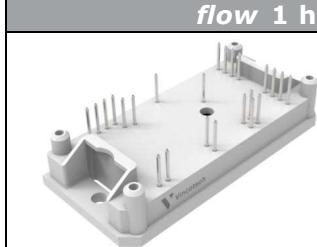
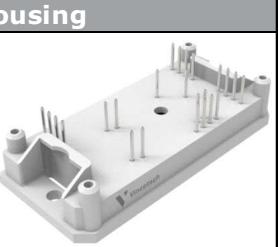
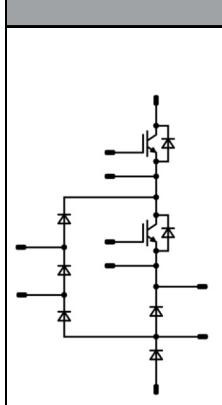
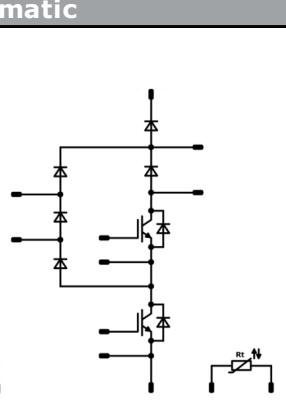




**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

Vincotech

<b>flow NPC 1 split</b>		<b>2400 V / 150 A</b>
<b>Features</b>		
• Enhanced efficiency • Low inductive package • Tandem diodes		
<b>Target applications</b>		
• Solar Inverters		
<b>Types</b>		
• 10-F124NIE150SH03-LG28F98		
<b>flow 1 housing</b>		
	 <b>LG18F98</b>	 <b>LG28F98</b>
<b>Schematic</b>		
	 <b>LG18F98</b>	 <b>LG28F98</b>

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>Buck Switch</b>				
Collector-emitter voltage	$V_{CES}$		1200	V
Collector current	$I_C$	$T_j = T_{j\max}$ $T_s = 80^\circ\text{C}$	109	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{j\max}$	450	A
Total power dissipation	$P_{tot}$	$T_j = T_{j\max}$ $T_s = 80^\circ\text{C}$	243	W
Gate-emitter voltage	$V_{GES}$		$\pm 20$	V
Short circuit ratings	$t_{SC}$ $V_{CC}$	$T_j \leq 150^\circ\text{C}$ $V_{GE} = 15\text{ V}$	10 800	$\mu\text{s}$ V
Maximum junction temperature	$T_{j\max}$		175	$^\circ\text{C}$



**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>Buck Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1300	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	81	A
Repetitive peak forward current	$I_{FRM}$		300	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	187	W
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$
<b>Boost Switch</b>				
Collector-emitter voltage	$V_{CES}$		1200	V
Collector current	$I_C$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	137	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{jmax}$	300	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	232	W
Gate-emitter voltage	$V_{GES}$		$\pm 20$	V
Maximum junction temperature	$T_{jmax}$		175	$^\circ\text{C}$
<b>Boost Diode</b>				
Peak repetitive reverse voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	45	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	94	W
Maximum junction temperature	$T_{jmax}$		175	$^\circ\text{C}$
<b>Boost Sw. Inv. Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1600	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	66	A
Surge (non-repetitive) forward current	$I_{FSM}$	50 Hz Single Half Sine Wave $t_p = 10 \text{ ms}$	490	A
Surge current capability	$I^2t$		1200	$\text{A}^2\text{s}$
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	77	W
Maximum Junction Temperature	$T_{jmax}$		150	$^\circ\text{C}$



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## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
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### Buck Sw. Protection Diode

Peak repetitive reverse voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	45	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	94	W
Maximum junction temperature	$T_{jmax}$		175	$^\circ\text{C}$

### Boost Sw. Protection Diode

Peak Repetitive Reverse Voltage	$V_{RRM}$		1600	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	66	A
Surge (non-repetitive) forward current	$I_{FSM}$	50 Hz Single Half Sine Wave $t_p = 10 \text{ ms}$	490	A
Surge current capability	$I^2t$	$T_j = 150^\circ\text{C}$	1200	$\text{A}^2\text{s}$
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	77	W
Maximum Junction Temperature	$T_{jmax}$		150	$^\circ\text{C}$

### Boost D. Protection Diode

Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	33	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	73	W
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$

