SKM125KD12SC

SEMITRANS® 3

SiC Bridge Rectifier

SKM125KD12SC

Features*

- Full Silicon Carbide (SiC) power module
- 1200V SiC Schottky FWDs
- High frequency rectifier
- Improved thermal performances with Aluminium Nitride (AlN) substrate
- UL recognized, file no. E63532

Typical Applications

- Rectifiers for DC/DC converters
- High frequency rectifier applications

Remarks

- Case temperature limited to T_C=125°C
- Recommended T_{jop}= -40…+150°C

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Diode 1				
V_{RRM}	T_j = 25 °C		1200	V
I_F	T_j = 175 °C	T_c = 25 °C	264	A
		T_c = 80 °C	200	A
I_{Fnom}			180	A
I_{FSM}	10 ms, sin 180°, T_j = 150 °C		630	A
i^2t	10 ms, sin 180°, T_j = 150 °C		1984	A^2s
T_j			-40 ... 175	°C

Absolute Maximum Ratings

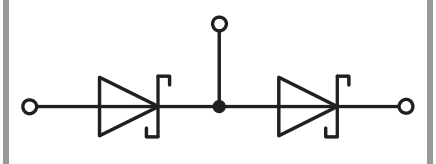
Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$		500	A
T_{stg}	module without TIM	-40 ... 125	°C
V_{isol}	AC sinus 50 Hz, t = 1 min	4000	V

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
V_F	I_F = 180 A	T_j = 25 °C		1.36	1.55	V
	chiplevel	T_j = 150 °C		1.70	1.98	V
V_{F0}	chiplevel	T_j = 25 °C		0.95	1.05	V
		T_j = 150 °C		0.80	0.90	V
r_F	chiplevel	T_j = 25 °C		2.3	2.8	mΩ
		T_j = 150 °C		5.0	6.0	mΩ
C_j	V_R = 800 V, f = 1 MHz, T_j = 25 °C			0.840		nF
Q_c	V_R = 800 V, di/dt_{off} = 500 A/µs, T_j = 25 °C			0.67		µC
$R_{th(j-c)}$	per diode				0.215	K/W

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Module						
L_{CE}				15		nH
$R_{CC'+EE'}$	measured per switch	T_C = 25 °C		0.55		mΩ
		T_C = 125 °C		0.85		mΩ
$R_{th(c-s)}$	calculated without thermal coupling (λ_{grease}=0.81 W/(m*K))			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



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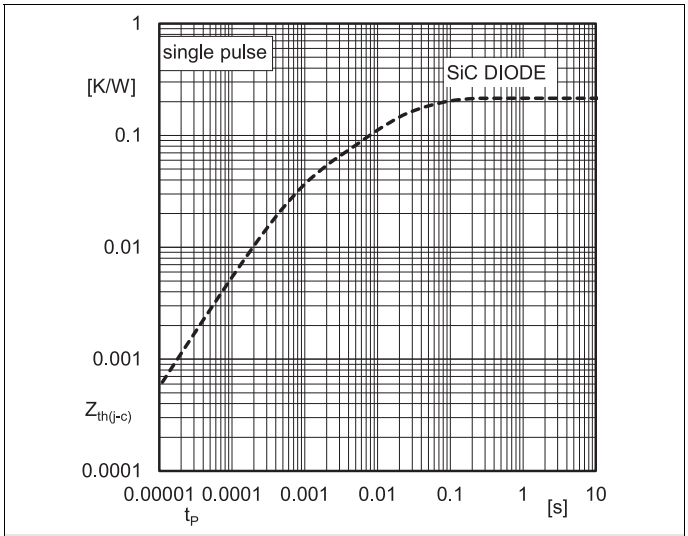


