



fastPACK 1 SiC

650 V / 100 A

Topology features

- Temperature sensor
- Single-phase non-controlled rectifier

Component features

- No diode recovery losses
- Very fast switching

Housing features

- Base isolation: Al₂O₃
- Convex shaped substrate for superior thermal contact
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

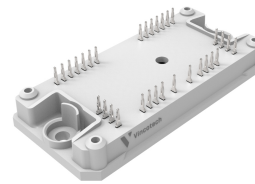
Target applications

- Charging Stations

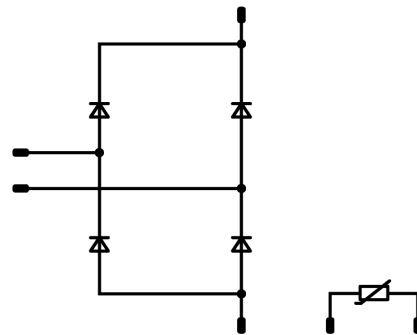
Types

- 10-PG07ORA100RO-LJ51I48T

flow 1 12 mm housing



Schematic





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10-PG07ORA100RO-LJ51I48T
datasheet

Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Rectifier Diode				
Peak repetitive reverse voltage	V_{RRM}		650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	121	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	520	A
Surge current capability	I^2t		1350	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	191	W
Maximum junction temperature	T_{jmax}		175	°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
Isolation voltage	V_{isol}	AC Voltage $t_p = 1\text{ min}$	3500	V
Creepage distance			>12,7	mm
Clearance			8,38	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				100	25 125 150		1,36 1,42 1,45	1,5 ⁽¹⁾ 1,71 ⁽¹⁾	V
Reverse leakage current	I_R	$V_T = 650$ V				25 150		0,3 20	500 2000	μA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,5		K/W
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Thermistor

Static

Rated resistance	R					25		22		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1484$ 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. FWD

Typical forward characteristics

$$I_F = f(V_F)$$

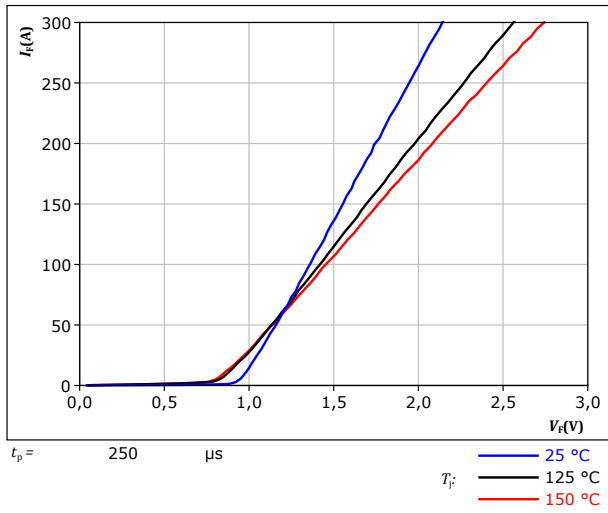
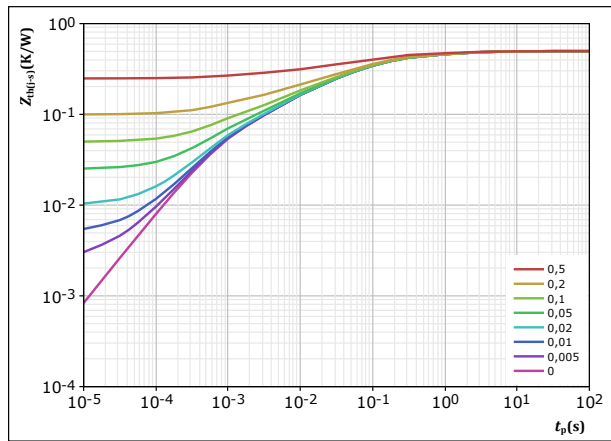


