

SKM350MB120SCH15



SEMITRANS® 3

SiC MOSFET Module

SKM350MB120SCH15

Target Data

Features

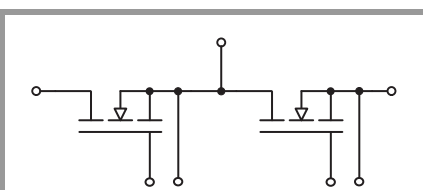
- Full Silicon Carbide (SiC) power module
- Latest generation SiC MOSFETs
- Optimized for fast switching and lowest power losses
- Insulated copper baseplate using DBC technology (Direct Bonded Copper)
- Improved thermal performances with Aluminium Nitride (AlN) substrate
- UL recognized, file no. E63532

Typical Applications*

- High frequency power supplies
- AC inverters

Remarks

- Case temperature limited to $T_c=125^\circ\text{C}$ max.
- Recommended $T_{jop} = -40\dots+150^\circ\text{C}$



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Absolute Maximum Ratings				
Symbol	Conditions	Values	Unit	
MOSFET				
V_{DSS}		1200	V	
I_D	$T_j = 175^\circ\text{C}$	$T_c = 25^\circ\text{C}$	523	A
		$T_c = 80^\circ\text{C}$	416	A
I_{DM}		1280	A	
V_{GS}		-6 ... 22	V	
T_j		-40 ... 175	$^\circ\text{C}$	
Integrated body Diode				
I_{FM}			A	

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$		500	A
T_{stg}		-40 ... 125	$^\circ\text{C}$
V_{isol}	AC sinus 50 Hz, $t = 1$ min	4000	V

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
MOSFET					
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 8\text{ mA}$	1200			V
$V_{GS(th)}$	$V_{GS} = V_{GS}, I_D = 71.2\text{ mA}$	1.6		4	V
I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = 1200\text{ V}, T_j = 25^\circ\text{C}$			0.08	mA
I_{GSS}	$V_{GS} = 22\text{ V}, V_{DS} = 0\text{ V}$			600	nA
$R_{DS(on)}$	$V_{GS} = 18\text{ V}$ $I_D = 176\text{ A}$	$T_j = 25^\circ\text{C}$	5.6	7.0	m Ω
		$T_j = 150^\circ\text{C}$	9.5		m Ω
C_{iss}	$V_{GS} = 0\text{ V}$		34.48		nF
C_{oss}	$V_{DS} = 800\text{ V}$		1.096		nF
C_{rss}	$f = 1\text{ MHz}$		0.152		nF
Q_G	$V_{GS} = 18\text{ V}$		1512		nC
R_{Gint}	$T_j = 25^\circ\text{C}$		0.6		Ω
$t_{d(on)}$	$V_{DD} = 600\text{ V}$ $I_D = 250\text{ A}$ $V_{GS} = -6 \dots 20\text{ V}$	$T_j = 150^\circ\text{C}$			ns
t_r		$T_j = 150^\circ\text{C}$			ns
$t_{d(off)}$		$T_j = 150^\circ\text{C}$			ns
t_f		$T_j = 150^\circ\text{C}$			ns
E_{on}		$T_j = 150^\circ\text{C}$		10.3	
E_{off}	$T_j = 150^\circ\text{C}$		4.7		mJ
$R_{th(j-c)}$				0.05	K/W
$R_{th(c-s)}$			0.03		K/W
Integrated body Diode					
$V_F = V_{SD}$	$V_{GS} = 0\text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	6.40		V
		$T_j = 150^\circ\text{C}$	5.20		V
V_{F0}	chipelevel	$T_j = 25^\circ\text{C}$	3.9		V
		$T_j = 150^\circ\text{C}$	3.4		V
r_F	chipelevel	$T_j = 25^\circ\text{C}$	6.25		m Ω
		$T_j = 150^\circ\text{C}$	4.5		m Ω
t_{rr}					μs
Q_{rr}					μC
I_{rr}	$V_{GS} = -6 \dots 20\text{ V V}$				A
E_{rr}					mJ

