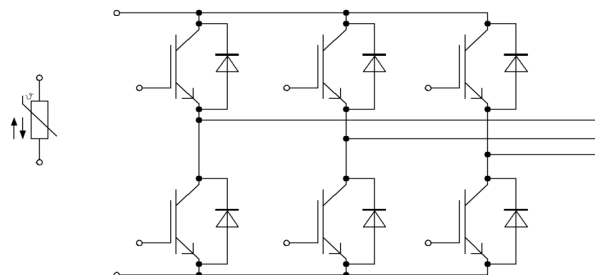


EconoPACK™3 Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled 4 Diode und NTC / bereits aufgetragenem Thermal Interface Material

EconoPACK™3 module with Trench/Fieldstop IGBT4 and Emitter Controlled 4 diode and NTC / pre-applied Thermal Interface Material



Typical appearance



$V_{CES} = 1200V$

$I_{C\ nom} = 200A / I_{CRM} = 400A$

Potentielle Anwendungen

- Hilfsumrichter
- Motorantriebe
- Servoumrichter

Elektrische Eigenschaften

- Niedrige Schaltverluste
- Niedriges V_{CEsat}
- $T_{vj\ op} = 150^{\circ}C$
- V_{CEsat} mit positivem Temperaturkoeffizienten

Mechanische Eigenschaften

- Hohe Last- und thermische Wechselfestigkeit
- Integrierter NTC Temperatur Sensor
- Kupferbodenplatte
- PressFIT Verbindungstechnik
- Standardgehäuse
- Thermisches Interface Material bereits aufgetragen

Potential Applications

- Auxiliary inverters
- Motor drives
- Servo drives

Electrical Features

- Low switching losses
- Low V_{CEsat}
- $T_{vj\ op} = 150^{\circ}C$
- V_{CEsat} with positive temperature coefficient

Mechanical Features

- High power and thermal cycling capability
- Integrated NTC temperature sensor
- Copper base plate
- PressFIT contact technology
- Standard housing
- Pre-applied Thermal Interface Material

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 Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
Kollektor-Dauergleichstrom Continuous DC collector current	$T_H = 60^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	$I_{C\text{nom}}$	200	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	$t_P = 1\text{ ms}$	I_{CRM}	400	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	$I_C = 200\text{ A}, V_{GE} = 15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	$V_{CE\text{sat}}$	1,75	2,15	V	
	$I_C = 200\text{ A}, V_{GE} = 15\text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		2,05		V	
	$I_C = 200\text{ A}, V_{GE} = 15\text{ V}$	$T_{vj} = 150^{\circ}\text{C}$		2,10		V	
Gate-Schwellenspannung Gate threshold voltage	$I_C = 7,60\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,20	5,80	6,40	V
Gateladung Gate charge	$V_{GE} = -15\text{ V} \dots +15\text{ V}$		Q_G		1,65		μC
Interner Gatewiderstand Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}		3,5		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}		14,0		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}		0,50		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}			1,0	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}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{Gon} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	t_{don}	0,14		μs	
		$T_{vj} = 125^{\circ}\text{C}$		0,15		μs	
		$T_{vj} = 150^{\circ}\text{C}$		0,15		μs	
Anstiegszeit, induktive Last Rise time, inductive load	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{Gon} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	t_r	0,03		μs	
		$T_{vj} = 125^{\circ}\text{C}$		0,035		μs	
		$T_{vj} = 150^{\circ}\text{C}$		0,04		μs	
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{Goff} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	t_{doff}	0,32		μs	
		$T_{vj} = 125^{\circ}\text{C}$		0,40		μs	
		$T_{vj} = 150^{\circ}\text{C}$		0,42		μs	
Fallzeit, induktive Last Fall time, inductive load	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}$ $V_{GE} = \pm 15\text{ V}$ $R_{Goff} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	t_f	0,09		μs	
		$T_{vj} = 125^{\circ}\text{C}$		0,16		μs	
		$T_{vj} = 150^{\circ}\text{C}$		0,18		μs	
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}, L_S = 30\text{ nH}$ $V_{GE} = \pm 15\text{ V}, di/dt = 5400\text{ A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Gon} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	E_{on}	10,5		mJ	
		$T_{vj} = 125^{\circ}\text{C}$		18,5		mJ	
		$T_{vj} = 150^{\circ}\text{C}$		20,5		mJ	
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	$I_C = 200\text{ A}, V_{CE} = 600\text{ V}, L_S = 30\text{ nH}$ $V_{GE} = \pm 15\text{ V}, du/dt = 5000\text{ V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Goff} = 1,1\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$	E_{off}	11,0		mJ	
		$T_{vj} = 125^{\circ}\text{C}$		16,5		mJ	
		$T_{vj} = 150^{\circ}\text{C}$		18,5		mJ	
Kurzschlußverhalten SC data	$V_{GE} \leq 15\text{ V}, V_{CC} = 800\text{ V}$ $V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$	$t_P \leq 10\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$	I_{SC}		720		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT valid with IFX pre-applied thermal interface material		R_{thJH}			0,216	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\text{op}}$	-40		150	$^{\circ}\text{C}$