

SKM200GB12F4SiC2



SEMITRANS® 3

High Speed IGBT4 Modules

SKM200GB12F4SiC2

Target Data

Features*

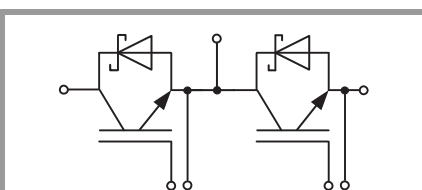
- IGBT4 = 4. Generation Fast Trench (High Speed) IGBT (Infineon)
- With Silicon Carbide Schottky diodes (ROHM)
- Insulated copper baseplate using DBC Technology (Direct Bonded Copper)
- UL recognized, file no. E63532
- With integrated gate resistor
- For higher switching frequencies

Typical Applications

- AC inverter drives
- UPS
- Electronic welders
- DC/DC converters

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max.
- Recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results valid for $T_j = 150^\circ\text{C}$



GB

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 175 °C	T _c = 25 °C	312	A
		T _c = 80 °C	239	A
I _{Cnom}			200	A
I _{CRM}	I _{CRM} = 2 x I _{Cnom}		400	A
V _{GES}			-20 ... 20	V
t _{psc}	V _{CC} = 800 V V _{GE} ≤ 15 V V _{CES} ≤ 1200 V R _{G on/off} ≥ 2 Ω	T _j = 150 °C	10	μs
T _j			-40 ... 175	°C
Inverse diode				
V _{RRM}	T _j = 25 °C		1200	V
I _F	T _j = 175 °C	T _c = 25 °C	246	A
		T _c = 80 °C	187	A
I _{Fnom}			160	A
I _{FRM}			336	A
I _{FSM}	t _p = 8.3 ms, sin 180°, T _j = 25 °C		t.b.d.	A
T _j			-40 ... 175	°C
Module				
I _{t(RMS)}			500	A
T _{stg}			-40 ... 125	°C
V _{isol}	AC sinus 50 Hz, t = 1 min		4000	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
IGBT						
V _{CE(sat)}	I _C = 200 A	T _j = 25 °C		2.06	2.42	V
	V _{GE} = 15 V chipelevel	T _j = 150 °C		2.59	2.97	V
V _{CE0}	chipelevel	T _j = 25 °C		1.10	1.28	V
		T _j = 150 °C		0.95	1.13	V
r _{CE}	V _{GE} = 15 V chipelevel	T _j = 25 °C		4.8	5.7	mΩ
		T _j = 150 °C		8.2	9.2	mΩ
V _{GE(th)}	V _{GE} =V _{CE} , I _C = 7.6 mA		5.1	5.8	6.4	V
I _{CES}	V _{GE} = 0 V	T _j = 25 °C			3.2	mA
	V _{CE} = 1200 V	T _j = 150 °C		-		mA
C _{ies}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz		12.3		nF
C _{oes}		f = 1 MHz		0.81		nF
C _{res}		f = 1 MHz		0.69		nF
Q _G		V _{GE} = - 8 V...+ 15 V			1134	
R _{Gint}	T _j = 25 °C			2.4		Ω
t _{d(on)}	V _{CC} = 600 V	T _j = 150 °C		t.b.d.		ns
t _r	I _C = 200 A		T _j = 150 °C		t.b.d.	
E _{on}	V _{GE} = +15/-15 V	T _j = 150 °C		7		mJ
t _{d(off)}	R _{G on} = 1 Ω	T _j = 150 °C		t.b.d.		ns
t _f	R _{G off} = 1 Ω	T _j = 150 °C		t.b.d.		ns
E _{off}		T _j = 150 °C		17		mJ
R _{th(j-c)}	per IGBT				0.115	K/W



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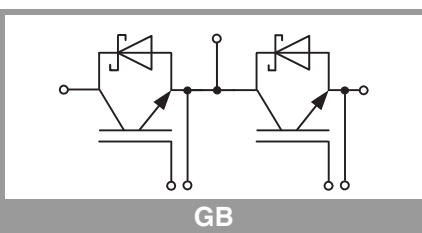
Typical Applications