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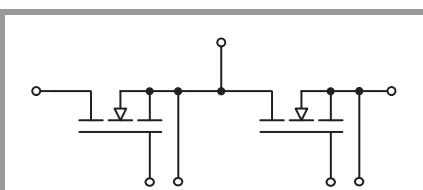
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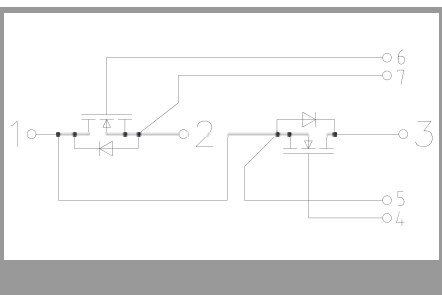
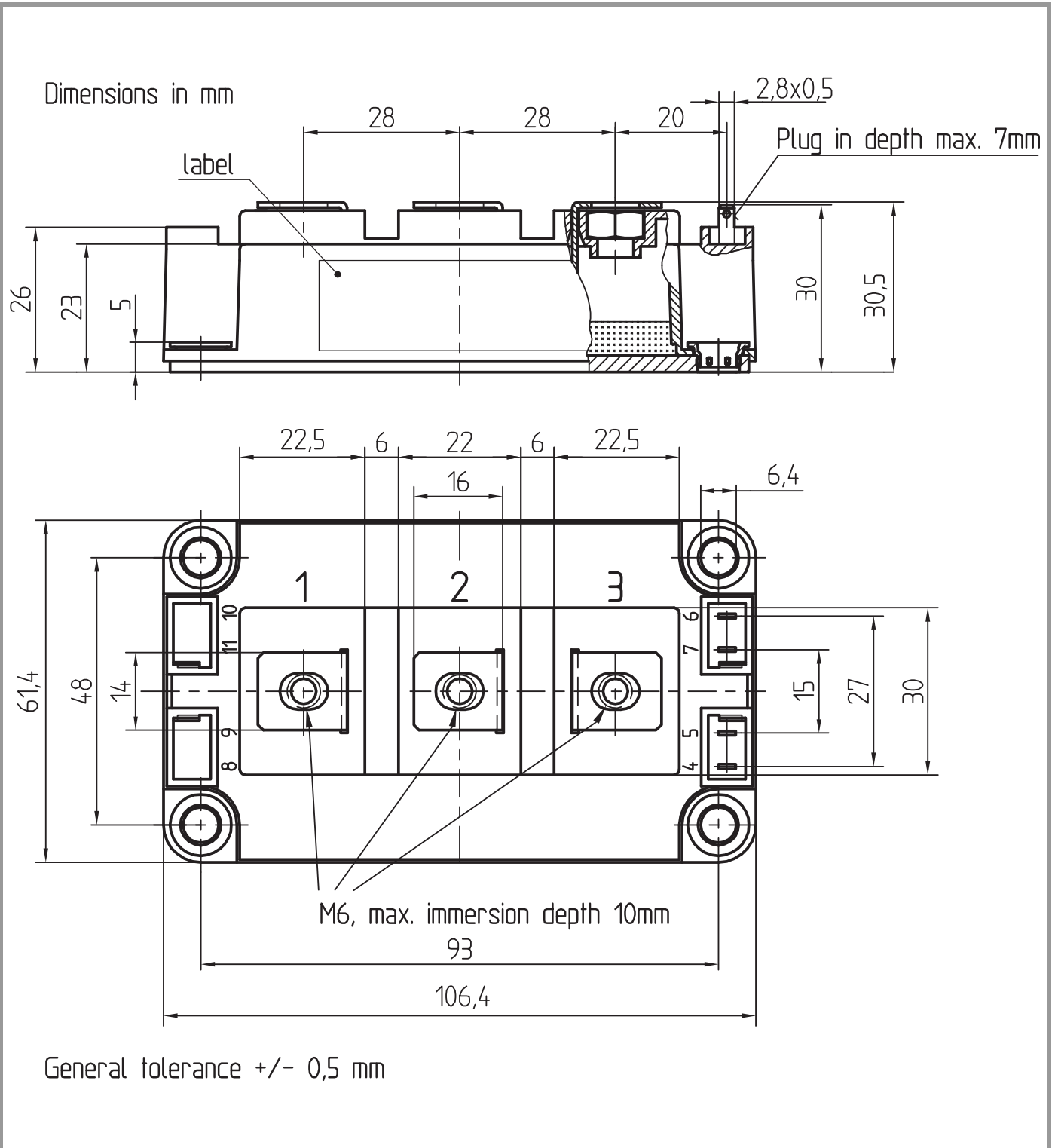
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
L_{CE}			15		nH
$R_{CC'+EE'}$	measured per switch,		0.55		m Ω
$R_{th(c-s)1}$	per module		0.015		K/W
$R_{th(c-s)2}$	including thermal coupling, Ts underneath module		0.0237		K/W
M_s	to heat sink M6	3		5	Nm
M_t					Nm
	to terminals M6	2.5		5	Nm
					Nm
w				325	g



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

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