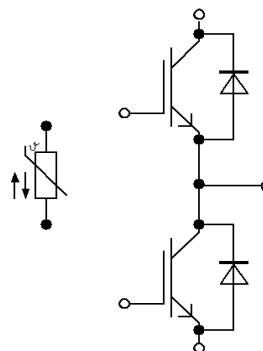
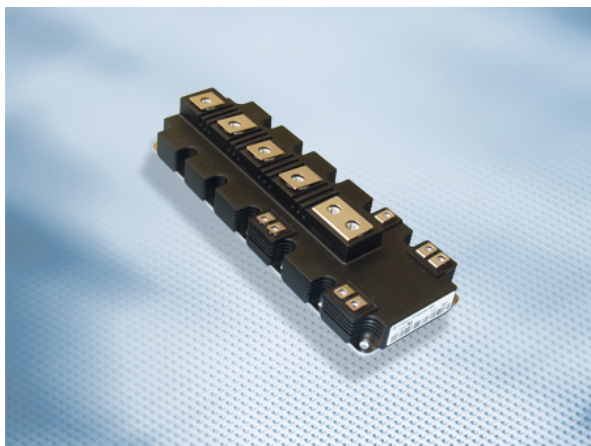


PrimePACK™3 Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled Diode
PrimePACK™3 module with Trench/Fieldstop IGBT4 and Emitter Controlled diode



$V_{CES} = 1200V$
 $I_{C\ nom} = 1400A / I_{CRM} = 2800A$

Typische Anwendungen

- Hochleistungsumrichter
- Motorantriebe
- Windgeneratoren

Typical Applications

- High power converters
- Motor drives
- Wind turbines

Elektrische Eigenschaften

- Hohe Kurzschlussrobustheit
- Hohe Stoßstromfestigkeit
- Hohe Stromdichte
- $T_{vj\ op} = 150^{\circ}C$
- V_{CESat} mit positivem Temperaturkoeffizienten

Electrical Features

- High short-circuit capability
- High surge current capability
- High current density
- $T_{vj\ op} = 150^{\circ}C$
- V_{CESat} with positive temperature coefficient

Mechanische Eigenschaften

- 4 kV AC 1min Isolationsfestigkeit
- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Integrierter NTC Temperatur Sensor
- RoHS konform
- Thermisches Interface Material bereits aufgetragen

Mechanical Features

- 4 kV AC 1min insulation
- Package with CTI > 400
- High creepage and clearance distances
- Integrated NTC temperature sensor
- RoHS compliant
- Pre-applied Thermal Interface Material

Module Label Code

Barcode Code 128



DMX - 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: SM	date of publication: 2016-09-06	
approved by: RN	revision: V3.2	UL approved (E83335)



IGBT, Wechselrichter / IGBT, Inverter

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	$T_H = 60^{\circ}\text{C}, T_{vj\ max} = 175^{\circ}\text{C}$	$I_{C\ nom}$	1400	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	$t_P = 1\ \text{ms}$	I_{CRM}	2800	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	$I_C = 1400\ \text{A}, V_{GE} = 15\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$		1,75	2,05	V	
	$I_C = 1400\ \text{A}, V_{GE} = 15\ \text{V}$	$T_{vj} = 125^{\circ}\text{C}$		2,05	2,40	V	
	$I_C = 1400\ \text{A}, V_{GE} = 15\ \text{V}$	$T_{vj} = 150^{\circ}\text{C}$		2,15	2,50	V	
			$V_{CE\ sat}$				
Gate-Schwellenspannung Gate threshold voltage	$I_C = 49,0\ \text{mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,00	5,80	6,50	V
Gateladung Gate charge	$V_{GE} = -15\ \text{V} \dots +15\ \text{V}$			Q_G	9,60		μC
Interner Gatewiderstand Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$			R_{Gint}	0,8		Ω
Eingangskapazität Input capacitance	$f = 1\ \text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\ \text{V}, V_{GE} = 0\ \text{V}$			C_{ies}	82,0		nF
Rückwirkungskapazität 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}	4,60		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	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$		0,20		μs	
	$V_{GE} = \pm 15\ \text{V}$	$T_{vj} = 125^{\circ}\text{C}$		0,21		μs	
	$R_{Gon} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0,21		μs	
			t_{don}				
Anstiegszeit, induktive Last Rise time, inductive load	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$		0,12		μs	
	$V_{GE} = \pm 15\ \text{V}$	$T_{vj} = 125^{\circ}\text{C}$		0,13		μs	
	$R_{Gon} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0,13		μs	
			t_r				
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$		0,87		μs	
	$V_{GE} = \pm 15\ \text{V}$	$T_{vj} = 125^{\circ}\text{C}$		0,95		μs	
	$R_{Goff} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0,97		μs	
			t_{doff}				
Fallzeit, induktive Last Fall time, inductive load	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$		0,20		μs	
	$V_{GE} = \pm 15\ \text{V}$	$T_{vj} = 125^{\circ}\text{C}$		0,23		μs	
	$R_{Goff} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0,23		μs	
			t_f				
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}, L_S = 30\ \text{nH}$	$T_{vj} = 25^{\circ}\text{C}$		65,0		mJ	
	$V_{GE} = \pm 15\ \text{V}, di/dt = 8600\ \text{A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$	$T_{vj} = 125^{\circ}\text{C}$		80,0		mJ	
	$R_{Gon} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		95,0		mJ	
			E_{on}				
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	$I_C = 1400\ \text{A}, V_{CE} = 600\ \text{V}, L_S = 30\ \text{nH}$	$T_{vj} = 25^{\circ}\text{C}$		215		mJ	
	$V_{GE} = \pm 15\ \text{V}, du/dt = 2500\ \text{V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$	$T_{vj} = 125^{\circ}\text{C}$		280		mJ	
	$R_{Goff} = 1,0\ \Omega$	$T_{vj} = 150^{\circ}\text{C}$		305		mJ	
			E_{off}				
Kurzschlußverhalten SC data	$V_{GE} \leq 15\ \text{V}, V_{CE} = 800\ \text{V}$ $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$	$t_P \leq 10\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$		I_{SC}	5600		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT valid with IFX pre-applied thermal interface material			R_{thJH}		30,5	K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions				$T_{vj\ op}$	-40	150	$^{\circ}\text{C}$

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