P \leq 10\ \mu\text{s}$ , $T_{vj} = 150^{\circ}\text{C}$ |   | $I_{SC}$           | 3800                 |      |             | A   |
| ジャンクション・ケース間熱抵抗<br>Thermal resistance, junction to case | IGBT部 ( 1素子当り ) / per IGBT   |   | $R_{thJC}$         |                      |      | 23,2        | K/kW  |
| ケース・ヒートシンク間熱抵抗<br>Thermal resistance, case to heatsink  | IGBT部 ( 1素子当り ) / per IGBT<br>$\lambda_{\text{Paste}} = 1\text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1\text{ W}/(\text{m}\cdot\text{K})$           |   | $R_{thCH}$         | 30,0                 |      |             | K/kW  |
| 動作温度<br>Temperature under switching conditions          |  |   | $T_{vj\text{op}}$  | -40                  | 150  |             | $^{\circ}\text{C}$                              |

|                 |                                 |
|-----------------|---------------------------------|
| prepared by: WB | date of publication: 2016-01-21 |
| approved by: IB | revision: V3.1                  |



**Diode、ブレーキチョッパー / Diode, Brake-Chopper**  
**最大定格 / Maximum Rated Values**

|  |  |                      |                      |  |
|--|--|----------------------|----------------------|--|
| ピーク繰返し逆電圧<br>Repetitive peak reverse voltage | $T_{vj} = -40^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$   | $V_{RRM}$            | 1570<br>1700<br>1700 | V  |
| 連続DC電流<br>Continuous DC forward current      |  | $I_F$                | 800                  | A  |
| ピーク繰返し順電流<br>Repetitive peak forward current | $t_P = 1 \text{ ms}$   | $I_{FRM}$            | 1600                 | A  |
| 電流二乗時間積<br>$I^2t$ - value                    | $V_R = 0 \text{ V}, t_P = 10 \text{ ms}, T_{vj} = 125^{\circ}\text{C}$<br>$V_R = 0 \text{ V}, t_P = 10 \text{ ms}, T_{vj} = 150^{\circ}\text{C}$ | $I^2t$               | 160<br>150           | $\text{kA}^2\text{s}$<br>$\text{kA}^2\text{s}$ |
| 最大損失<br>Maximum power dissipation            | $T_{vj} = 125^{\circ}\text{C}$   | $P_{RQM}$            | 1200                 | kW   |
| 最小ターンオン時間<br>Minimum turn-on time            |  | $t_{on \text{ min}}$ | 10,0                 | $\mu\text{s}$                                  |

**電気的特性 / Characteristic Values**

|   |   |   | min.                | typ.                 | max. |   |
|---|---|---|---------------------|----------------------|------|---|
| 順電圧<br>Forward voltage                                  | $I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$<br>$I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$<br>$I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$                         | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $V_F$               | 1,65<br>1,65<br>1,65 | 2,10 | V<br>V<br>V                                     |
| ピーク逆回復電流<br>Peak reverse recovery current               | $I_F = 800 \text{ A}, -di_F/dt = 6800 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$<br>$V_{GE} = -15 \text{ V}$                    | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $I_{RM}$            | 990<br>1150<br>1200  |      | A<br>A<br>A                                     |
| 逆回復電荷量<br>Recovered charge                              | $I_F = 800 \text{ A}, -di_F/dt = 6800 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$<br>$V_{GE} = -15 \text{ V}$                    | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $Q_r$               | 220<br>390<br>440    |      | $\mu\text{C}$<br>$\mu\text{C}$<br>$\mu\text{C}$ |
| 逆回復損失<br>Reverse recovery energy                        | $I_F = 800 \text{ A}, -di_F/dt = 6800 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$<br>$V_{GE} = -15 \text{ V}$                    | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $E_{rec}$           | 115<br>235<br>265    |      | mJ<br>mJ<br>mJ                                  |
| ジャンクション・ケース間熱抵抗<br>Thermal resistance, junction to case | /Diode ( 1 素子当り ) / per diode   |   | $R_{thJC}$          |                      | 31,9 | K/kW  |
| ケース・ヒートシンク間熱抵抗<br>Thermal resistance, case to heatsink  | /Diode ( 1 素子当り ) / per diode<br>$\lambda_{\text{Paste}} = 1 \text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1 \text{ W}/(\text{m}\cdot\text{K})$ |   | $R_{thCH}$          | 33,0                 |      | K/kW  |
| 動作温度<br>Temperature under switching conditions          |   |   | $T_{vj \text{ op}}$ | -40                  | 150  | $^{\circ}\text{C}$                              |

|                 |                                 |
|-----------------|---------------------------------|
| prepared by: WB | date of publication: 2016-01-21 |
| approved by: IB | revision: V3.1                  |



**Diode、リバーズ / Diode, Reverse**  
**最大定格 / Maximum Rated Values**

|  |  |                      |                      |  |
|--|--|----------------------|----------------------|--|
| ピーク繰返し逆電圧<br>Repetitive peak reverse voltage | $T_{vj} = -40^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$   | $V_{RRM}$            | 1570<br>1700<br>1700 | V  |
| 連続DC電流<br>Continuous DC forward current      |  | $I_F$                | 800                  | A  |
| ピーク繰返し順電流<br>Repetitive peak forward current | $t_P = 1 \text{ ms}$   | $I_{FRM}$            | 1600                 | A  |
| 電流二乗時間積<br>$I^2t$ - value                    | $V_R = 0 \text{ V}, t_P = 10 \text{ ms}, T_{vj} = 125^{\circ}\text{C}$<br>$V_R = 0 \text{ V}, t_P = 10 \text{ ms}, T_{vj} = 150^{\circ}\text{C}$ | $I^2t$               | 105<br>95,0          | $\text{kA}^2\text{s}$<br>$\text{kA}^2\text{s}$ |
| 最大損失<br>Maximum power dissipation            | $T_{vj} = 125^{\circ}\text{C}$   | $P_{RQM}$            | 800                  | kW   |
| 最小ターンオン時間<br>Minimum turn-on time            |  | $t_{on \text{ min}}$ | 10,0                 | $\mu\text{s}$                                  |

