



Vincotech

30-FT10NIA375F9-LQ08F08

target datasheet

for virtual products created by Vincotech Product Creator, only for evaluation purposes,
no commitment for product development!

flowNPC 2

1500 V / 375 A

Features

- High speed IGBT
- Integrated NTC
- Three-level high efficient topology

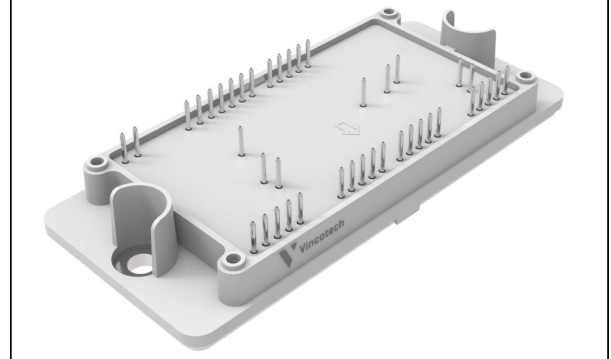
Target applications

- Solar Inverters

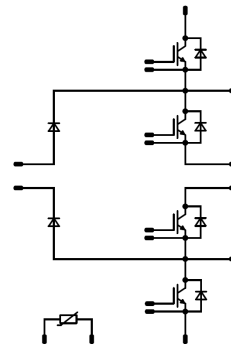
Types

- 30-FT10NIA375F9-LQ08F08

flow 2 13 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
NPC BUCK Switch				
Collector-emitter voltage	V_{CES}		950	V
Collector current	I_C		375	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1125	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	481	W
Gate-emitter voltage	V_{GES}		±15	V
Maximum junction temperature	T_{jmax}		175	°C
NPC BOOST Switch				
Collector-emitter voltage	V_{CES}		950	V
Collector current	I_C		300	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	900	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	467	W
Gate-emitter voltage	V_{GES}		±15	V
Maximum junction temperature	T_{jmax}		175	°C
NPC BUCK Diode				
Peak repetitive reverse voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F		100	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	455	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 0\text{ °C}$	650	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	226	W
Maximum junction temperature	T_{jmax}		175	°C



Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
NPC BOOST Diode				
Peak repetitive reverse voltage	V_{RRM}		950	V
Continuous (direct) forward current	I_F		150	A
Surge (non-repetitive) forward current	I_{FSM}	$T_j = 25\text{ °C}$	450	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	252	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Sw.Inv.Diode

Peak repetitive reverse voltage	V_{RRM}		950	V
Continuous (direct) forward current	I_F		150	A
Surge (non-repetitive) forward current	I_{FSM}	$T_j = 25\text{ °C}$	450	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	252	W
Maximum junction temperature	T_{jmax}		175	°C



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

Parameter	Symbol	Conditions	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...+($T_{jmax} - 25$)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage $t_p = 2\text{ s}$	6000	V
Isolation voltage	V_{isol}	AC Voltage $t_p = 1\text{ min}$	2500	V
Creepage distance			>12,7	mm
Clearance			>12,7	mm
Comparative Tracking Index	CTI		≥ 600	



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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		

NPC BUCK Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,38	25	3,2	4,67	5,8	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		375	25		1,69	2,11	V
Collector-emitter cut-off current	I_{CES}		0	950		25			1250	μA
Gate-emitter leakage current	I_{GES}		20	0		25			2000	nA
Input capacitance	C_{ies}	f = 1 Mhz	0	30		25		25025		pF
Output capacitance	C_{oes}							486,50		pF
Reverse transfer capacitance	C_{res}							110		pF
Gate charge	Q_g		15	600	375	25		735		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,2		K/W
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NPC BOOST Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,3	25	3,2	4,36	5,8	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		300	25		1,31	1,69	V
Collector-emitter cut-off current	I_{CES}		0	950		25			1000	μA
Gate-emitter leakage current	I_{GES}		20	0		25			1600	nA
Input capacitance	C_{ies}	f = 1 Mhz	0	30		25		60600		pF
Output capacitance	C_{oes}							496		pF
Reverse transfer capacitance	C_{res}							99,6		pF
Gate charge	Q_g		15	600	300	25		2772		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,2		K/W
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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		

