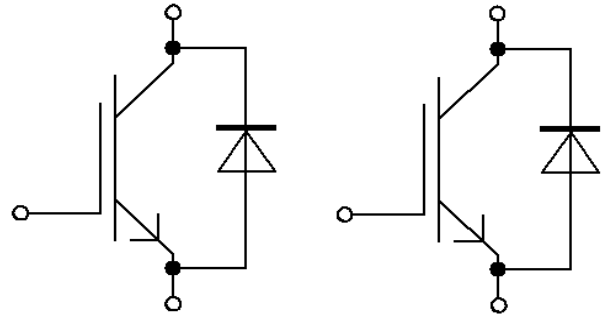
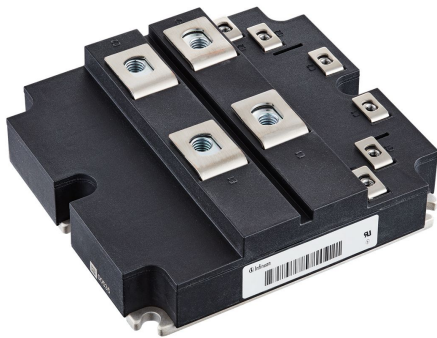


IHM-A Modul mit Trench/Feldstopp IGBT4 und Emitter Controlled 3 Diode
 IHM-A module with Trench/Fieldstop IGBT4 and Emitter Controlled 3 diode



$V_{CES} = 1700V$
 $I_{C\,nom} = 800A / I_{CRM} = 1600A$

Potentielle Anwendungen

- Hochleistungsumrichter
- Mittelspannungsantriebe
- Motorantriebe
- Traktionsumrichter
- Windgeneratoren

Potential Applications

- High power converters
- Medium voltage converters
- Motor drives
- Traction drives
- Wind turbines

Elektrische Eigenschaften

- Erweiterte Sperrschichttemperatur $T_{vj\,op}$
- Niedriges V_{CEsat}
- $T_{vj\,op} = 150^{\circ}C$
- Verstärkte Diode für Rückspeisebetrieb

Electrical Features

- Extended operating temperature $T_{vj\,op}$
- Low V_{CEsat}
- $T_{vj\,op} = 150^{\circ}C$
- Enlarged diode for regenerative operation

Mechanische Eigenschaften

- 4 kV AC 1min Isolationsfestigkeit
- AlSiC Bodenplatte für erhöhte thermische Lastwechselfestigkeit
- Hohe Last- und thermische Wechselfestigkeit
- Hohe Leistungsdichte
- Standardgehäuse

Mechanical Features

- 4 kV AC 1min insulation
- AlSiC base plate for increased thermal cycling capability
- High power and thermal cycling capability
- High power density
- Standard housing

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}	1700	V
Kollektor-Dauergleichstrom Continuous DC collector current	$T_C = 80^{\circ}\text{C}, T_{vj\max} = 150^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}, T_{vj\max} = 150^{\circ}\text{C}$	I_{CDC} I_C	800 1200	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	$t_P = 1\text{ ms}$	I_{CRM}	1600	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	$I_C = 800\text{ A}$ $V_{GE} = 15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$V_{CE\text{ sat}}$	1,80 2,10 2,20	2,20 2,60 2,70	V V V	
Gate-Schwellenspannung Gate threshold voltage	$I_C = 32,0\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,20	5,80	6,40	V
Gateladung Gate charge	$V_{GE} = -15 / 15\text{ V}$		Q_G	8,30			μC
Interner Gatewiderstand Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	1,9			Ω
Eingangskapazität Input capacitance	$f = 1000\text{ kHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$		C_{ies}	65,0			nF
Rückwirkungskapazität Reverse transfer capacitance	$f = 1000\text{ kHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$		C_{res}	2,10			nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	$V_{CE} = 1700\text{ V}, V_{GE} = 0\text{ V}, T_{vj} = 25^{\circ}\text{C}$		I_{CES}			5,0	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}			400	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Gon} = 0,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{don}	0,59 0,63 0,64			μs μs μs
Anstiegszeit, induktive Last Rise time, inductive load	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Gon} = 0,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_r	0,14 0,16 0,16			μs μs μs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Goff} = 1,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{doff}	1,00 1,15 1,15			μs μs μs
Fallzeit, induktive Last Fall time, inductive load	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}$ $V_{GE} = -15 / 15\text{ V}$ $R_{Goff} = 1,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_f	0,32 0,50 0,55			μs μs μs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}, L\sigma = 50\text{ nH}$ $V_{GE} = -15 / 15\text{ V}, R_{Gon} = 0,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{on}	145 215 245			mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	$I_C = 800\text{ A}, V_{CE} = 900\text{ V}, L\sigma = 50\text{ nH}$ $du/dt = 3300\text{ V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $V_{GE} = -15 / 15\text{ V}, R_{Goff} = 1,8\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{off}	255 330 365			mJ mJ mJ
Kurzschlußverhalten SC data	$V_{GE} \leq 15\text{ V}, V_{CC} = 1000\text{ V}$ $V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$ $t_P \leq 10\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$		I_{SC}	3400			A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			25,7	K/kW
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT $\lambda_{Paste} = 1\text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{grease} = 1\text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}			22,8	K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\text{ op}}$	-40		150	$^{\circ}\text{C}$