**電気的特性 / Characteristic Values**

|   |   |   | min.                | typ.                 | max. |   |
|---|---|---|---------------------|----------------------|------|---|
| 順電圧<br>Forward voltage                                  | $I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$<br>$I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$<br>$I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$                         | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $V_F$               | 1,80<br>1,90<br>1,95 | 2,20 | V<br>V<br>V                                     |
| ピーク逆回復電流<br>Peak reverse recovery current               | $I_F = 800 \text{ A}, -di_F/dt = 6500 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $I_{RM}$            | 900<br>1000<br>1050  |      | A<br>A<br>A                                     |
| 逆回復電荷量<br>Recovered charge                              | $I_F = 800 \text{ A}, -di_F/dt = 6500 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $Q_r$               | 190<br>320<br>360    |      | $\mu\text{C}$<br>$\mu\text{C}$<br>$\mu\text{C}$ |
| 逆回復損失<br>Reverse recovery energy                        | $I_F = 800 \text{ A}, -di_F/dt = 6500 \text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$<br>$V_R = 900 \text{ V}$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 150^{\circ}\text{C}$ | $E_{rec}$           | 110<br>200<br>230    |      | mJ<br>mJ<br>mJ                                  |
| ジャンクション・ケース間熱抵抗<br>Thermal resistance, junction to case | /Diode ( 1 素子当り ) / per diode   |   | $R_{thJC}$          |                      | 39,1 | K/kW  |
| ケース・ヒートシンク間熱抵抗<br>Thermal resistance, case to heatsink  | /Diode ( 1 素子当り ) / per diode<br>$\lambda_{\text{Paste}} = 1 \text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1 \text{ W}/(\text{m}\cdot\text{K})$ |   | $R_{thCH}$          | 33,0                 |      | K/kW  |
| 動作温度<br>Temperature under switching conditions          |   |   | $T_{vj \text{ op}}$ | -40                  | 150  | $^{\circ}\text{C}$                              |

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| prepared by: WB | date of publication: 2016-01-21 |
| approved by: IB | revision: V3.1                  |



モジュール / Module

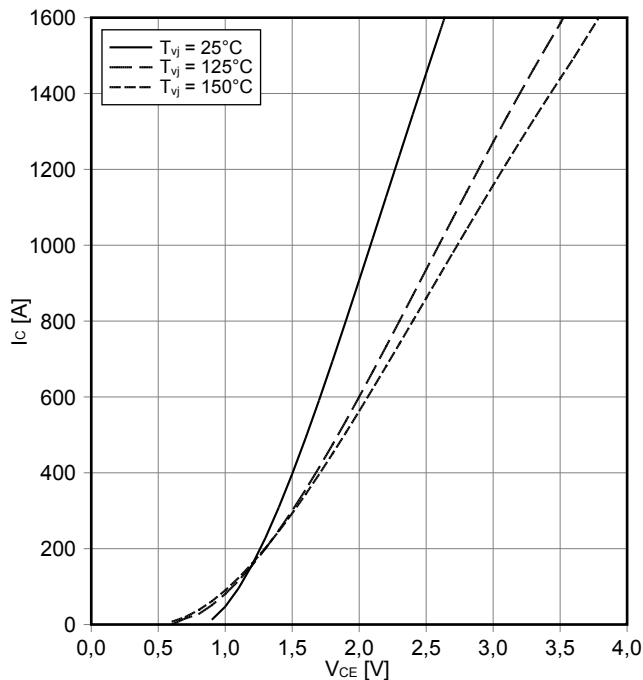
|   |  |  |              |              |              |
|---|--|--|--------------|--------------|--------------|
| 絶縁耐圧<br>Isolation test voltage                              | RMS, f = 50 Hz, t = 1 min.   | V <sub>ISOL</sub>                            | 4,0          |              | kV           |
| ベースプレート材質<br>Material of module baseplate                   |  |  | AISiC        |              |              |
| 沿面距離<br>Creepage distance                                   | 連絡方法 - ヒートシンク / terminal to heatsink<br>連絡方法 - 連絡方法 / terminal to terminal   |  | 32,2<br>32,2 |              | mm           |
| 空間距離<br>Clearance   | 連絡方法 - ヒートシンク / terminal to heatsink<br>連絡方法 - 連絡方法 / terminal to terminal   |  | 19,1<br>19,1 |              | mm           |
| 相対トラッキング指数<br>Comperative tracking index                    |  | CTI  | > 400        |              |              |
|   |  |  | min.         | typ.         | max.         |
| 内部インダクタンス<br>Stray inductance module                        |  | L <sub>sCE</sub>                             |              | 18           | nH           |
| パワーターミナル・チップ間抵抗<br>Module lead resistance, terminals - chip | T <sub>c</sub> = 25°C, /スイッチ / per switch  | R <sub>CC'+EE'</sub><br>R <sub>AA'+CC'</sub> |              | 0,28<br>0,25 | mΩ           |
| 保存温度<br>Storage temperature                                 |  | T <sub>stg</sub>                             | -40          |              | 150 °C       |
| 取り付けネジ締め付けトルク<br>Mounting torque for modul mounting         | 取り付けネジ M6<br>適切なアプリケーションノートによるマウンティング<br>Screw M6 - Mounting according to valid application note   | M  | 4,25         |              | 5,75 Nm      |
| 主端子ネジ締め付けトルク<br>Terminal connection torque                  | 取り付けネジ M4<br>適切なアプリケーションノートによるマウンティング<br>Screw M4 - Mounting according to valid application note<br>取り付けネジ M8<br>適切なアプリケーションノートによるマウンティング<br>Screw M8 - Mounting according to valid application note | M  | 1,8<br>8,0   | -<br>-       | 2,1<br>10 Nm |
| 質量<br>Weight  |  | G  |              | 800          | g            |

