Vincotech

V23990-P718-H10-PM
datasheet

***flow*90CON 1** **1600 V / 43 A**

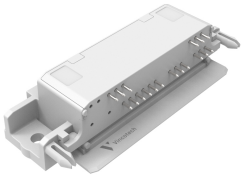
Topology features
- Three-phase Half Controlled Converter

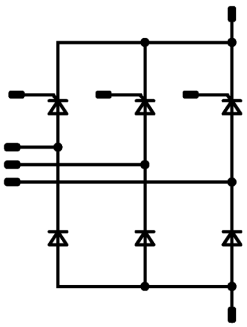
Component features
- High inrush current capability

Housing features
- Base isolation: Al_2O_3
- 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
- Industrial Drives
- Servo Drives

Types
- V23990-P718-H10-PM

*flow*90 1 housing


Schematic


Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Rectifier Thyristor					
Repetitive peak reverse voltage	V_{RRM}			1200	V
Maximum RMS on-state current	I_{TRMSM}	T_j = T_{jmax}	T_s = 80 °C	60	A
Surge on-state current	I_{TSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	540	A
I2t value	I^2t	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	1460	A^2s
Mean total power loss	$P_{tot}(AV)$	T_j = T_{jmax}	T_s = 80 °C	64	W
Maximum Junction Temperature	T_{jmax}			150	°C
Rectifier Diode					
Peak repetitive reverse voltage	V_{RRM}			1600	V
Forward current (DC current)	I_F	T_j = T_{jmax}	T_s = 80 °C	69	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	740	A
Surge current capability	I^2t			2740	A^2s
Total power dissipation	P_{tot}	T_j = T_{jmax}	T_s = 80 °C	88	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 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 Thyristor										
Static										
On-state voltage	V_T				60	25 125		1,32 1,33	1,26 1,28	V
On-state threshold voltage	$V_{T(TO)}$				0	125			0,89	V
On-state slope resistance	r_T				0	125			6	mΩ
Direct reverse current	I_{RD}	V_r = 1200 V				25 125			50 5000	µA
Holding current	I_H	I_T = A		6		25		75		mA
Latching current	I_L	t_p = 10 µs I_G = 0,45 A di_G/dt = 0,45 A/µs				25		125		mA
Gate trigger voltage	V_{GT}			6		25			1,5	V
Gate trigger current	I_{GT}			6		25			50	mA
Gate non-trigger current	I_{GD}					25			5	mA
Thermal										
Thermal resistance junction to sink(2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,1		K/W
Rectifier Diode										
Static										
Forward voltage	V_F				80	25 125 150		1,33 1,35	1,23(1) 1,17(1)	V
Reverse leakage current	I_R	V_r = 1600 V				25 150			50 1500	µA
Thermal										
Thermal resistance junction to sink(2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,79		K/W

(1) Value at chip level

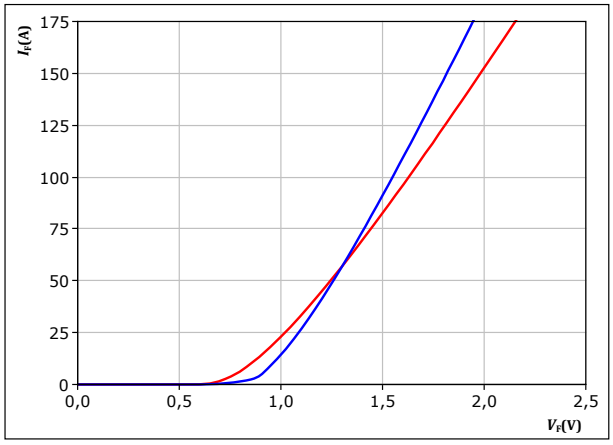
(2) Only valid with pre-applied Vincotech thermal interface material.

