Vincotech

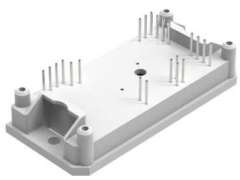
10-F124NIB150SH02-LA18F08
10-F124NIC150SH02-LA28F08
target datasheet

flow NPC 1 **1200 V / 150 A**

Features

- High DC link voltage applications
- 1200 V components
- Split NPC
- Thermistor

flow 1 17mm housing



LA18F08

LA28F08

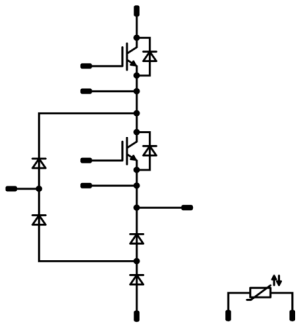
Target applications

- Solar

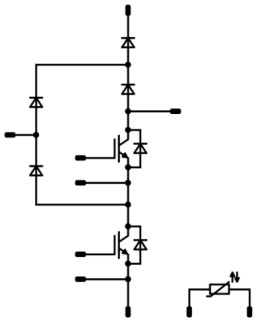
Types

- 10-F124NIB150SH02-LA18F08
- 10-F124NIC150SH02-LA28F08

Schematic



LA18F08



LA28F08

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Buck Switch / Boost Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current	I_C	$T_j = T_{jmax}$ T_s = 80 °C	150	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	242	W
Gate-emitter voltage	V_{GES}		±20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq$ 150 °C V_{GE} = 15 V	10 800	µs V
Maximum junction temperature	T_{jmax}		175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Buck Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	120	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	189	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost Diode Protection				
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	33	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave t_p = 10 ms T_j = 150 °C	170	A
Surge current capability	I^2t		145	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	73	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost Diode / Buck Sw. Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	47	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave t_p = 10 ms T_j =150°C	270	A
Surge current capability	I^2t		365	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	101	W
Maximum Junction Temperature	T_{jmax}		175	°C
Polarity Rectifier Diode / Boost Sw. Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	49	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave t_p = 10 ms T_j = 150 °C	490	A
Surge current capability	I^2t		1200	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	74	W
Maximum Junction Temperature	T_{jmax}		150	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
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	4000	V
Creepage distance			min. 12,7	mm
Clearance			8,68	mm
Comparative Tracking Index	CTI		> 200	

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	
Buck Switch / Boost Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,0052	25	5,3	5,8	6,3	V
Collector-emitter saturation voltage	V_{CEsat}		15		150	25	1,78	2,05	2,42	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			2	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		8800		pF
Reverse transfer capacitance	C_{res}							470		
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,39		K/W
Buck Diode										
Static										
Forward voltage	V_F				150	25 150		2,17 2,11	2,49	V
Reverse leakage current	I_r			1200		25 150			240 28000	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,50		K/W
Boost Diode Protection										
Static										
Forward voltage	V_F				35	25 150		2,30 2,29	2,62	V
Reverse leakage current	I_r			1200		25 150			60 5500	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						1,30		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	
Boost Diode / Buck Sw. Protection Diode										
Static										
Forward voltage	V_F				50	25 150		2,19 2,21	2,54	V
Reverse leakage current	I_r			1200		25 150			60 8800	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,94		K/W
Polarity Rectifier Diode / Boost Sw. Protection Diode										
Static										
Forward voltage	V_F				50	25 125		1,22 1,48	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						0,94		K/W
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	

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10-F124NIC150SH02-LA28F08
target datasheet

Ordering Code & Marking

Version	Ordering Code
without thermal paste 17mm housing with solder pins	10-F124NIB150SH02-LA18F08
without thermal paste 17mm housing with solder pins	10-F124NIC150SH02-LA28F08

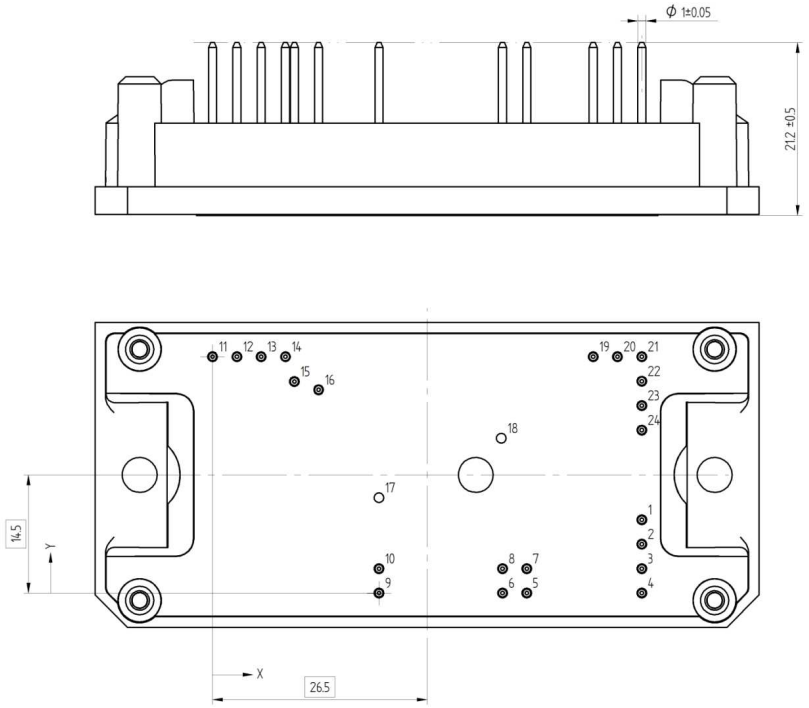
	Name	Date code	UL & VIN	Lot	Serial
Text	NN-NNNNNNNNNNNNN-TTTTTTW	WWYY	UL VIN	LLLLL	SSSS

