



flow90CON 1

1600 V / 75 A

**Topology features**

- Three-phase Rectifier

**Component features**

- High inrush current capability

**Housing features**

- Base isolation: Al<sub>2</sub>O<sub>3</sub>
- 90° mounting angle between heatsink and PCB
- Screw-on heatsink mounting
- Clip-in PCB mounting
- Thermo-mechanical push-and-pull force relief
- Solder pin

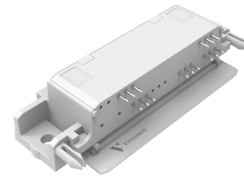
**Target applications**

- Motor drives
- Servo drives

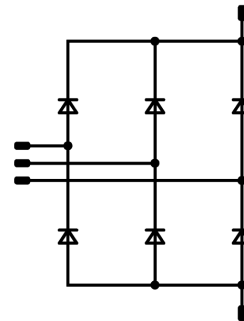
**Types**

- V23990-P719-H-PM

**flow90 1 housing**



**Schematic**





## Maximum Ratings

$T_j = 25\text{ °C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
<b>Rectifier Diode</b>				
Peak repetitive reverse voltage	$V_{RRM}$		1600	V
Forward current (DC current)	$I_F$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	85	A
Surge (non-repetitive) forward current	$I_{FSM}$	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	1000	A
Surge current capability	$I^2t$		5000	A <sup>2</sup> s
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	103	W
Maximum junction temperature	$T_{jmax}$		150	°C

## Module Properties

### Thermal Properties

Storage temperature	$T_{stg}$		-40...+125	°C
Operation temperature under switching condition	$T_{jop}$		-40...+( $T_{jmax} - 25$ )	°C

### Isolation Properties

Isolation voltage	$V_{isol}$	DC Test Voltage* $t_p = 2\text{ s}$	6000	V
Creepage distance			>12,7	mm
Clearance			11,84	mm
Comparative Tracking Index	CTI		≥ 200	

\*100 % tested in production



### Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		$V_{GE}$ [V] $V_{GS}$ [V]	$V_{CE}$ [V] $V_{DS}$ [V] $V_F$ [V]	$I_C$ [A] $I_D$ [A] $I_F$ [A]	$T_j$ [°C]	Min	Typ	Max		

### Rectifier Diode

#### Static

Forward voltage	$V_F$				150	25 125 150		1,43 1,49	1,31 <sup>(1)</sup> 1,28 <sup>(1)</sup>	V
Reverse leakage current	$I_R$	$V_r = 1600$ V				25 150			50 2000	μA

#### Thermal

Thermal resistance junction to sink <sup>(2)</sup>	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,68		K/W
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<sup>(1)</sup> Value at chip level

<sup>(2)</sup> Only valid with pre-applied Vincotech thermal interface material.



## Rectifier Diode Characteristics

figure 1. Rectifier

Typical forward characteristics

$$I_F = f(V_F)$$

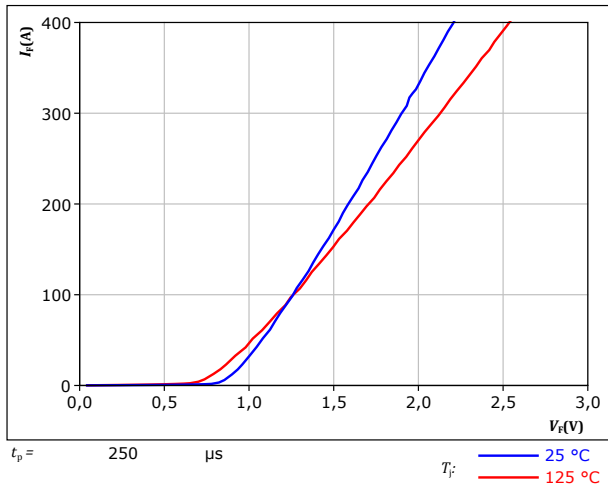
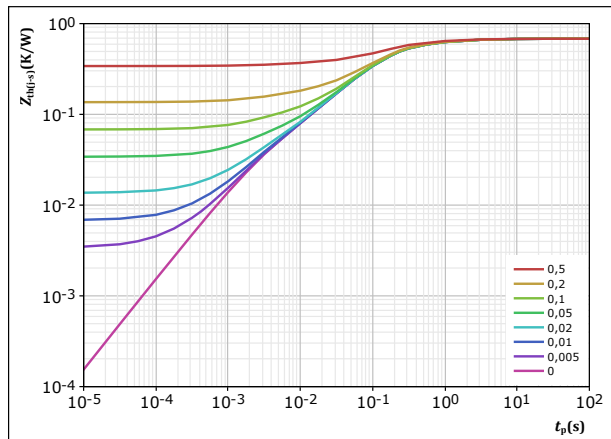