Rectifier Thyristor Characteristics

figure 1. **Thyristor**

Typical forward characteristics

$I_F = f(V_F)$



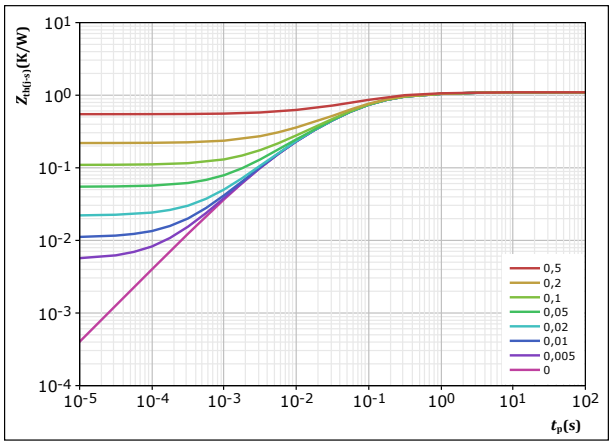
t_p = 250 µs

T_j: 25 °C, 125 °C

figure 2. **Thyristor**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 1,096 K/W

Thyristor thermal model values

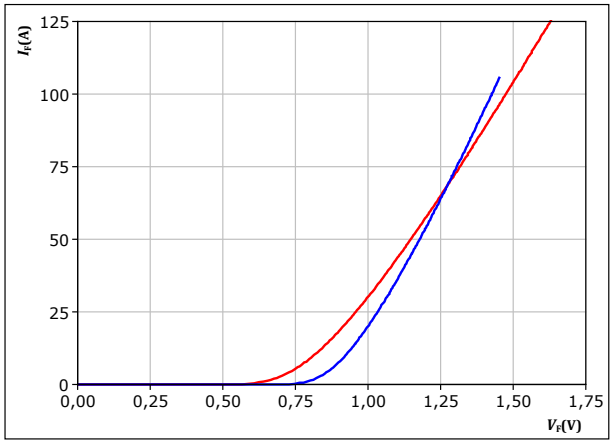
R (K/W)	τ (s)
8,69E-02	1,86E+00
3,24E-01	1,95E-01
4,90E-01	5,57E-02
1,65E-01	1,01E-02
3,08E-02	2,31E-03

Rectifier Diode Characteristics

figure 3. **Rectifier**

Typical forward characteristics

$I_F = f(V_F)$



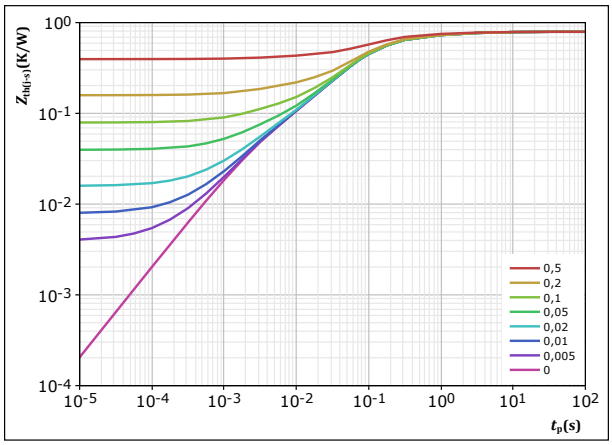
t_p = 250 µs

T_j: 25 °C, 125 °C

figure 4. **Rectifier**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 0,792 K/W

Rectifier thermal model values

R (K/W)	τ (s)
3,05E-02	5,90E+00
8,93E-02	1,13E+00
2,82E-01	1,79E-01
3,51E-01	6,17E-02
3,93E-02	3,00E-03

Ordering Code

Version	Ordering Code
Without thermal paste	V23990-P718-H10-PM
With thermal paste (5,2 W/mK, PTM6000HV)	V23990-P718-H10-/7/-PM

