

SEMiX® 6p

3-Phase Bridge Rectifier

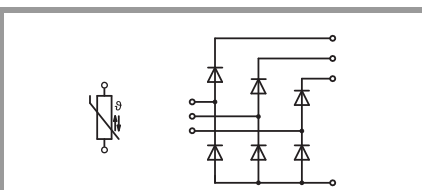
SEMiX526D22p

Features*

- Terminal height 17 mm
- Chips soldered directly to insulated substrate
- UL recognized file no. E63532
- Press-Fit pins
- NEW SKR PEP diode-technology for enhanced power and environmental robustness
- $T_{jmax} = 150^{\circ}\text{C}$
- NTC temperature sensor

Remarks

- Temperature sensor: no basic insulation to main circuit, signal processing with reference to negative DC potential
- Product reliability results valid for $T_j \leq 130^{\circ}\text{C}$ (recommended $T_{jop} = -40 \dots 130^{\circ}\text{C}$)
- All positive DC terminals have to be connected externally to same potential



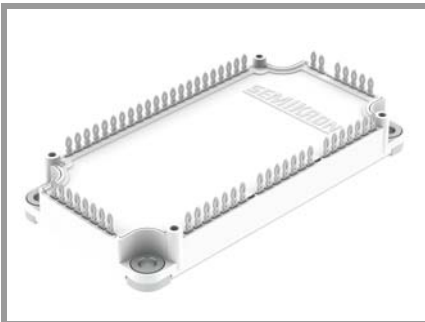
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Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$	per power terminal (50 A / pin)	650	A
T_{stg}		-40 ... 125	$^{\circ}\text{C}$
V_{isol}	AC sinus 50Hz, $t = 1 \text{ min}$	4000	V

Absolute Maximum Ratings				
Symbol	Conditions	Values	Unit	
Diode				
I_{FAV}	$T_j = 150^{\circ}\text{C}$ sin 180°	$T_c = 85^{\circ}\text{C}$	384	A
		$T_c = 100^{\circ}\text{C}$	318	A
I_{FSM}	10 ms sin 180°	$T_j = 25^{\circ}\text{C}$	5400	A
		$T_j = 130^{\circ}\text{C}$	5300	A
i^2t	10 ms sin 180°	$T_j = 25^{\circ}\text{C}$	145800	A^2s
		$T_j = 130^{\circ}\text{C}$	140450	A^2s
V_{RSM}		2300	V	
V_{RRM}		2200	V	
T_j		-40 ... 150	$^{\circ}\text{C}$	

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Diode					
V_F	$I_F = 302 \text{ A}$ chiplevel	$T_j = 25^{\circ}\text{C}$	1.00	1.10	V
		$T_j = 125^{\circ}\text{C}$	0.91	1.01	V
V_F	$I_F = 302 \text{ A}$ terminal level	$T_j = 25^{\circ}\text{C}$	1.12	1.28	V
		$T_j = 125^{\circ}\text{C}$	1.09	1.25	V
V_{F0}	chiplevel Approximation for: $I_{F1} = 302 \text{ A}$ $I_{F2} = 906 \text{ A}$	$T_j = 25^{\circ}\text{C}$	0.90	0.97	V
		$T_j = 125^{\circ}\text{C}$	0.78	0.83	V
r_F	chiplevel	$T_j = 25^{\circ}\text{C}$	0.33	0.45	$\text{m}\Omega$
		$T_j = 125^{\circ}\text{C}$	0.43	0.58	$\text{m}\Omega$
I_R	$T_j = 150^{\circ}\text{C}$, V_{RRM}			9	mA
$R_{th(j-c)}$	per diode, cont.			0.1	K/W
$R_{th(j-c)}$	per diode, sin. 180°			0.122	K/W
$R_{th(j-c)}$	per diode, rec. 120°			0.128	K/W
$R_{th(c-s)}$	per diode ($\lambda_{grease} = 0.81 \text{ W}/(\text{m}^2\text{K})$)		0.042		K/W

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
R_{CC+EE}	measured per switch	$T_c = 25^{\circ}\text{C}$	0.4		$\text{m}\Omega$
		$T_c = 125^{\circ}\text{C}$	0.6		$\text{m}\Omega$
$R_{th(c-s)1}$	calculated without thermal coupling ($\lambda_{grease} = 0.81 \text{ W}/(\text{m}^2\text{K})$)		0.007		K/W
		including thermal coupling, T_s underneath module ($\lambda_{grease} = 0.81 \text{ W}/(\text{m}^2\text{K})$)		0.011	
M_s	to heat sink (M5)	3		6	Nm
w			300		g