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| prepared by: WB | date of publication: 2016-01-21 |
| approved by: IB | revision: V3.1                  |



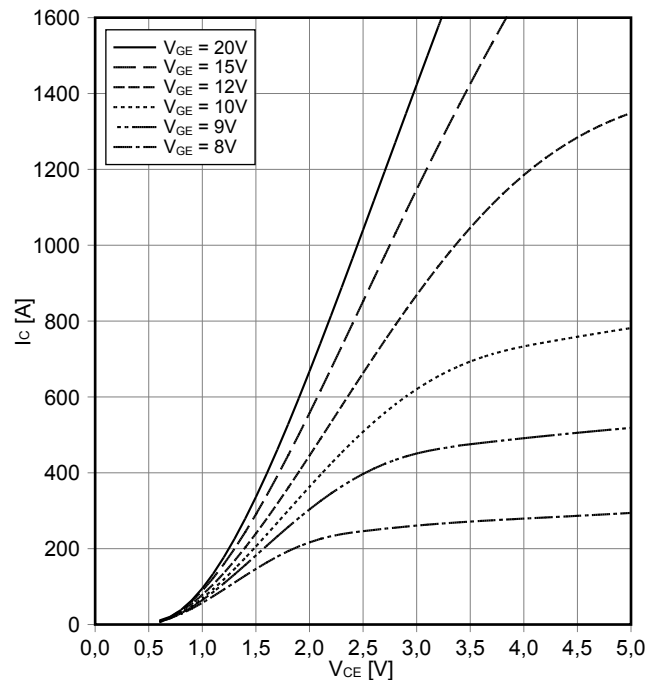
出力特性 IGBT-ブレーキチョッパー (Typical)  
output characteristic IGBT, Brake-Chopper (typical)

$I_c = f(V_{CE})$   
 $V_{GE} = 15\text{ V}$



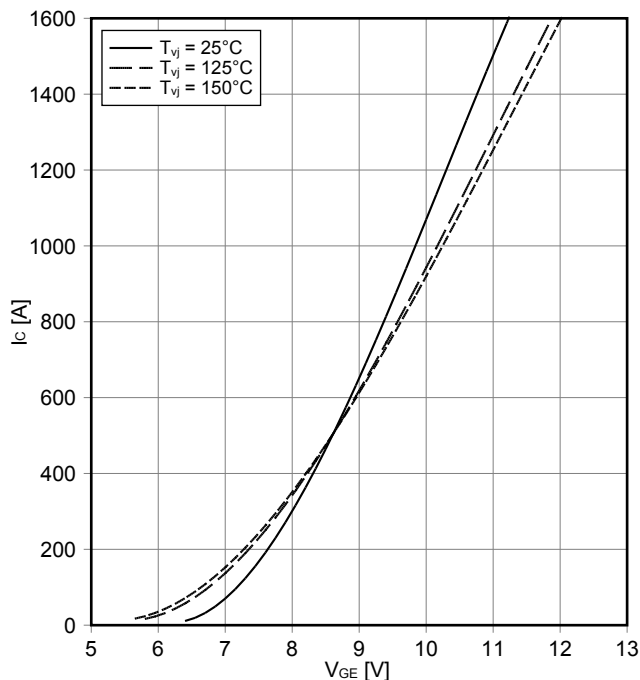
出力特性 IGBT-ブレーキチョッパー (Typical)  
output characteristic IGBT, Brake-Chopper (typical)

$I_c = f(V_{CE})$   
 $T_{vj} = 150^\circ\text{C}$



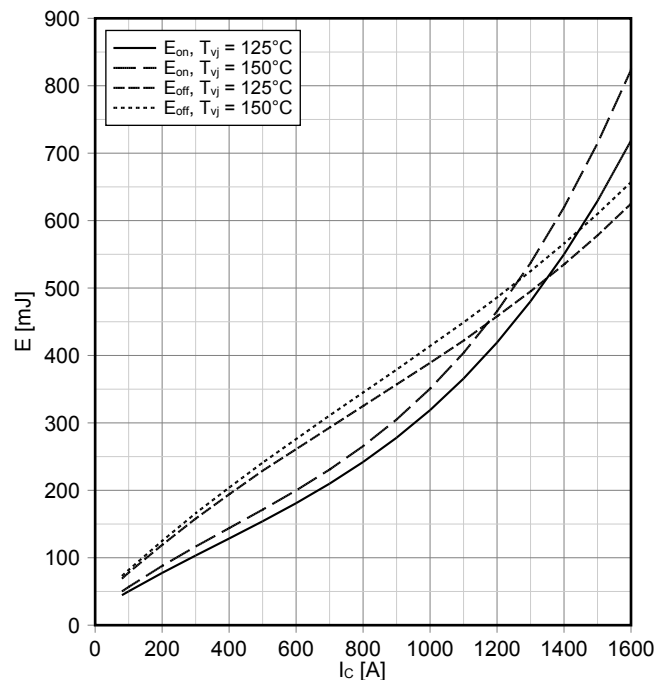
伝達特性 IGBT-ブレーキチョッパー (Typical)  
transfer characteristic IGBT, Brake-Chopper (typical)