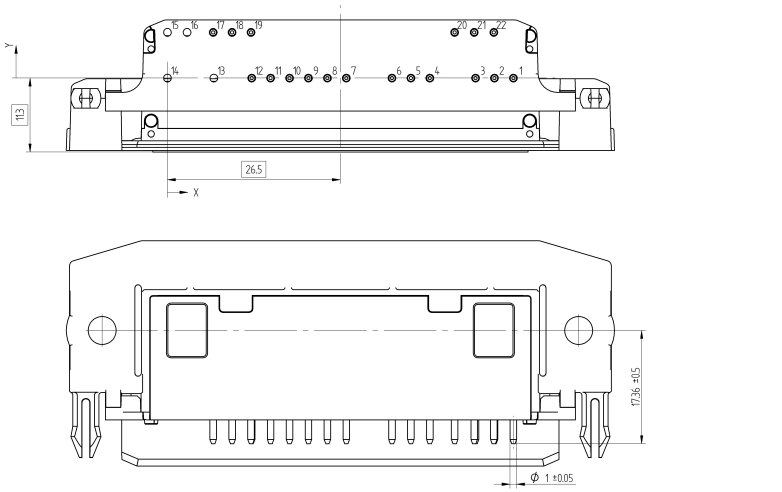
Marking

Text	VIN	Date code	Type&Ver	UL	Lot	Serial
	VIN	WWYY	TTTTTTTVV	UL	LLLLL	SSSS
Datamatrix	**Type&Ver**	**Lot number**	**Serial**	**Date code**		
	TTTTTTTVV	LLLLL	SSSS	WWYY		

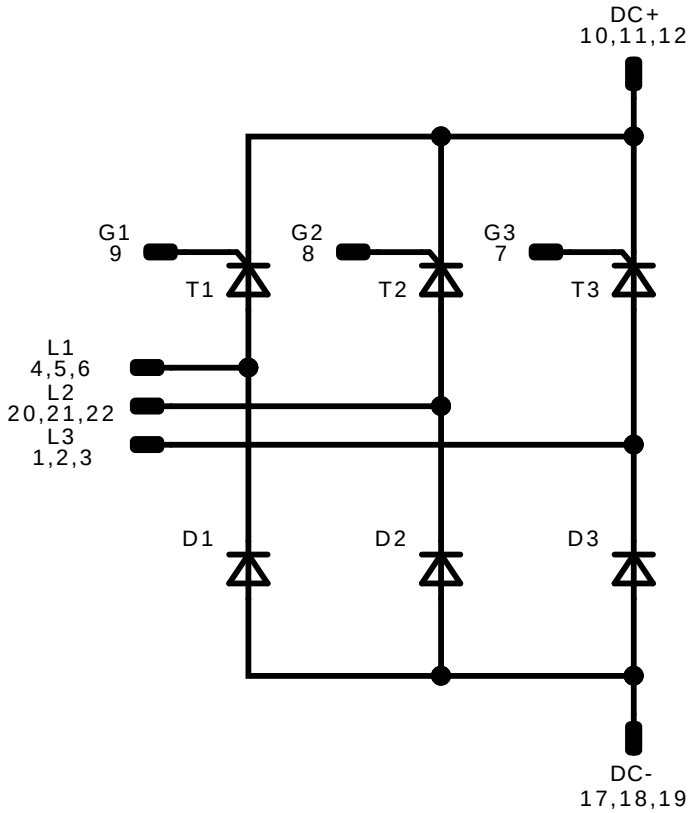
Outline

Pin table [mm]

Pin	X	Y	Function
1	53	0	L3
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	G3
8	24,5	0	G2
9	21,6	0	G1
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



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T1, T2, T3	Thyristor	1200 V	60 A	Rectifier Thyristor	
D1, D2, D3	Rectifier	1600 V	80 A	Rectifier Diode	

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

Handling instruction
Handling instructions for *flow*90 1 packages see vincotech.com website.

Package data
Package data for *flow*90 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 UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,op}$=175°C and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
V23990-P718-H10-PM-D4-14	11 Mar. 2025	New Datasheet format. No change in the module	