## Module Properties

### Thermal Properties

Storage temperature	$T_{stg}$		-40...+125	$^\circ\text{C}$
Operation temperature under switching condition	$T_{op}$		-40...( $T_{jmax} - 25$ )	$^\circ\text{C}$

### Isolation Properties

Isolation voltage	$V_{isol}$	DC Test Voltage*	$t_p = 2 \text{ s}$	6000	V
		AC Voltage	$t_p = 1 \text{ min}$	2500	V
Creepage distance				min. 12,7	mm
Clearance				min. 12,7	mm
Comparative Tracking Index	CTI			> 200	

\*100% Tested in production



**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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## Characteristic Values

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

### Buck 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	25 125 150		1,78	2,16 2,48 2,56	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		
Gate charge	$Q_g$		15			25			1140		nC

#### Thermal

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

#### Static

Forward voltage	$V_F$				150	25 125 150		3,12 3,00 2,96	3,84		V
Reverse leakage current	$I_r$			1300		25			7,6		µA

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 3,4 \text{ W/mK}$ (PSX)							0,51		K/W
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**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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## 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 Switch

#### Static

Gate-emitter threshold voltage	$V_{GE(\text{th})}$	$V_{GE} = V_{CE}$			0,015	25	5,4	6	6,6	V
Collector-emitter saturation voltage	$V_{CE\text{sat}}$		15		150	125 150		1,55 1,75 1,80	2,05	V
Collector-emitter cut-off current	$I_{CES}$		0	1200		25			220	µA
Gate-emitter leakage current	$I_{GES}$		20	0		25			1000	nA
Internal gate resistance	$r_g$							2		Ω
Input capacitance	$C_{ies}$						32000			pF
Output capacitance	$C_{oes}$		0	10		25		960		
Reverse transfer capacitance	$C_{res}$							380		
Gate charge	$Q_g$		15	600	150	25		980		nC

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 3,4 \text{ W/mK (PSX)}$						0,41		K/W
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### Boost Diode

#### Static

Forward voltage	$V_F$				50	25		2,19	2,54	V
Reverse leakage current	$I_R$			1200		25 150			60 8800	µA

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 3,4 \text{ W/mK (PSX)}$						1,02		K/W
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### Boost Sw. Inv. Diode

#### Static

Forward voltage	$V_F$				50	25 125		1,14 1,08	1,35	V
Reverse leakage current	$I_F$			1600		25 145			50 1100	µA

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 3,4 \text{ W/mK (PSX)}$						0,82		K/W
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**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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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]	$T_j$ [°C]	Min	Typ	

### Buck Sw. Protection Diode

#### Static

Forward voltage	$V_F$				50	25		2,19	2,54	V
Reverse leakage current	$I_R$			1200		25	150		60 8800	$\mu A$

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						1,02		K/W
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### Boost Sw. Protection Diode

#### Static

Forward voltage	$V_F$				50	25 125		1,14 1,08	1,35	V
Reverse leakage current	$I_R$			1600		25 145			50 1100	$\mu A$

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						0,82		K/W
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### Boost D. Protection Diode

#### 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	$\mu A$

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						1,30		K/W
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### Thermistor

Rated resistance	$R$					25		22		kΩ
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. ±1 %				25		3962		K
B-value	$B_{(25/100)}$	Tol. ±1 %				25		4000		K
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**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

Ordering Code & Marking							
Version				Ordering Code			
without thermal paste 17 mm housing with solder pins				10-F124NID150SH03-LG18F98			
with thermal paste 17 mm housing with solder pins				10-F124NID150SH03-LG18F98-/3/			
NNNNNNNNNNNNNN TTTTTVV WWYY UL VIN LLLL SSSS			Text	Name	Date code	UL & VIN	Lot
				NN-NNNNNNNNNNNN-TTTTTV	WWYY	UL VIN	LLLL
Datamatrix	Type&Ver	Lot number	Serial	Date code			SSSS
	TTTTTTVV	LLLL	SSSS	WWYY			

### High Side Module 10-F124NID150SH03-LG18F98

Pin table [mm]				Outline			
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	3	0	Therm1				
12	0	0	Therm2				
13	0	29	Ph				
14	3	29	Ph				
15	6	29	Ph				
16	9	29	Ph				
17	10,1	25,95	S13				
18	13,1	24,95	G13				
19	25,5	29	TM15				
20	35,65	19	TM11				
21	53	29	DC-				
22	53	26	DC-				
23	53	23	DC-				
24	53	20	DC-				

