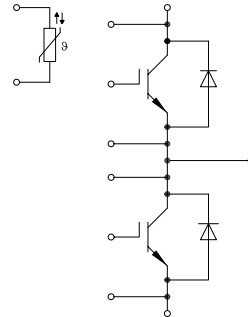


PrimePACK™3+ B-Serien Modul mit Trench/Feldstopp IGBT5, Emitter Controlled 5 Diode und NTC  
 PrimePACK™3+ B-series module with Trench/Fieldstop IGBT5, Emitter Controlled 5 diode and NTC



$V_{CES} = 1200V$   
 $I_{C\ nom} = 1500A / I_{CRM} = 3000A$

### Potentielle Anwendungen

- Hochleistungsumrichter
- Motorantriebe
- Solar Anwendungen
- USV-Systeme

### Potential Applications

- High power converters
- Motor drives
- Solar applications
- UPS systems

### Elektrische Eigenschaften

- Erweiterte Sperrschichttemperatur  $T_{vj\ op}$
- Hohe Kurzschlussrobustheit
- Sehr große Robustheit
- $T_{vj\ op} = 175^{\circ}C$
- Trench IGBT 5

### Electrical Features

- Extended operating temperature  $T_{vj\ op}$
- High short-circuit capability
- Unbeatable robustness
- $T_{vj\ op} = 175^{\circ}C$
- Trench IGBT 5

### Mechanische Eigenschaften

- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Hohe Last- und thermische Wechselfestigkeit
- Hohe Leistungsdichte

### Mechanical Features

- Package with CTI > 400
- High creepage and clearance distances
- High power and thermal cycling capability
- High power density

## 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, Wechselrichter / IGBT, Inverter Höchstzulässige Werte / Maximum Rated Values

|  |   |           |       |   |
|--|---|-----------|-------|---|
| Kollektor-Emitter-Sperrspannung<br>Collector-emitter voltage             | $T_{vj} = 25^{\circ}\text{C}$                                 | $V_{CES}$ | 1200  | V |
| Kollektor-Dauergleichstrom<br>Continuous DC collector current            | $T_C = 100^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ | $I_{CDC}$ | 1500  | A |
| Periodischer Kollektor-Spitzenstrom<br>Repetitive peak collector current | $t_P = 1\text{ ms}$   | $I_{CRM}$ | 3000  | A |
| Gate-Emitter-Spitzenspannung<br>Gate-emitter peak voltage                |   | $V_{GES}$ | +/-20 | V |