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Features*

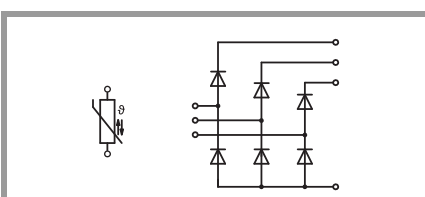
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Characteristics

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Temperature Sensor					
R_{100}	$T_c = 100^{\circ}\text{C}$ ($R_{25} = 5 \text{ k}\Omega$)		$493 \pm 5\%$		Ω
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; $T[\text{K}]$		$3550 \pm 2\%$		K



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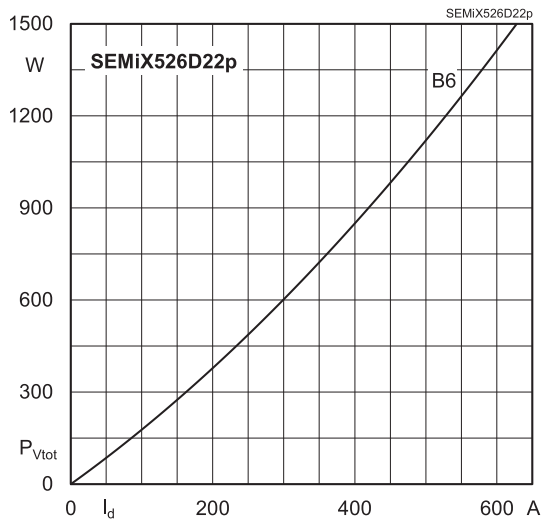


Fig. 4L: Power dissipation per module vs. direct current

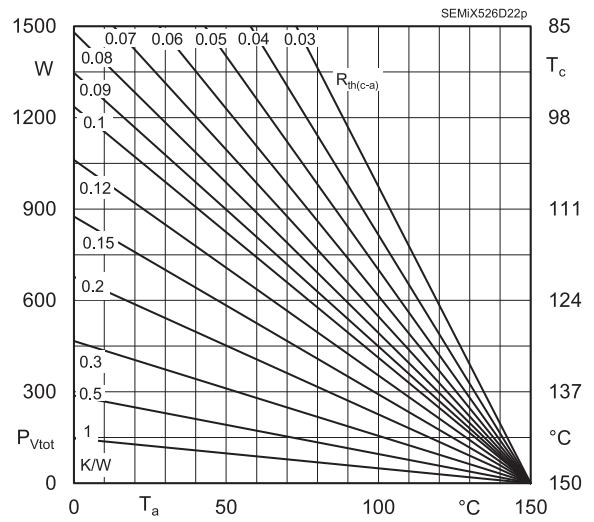


Fig. 4R: Power dissipation per module vs. ambient temperature

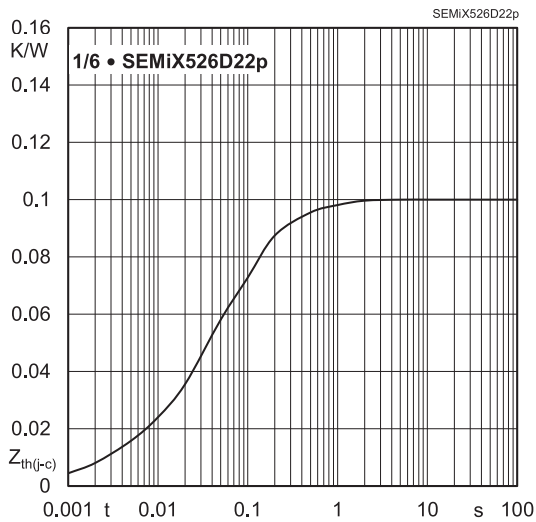


Fig. 6: Transient thermal impedance vs. time

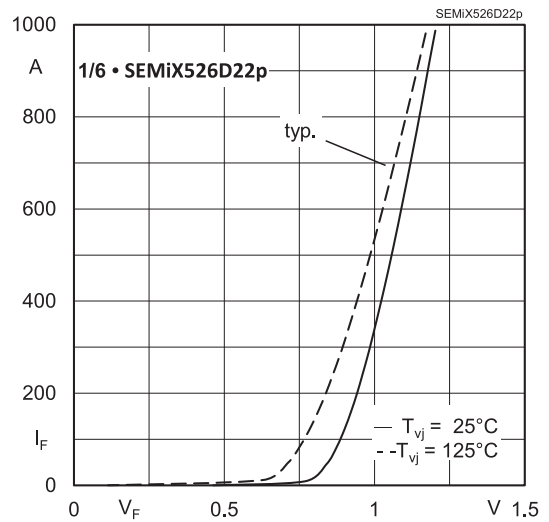


Fig. 7: On-state characteristics (chipelevel)