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

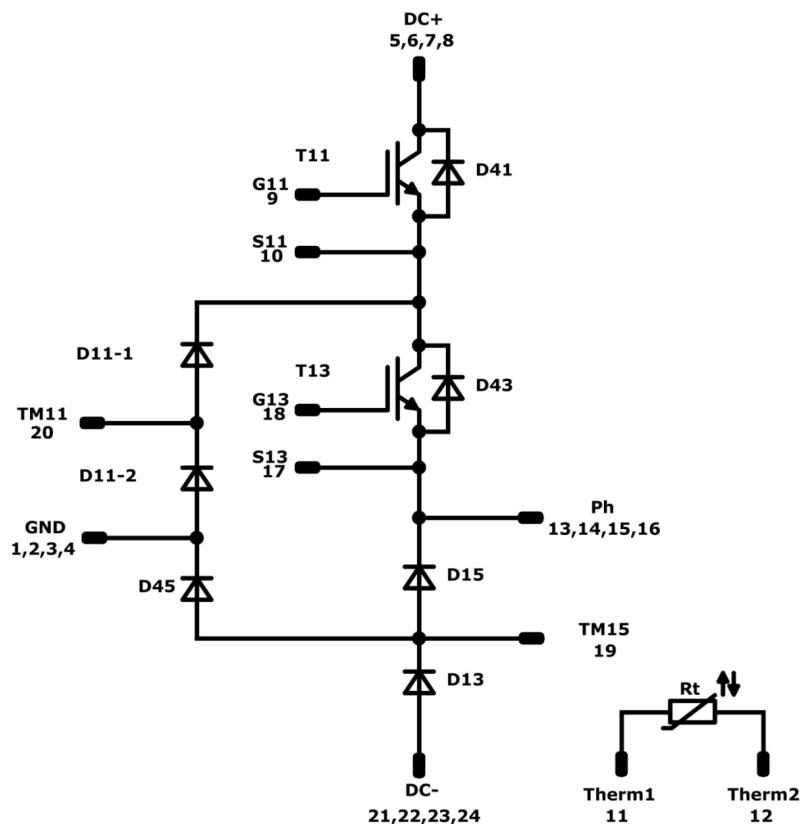


**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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**High Side Module 10-F124NID150SH03-LG18F98**

**Pinout**



**Identification**

ID	Component	Voltage	Current	Function	Comment
T11	IGBT	1200 V	150 A	Buck Switch	
D11-1, D11-2	FWD	1300 V	150 A	Buck Diode	Serial devices. Values apply to complete device.
T13	IGBT	1200 V	150 A	Boost Switch	
D13	FWD	1200 V	50 A	Boost Diode	
D15	Rectifier	1600 V	50 A	Boost Sw. Inv. Diode	
D41	FWD	1200 V	50 A	Buck Sw. Protection Diode	
D43	Rectifier	1600 V	50 A	Boost Sw. Protection Diode	
D45	FWD	1200 V	35 A	Boost D. Protection Diode	
Rt	NTC			Thermistor	



