Vincotech

10-PY166RA110RW-LR58H08Y
datasheet

***flow*CON 1** **1600 V / 110 A**

Topology features

- Temperature sensor
- Three-phase Rectifier

Component features

- High inrush current capability

Housing features

- Base isolation: Al_2O_3
- Convex shaped substrate for superior thermal contact
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

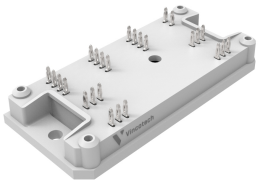
Target applications

- Embedded Drives
- Heat Pumps
- HVAC
- Industrial Drives

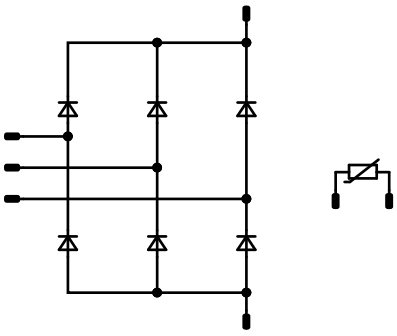
Types

- 10-PY166RA110RW-LR58H08Y

flow 1 12 mm housing



Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Rectifier Diode				
Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	T_j = T_{jmax}, T_s = 80 °C	120	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms, T_j = 150 °C	1380	A
Surge current capability	I^2t		9520	A^2s
Total power dissipation	P_{tot}	T_j = T_{jmax}, T_s = 80 °C	132	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			8,69	mm
Comparative Tracking Index	CTI		≥ 600	

*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				110	25 125		1,22 1,11	1,5(1)	V
Reverse leakage current	I_R	V_r = 1600 V				25 150			100 2000	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,53		K/W
Thermistor										
Static										
Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1484 Ω				100	-5		5	%
Power dissipation	P					25		130		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ±1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ±1 %						4000		K
Vincotech Thermistor Reference									I	

(1) Value at chip level

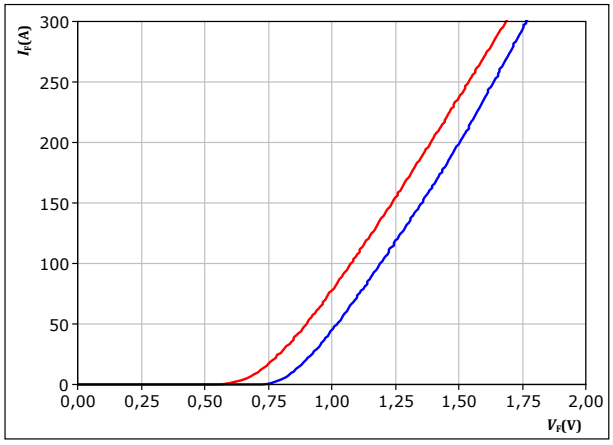
(2) Only valid with pre-applied Vincotech thermal interface material.

Rectifier Diode Characteristics

figure 1. **Rectifier**

Typical forward characteristics

$I_F = f(V_F)$



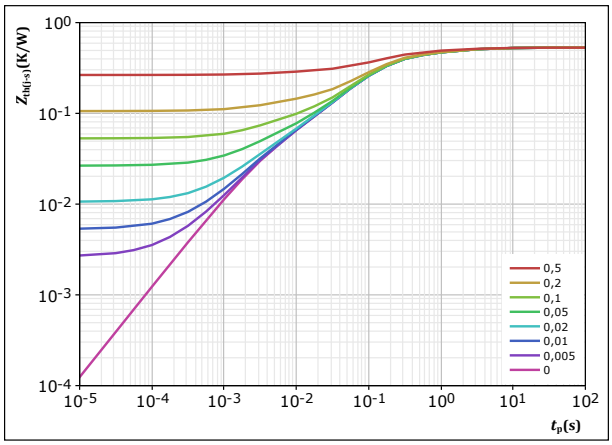
t_p = 250 µs

T_j: 25 °C, 125 °C

figure 2. **Rectifier**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 0,53 K/W

Rectifier thermal model values

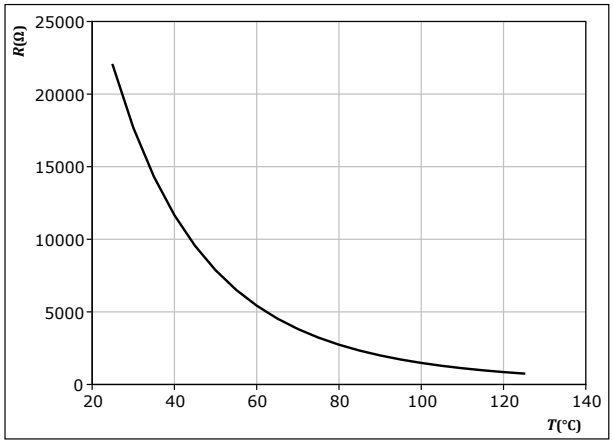
R (K/W)	τ (s)
1,56E-02	8,53E+00
9,06E-02	1,44E+00
2,54E-01	1,78E-01
1,38E-01	6,01E-02
3,18E-02	3,70E-03

Thermistor Characteristics

figure 3. **Thermistor**

Typical NTC characteristic as function of temperature

$R_T = f(T)$



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Ordering Code

Version	Ordering Code
Without thermal paste	10-PY166RA110RW-LR58H08Y
With thermal paste (5,2 W/mK, PTM6000HV)	10-PY166RA110RW-LR58H08Y-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-PY166RA110RW-LR58H08Y-/3/

