Vincotech

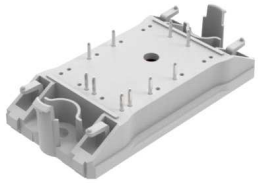
10-FZ07ANA150SM-LE20L08
target datasheet

flow ANPFC 0 **650 V / 150 A**

Features

- Ultra fast IGBT and recovery boost diodes
- Topology requires only one gate driver
- Integrated capacitor
- Temperature sensor

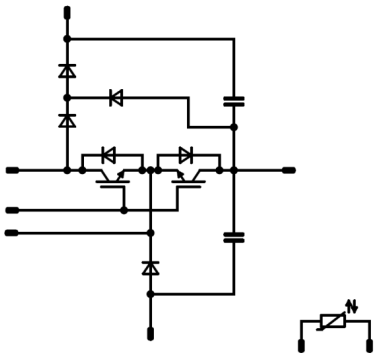
flow 0 housing



Target applications

- Power Supply
- UPS
- Welding & Cutting

Schematic



Types

- 10-FZ07ANA150SM-LE20L08

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
PFC Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ T_s = 80 °C	87	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	450	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	142	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum Junction Temperature	T_{jmax}		175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
PFC Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	92	A
Repetitive peak forward current	I_{FRM}		300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	111	W
Maximum Junction Temperature	T_{jmax}		175	°C
PFC Inverse Diode (D11), PFC Diode (D21)				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	69	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave t_p = 10 ms T_j = 150 °C	600	A
Surge current capability	I^2t		1800	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	82	W
Maximum Junction Temperature	T_{jmax}		150	°C
PFC Inverse Diode (D12)				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	87	A
Surge (non-repetitive) forward current	I_{FSM}	t_p = 10 ms, sin 180° T_j = 150 °C	890	A
Surge current capability	I^2t		3960	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	95	W
Maximum Junction Temperature	T_{jmax}		150	°C
PFC Protection Diode				
Peak repetitive reverse voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	24	A
Repetitive peak forward current	I_{FRM}		40	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	42	W
Maximum junction temperature	T_{jmax}		175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
DC Link Capacitor				
Maximum DC voltage	V_{MAX}		630	V
Operation Temperature	T_{op}		-55…+125	°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
		AC Test Voltage t_p = 1 min	2500	V
Creepage distance			min. 12,7	mm
Clearance			min. 12,7	mm
Comparative Tracking Index	CTI		> 200	

* 100% tested in production

Characteristic Values

Parameter	Symbol	Conditions					Value			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	
PFC Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,0015	25	3,3	4	4,7	V
Collector-emitter saturation voltage	V_{CEsat}		15		150	25 125 150		1,70 1,88 1,93	2,22	V
Collector-emitter cut-off current	I_{CES}		0	650		25			80	µA
Gate-emitter leakage current	I_{GES}		20	0		25			240	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}	f= 1 MHz	0	25		25		8600		pF
Output capacitance	C_{oes}							150		
Reverse transfer capacitance	C_{res}							32		
Gate charge	Q_g		15	520	150	25		332		nC
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ=3,4W/mK						0,67		K/W
PFC Diode										
Static										
Forward voltage	V_F				150	25 125 150		1,56 1,50 1,48	1,92	V
Reverse leakage current	I_r			650		25			7,6	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,86		K/W

Characteristic Values

Parameter	Symbol	Conditions					Value			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	
PFC Inverse Diode (D11), PFC Diode (D21)										
Static										
Forward voltage	V_F				65	25 125		1,18 1,15		V
Reverse leakage current	I_r			1600		25 150			50 1100	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,86		K/W
PFC Inverse Diode (D12)										
Static										
Forward voltage	V_F				75	25 125		1,10 1,05	1,8	V
Reverse leakage current	I_r			1600		25 145			50 1100	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,74		K/W
PFC Protection Diode										
Static										
Forward voltage	V_F				20	25 150		1,55 1,50	1,87	V
Reverse leakage current	I_R			650		25			0,24	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						2,24		K/W
DC Link Capacitor										
Capacitance	C							100		nF
Tolerance							-10		+10	%
Dissipation factor		f= 1 kHz				25			2,5	%

Characteristic Values

Parameter	Symbol	Conditions					Value			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	
Thermistor										
Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1484 Ω				100	-5		5	%
Power dissipation	P					25		5		mW
Power dissipation constant						25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ±1 %				25		3962		K
B-value	$B_{(25/100)}$	Tol. ±1 %				25		4000		K
Vincotech NTC Reference									I	