	Type&Ver	Lot number	Serial	Date code		
Datamatrix	TTTTTTTVV	LLLLL	SSSS	WWYY		

High Side Module (10-F124NIB150SH02-LA18F08)

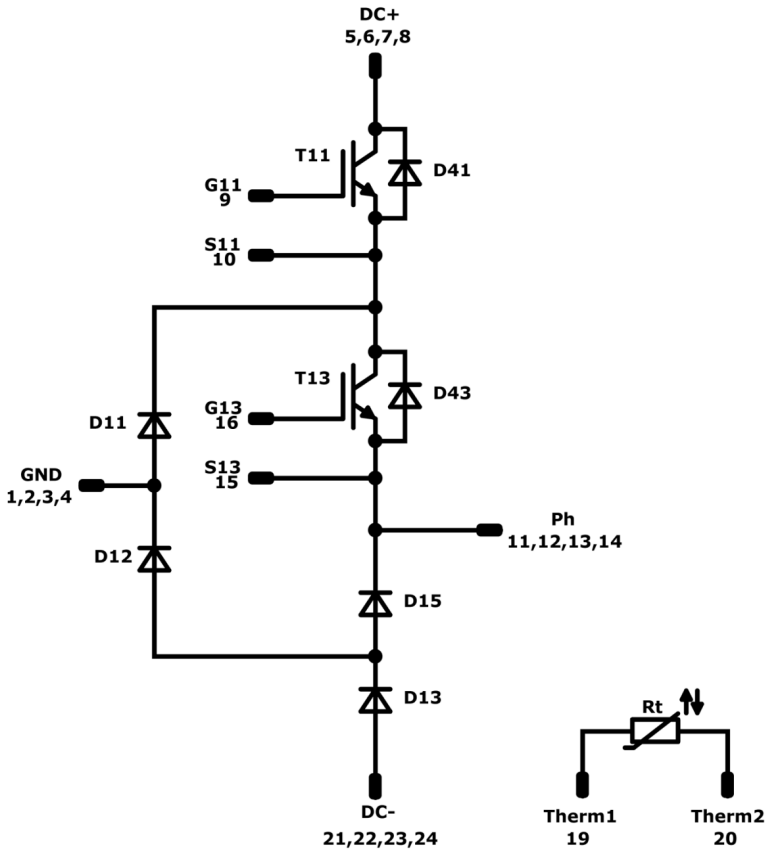
Outline

Pin table [mm]			
Pin	X	Y	Function
1	53	9	GND
2	53	6	GND
3	53	3	GND
4	53	0	GND
5	38,8	0	DC+
6	35,8	0	DC+
7	38,8	3	DC+
8	35,8	3	DC+
9	20,55	0	G11
10	20,55	3	S11
11	0	29	Ph
12	3	29	Ph
13	6	29	Ph
14	9	29	Ph
15	10,1	25,95	S13
16	13,1	24,95	G13
17	Not assembled		
18	Not assembled		
19	47	29	Therm1
20	50	29	Therm2
21	53	29	DC-
22	53	26	DC-
23	53	23	DC-
24	53	20	DC-



High Side Module (10-F124NIB150SH02-LA18F08)