NPC BUCK Diode

Static

Forward voltage	V_F				100	25		1,5	1,8	V
Reverse leakage current	I_R			1200		25		175	1000	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,42		K/W
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NPC BOOST Diode

Static

Forward voltage	V_F				150	150		1,71		V
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Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,38		K/W
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Boost Sw.Inv.Diode

Static

Forward voltage	V_F				150	150		1,71		V
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Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,38		K/W
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Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	V_{CE} [V]	T_j [°C]	Min	Typ	Max	

Thermistor



Static

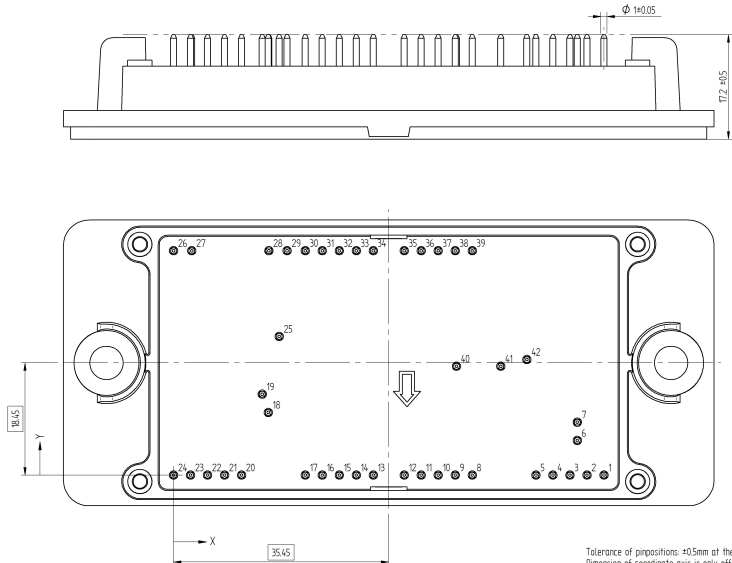
Rated resistance	R					25		22		kΩ
Deviation of R100	$A_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant						25		1,5		mW/K
B-value	$B_{(25/50)}$					25		3962		K
B-value	$B_{(25/100)}$					25		4000		K
Vincotech Thermistor Reference									I	



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Ordering Code & Marking								
Version			Ordering Code					
without thermal paste 13 mm housing with solder pins			30-FT10NIA375F9-LQ08F08					
with thermal paste 13 mm housing with solder pins			30-FT10NIA375F9-LQ08F08-/3/					
NN-NNNNNNNNNNNNNN TTTTITTV WWYY UL VIN LLLLL SSSS			Name		Date code	UL & VIN	Lot	Serial
			NN-NNNNNNNNNNNNNN-TTTTITTV		WWYY	UL VIN	LLLLL	SSSS
			Type&Ver	Lot number	Serial	Date code		
			TTTTITTV	LLLLL	SSSS	WWYY		

