

SKM125KD12SC



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

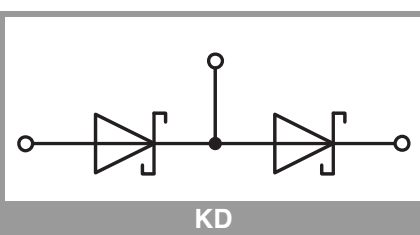
- Case temperature limited to $T_C=125^{\circ}\text{C}$
- Recommended $T_{jop} = -40...+150^{\circ}\text{C}$

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 ² t	10 ms, sin 180°, T _j = 150 °C		1984	A ² s
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	T _C = 25 °C	0.55			mΩ
	switch	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



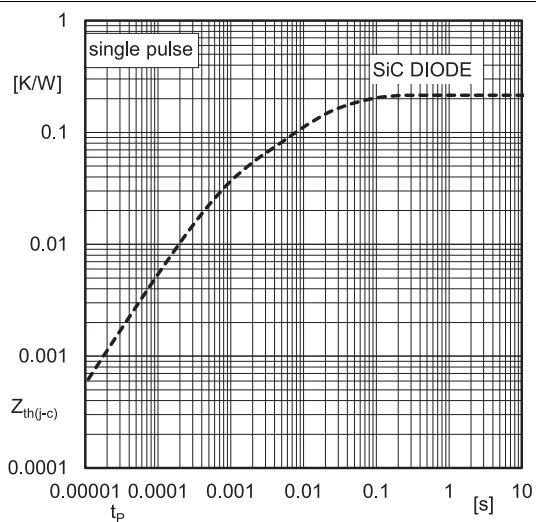


Fig. 9: Typ. transient thermal impedance