Fig. 9: Typ. transient thermal impedance

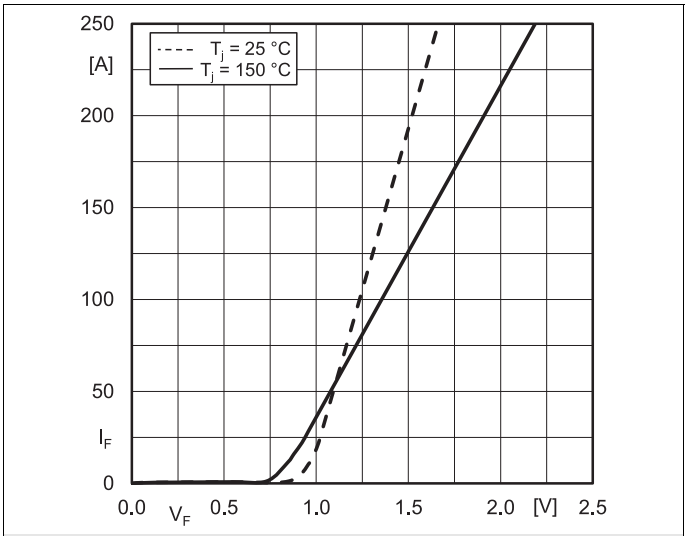


Fig. 10: Typ. Diode forward charact., incl. $R_{CC'+EE'}$

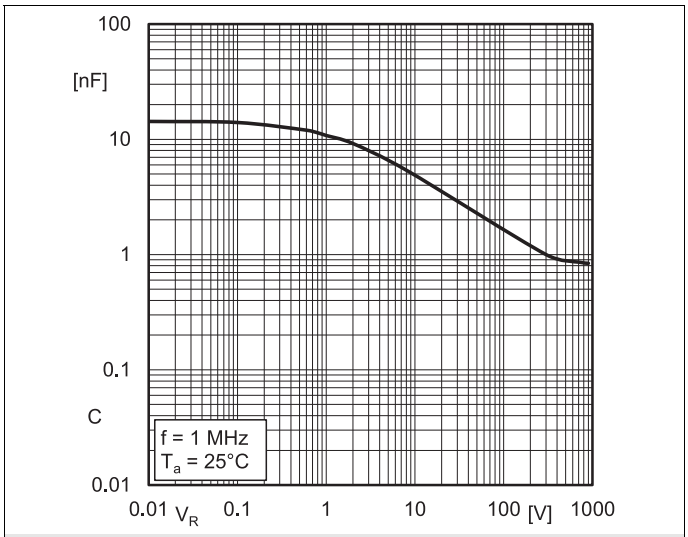
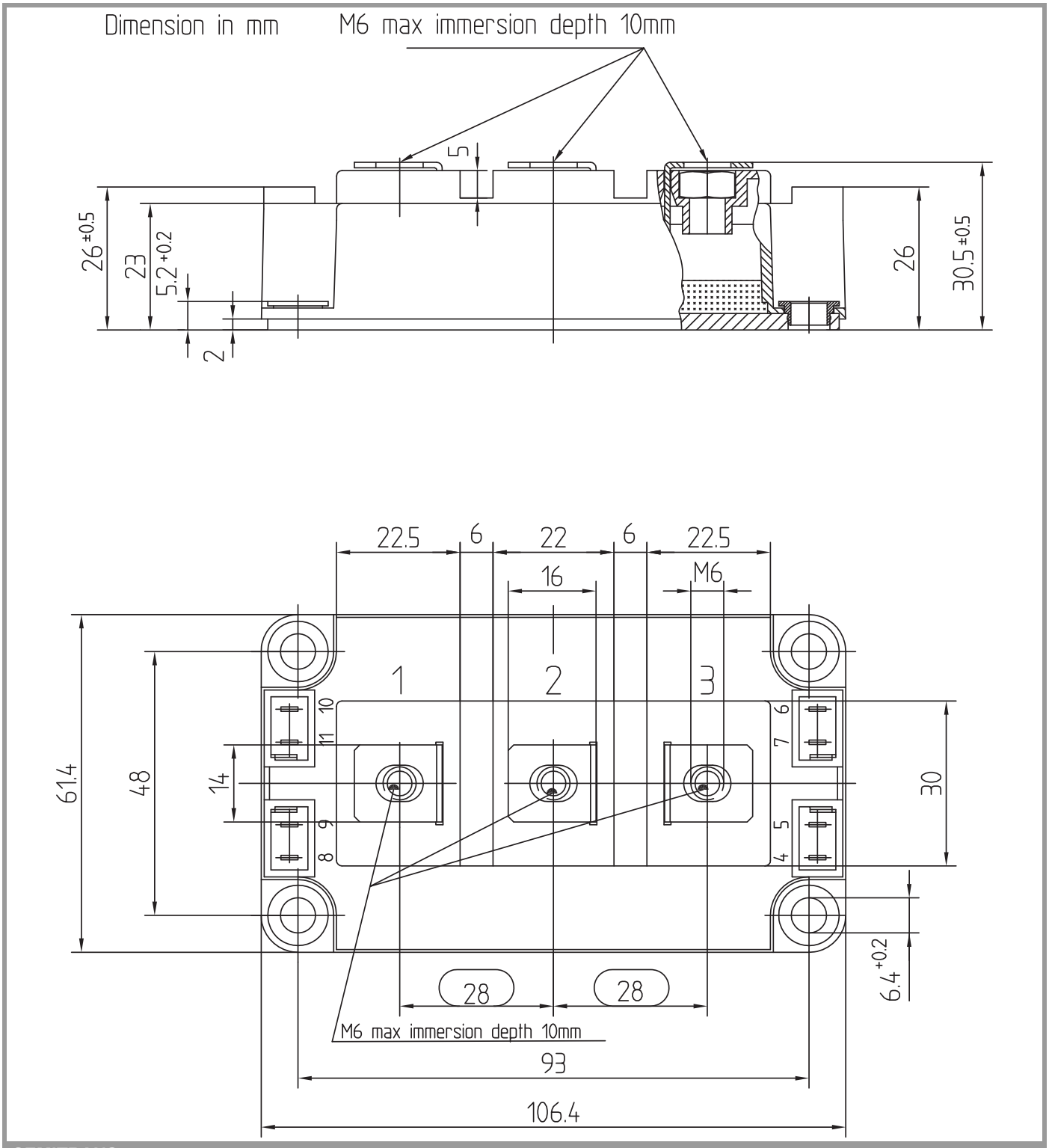


Fig. 20: Typ. Capacitance-voltage characteristic



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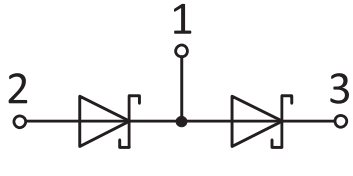

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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