$I_c = f(V_{GE})$   
 $V_{CE} = 20\text{ V}$



スイッチング損失 IGBT-ブレーキチョッパー (Typical)  
switching losses IGBT, Brake-Chopper (typical)

$E_{on} = f(I_c)$ ,  $E_{off} = f(I_c)$   
 $V_{GE} = \pm 15\text{ V}$ ,  $R_{Gon} = 0.39\ \Omega$ ,  $R_{Goff} = 2.2\ \Omega$ ,  $V_{CE} = 900\text{ V}$

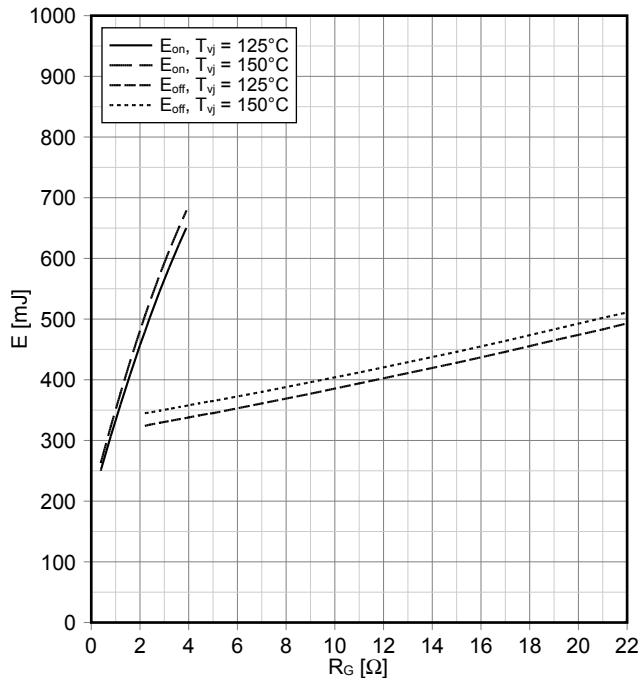


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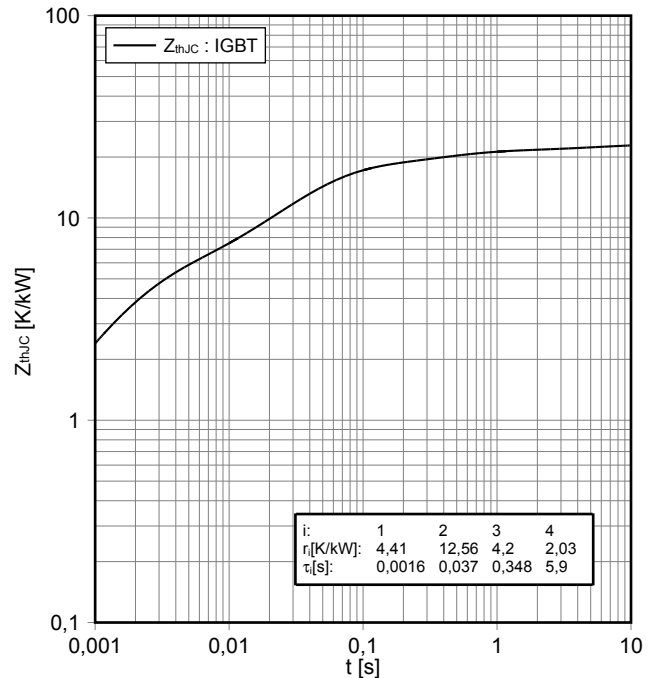
スイッチング損失 IGBT-ブレーキチョッパー (Typical)  
switching losses IGBT, Brake-Chopper (typical)

$E_{on} = f(R_G)$ ,  $E_{off} = f(R_G)$   
 $V_{GE} = \pm 15\text{ V}$ ,  $I_C = 800\text{ A}$ ,  $V_{CE} = 900\text{ V}$



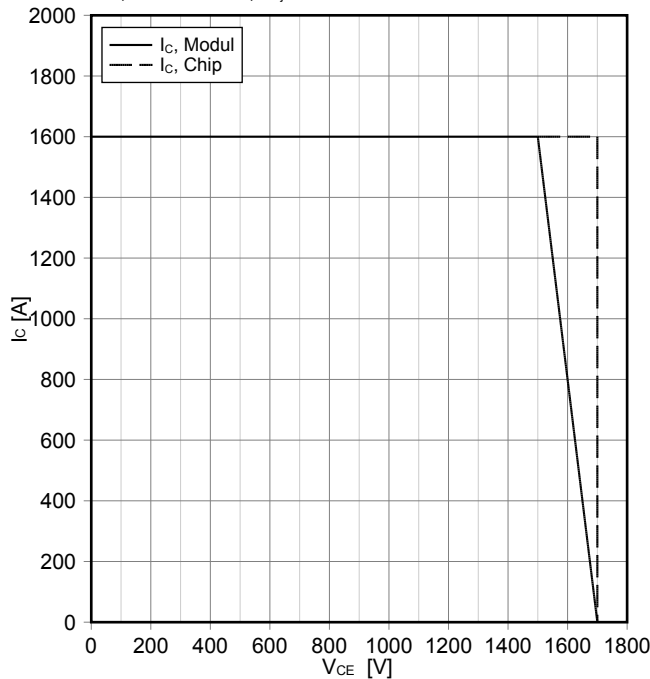
過渡熱インピーダンス IGBT-ブレーキチョッパー  
transient thermal impedance IGBT, Brake-Chopper