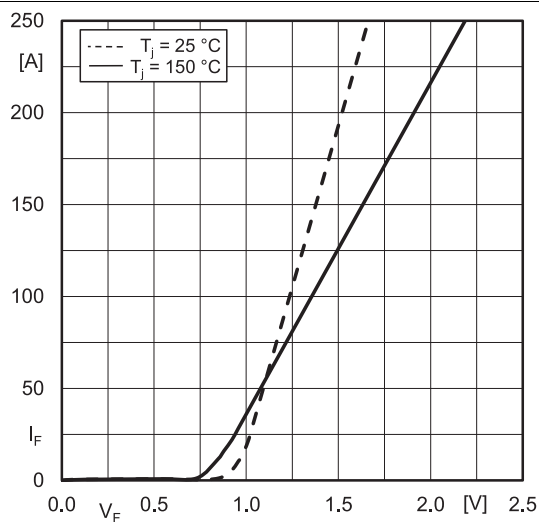


Fig. 10: Typ. Diode forward charact., incl. $R_{CC'+EE'}$

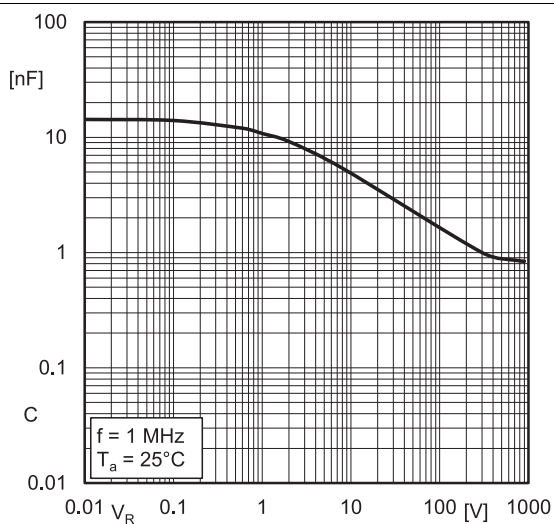
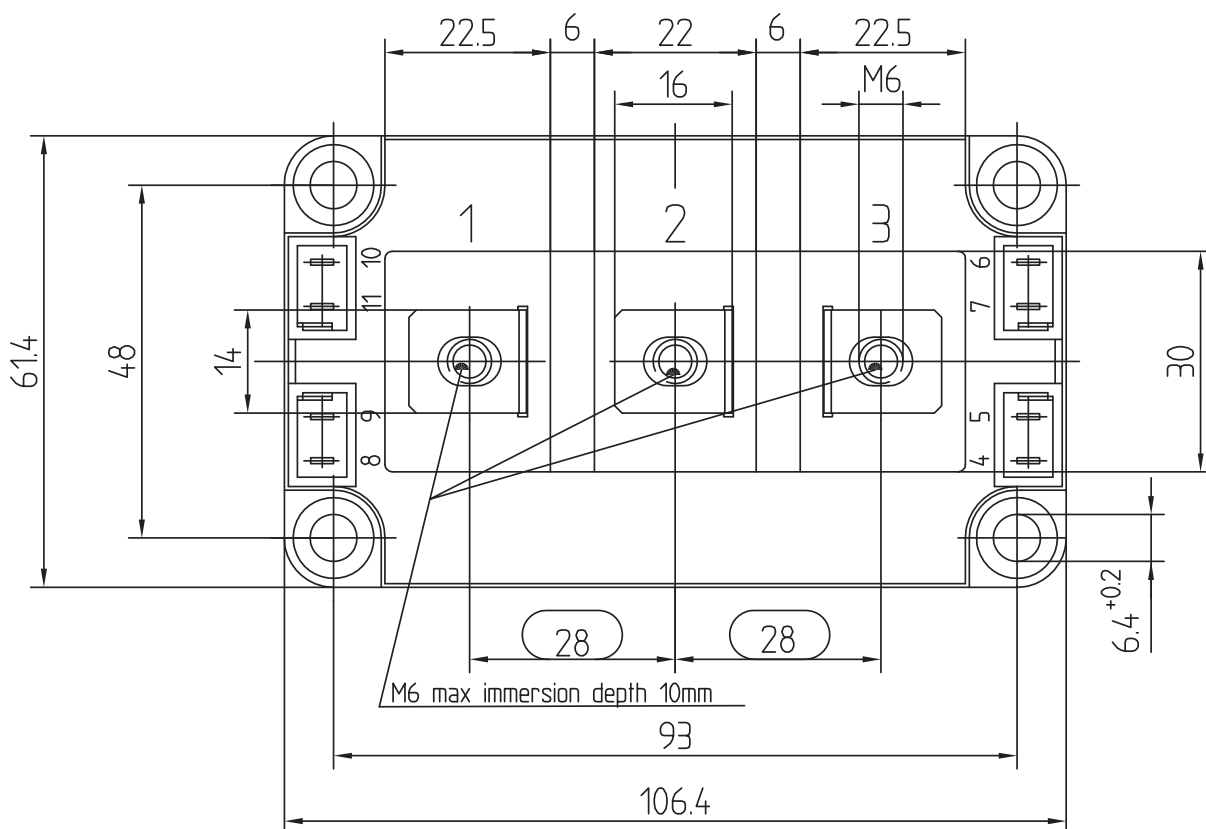
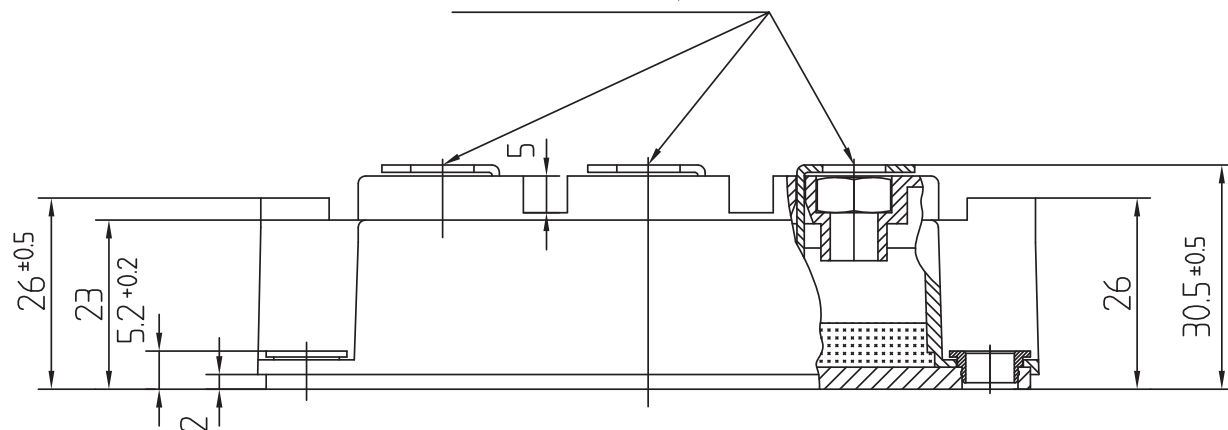


Fig. 20: Typ. Capacitance-voltage characteristic

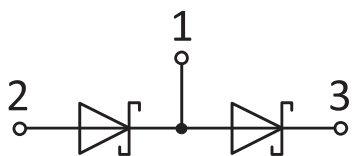
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Dimension in mm

M6 max immersion depth 10mm



SEMITRANS 3



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

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