Technische Information / Technical Information

IGBT-Modul
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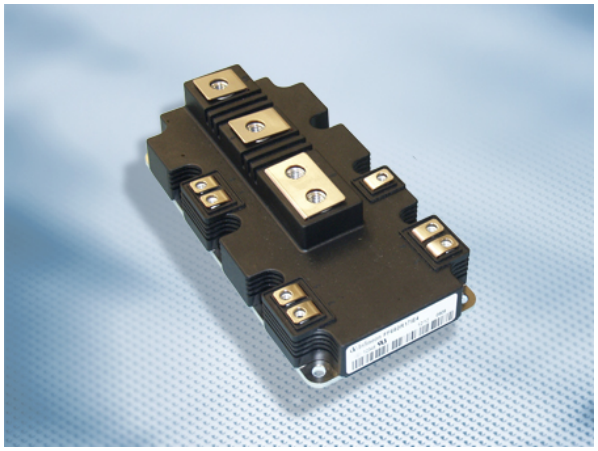
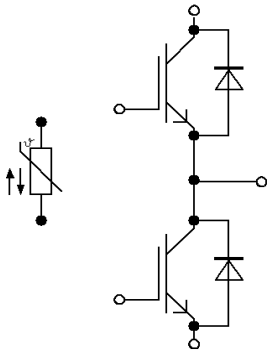
FF650R17IE4DP_B2

PrimePACK™2 Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled Diode
PrimePACK™2 module with Trench/Fieldstop IGBT4 and Emitter Controlled diode





V_{CES} = 1700V
$I_{C\ nom}$ = 650A / I_{CRM} = 1300A

Typische Anwendungen

- Traktionsumrichter
- Windgeneratoren

Typical Applications

- Traction drives
- Wind turbines

Elektrische Eigenschaften

- Hohe Kurzschlussrobustheit
- Hohe Stoßstromfestigkeit
- Hohe Stromdichte
- $T_{vj\ op}$ = 150°C
- V_{CEsat} mit positivem Temperaturkoeffizienten
- Verstärkte Diode für Rückspeisebetrieb

Electrical Features

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

Mechanische Eigenschaften

- 4 kV AC 1min Isolationsfestigkeit
- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Hohe Last- und thermische Wechselfestigkeit
- RoHS konform
- Thermisches Interface Material bereits aufgetragen

Mechanical Features

- 4 kV AC 1min insulation
- Package with CTI > 400
- High creepage and clearance distances
- High power and thermal cycling capability
- RoHS compliant
- Pre-applied Thermal Interface Material

Module Label Code

Barcode Code 128

Sample
00000123456000000000000

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: V3.0	UL approved (E83335)

IGBT,Wechselrichter / IGBT,Inverter

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1700	V
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 60°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$	650	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	1300	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 = 650 A, V_{GE} = 15 V I_C = 650 A, V_{GE} = 15 V I_C = 650 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$	 	2,00 2,35 2,45	2,45 2,80 3,00	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 24,0 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,20	5,80	6,40	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V		Q_G		7,00		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		2,3		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		54,0		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		1,70		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1700 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			5,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			400	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 650 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,58 0,645 0,655		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 650 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,105 0,11 0,11		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 650 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 2,7 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		1,00 1,25 1,30		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 650 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 2,7 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,29 0,49 0,57		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 650 A, V_{CE} = 900 V, L_S = 45 nH V_{GE} = ±15 V, di/dt = 5800 A/µs (T_{vj} = 150°C) R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		180 260 280		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 650 A, V_{CE} = 900 V, L_S = 45 nH V_{GE} = ±15 V, du/dt = 3200 V/µs (T_{vj} = 150°C) R_{Goff} = 2,7 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		140 205 230		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 1000 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 10 µs, T_{vj} = 150°C	I_{SC}		2700		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT valid with IFX pre-applied thermal interface material		R_{thJH}			56,0	K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C