$Z_{thJC} = f(t)$



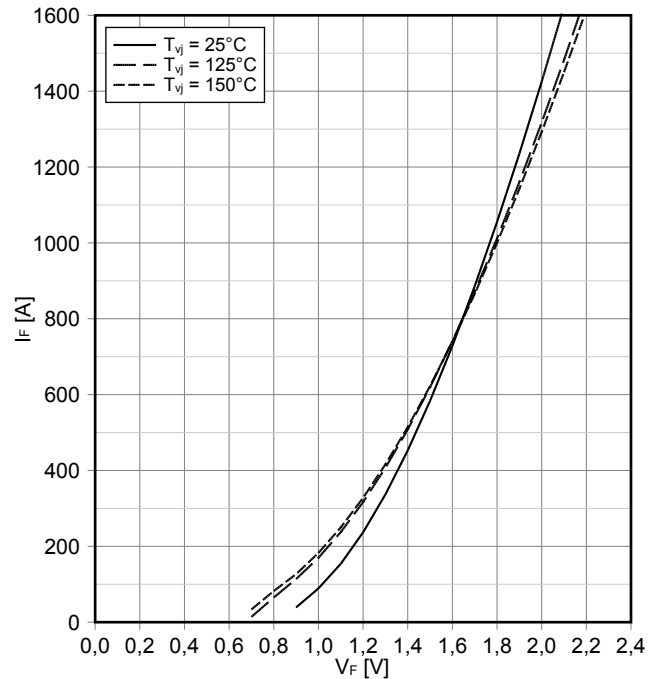
逆バイアス安全動作領域 IGBT-ブレーキチョッパー (RBSOA)  
reverse bias safe operating area IGBT, Brake-Chopper (RBSOA)

$I_C = f(V_{CE})$   
 $V_{GE} = \pm 15\text{ V}$ ,  $R_{Goff} = 2.2\ \Omega$ ,  $T_{vj} = 150^\circ\text{C}$



順電圧特性 Diode、ブレーキチョッパー (typical)  
forward characteristic of Diode, Brake-Chopper (typical)

$I_F = f(V_F)$

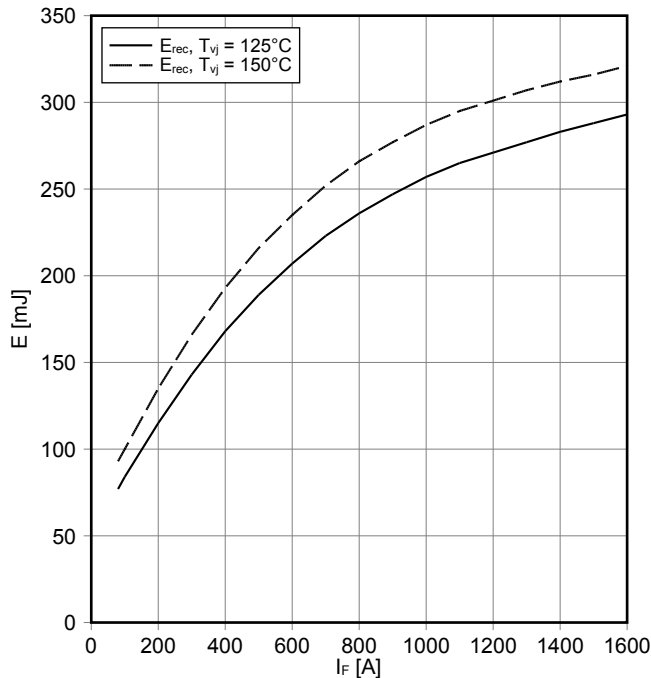


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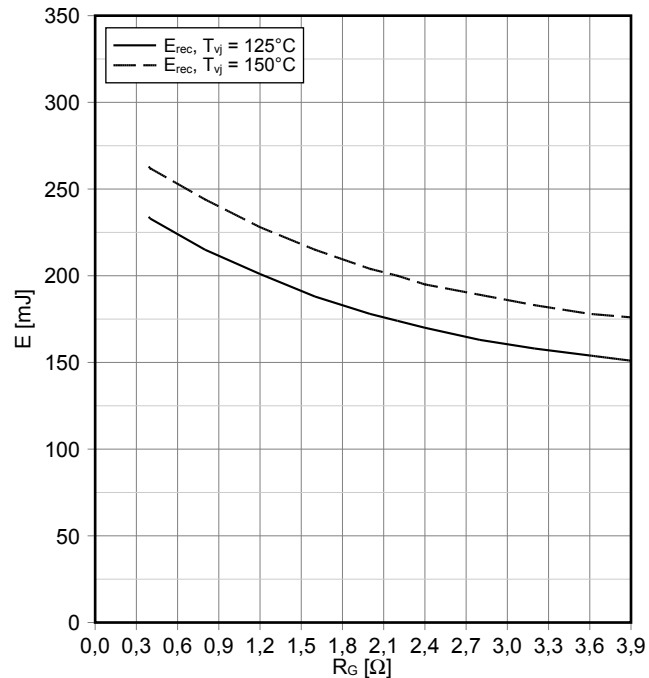
スイッチング損失 Diode、ブレーキチョッパー (Typical)  
switching losses Diode, Brake-Chopper (typical)