figure 2. FWD

Transient thermal impedance as a function of pulse width

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



$D = \frac{t_p}{T}$
 $R_{th(j-s)} = 0,497 \text{ K/W}$
 FWD thermal model values

R (K/W)	τ (s)
2,24E-02	4,82E+00
7,92E-02	7,17E-01
2,19E-01	8,04E-02
1,24E-01	8,83E-03
5,29E-02	7,90E-04

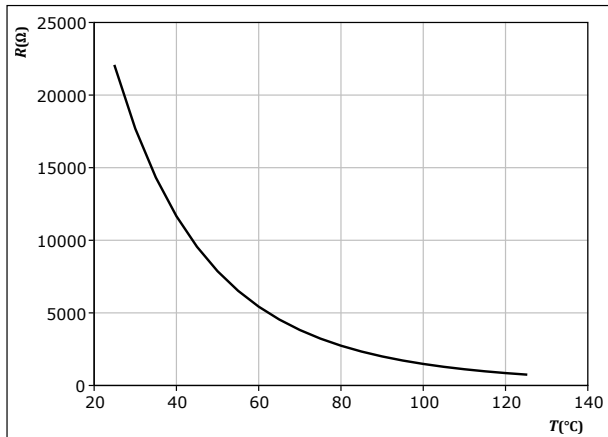


Thermistor Characteristics

figure 3. Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$






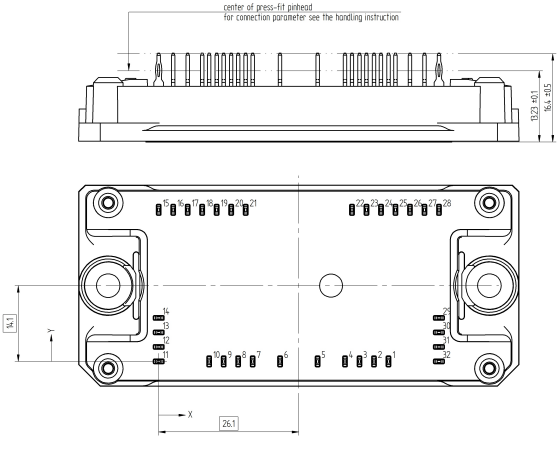
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10-PG07ORA100RO-LJ51I48T
datasheet

Ordering Code	
Version	Ordering Code
Without thermal paste	10-PG07ORA100RO-LJ51I48T
With thermal paste (5,2 W/mK, PTM6000HV)	10-PG07ORA100RO-LJ51I48T-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-PG07ORA100RO-LJ51I48T-/3/

Marking						
Text	Name		Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNN- TTTTTIVV		WWYY	UL VIN	LLLLL
Datamatrix		Type&Ver	Lot number	Serial	Date code	
	TTTTTIVV	LLLLL	SSSS	WWYY		