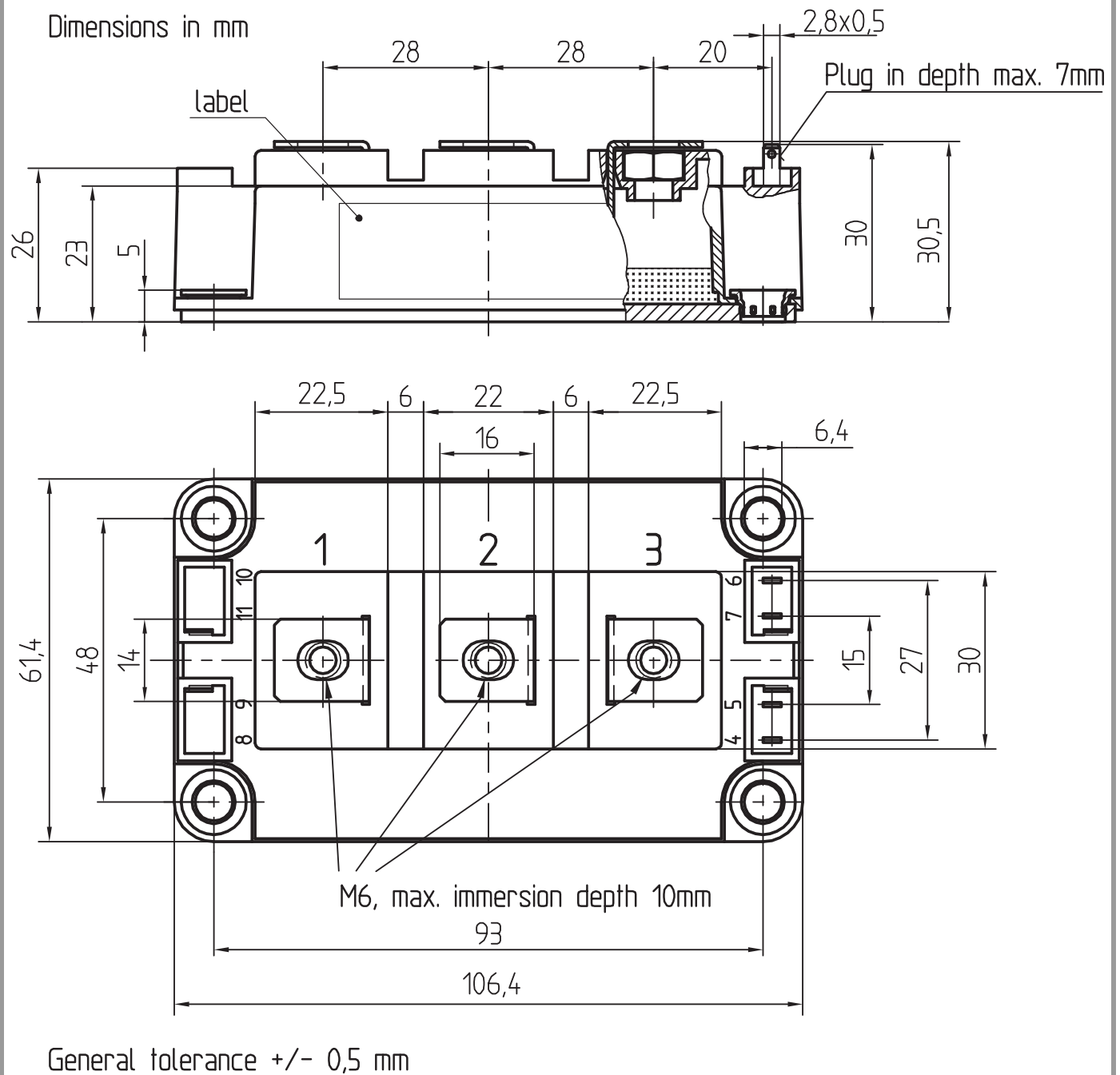
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Remarks

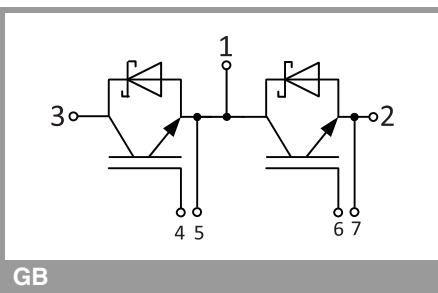
- Case temperature limited to $T_c = 125^\circ\text{C}$ max.
- Recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results valid for $T_j = 150^\circ\text{C}$

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverse diode						
V _F = V _{SD}	I _F = 200 A	T _j = 25 °C		1.51	1.74	V
	V _{GE} = 0 V	T _j = 150 °C		2.05	2.40	V
	chiplevel					
V _{F0}		T _j = 25 °C		0.95	1.05	V
	chiplevel	T _j = 150 °C		0.83	0.90	V
r _F		T _j = 25 °C		2.8	3.4	mΩ
	chiplevel	T _j = 150 °C		6.1	7.5	mΩ
C _j	f = 1 MHz, V _R = 800 V, T _j = 25 °C, parallel to C _{oss}			0.68		nF
Q _c	V _R = 800 V, di/dt _{off} = 500 A/μs			0.53		μC
R _{th(j-c)}	per diode				0.21	K/W
Module						
L _{CE}				15		nH
R _{CC'+EE'}	measured per	T _C = 25 °C		0.55		mΩ
	switch	T _C = 125 °C		0.85		mΩ
R _{th(c-s)1}	calculated without thermal coupling (λ _{grease} =0.81 W/(m²K))			0.02	0.038	K/W
M _s	to heat sink M6		3		5	Nm
M _t		to terminals M6	2.5		5	Nm
						Nm
w					325	g





SEMITRANS 3



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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