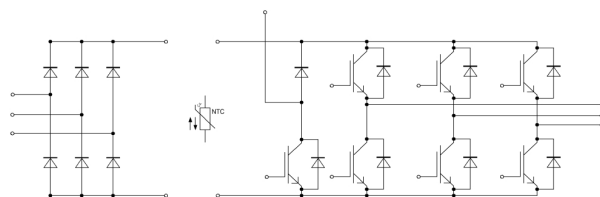
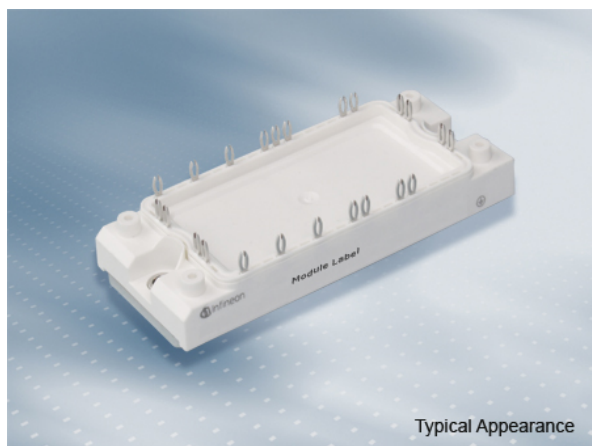


EconoPIM™2 モジュール トレンチ/フィールドストップ IGBT4 and エミッターコントロール3 diode内蔵 and PressFIT / NTCサーミスタ

EconoPIM™2 module with Trench/Fieldstop IGBT4 and Emitter Controlled 3 diode and PressFIT / NTC



$V_{CES} = 650V$

$I_{C\ nom} = 50A / I_{CRM} = 100A$

一般応用

- モーター駆動

電気的特性

- 650Vに増加したブロッキング電圧
- 高い短絡電流耐量
- $T_{vj\ op} = 150^{\circ}C$
- トレンチ IGBT 4
- 正温度特性を持った V_{CEsat} 飽和電圧

機械的特性

- 内蔵されたNTCサーミスタ
- 絶縁されたベースプレート
- 銅ベースプレート
- PressFIT 接合 技術

Typical Applications

- Motor drives

Electrical Features

- Increased blocking voltage capability up to 650V
- High short-circuit capability
- $T_{vj\ op} = 150^{\circ}C$
- Trench IGBT 4
- V_{CEsat} with positive temperature coefficient

Mechanical Features

- Integrated NTC temperature sensor
- Isolated base plate
- Copper base plate
- PressFIT contact technology

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 |

IGBT- インバータ / IGBT, Inverter 最大定格 / Maximum Rated Values

| | | | | |
|--|--|----------------------------|----------|--------|
| コレクタ・エミッタ間電圧 Collector-emitter voltage | $T_{vj} = 25^{\circ}\text{C}$ | V_{CES} | 650 | V |
| 連続DCコレクタ電流 Continuous DC collector current | $T_C = 80^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ | $I_{C\text{nom}}$ I_C | 50 70 | A A |
| 繰り返しピークコレクタ電流 Repetitive peak collector current | $t_P = 1\text{ms}$ | I_{CRM} | 100 | A |
| ゲート・エミッタ間ピーク電圧 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 Collector-emitter saturation voltage | $I_C = 50\text{A}, V_{GE} = 15\text{V}$ $I_C = 50\text{A}, V_{GE} = 15\text{V}$ $I_C = 50\text{A}, V_{GE} = 15\text{V}$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | $V_{CE\text{sat}}$ | 1,55 1,70 1,75 | 1,95 V V V |
| ゲート・エミッタ間しきい値電圧 Gate threshold voltage | $I_C = 0,80\text{mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$ | | V_{GEth} | 5,05 5,80 6,45 | V |
| ゲート電荷量 Gate charge | $V_{GE} = -15\text{V} \dots +15\text{V}$ | | Q_G | 0,50 | μC |
| 内蔵ゲート抵抗 Internal gate resistor | $T_{vj} = 25^{\circ}\text{C}$ | | R_{Gint} | 0,0 | Ω |
| 入力容量 Input capacitance | $f = 1\text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{V}, V_{GE} = 0\text{V}$ | | C_{ies} | 3,10 | nF |
| 帰還容量 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} | 0,095 | nF |
| コレクタ・エミッタ間遮断電流 Collector-emitter cut-off current | $V_{CE} = 650\text{V}, V_{GE} = 0\text{V}, T_{vj} = 25^{\circ}\text{C}$ | | I_{CES} | | 1,0 mA |
| ゲート・エミッタ間漏れ電流 Gate-emitter leakage current | $V_{CE} = 0\text{V}, V_{GE} = 20\text{V}, T_{vj} = 25^{\circ}\text{C}$ | | I_{GES} | | 100 nA |
| ターンオン遅れ時間 (誘導負荷) Turn-on delay time, inductive load | $I_C = 50\text{A}, V_{CE} = 300\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Gon} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_{don} | 0,023 0,023 0,023 | μs μs μs |
| ターンオン上昇時間 (誘導負荷) Rise time, inductive load | $I_C = 50\text{A}, V_{CE} = 300\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Gon} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_r | 0,015 0,018 0,02 | μs μs μs |
| ターンオフ遅れ時間 (誘導負荷) Turn-off delay time, inductive load | $I_C = 50\text{A}, V_{CE} = 300\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Goff} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_{doff} | 0,18 0,20 0,205 | μs μs μs |
| ターンオフ下降時間 (誘導負荷) Fall time, inductive load | $I_C = 50\text{A}, V_{CE} = 300\text{V}$ $V_{GE} = \pm 15\text{V}$ $R_{Goff} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | t_f | 0,055 0,06 0,06 | μs μs μs |
| ターンオンスイッチング損失 Turn-on energy loss per pulse | $I_C = 50\text{A}, V_{CE} = 300\text{V}, L_S = 30\text{nH}$ $V_{GE} = \pm 15\text{V}, di/dt = 2800\text{A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Gon} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | E_{on} | 0,33 0,375 0,475 | mJ mJ mJ |
| ターンオフスイッチング損失 Turn-off energy loss per pulse | $I_C = 50\text{A}, V_{CE} = 300\text{V}, L_S = 30\text{nH}$ $V_{GE} = \pm 15\text{V}, du/dt = 4200\text{V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Goff} = 8,2\Omega$ | $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$ | E_{off} | 1,80 2,25 2,40 | mJ mJ mJ |
| 短絡電流 SC data | $V_{GE} \leq 15\text{V}, V_{CC} = 360\text{V}$ $V_{CE\text{max}} = V_{CES} - L_{SCE} \cdot di/dt$ | $t_P \leq 10\mu\text{s}, T_{vj} = 25^{\circ}\text{C}$ $t_P \leq 10\mu\text{s}, T_{vj} = 150^{\circ}\text{C}$ | I_{SC} | 240 190 | A A |
| ジャンクション・ケース間熱抵抗 Thermal resistance, junction to case | IGBT部 (1素子当り) / per IGBT | | R_{thJC} | | 0,800 K/W |
| ケース・ヒートシンク間熱抵抗 Thermal resistance, case to heatsink | IGBT部 (1素子当り) / per IGBT $\lambda_{\text{Paste}} = 1\text{W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1\text{W}/(\text{m}\cdot\text{K})$ | | R_{thCH} | 0,375 | K/W |
| 動作温度 Temperature under switching conditions | | | $T_{vj\text{op}}$ | -40 | 150 $^{\circ}\text{C}$ |