



<i>flow</i> NPC 1	1200 V / 150 A
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Features</b></div> <ul style="list-style-type: none"> <li>High DC link voltage applications</li> <li>1200 V components</li> <li>Split NPC</li> <li>Thermistor</li> </ul>	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>flow 1 17mm housing</b></div> <div style="display: flex; justify-content: space-around;"> </div> <div style="display: flex; justify-content: space-around; font-size: small;"> <span>LA18F08</span> <span>LA28F08</span> </div>
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Target applications</b></div> <ul style="list-style-type: none"> <li>Solar</li> </ul>	<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Schematic</b></div> <div style="display: flex; justify-content: space-around;"> </div> <div style="display: flex; justify-content: space-around; font-size: small;"> <span>LA18F08</span> <span>LA28F08</span> </div>
<div style="background-color: #eee; padding: 2px; margin-bottom: 5px;"><b>Types</b></div> <ul style="list-style-type: none"> <li>10-F124NIB150SH02-LA18F08</li> <li>10-F124NIC150SH02-LA28F08</li> </ul>	

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>Buck Switch / Boost Switch</b>				
Collector-emitter voltage	$V_{CES}$		1200	V
Collector current	$I_C$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	150	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{jmax}$	450	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	242	W
Gate-emitter voltage	$V_{GES}$		$\pm 20$	V
Short circuit ratings	$t_{SC}$ $V_{CC}$	$T_j \leq 150\text{ °C}$ $V_{GE} = 15\text{ V}$	10 800	$\mu\text{s}$ V
Maximum junction temperature	$T_{jmax}$		175	°C



## Maximum Ratings

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

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



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

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
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### Module Properties

#### Thermal Properties

Storage temperature	$T_{stg}$		-40...+125	°C
Operation temperature under switching condition	$T_{jop}$		-40...(T <sub>jmax</sub> - 25)	°C

#### Isolation Properties

Isolation voltage	$V_{isol}$	DC Test Voltage $t_p = 2\text{ s}$	4000	V
Creepage distance			min. 12,7	mm
Clearance			8,68	mm
Comparative Tracking Index	CTI		> 200	



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## Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		$V_{GS}$ [V]	$V_{GE}$ [V]	$V_{DS}$ [V]	$I_D$ [A]	$T_j$ [°C]	Min	Typ	Max	

### Buck Switch / Boost Switch

#### Static

Parameter	Symbol	Conditions	$V_{GS}$ [V]	$V_{GE}$ [V]	$V_{DS}$ [V]	$I_D$ [A]	$T_j$ [°C]	Min	Typ	Max	Unit
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	$C_{ies}$	$f = 1 \text{ MHz}$	0	25			25		8800		pF
Reverse transfer capacitance	$C_{res}$								470		

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4 \text{ W/mK}$							0,39		K/W
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### Buck Diode

#### Static

Parameter	Symbol	Conditions	$V_{GS}$ [V]	$V_{GE}$ [V]	$V_{DS}$ [V]	$I_D$ [A]	$T_j$ [°C]	Min	Typ	Max	Unit
Forward voltage	$V_F$				150	25	25	2,17	2,11	2,49	V
Reverse leakage current	$I_r$			1200		25	25			240	μA
						150				28000	

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4 \text{ W/mK}$							0,50		K/W
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### Boost Diode Protection

#### Static

Parameter	Symbol	Conditions	$V_{GS}$ [V]	$V_{GE}$ [V]	$V_{DS}$ [V]	$I_D$ [A]	$T_j$ [°C]	Min	Typ	Max	Unit
Forward voltage	$V_F$					35	25	2,30	2,29	2,62	V
Reverse leakage current	$I_r$			1200			25			60	μA
							150			5500	

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4 \text{ W/mK}$							1,30		K/W
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### Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}$ [V] $V_{GS}$ [V]	$V_{CE}$ [V] $V_{DS}$ [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	$\mu$ A

##### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK					0,94		K/W
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#### 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	$\mu$ A

##### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK					0,94		K/W
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#### Thermistor

Rated resistance	R				25		22		k $\Omega$
Deviation of $R_{100}$	$\Delta_{R/R}$	$R_{100} = 1484 \Omega$			100	-5		5	%
Power dissipation	P				25		5		mW
Power dissipation constant					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 1$ %			25		3962		K
B-value	$B_{(25/100)}$	Tol. $\pm 1$ %			25		4000		K
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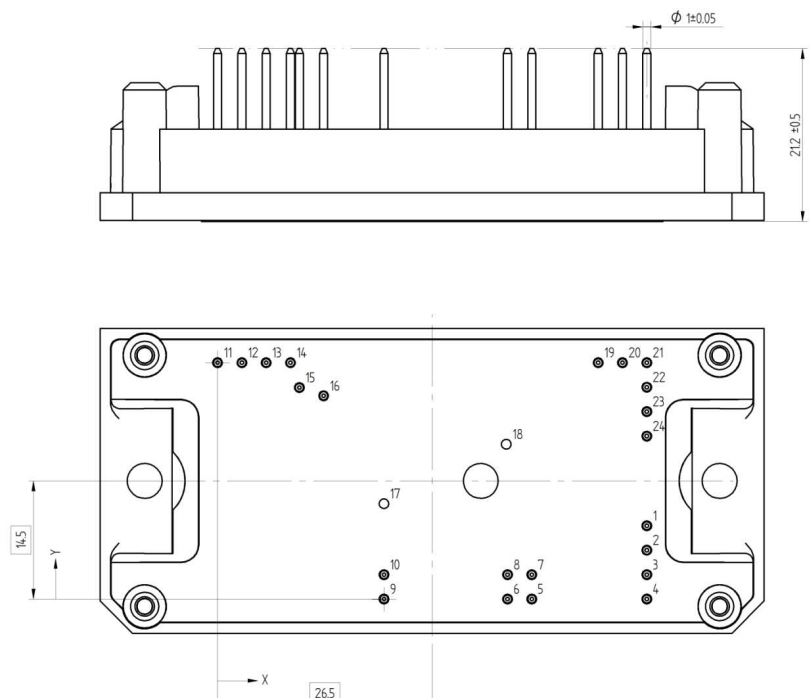
**10-F124NIB150SH02-LA18F08**  
**10-F124NIC150SH02-LA28F08**  
 target datasheet

