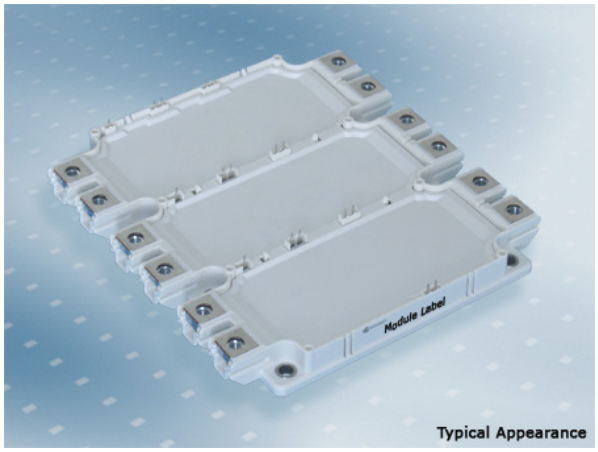
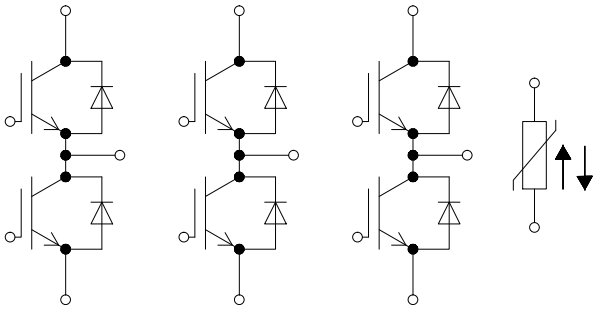
EconoPACK™+ Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled HE Diode und PressFIT / NTC
EconoPACK™+ module with Trench/Fieldstop IGBT4 and Emitter Controlled HE diode and PressFIT / NTC





V_{CES} = 1200V
$I_{C\ nom}$ = 450A / I_{CRM} = 900A

Potentielle Anwendungen
- Aufzugstechnik
- Hochleistungsumrichter
- Hybrid-Nutzfahrzeuge
- Motorantriebe
- Solar Anwendungen
- USV-Systeme

Potential Applications
- Elevators
- High power converters
- Commercial Agriculture Vehicles
- Motor drives
- Solar applications
- UPS systems

Elektrische Eigenschaften
- Hohe Kurzschlussrobustheit
- Hohe Stoßstromfestigkeit
- Sehr große Robustheit
- $T_{vj\ op}$ = 150°C
- Trench IGBT 4

Electrical Features
- High short-circuit capability
- High surge current capability
- Unbeatable robustness
- $T_{vj\ op}$ = 150°C
- Trench IGBT 4

Mechanische Eigenschaften
- H_2S Robustheit
- Hohe mechanische Robustheit
- Integrierter NTC Temperatur Sensor
- Isolierte Bodenplatte
- PressFIT Verbindungstechnik
- RoHS konform

Mechanical Features
- H_2S ruggedness
- High mechanical robustness
- Integrated NTC temperature sensor
- Isolated base plate
- PressFIT contact technology
- RoHS compliant

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}	1200		V
Kollektor-Dauergleichstrom Continuous DC collector current	T_C = 95°C, $T_{vj\,max}$ = 175°C	I_{CDC}	450		A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	900		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 = 450 A, V_{GE} = 15 V I_C = 450 A, V_{GE} = 15 V I_C = 450 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,76 2,00 2,06	2,10	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 17,1 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,20	5,80	6,40	V
Gateladung Gate charge	V_{GE} = -15 / 15 V		Q_G		3,31		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		1,7		Ω
Eingangskapazität Input capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		27,9		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		1,53		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1200 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			3,0	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 = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,19 0,22 0,22		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,06 0,06 0,07		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,44 0,55 0,57		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,06 0,10 0,11		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, di/dt = 6300 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, di/dt = 6300 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, di/dt = 6300 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		25,0 40,4 44,2		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, du/dt = 3100 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, du/dt = 3100 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω I_C = 450 A, V_{CE} = 600 V, Lσ = 35 nH, du/dt = 3100 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 1,0 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		37,1 56,7 63,0		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 800 V, V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 10 µs, T_{vj} = 150°C	I_{SC}		1800		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			0,0670	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}		0,0420		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C