$E_{rec} = f(I_F)$   
 $R_{Gon} = 0.39 \Omega, V_{CE} = 900 V$



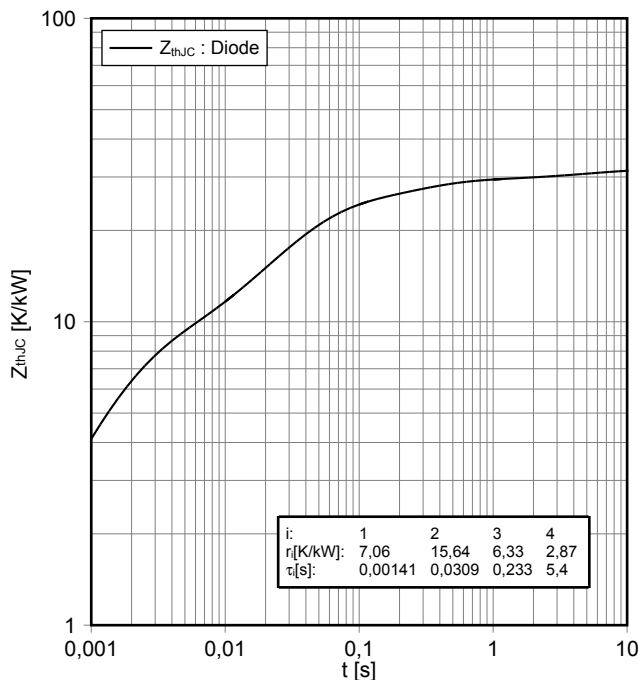
スイッチング損失 Diode、ブレーキチョッパー (Typical)  
switching losses Diode, Brake-Chopper (typical)

$E_{rec} = f(R_G)$   
 $I_F = 800 A, V_{CE} = 900 V$



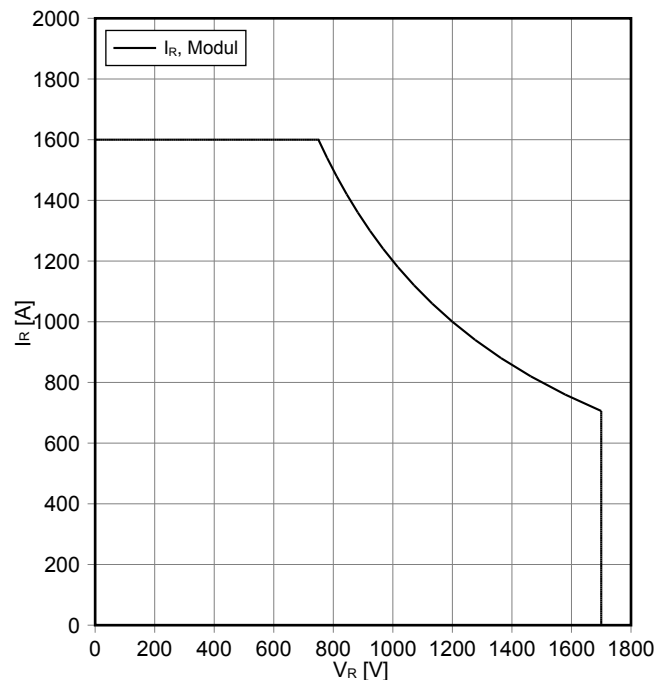
過渡熱インピーダンス Diode、ブレーキチョッパー  
transient thermal impedance Diode, Brake-Chopper

$Z_{thJC} = f(t)$



安全動作領域 Diode、ブレーキチョッパー (SOA)  
safe operation area Diode, Brake-Chopper (SOA)