## Charakteristische Werte / Characteristic Values

|   |   |   | min.                | typ.                 | max.                 |             |   |
|---|---|---|---------------------|----------------------|----------------------|-------------|---|
| Kollektor-Emitter-Sättigungsspannung<br>Collector-emitter saturation voltage    | $I_C = 1500\text{ A}$<br>$V_{GE} = 15\text{ V}$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $V_{CE\text{ sat}}$ | 1,70<br>2,00<br>2,15 | 2,15<br>2,45<br>2,60 | V<br>V<br>V |   |
| Gate-Schwellenspannung<br>Gate threshold voltage                                | $I_C = 41,0\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$  |   | $V_{GEth}$          | 5,25                 | 5,80                 | 6,35        | V   |
| Gateladung<br>Gate charge   | $V_{GE} = -15 / 15\text{ V}, V_{CE} = 600\text{ V}$   |   | $Q_G$               | 7,15                 |                      |             | $\mu\text{C}$                                   |
| Interner Gatewiderstand<br>Internal gate resistor                               | $T_{vj} = 25^{\circ}\text{C}$   |   | $R_{Gint}$          | 0,6                  |                      |             | $\Omega$  |
| Eingangskapazität<br>Input capacitance  | $f = 1000\text{ kHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$   |   | $C_{ies}$           | 82,0                 |                      |             | nF  |
| Rückwirkungskapazität<br>Reverse transfer capacitance                           | $f = 1000\text{ kHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$   |   | $C_{res}$           | 3,25                 |                      |             | nF  |
| Kollektor-Emitter-Reststrom<br>Collector-emitter cut-off current                | $V_{CE} = 1200\text{ V}, V_{GE} = 0\text{ V}$   | $T_{vj} = 25^{\circ}\text{C}$   | $I_{CES}$           |                      |                      | 5,0         | mA  |
| Gate-Emitter-Reststrom<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  |
| Einschaltverzögerungszeit, induktive Last<br>Turn-on delay time, inductive load | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}$<br>$V_{GE} = -15 / 15\text{ V}$<br>$R_{Gon} = 0,82\ \Omega$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $t_{don}$           | 0,26<br>0,28<br>0,28 |                      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| Anstiegszeit, induktive Last<br>Rise time, inductive load                       | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}$<br>$V_{GE} = -15 / 15\text{ V}$<br>$R_{Gon} = 0,82\ \Omega$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $t_r$               | 0,16<br>0,17<br>0,18 |                      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| Abschaltverzögerungszeit, induktive Last<br>Turn-off delay time, inductive load | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}$<br>$V_{GE} = -15 / 15\text{ V}$<br>$R_{Goff} = 0,82\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $t_{doff}$          | 0,51<br>0,56<br>0,59 |                      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| Fallzeit, induktive Last<br>Fall time, inductive load                           | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}$<br>$V_{GE} = -15 / 15\text{ V}$<br>$R_{Goff} = 0,82\ \Omega$   | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $t_f$               | 0,09<br>0,11<br>0,13 |                      |             | $\mu\text{s}$<br>$\mu\text{s}$<br>$\mu\text{s}$ |
| Einschaltverlustenergie pro Puls<br>Turn-on energy loss per pulse               | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}, L\sigma = 30\text{ nH}$<br>$di/dt = 7900\text{ A}/\mu\text{s} (T_{vj} = 175^{\circ}\text{C})$<br>$V_{GE} = -15 / 15\text{ V}, R_{Gon} = 0,82\ \Omega$  | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $E_{on}$            | 120<br>180<br>215    |                      |             | mJ<br>mJ<br>mJ                                  |
| Abschaltverlustenergie pro Puls<br>Turn-off energy loss per pulse               | $I_C = 1500\text{ A}, V_{CE} = 600\text{ V}, L\sigma = 30\text{ nH}$<br>$du/dt = 2750\text{ V}/\mu\text{s} (T_{vj} = 175^{\circ}\text{C})$<br>$V_{GE} = -15 / 15\text{ V}, R_{Goff} = 0,82\ \Omega$ | $T_{vj} = 25^{\circ}\text{C}$<br>$T_{vj} = 125^{\circ}\text{C}$<br>$T_{vj} = 175^{\circ}\text{C}$ | $E_{off}$           | 155<br>195<br>220    |                      |             | mJ<br>mJ<br>mJ                                  |
| Kurzschlußverhalten<br>SC data  | $V_{GE} \leq 15\text{ V}, V_{CC} = 900\text{ V}$<br>$V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$   | $t_P \leq 10\ \mu\text{s}, T_{vj} = 175^{\circ}\text{C}$  | $I_{SC}$            | 5600                 |                      |             | A   |
| Wärmewiderstand, Chip bis Gehäuse<br>Thermal resistance, junction to case       | pro IGBT / per IGBT   |   | $R_{thJC}$          |                      |                      | 19,5        | K/kW  |
| Wärmewiderstand, Gehäuse bis Kühlkörper<br>Thermal resistance, case to heatsink | pro IGBT / per IGBT<br>$\lambda_{Paste} = 1\text{ W}/(\text{m}\cdot\text{K}) / \lambda_{grease} = 1\text{ W}/(\text{m}\cdot\text{K})$   |   | $R_{thCH}$          |                      |                      | 12,5        | K/kW  |
| Temperatur im Schaltbetrieb<br>Temperature under switching conditions           |   |   | $T_{vj\text{ op}}$  | -40                  |                      | 175         | $^{\circ}\text{C}$                              |