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

**High Side Module (10-F124NIB150SH02-LA18F08)**

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-

**Outline**



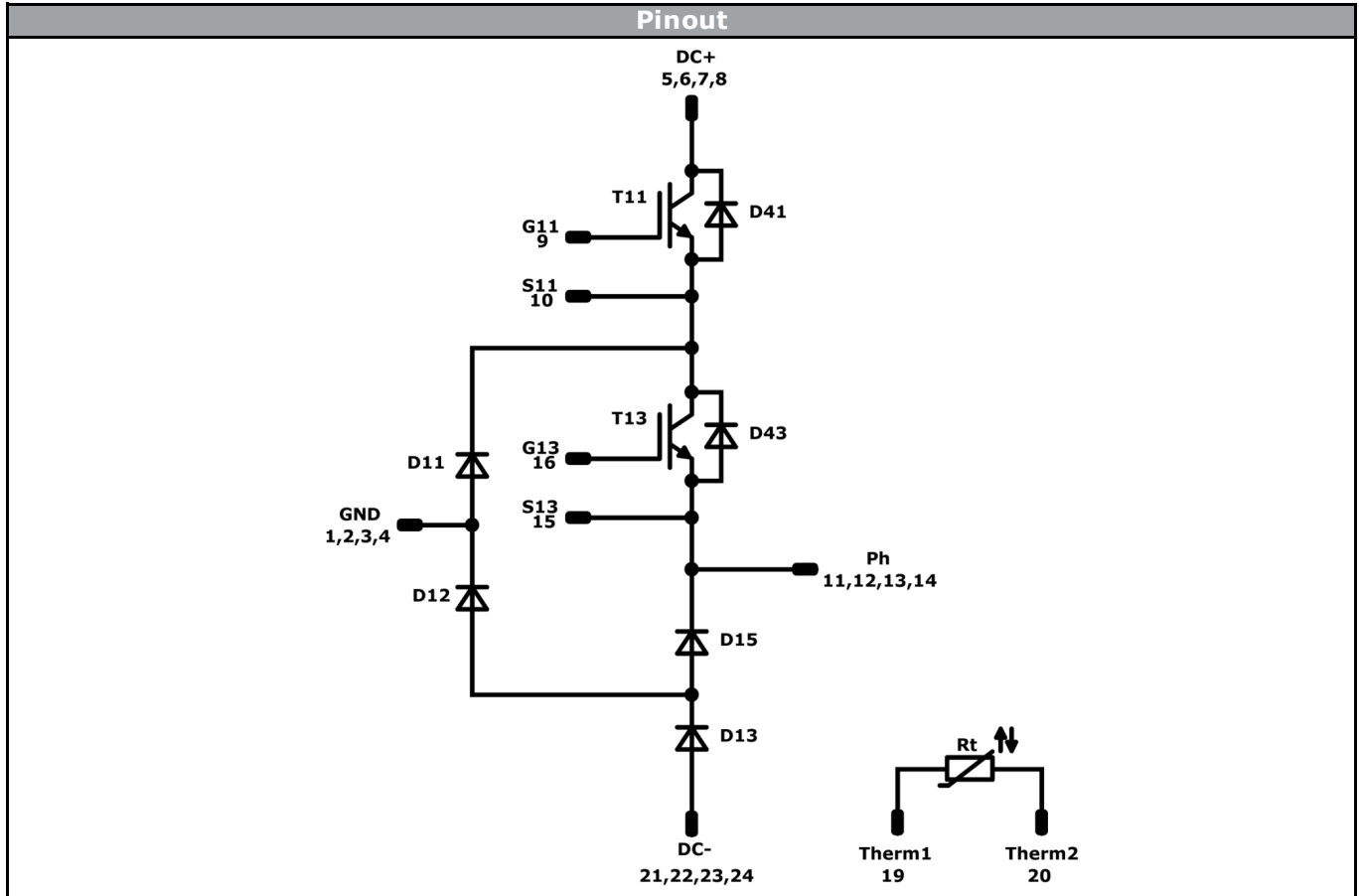
Tolerance of pinpositions: ±0.5mm at the end of pins  
 Dimension of coordinate axis is only offset without tolerance



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**10-F124NIC150SH02-LA28F08**  
 target datasheet