Pinout



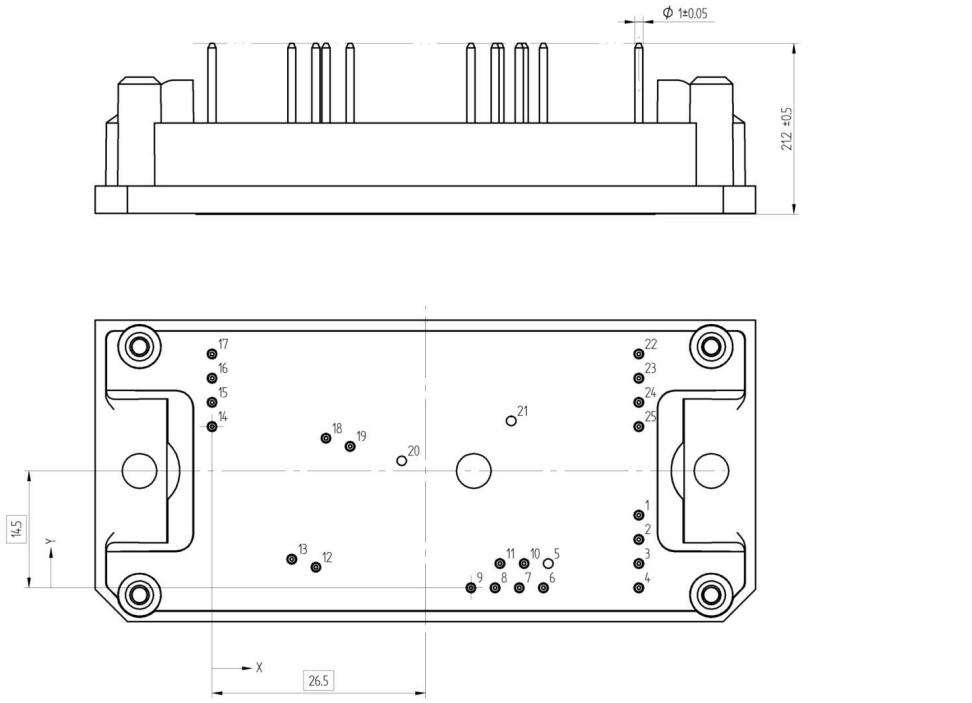
Identification

ID	Component	Voltage	Current	Function	Comment
T11	IGBT	1200 V	150 A	Buck Switch	
T13	IGBT	1200 V	150 A	Boost Switch	
D11	FWD	1200 V	150 A	Buck Diode	
D12	FWD	1200 V	35 A	Boost Diode Protection	
D13	FWD	1200 V	50 A	Boost Diode	
D41	FWD	1200 V	50 A	Buck Sw. Protection Diode	
D43	FWD	1600 V	50 A	Boost Sw. Protection Diode	
D15	FWD	1600 V	50 A	Polarity Rectifier Diode	
Rt	NTC			Thermistor	

Low Side Module (10-F124NIC150SH02-LA28F08)

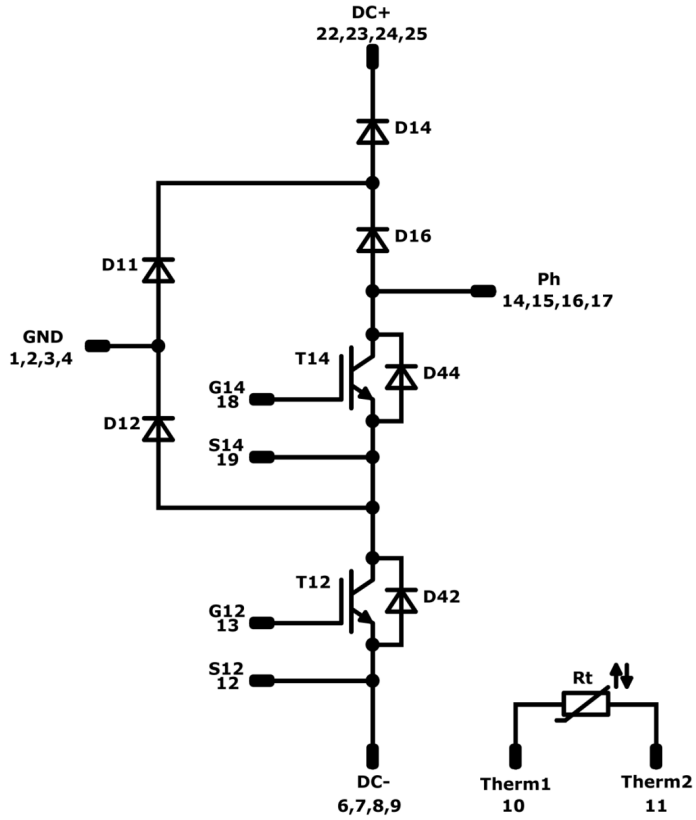
Outline

Pin table [mm]			
Pin	X	Y	Function
1	53	9	GND
2	53	6	GND
3	53	3	GND
4	53	0	GND
5	Not assembled		
6	41,15	0	DC-
7	38,15	0	DC-
8	35,15	0	DC-
9	32,15	0	DC-
10	38,75	3	Therm1
11	35,75	3	Therm2
12	12,9	2,55	S12
13	9,9	3,55	G12
14	0	20	Ph
15	0	23	Ph
16	0	26	Ph
17	0	29	Ph
18	14,15	18,55	G14
19	17,15	17,55	S14
20	Not assembled		
21	Not assembled		
22	53	29	DC+
23	53	26	DC+
24	53	23	DC+
25	53	20	DC+



Low Side Module (10-F124NIC150SH02-LA28F08)

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T12	IGBT	1200 V	150 A	Buck Switch	
T14	IGBT	1200 V	150 A	Boost Switch	
D12	FWD	1200 V	150 A	Buck Diode	
D11	FWD	1200 V	35 A	Boost Diode Protection	
D14	FWD	1200 V	50 A	Boost Diode	
D42	FWD	1200 V	50 A	Buck Sw. Protection Diode	
D44	FWD	1600 V	50 A	Boost Sw. Protection Diode	
D16	FWD	1600 V	50 A	Polarity Rectifier Diode	
Rt	NTC			Thermistor	

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target datasheet

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.

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-F124NIx150SH02-LAx8F08-T1-14	25 Jul. 2016		

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.

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