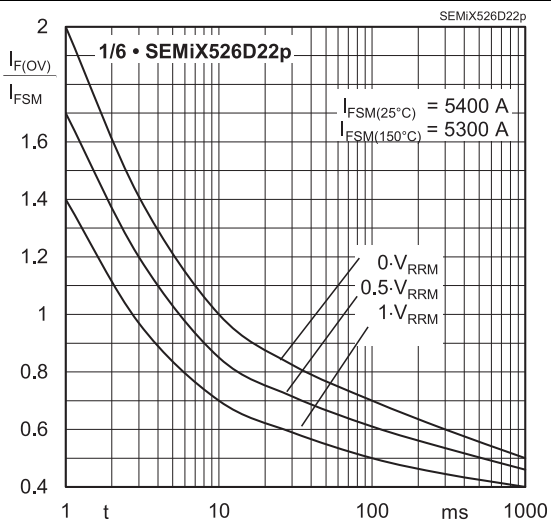
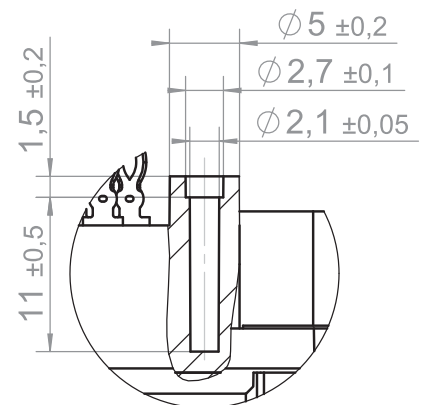
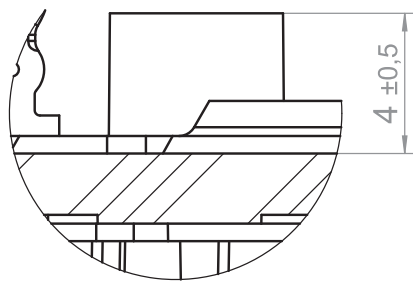
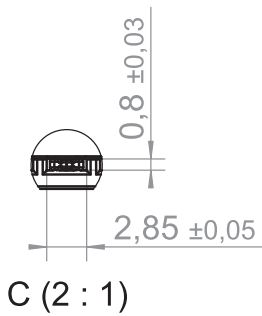
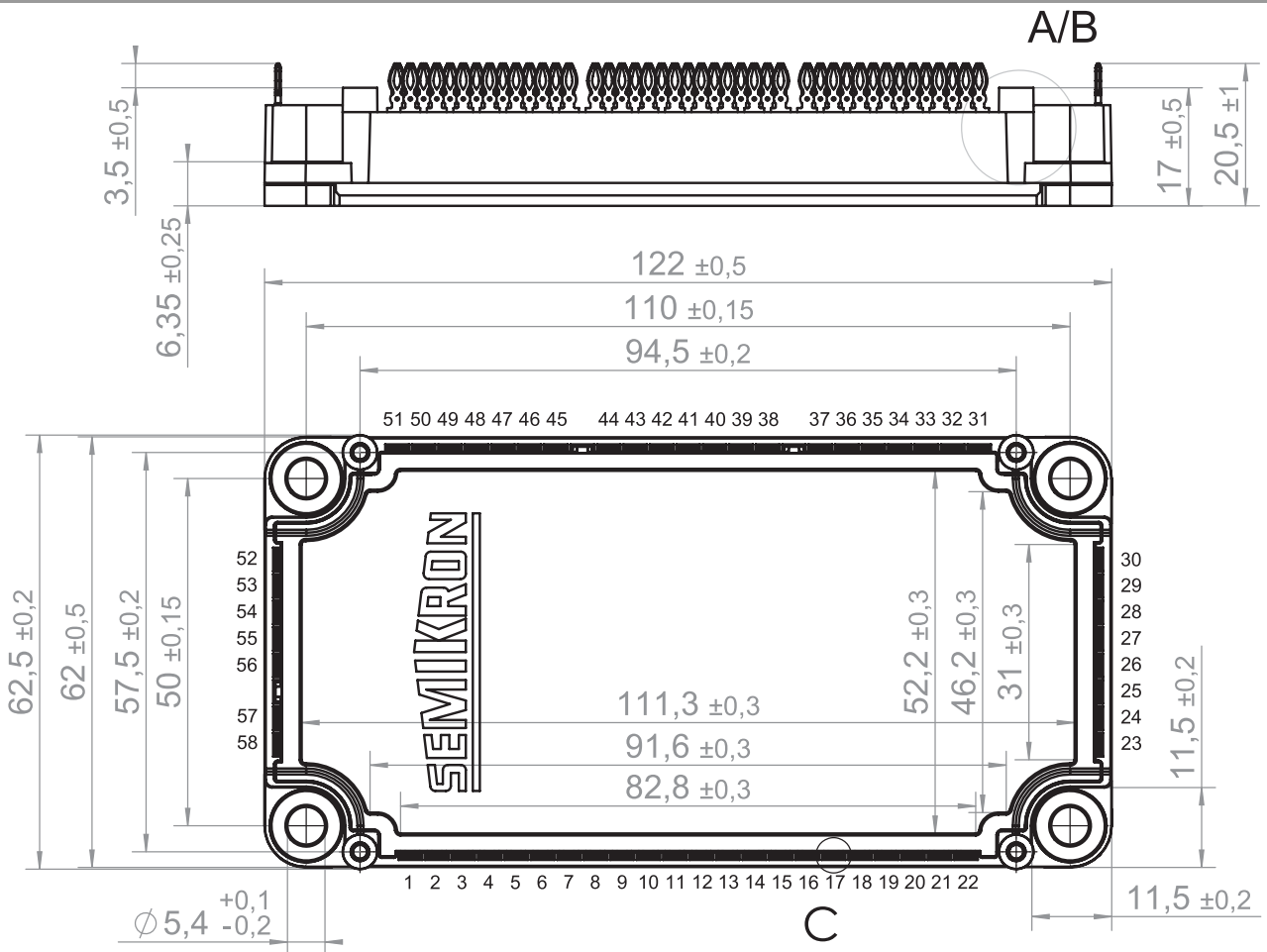