### High Side Module (10-F124NIB150SH02-LA18F08)



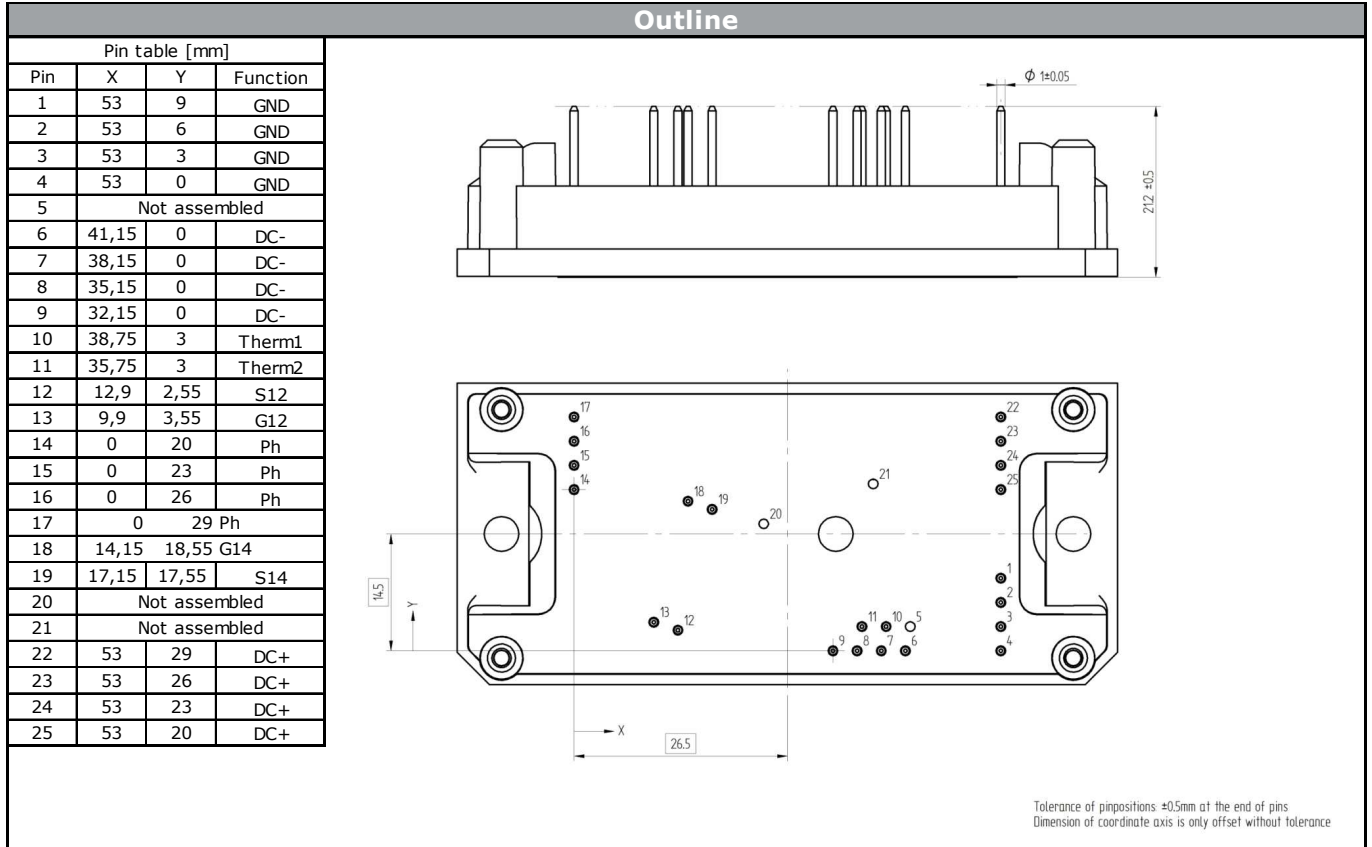
Identification					
ID	Component	Voltage	Current	Function	Comment
T11	IGBT	1200 V	150 A	Buck Switch	
T13	IGBT	1200 V	150 A	Boost Switch	
D11	FWD	1200 V	150 A	Buck Diode	
D12	FWD	1200 V	35 A	Boost Diode Protection	
D13	FWD	1200 V	50 A	Boost Diode	
D41	FWD	1200 V	50 A	Buck Sw. Protection Diode	
D43	FWD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



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**10-F124NIB150SH02-LA18F08**  
**10-F124NIC150SH02-LA28F08**  
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**Low Side Module (10-F124NIC150SH02-LA28F08)**



