



Vincotech

10-FY07ORA120SA-LJ52I58Z

datasheet

fastPACK 1 SiC

650 V / 120 A

Topology features

- Temperature sensor
- Single-phase non-controlled rectifier

Component features

- No diode recovery losses
- Very fast switching

Housing features

- Base isolation: Al_2O_3
- Convex shaped substrate for superior thermal contact
- Solder pin
- Thermo-mechanical push-and-pull force relief

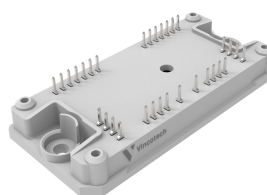
Target applications

- Charging Stations

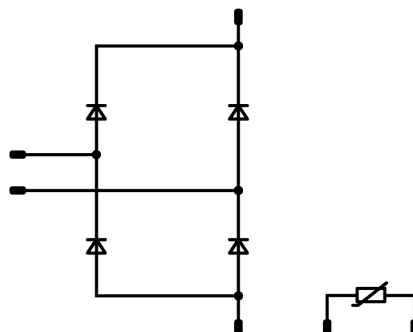
Types

- 10-FY07ORA120SA-LJ52I58Z

flow 1 12 mm housing



Schematic





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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	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	114	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	543	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	756	A
Surge current capability	I_{t}		2853	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	198	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
Creepage distance			>12,7	mm
Clearance			10,55	mm
Comparative Tracking Index	CTI		≥ 600	

*100 % tested in production



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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				120	25 125 150		1,47 1,66 1,73	1,5 ⁽¹⁾		V
Reverse leakage current	I_R	$V_r = 650$ V				25		9	360		μA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2$ W/mK (PTM)						0,48			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.



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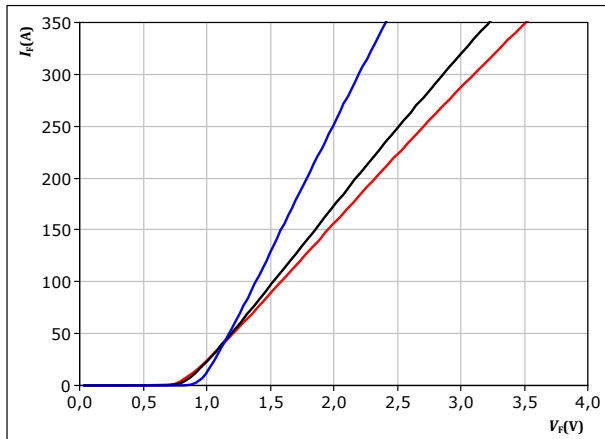
Rectifier Diode Characteristics

figure 1.

FWD

Typical forward characteristics

$$I_F = f(V_F)$$



$t_p =$ 250 μ s

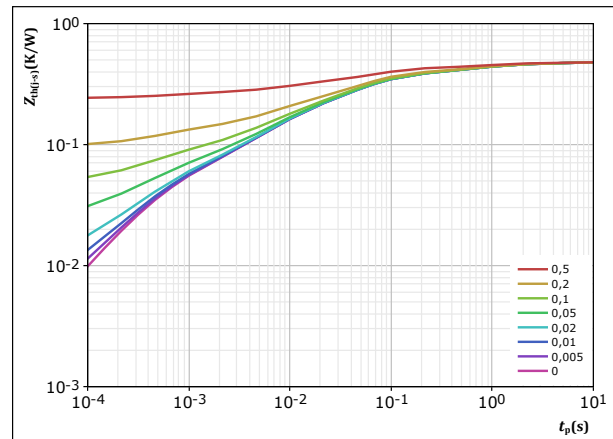
T_j :
— 25 °C
— 125 °C
— 150 °C

figure 2.