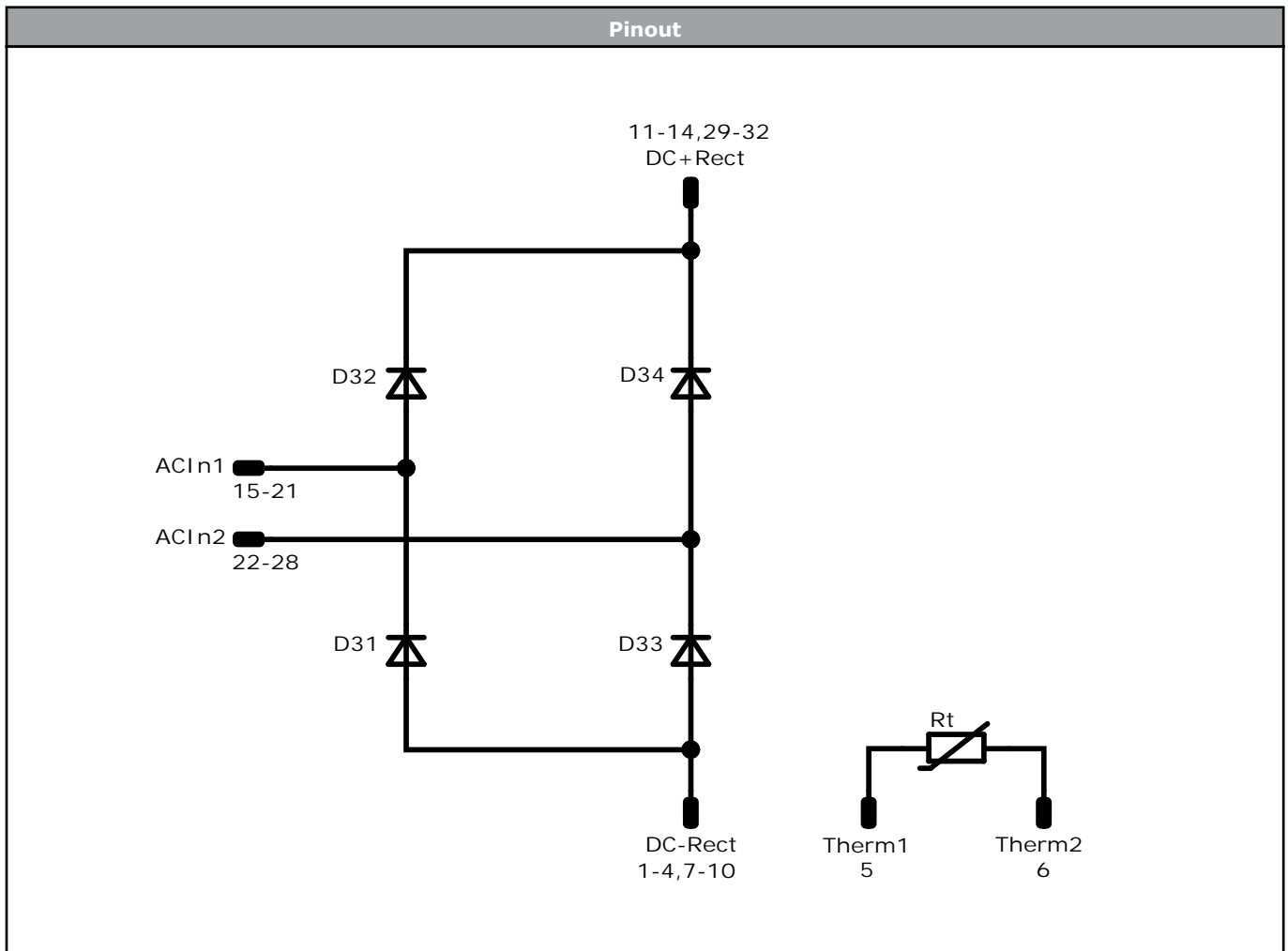
Pin table [mm]			
Pin	X	Y	Function
1	42,8	0	DC-Rect
2	40,1	0	DC-Rect
3	37,4	0	DC-Rect
4	34,7	0	DC-Rect
5	29,6	0	Therm1
6	22,6	0	Therm2
7	17,5	0	DC-Rect
8	14,8	0	DC-Rect
9	12,1	0	DC-Rect
10	9,4	0	DC-Rect
11	0	0	DC+Rect
12	0	2,7	DC+Rect
13	0	5,4	DC+Rect
14	0	8,1	DC+Rect
15	0	28,2	ACin1
16	2,7	28,2	ACin1
17	5,4	28,2	ACin1
18	8,1	28,2	ACin1
19	10,8	28,2	ACin1
20	13,5	28,2	ACin1
21	16,2	28,2	ACin1
22	36	28,2	ACin2
23	38,7	28,2	ACin2
24	41,4	28,2	ACin2
25	44,1	28,2	ACin2
26	46,8	28,2	ACin2
27	49,5	28,2	ACin2
28	52,2	28,2	ACin2
29	52,2	8,1	DC+Rect
30	52,2	5,4	DC+Rect
31	52,2	2,7	DC+Rect
32	52,2	0	DC+Rect



Tolerance of positions: ±0.4mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



Vincotech



Identification					
ID	Component	Voltage	Current	Function	Comment
D31, D32, D33, D34	FWD	650 V	100 A	Rectifier Diode	
Rt	Thermistor			Thermistor	




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

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

Package data
Package data for <i>flow 1</i> 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-PG07ORA100RO-LJ51I48T-D1-14	31 Jul. 2023		

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