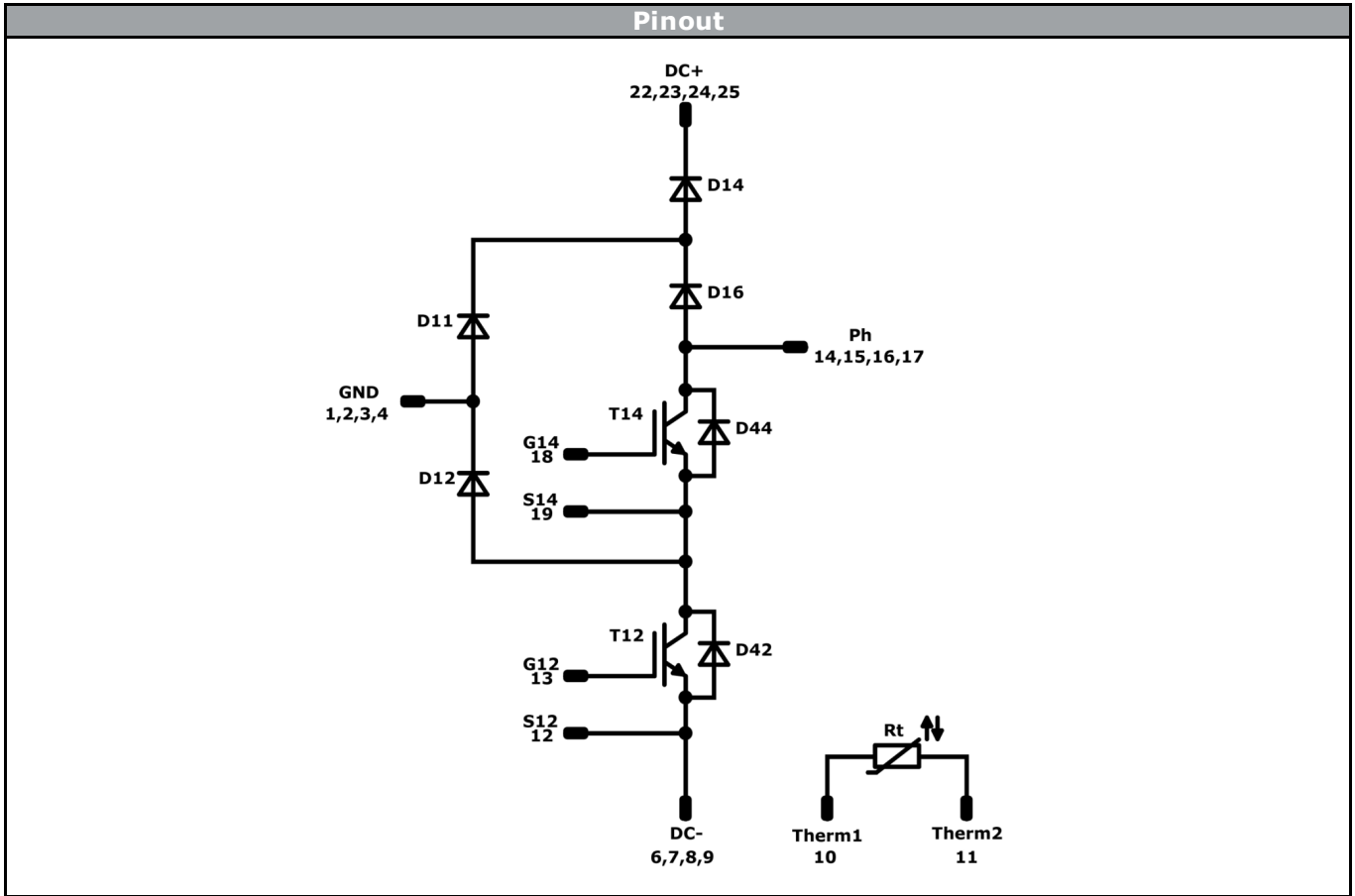




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**10-F124NIB150SH02-LA18F08**  
**10-F124NIC150SH02-LA28F08**  
 target datasheet

**Low Side Module (10-F124NIC150SH02-LA28F08)**



<b>Identification</b>					
<b>ID</b>	<b>Component</b>	<b>Voltage</b>	<b>Current</b>	<b>Function</b>	<b>Comment</b>
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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**10-F124NIB150SH02-LA18F08**  
**10-F124NIC150SH02-LA28F08**  
 target datasheet

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.

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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