FWD

Transient thermal impedance as a function of pulse width

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



$D =$ t_p / T
 $R_{th(j-s)} =$ 0,479 K/W

FWD thermal model values

R (K/W)	τ (s)
2,72E-02	5,15E+00
9,34E-02	6,12E-01
2,18E-01	4,95E-02
1,02E-01	6,60E-03
4,16E-02	4,78E-04



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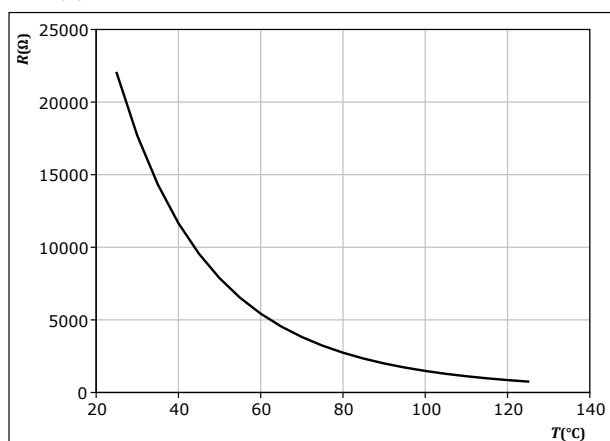
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Thermistor Characteristics

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-FY07ORA120SA-LJ52I58Z
With thermal paste (5,2 W/mK, PTM6000HV)	10-FY07ORA120SA-LJ52I58Z-/7/

Marking						
	Text	Name	Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNNNN- TTTTWWYY	WWYY	UL VIN	LLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code	
		TTTTTTVV	LLLLL	SSSS	WWYY	

Outline			
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

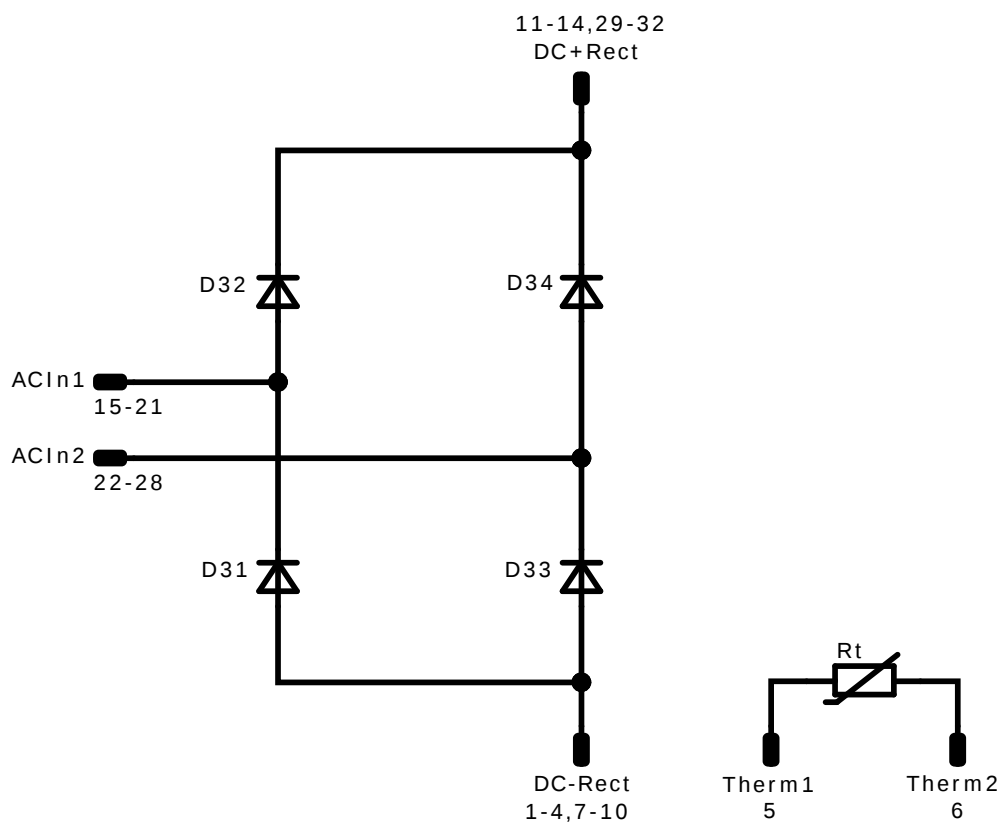
Tolerance of positions: ±0,1mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
D31, D32, D33, D34	FWD	650 V	120 A	Rectifier Diode	
Rt	Thermistor			Thermistor	



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Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample
Handling instruction				
Handling instructions for <i>flow</i> 1 packages see vincotech.com website.				
Package data				
Package data for <i>flow</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 UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,sp}=175^{\circ}\text{C}$ and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.				

Document No.:	Date:	Modification:	Pages
10-FY07ORA120SA-LJ52I58Z-D1-14	14 Sep. 2026	Initial release	

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