Vincotech

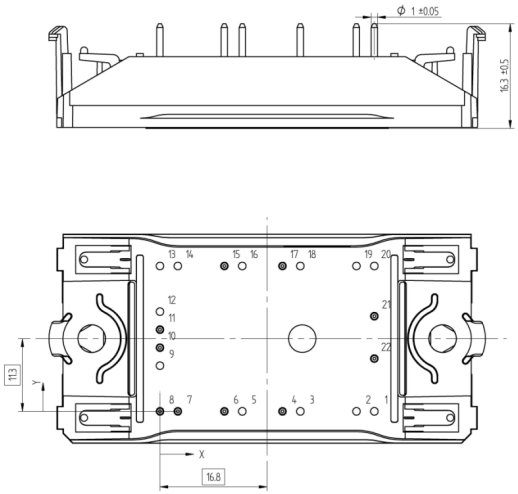
Ordering Code & Marking

Version	Ordering Code
without thermal paste 12mm housing with solder pins	10-FZ07ANA150SM-LE20L08

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

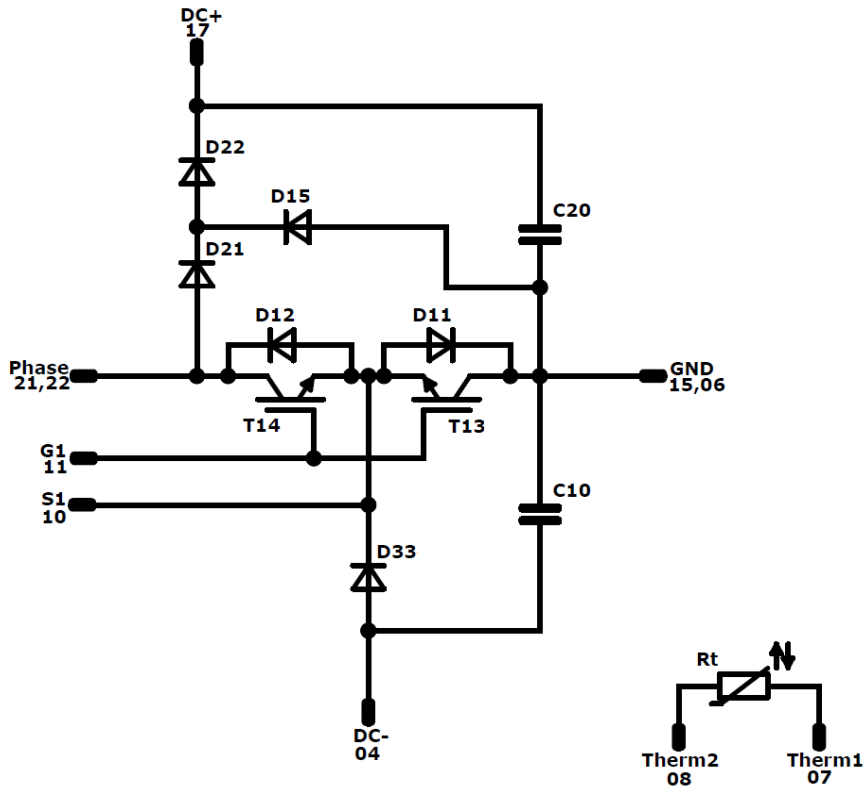
Outline

Pin table [mm]			
Pin	X	Y	Function
1	Not assembled		
2			
3			
4	19,2	0	DC-
5	Not assembled		
6	10,1	0	GND
7	2,8	0	Therm1
8	0	0	Therm2
9	Not assembled		
10	0	9,9	S1
11	0	12,7	G1
12	Not assembled		
13			
14			
15	10,1	22,6	GND
16	Not assembled		
17	19,2	22,6	DC+
18	Not assembled		
19			
20			
21	33,6	14,8	Phase
22	33,6	8,2	Phase



Tolerance of pinpositions ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T13,T14	IGBT	650 V	150 A	PFC Switch	
D22,D33	FWD	650 V	150 A	PFC Diode	
D11,D21	FWD	1600 V	65 A	PFC Inverse Diode (D11), PFC Diode (D21)	
D12	FWD	1600 V	75 A	PFC Inverse Diode (D12)	
D15	FWD	650 V	20 A	PFC Protection Diode	
C10,C20	Capacitor	630 V		DC Link Capacitor	
Rt	Thermistor			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 135	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 0 packages see vincotech.com website.

Package data
Package data for *flow* 0 packages see 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-FZ07ANA150SM-LE20L08-T1-14	19 Apr. 2017		

Product status definition		
Datasheet Status	**Product Status**	**Definition**
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.