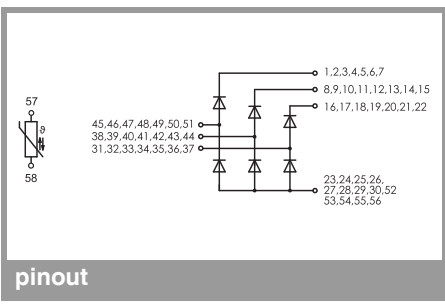
Fig. 8: Surge overload current vs. time



C (2 : 1)

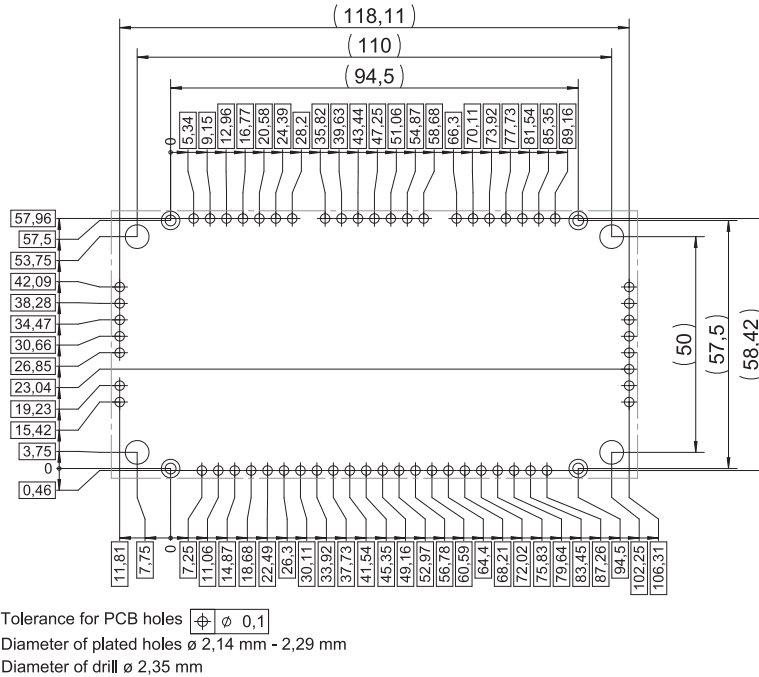
B (5 : 1)
Cross-sectional plane in
the middle of the module

A (2 : 1)
Cut-out shows section through
the center of the PCB-dome



pinout

PCB drillhole pattern



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

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