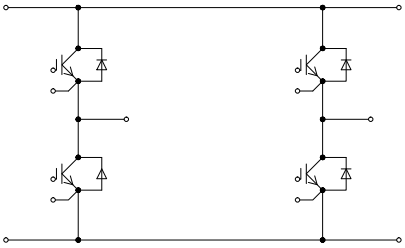
EconoPACK™3 Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled Diode und NTC
EconoPACK™3 module with Trench/Fieldstop IGBT4 and Emitter Controlled diode and NTC

Typical appearance



V_{CES} = 1700V
$I_{C\ nom}$ = 200A / I_{CRM} = 400A

Typische Anwendungen
- Hochleistungsumrichter
- Mittelspannungsantriebe

Typical Applications
- High power converters
- Medium voltage converters

Elektrische Eigenschaften
- Niedriges V_{CEsat}
- $T_{vj\ op}$ = 150°C
- Trench IGBT 4
- V_{CEsat} mit positivem Temperaturkoeffizienten

Electrical Features
- Low V_{CEsat}
- $T_{vj\ op}$ = 150°C
- Trench IGBT 4
- V_{CEsat} with positive temperature coefficient

Mechanische Eigenschaften
- Integrierter NTC Temperatur Sensor
- Isolierte Bodenplatte
- Lötverbindungstechnik
- Standardgehäuse

Mechanical Features
- Integrated NTC temperature sensor
- Isolated base plate
- Solder contact technology
- Standard housing

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

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_C = 95°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$	200	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 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 A, V_{GE} = 15 V I_C = 200 A, V_{GE} = 15 V I_C = 200 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,95 2,35 2,45	2,30	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 4,00 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,35	5,80	6,25	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V		Q_G		2,40		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		3,8		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		18,0		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,58		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1700 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			1,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 200 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,21 0,22 0,23		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 200 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,03 0,04 0,04		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 200 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,43 0,57 0,61		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 200 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,24 0,45 0,55		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 200 A, V_{CE} = 900 V, L_S = 30 nH V_{GE} = ±15 V, di/dt = 5500 A/µs (T_{vj} = 150°C) R_{Gon} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		41,5 59,5 64,0		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 200 A, V_{CE} = 900 V, L_S = 30 nH V_{GE} = ±15 V, du/dt = 3100 V/µs (T_{vj} = 150°C) R_{Goff} = 0,51 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		34,0 57,5 66,0		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}		900		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			0,130	K/W
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)		R_{thCH}		0,0835		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C