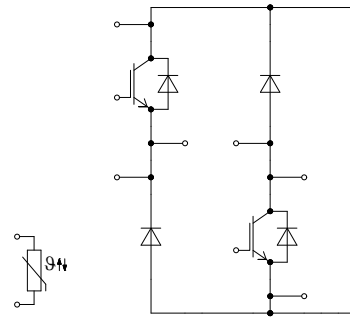


PrimePACK™3+ Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled Diode
 PrimePACK™3+ module with Trench/Fieldstop IGBT4 and Emitter Controlled diode



$$V_{CES} = 1200V$$

$$I_{C\text{ nom}} = 900A / I_{CRM} = 1800A$$

Potentielle Anwendungen

- Chopper-Anwendungen
- Geschalteter Reluktanzantrieb
- Hybrid-Nutzfahrzeuge
- Motorantriebe

Elektrische Eigenschaften

- Hohe Kurzschlussrobustheit
- Hohe Stromdichte
- Niedriges V_{CEsat}
- $T_{vj\text{ op}} = 150^{\circ}C$
- V_{CEsat} mit positivem Temperaturkoeffizienten
- Verstärkte Diode für Rückspeisebetrieb

Mechanische Eigenschaften

- 4 kV AC 1min Isolationsfestigkeit
- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Hohe mechanische Robustheit
- Hohe Vibrationsfestigkeit
- Integrierter NTC Temperatur Sensor
- RoHS konform

Potential Applications

- Chopper applications
- Switched reluctance drive
- Commercial Agriculture Vehicles
- Motor drives

Electrical Features

- High short-circuit capability
- High current density
- Low V_{CEsat}
- $T_{vj\text{ op}} = 150^{\circ}C$
- V_{CEsat} with positive temperature coefficient
- Enlarged diode for regenerative operation

Mechanical Features

- 4 kV AC 1min insulation
- Package with CTI > 400
- High creepage and clearance distances
- High mechanical robustness
- High vibration resistance
- Integrated NTC temperature sensor
- RoHS compliant

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, Brems-Chopper / IGBT, Brake-Chopper
Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
Kollektor-Dauergleichstrom Continuous DC collector current	$T_C = 100^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	I_{CDC}	900	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	$t_P = 1\text{ ms}$	I_{CRM}	1800	A
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	$I_C = 900\text{ A}$ $V_{GE} = 15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$V_{CE\text{ sat}}$	1,70 2,00 2,10	2,05 2,40	V V V
Gate-Schwellenspannung Gate threshold voltage	$I_C = 33,0\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,00	5,80	6,50 V
Gateladung Gate charge	$V_{GE} = -15 / 15\text{ V}$		Q_G	6,40		μC
Interner Gatewiderstand Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	1,2		Ω
Eingangskapazität Input capacitance	$f = 1000\text{ kHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$		C_{ies}	54,0		nF
Rückwirkungskapazität 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}	2,80		nF
Kollektor-Emitter-Reststrom 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 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 Turn-on delay time, inductive load	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Gon} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{don}	0,23 0,26 0,27		μs μs μs
Anstiegszeit, induktive Last Rise time, inductive load	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Gon} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_r	0,10 0,11 0,11		μs μs μs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Goff} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{doff}	0,60 0,70 0,73		μs μs μs
Fallzeit, induktive Last Fall time, inductive load	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Goff} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_f	0,14 0,16 0,17		μs μs μs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}, L\sigma = 45\text{ nH}$ $di/dt = 7800\text{ A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $V_{GE} = -15 / 15\text{ V}, R_{Gon} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{on}	53,0 83,0 93,0		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	$I_C = 900\text{ A}, V_{CE} = 600\text{ V}, L\sigma = 45\text{ nH}$ $du/dt = 2700\text{ V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $V_{GE} = -15 / 15\text{ V}, R_{Goff} = 1,2\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{off}	140 185 200		mJ mJ mJ
Kurzschlußverhalten SC data	$V_{GE} \leq 15\text{ V}, V_{CC} = 800\text{ V}$ $V_{CE\max} = V_{CES} - L_{SCE} \cdot di/dt$ $t_P \leq 10\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$		I_{SC}	3600		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}		29,6	K/kW
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT $\lambda_{Paste} = 1\text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{grease} = 1\text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}		13,9	K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\text{ op}}$	-40	150	$^{\circ}\text{C}$