$I_R = f(V_R)$   
 $T_{vj} = 150^\circ C$

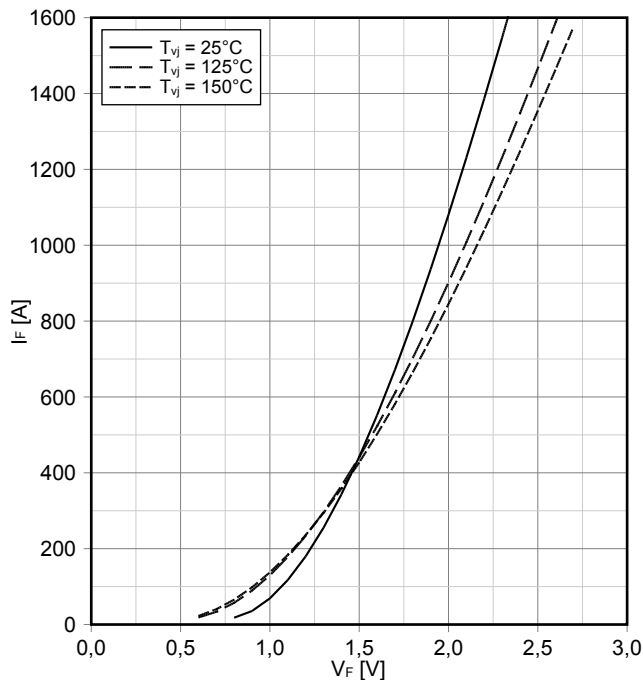


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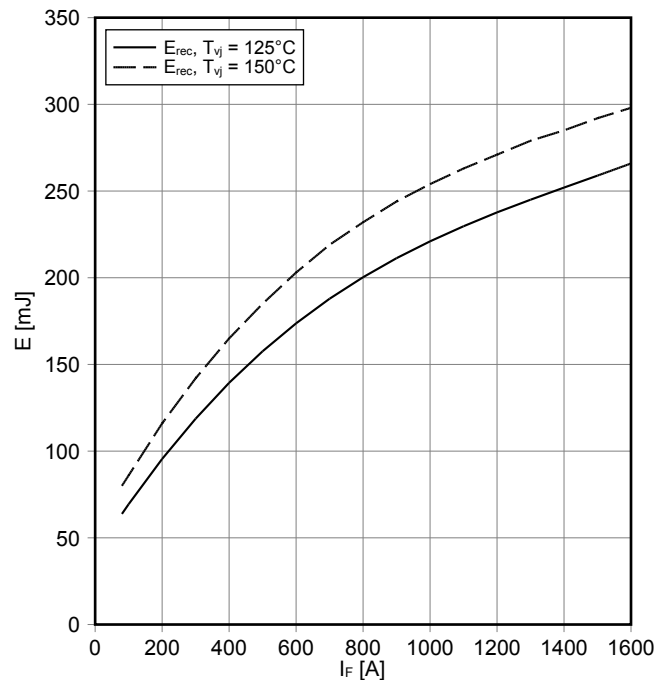


順電圧特性 Diode、リバース ( typical)  
forward characteristic of Diode, Reverse (typical)  
 $I_F = f(V_F)$



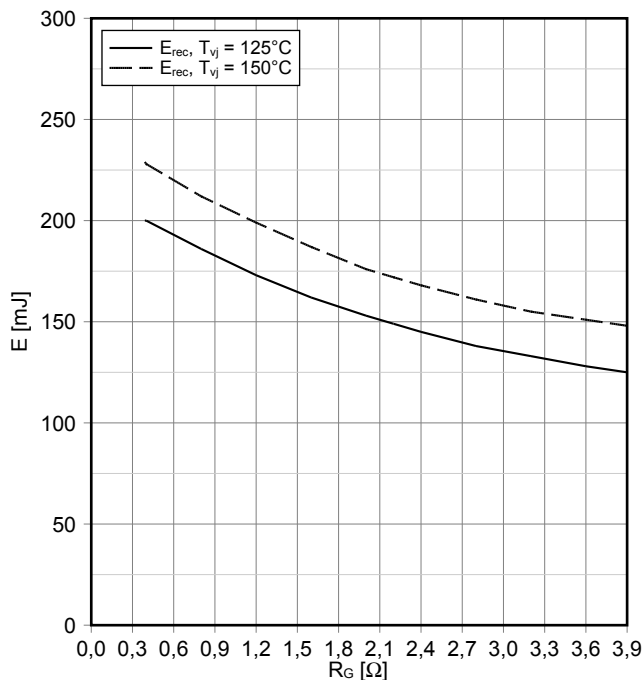
スイッチング損失 Diode、リバース (Typical)  
switching losses Diode, Reverse (typical)  
 $E_{rec} = f(I_F)$

$R_{Gon} = 0.39 \Omega$ ,  $V_{CE} = 900 V$

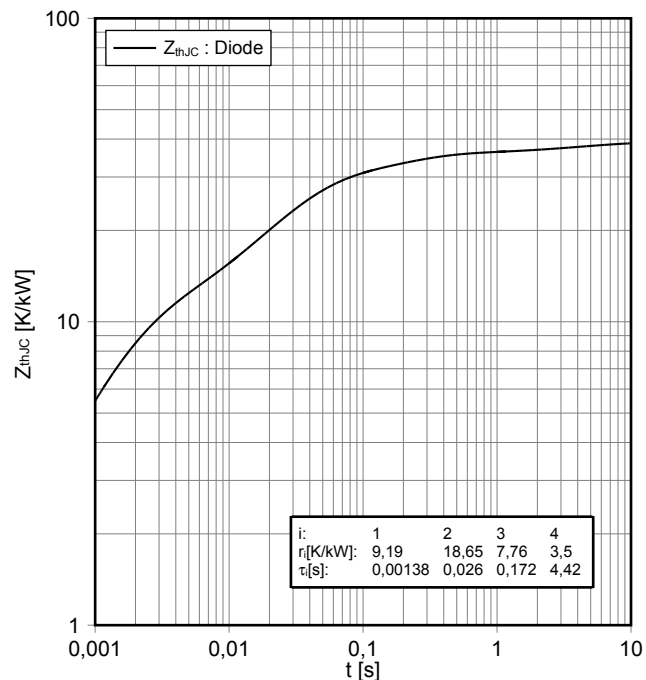


スイッチング損失 Diode、リバース (Typical)  
switching losses Diode, Reverse (typical)  
 $E_{rec} = f(R_G)$

$I_F = 800 A$ ,  $V_{CE} = 900 V$



過渡熱インピーダンス Diode、リバース  
transient thermal impedance Diode, Reverse  
 $Z_{thJC} = f(t)$