figure 2. Rectifier

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$



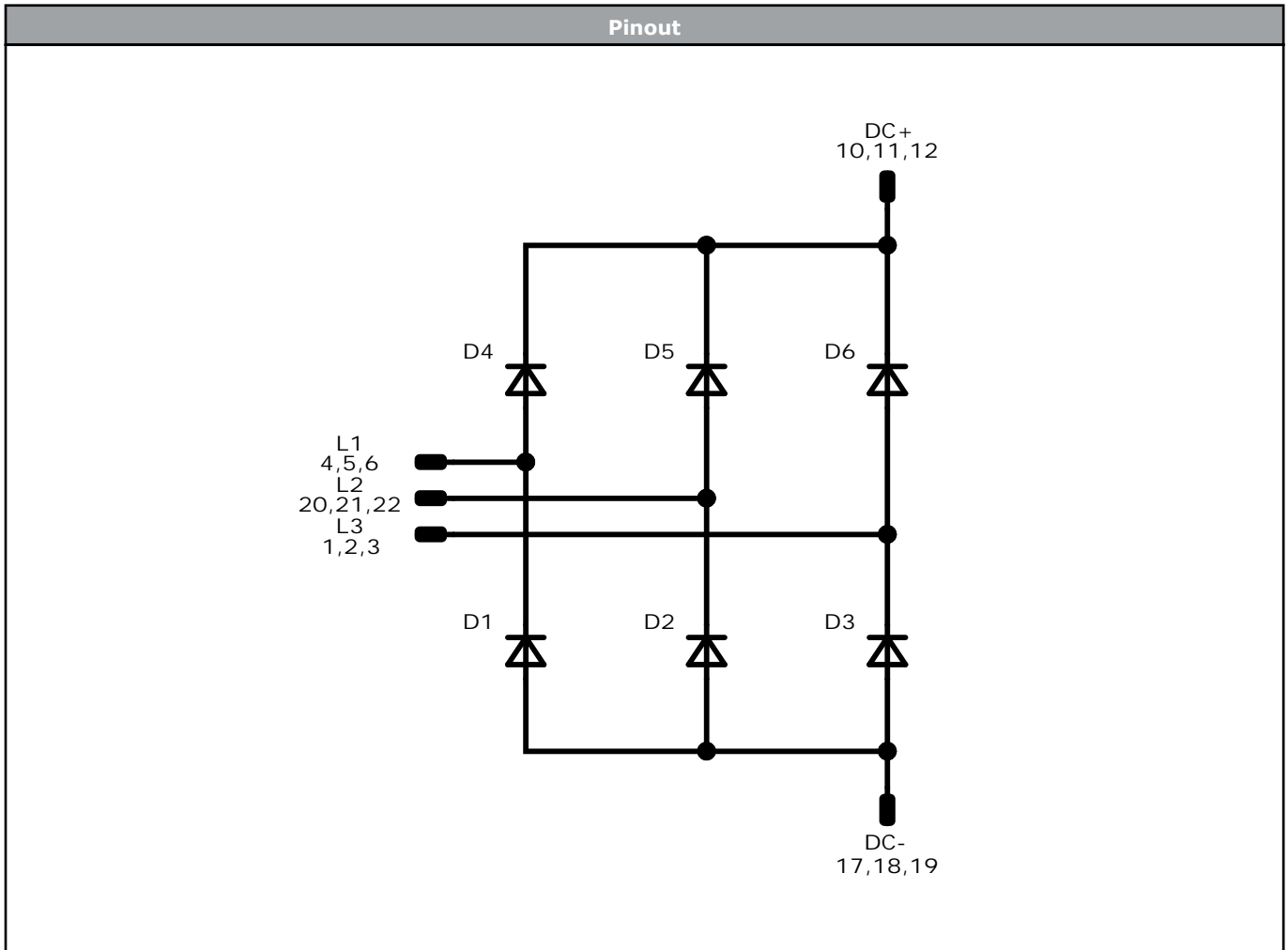
$D =$	$t_p / T$	
$R_{th(j-s)} =$	0,681	K/W
Rectifier thermal model values		
$R$ (K/W)	$\tau$ (s)	
3,26E-02	4,41E+00	
1,27E-01	6,74E-01	
4,15E-01	1,33E-01	
7,82E-02	3,42E-02	
2,89E-02	2,94E-03	



Ordering Code	
<b>Version</b>	<b>Ordering Code</b>
Without thermal paste	V23990-P719-H-PM
With thermal paste (3,4 W/mK, PSX-P7)	V23990-P719-H-/3/-PM

Marking							
	<b>Text</b>	<b>VIN</b> VIN	<b>Date code</b> WWYY	<b>Type&amp;Ver</b> TTTTTTTV	<b>UL</b> UL	<b>Lot</b> LLLLL	<b>Serial</b> SSSS
	<b>Datamatrix</b>	<b>Type&amp;Ver</b>	<b>Lot number</b>	<b>Serial</b>	<b>Date code</b>		
		TTTTTTTV	LLLLL	SSSS	WWYY		

Pin table [mm]				Function	Outline	
Pin	X	Y				
1	53	0		L3	<p>Tolerance of positions: ±0.5mm at the end of pins Dimension of coordinate axis is only offset without tolerance</p>	
2	50,1	0		L3		
3	47,2	0		L3		
4	40,2	0		L1		
5	37,3	0		L1		
6	34,4	0		L1		
7	27,4	0		NA		
8	24,5	0		NA		
9	21,6	0		NA		
10	18,7	0		DC+		
11	15,8	0		DC+		
12	12,9	0		DC+		
13	7,1	0		NA		
14	0	0		NA		
15	0	7		NA		
16	3	7		NA		
17	7	7		DC-		
18	9,9	7		DC-		
19	12,8	7		DC-		
20	44	7		L2		
21	47	7		L2		
22	50	7		L2		



Identification					
ID	Component	Voltage	Current	Function	Comment
D1, D4, D2, D5, D3, D6	Rectifier	1600 V	150 A	Rectifier Diode	




Packaging instruction				
Standard packaging quantity (SPQ) 80	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for <i>flow90</i> 1 packages see vincotech.com website.

Package data
Package data for <i>flow90</i> 1 packages see vincotech.com website.

Vincotech thermistor reference
See Vincotech thermistor reference table at vincotech.com website.

UL recognition and file number
This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website. 

Document No.:	Date:	Modification:	Pages
V23990-P719-H-PM-D4-14	7 Aug. 2022	New Datasheet format, module is unchanged Separate datasheet Introduce Rth values with PSX-P7 Updated static characteristic	

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