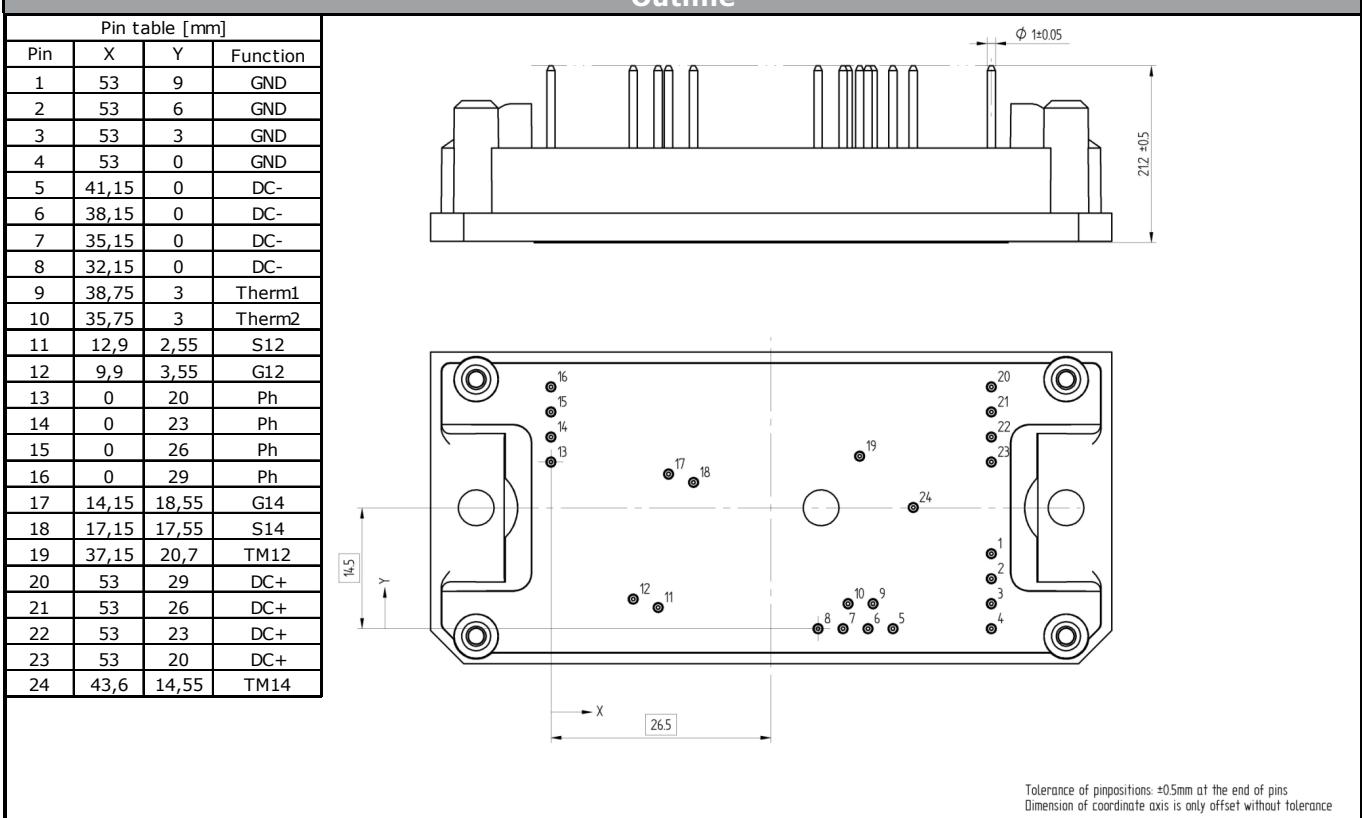
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**10-F124NID150SH03-LG18F98  
10-F124NIE150SH03-LG28F98**  
target datasheet

Ordering Code & Marking							
Version				Ordering Code			
without thermal paste 17 mm housing with solder pins				10-F124NIE150SH03-LG28F98			
with thermal paste 17 mm housing with solder pins				10-F124NIE150SH03-LG28F98-/3/			
NN-NNNNNNNNNNNN TTTTTVV WWYY UL VIN LLLL SSSS			Text	Name	Date code	UL & VIN	Lot
				NN-NNNNNNNNNNNN-TTTTTVW	WWYY	UL VIN	LLLL
			Datamatrix	Type&Ver	Lot number	Serial	Date code
				TTTTTTVV	LLLLL	SSSS	WWYY