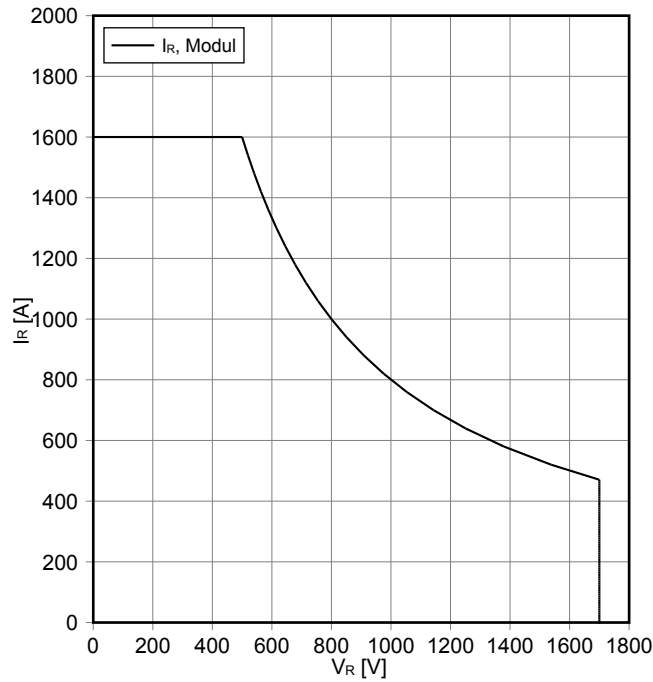


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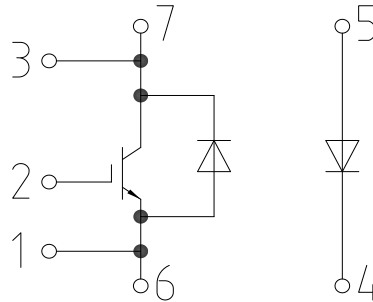
安全動作領域 Diode、リバース (SOA)  
safe operation area Diode, Reverse (SOA)

$I_R = f(V_R)$   
 $T_{vj} = 150^\circ\text{C}$

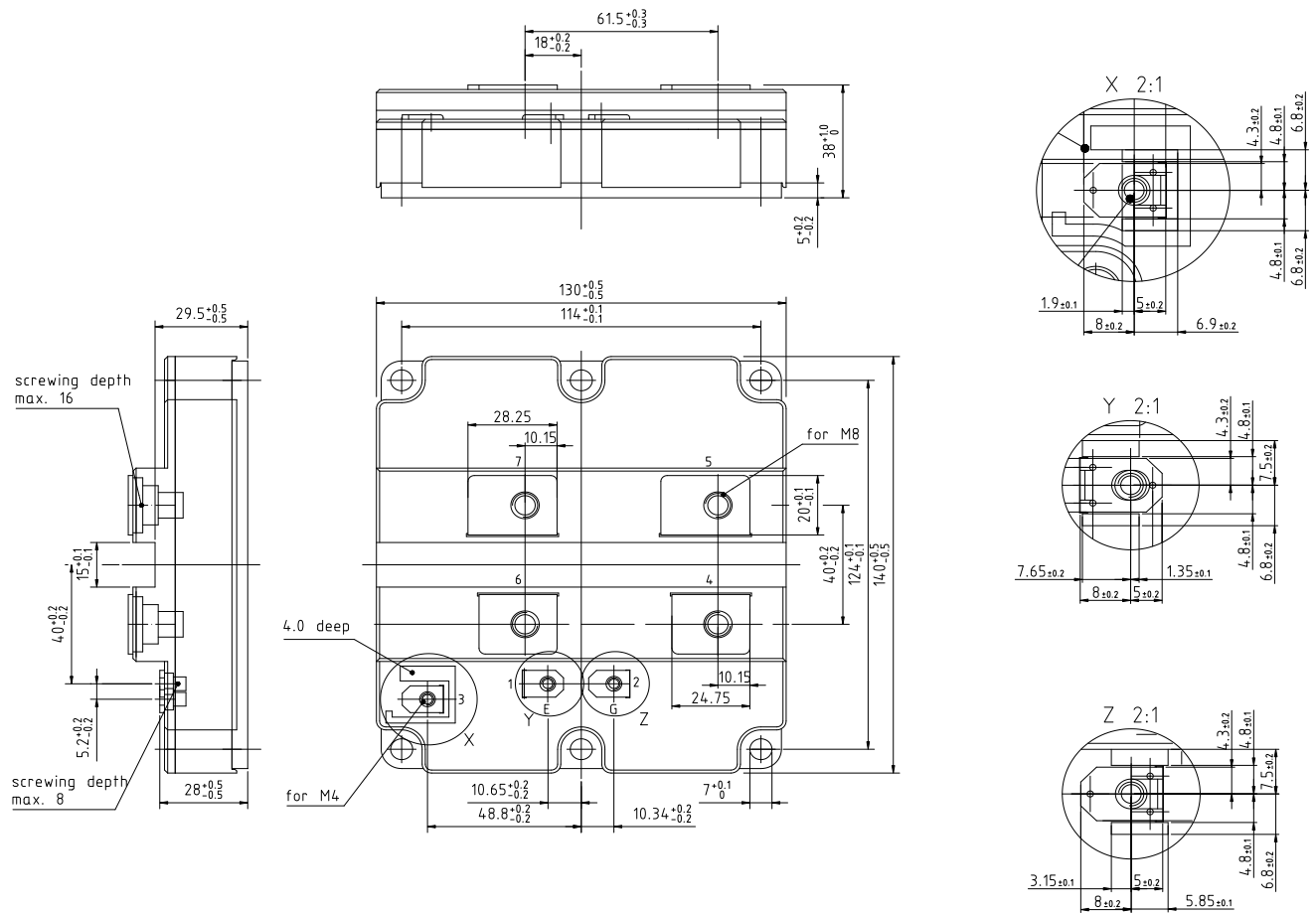


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回路図 / Circuit diagram



パッケージ概要 / Package outlines



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