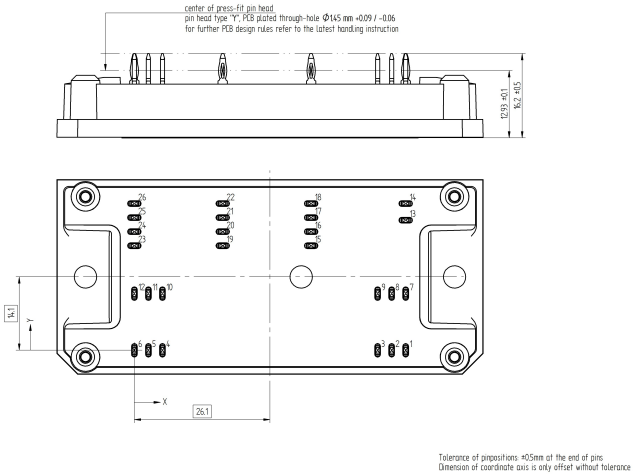
Marking

	Name		Date code	UL & VIN	Lot	Serial
Text	NN-NNNNNNNNNNNNNN-TTTTTTVV		WWYY	UL VIN	LLLLL	SSSS
Datamatrix	**Type&Ver**	**Lot number**	**Serial**	**Date code**		
	TTTTTTTVV	LLLLL	SSSS	WWYY		

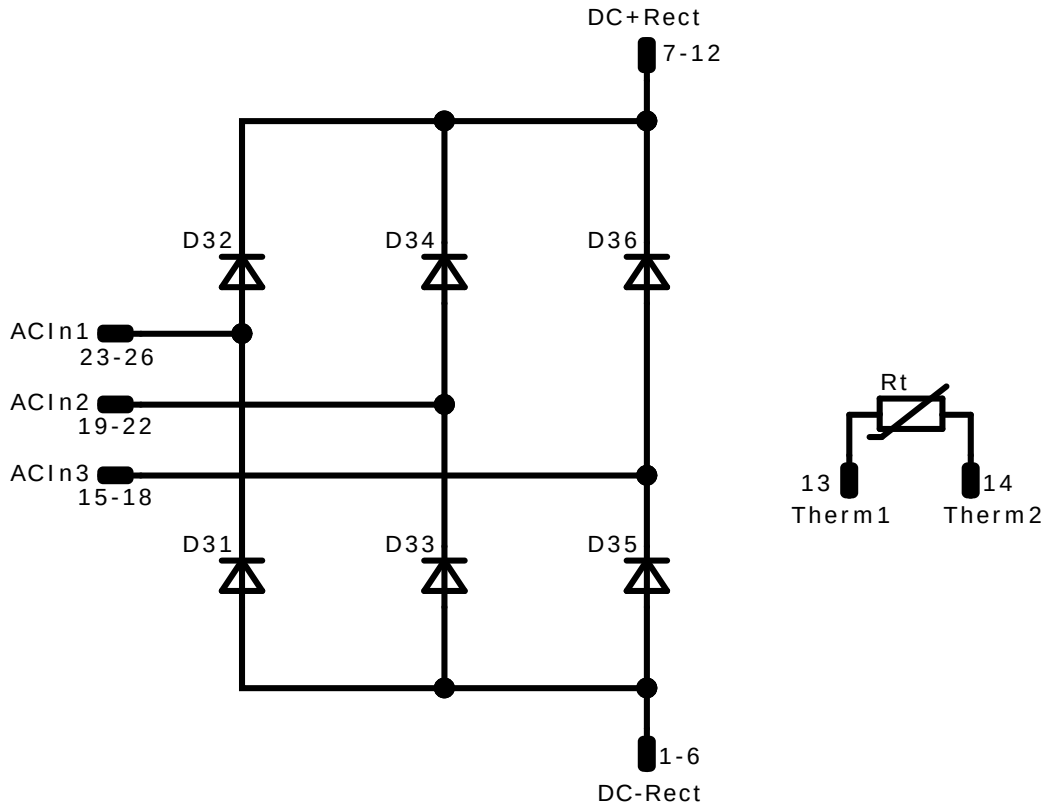
Outline

Pin table [mm]

Pin	X	Y	Function
1	52,2	0	DC-Rect
2	49,5	0	DC-Rect
3	46,8	0	DC-Rect
4	5,4	0	DC-Rect
5	2,7	0	DC-Rect
6	0	0	DC-Rect
7	52,2	10,9	DC+Rect
8	49,5	10,9	DC+Rect
9	46,8	10,9	DC+Rect
10	5,4	10,9	DC+Rect
11	2,7	10,9	DC+Rect
12	0	10,9	DC+Rect
13	52,2	25	Therm1
14	52,2	28,2	Therm2
15	34	20,1	ACIn3
16	34	22,8	ACIn3
17	34	25,5	ACIn3
18	34	28,2	ACIn3
19	17	20,1	ACIn2
20	17	22,8	ACIn2
21	17	25,5	ACIn2
22	17	28,2	ACIn2
23	0	20,1	ACIn1
24	0	22,8	ACIn1
25	0	25,5	ACIn1
26	0	28,2	ACIn1



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
D31, D32, D33, D34, D35, D36	Rectifier	1600 V	110 A	Rectifier Diode	
Rt	Thermistor			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample

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

Package data
Package data for *flow* 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
10-PY166RA110RW-LR58H08Y-D1-14	22 Jun. 2022		