#### Low Side Module 10-F124NIE150SH03-LG28F98

#### Outline

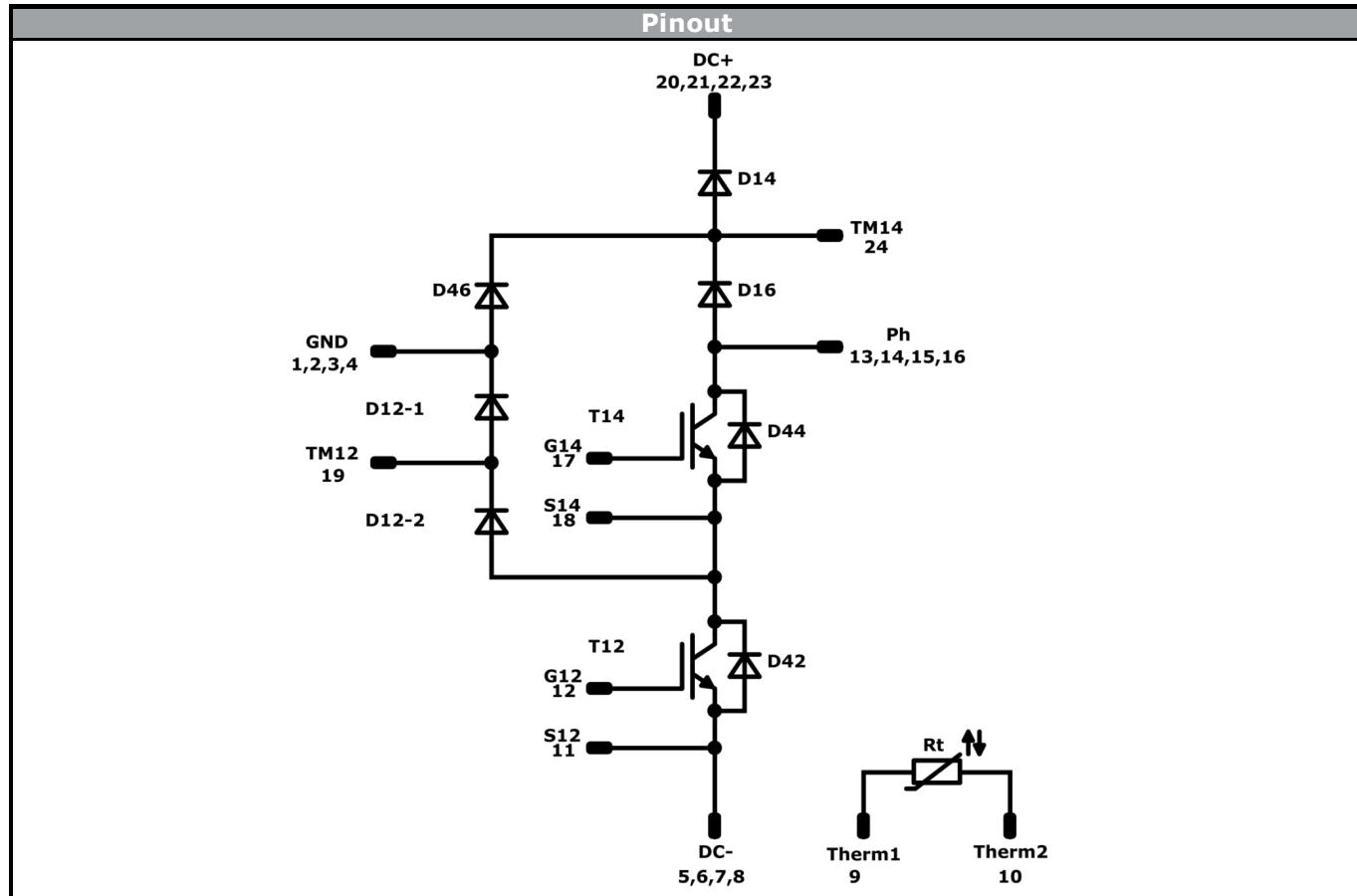




**10-F124NID150SH03-LG18F98**  
**10-F124NIE150SH03-LG28F98**  
target datasheet

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**Low Side Module 10-F124NIE150SH03-LG28F98**



Identification					
ID	Component	Voltage	Current	Function	Comment
T12	IGBT	1200 V	150 A	Buck Switch	
D12-1, D12-2	FWD	1300 V	150 A	Buck Diode	Serial devices. Values apply to complete device.
T14	IGBT	1200 V	150 A	Boost Switch	
D14	FWD	1200 V	50 A	Boost Diode	
D16	Rectifier	1600 V	50 A	Boost Sw. Inv. Diode	
D42	FWD	1200 V	50 A	Buck Sw. Protection Diode	
D44	Rectifier	1600 V	50 A	Boost Sw. Protection Diode	
D46	FWD	1200 V	35 A	Boost D. Protection Diode	
Rt	NTC			Thermistor	

**10-F124NID150SH03-LG18F98****10-F124NIE150SH03-LG28F98**

target datasheet

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

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

<b>Package data</b>			
Package data for flow 1 packages see vincotech.com website.			

<b>UL recognition and file number</b>			
This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.			

<b>Document No.:</b>	<b>Date:</b>	<b>Modification:</b>	<b>Pages</b>
10-F124NIx150SH03-LGx8F98-T2-14	20 Oct. 2017		

<b>Product status definition</b>		
<b>Datasheet Status</b>	<b>Product Status</b>	<b>Definition</b>
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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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.	