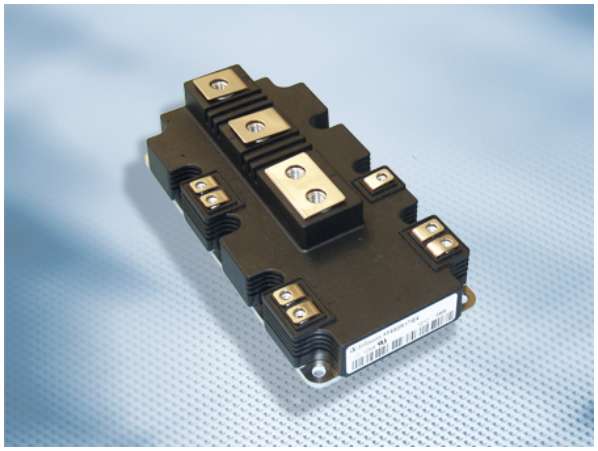
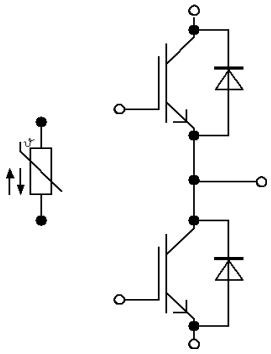
Technische Information / Technical Information

IGBT-Modul
IGBT-Module

FF900R12IE4VP

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





V_{CES} = 1200V
$I_{C\ nom}$ = 900A / I_{CRM} = 1800A

Typische Anwendungen
- Hybrid-Nutzfahrzeuge
- Traktionsumrichter

Typical Applications
- Commercial Agriculture Vehicles
- Traction drives

Elektrische Eigenschaften
- Hohe Kurzschlussrobustheit
- Hohe Stoßstromfestigkeit
- Hohe Stromdichte
- Niedrige Schaltverluste
- $T_{vj\ op}$ = 150°C
- V_{CEsat} mit positivem Temperaturkoeffizienten

Electrical Features
- High short-circuit capability
- High surge current capability
- High current density
- Low switching losses
- $T_{vj\ op}$ = 150°C
- V_{CEsat} with positive temperature coefficient

Mechanische Eigenschaften
- 4 kV AC 1min Isolationsfestigkeit
- Gehäuse mit CTI > 400
- Große Luft- und Kriechstrecken
- Hohe mechanische Robustheit
- 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
- High mechanical robustness
- Integrated NTC temperature sensor
- 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: 2016-08-23	
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}		1200	V
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 60°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$		900	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 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 A, V_{GE} = 15 V T_{vj} = 25°C I_C = 900 A, V_{GE} = 15 V T_{vj} = 125°C I_C = 900 A, V_{GE} = 15 V T_{vj} = 150°C	$V_{CE\,sat}$		1,75 2,05 2,10	2,10 2,45 2,50	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 33,0 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		6,40		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C	R_{Gint}		1,2		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}		3,00		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1200 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 = 900 A, V_{CE} = 600 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Gon} = 1,5 Ω T_{vj} = 150°C	$t_{d\,on}$		0,20 0,22 0,22		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 900 A, V_{CE} = 600 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Gon} = 1,5 Ω T_{vj} = 150°C	t_r		0,11 0,12 0,13		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 900 A, V_{CE} = 600 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Goff} = 1,5 Ω T_{vj} = 150°C	$t_{d\,off}$		0,66 0,75 0,79		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 900 A, V_{CE} = 600 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Goff} = 1,5 Ω T_{vj} = 150°C	t_f		0,09 0,14 0,15		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 900 A, V_{CE} = 600 V, L_S = 45 nH T_{vj} = 25°C V_{GE} = ±15 V, di/dt = 5700 A/µs (T_{vj} = 150°C) T_{vj} = 125°C R_{Gon} = 1,3 Ω T_{vj} = 150°C	E_{on}		55,0 70,0 80,0		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 900 A, V_{CE} = 600 V, L_S = 45 nH T_{vj} = 25°C V_{GE} = ±15 V, du/dt = 3200 V/µs (T_{vj} = 150°C) T_{vj} = 125°C R_{Goff} = 1,5 Ω T_{vj} = 150°C	E_{off}		85,0 120 130		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 900 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt t_P ≤ 10 µs, T_{vj} = 150°C	I_{SC}		3600		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT valid with IFX pre-applied thermal interface material	R_{thJH}			48,1	K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C