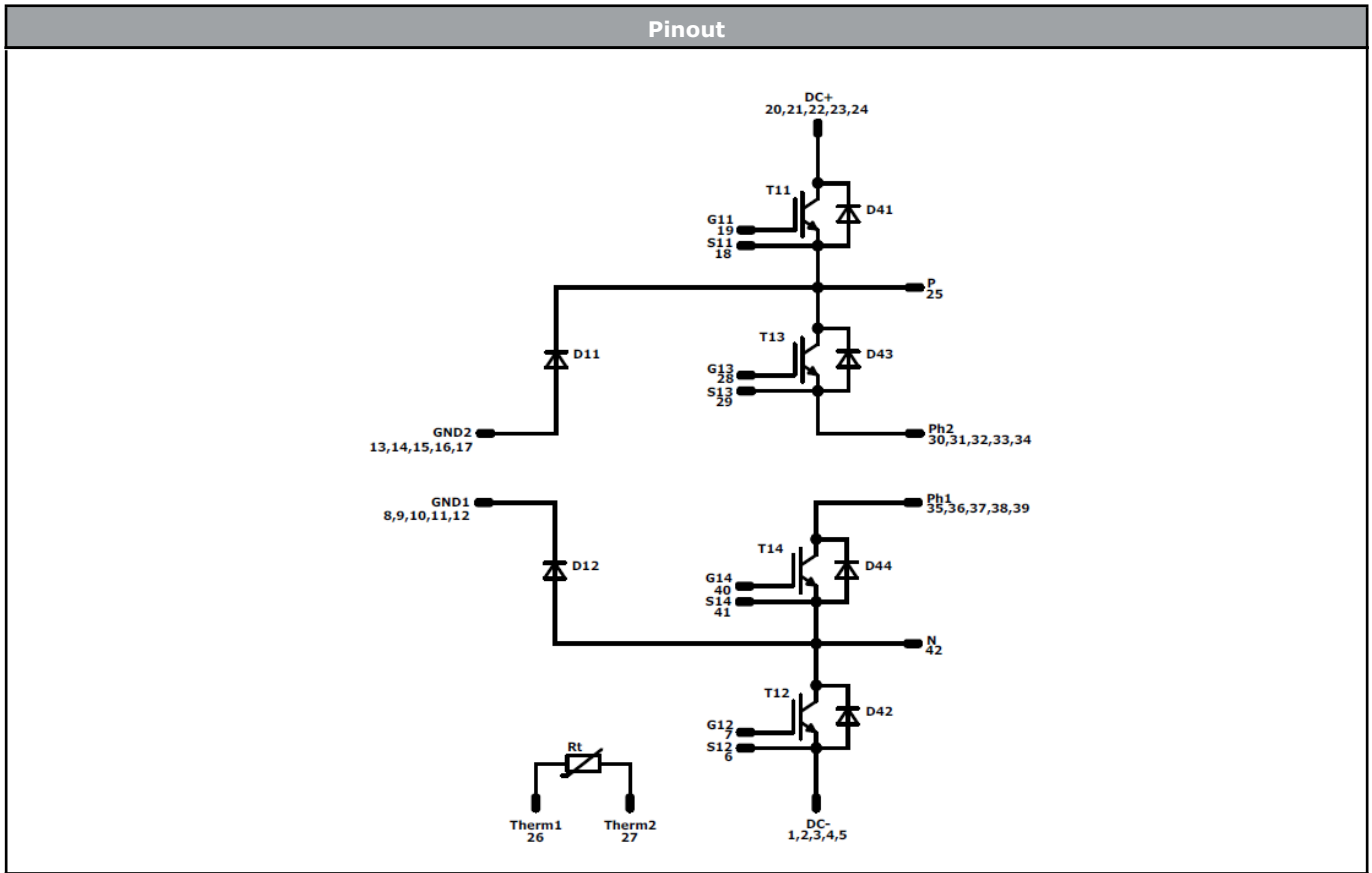
Pin table [mm]				Outline	
Pin	X	Y	Function		
1	70,9	0	DC-		
2	68,2	0	DC-		
3	65,5	0	DC-		
4	62,8	0	DC-		
5	60,1	0	DC-		
6	70,9	10,8	S12		
7	67,85	10,8	G12		
8	48,8	0	GND1		
9	46,1	0	GND1		
10	43,4	0	GND1		
11	40,7	0	GND1		
12	38	0	GND1		
13	32,9	0	GND2		
14	30,2	0	GND2		
15	27,5	0	GND2		
16	24,8	0	GND2		
17	22,1	0	GND2		
18	19,35	9,1	S11		
19	16,3	9,1	G11		
20	10,8	0	DC+		
21	8,1	0	DC+		
22	5,4	0	DC+		
23	2,7	0	DC+		
24	0	0	DC+		
25	19,75	18,7	P		
26	0	36,9	Therm1		
27	3	36,9	Therm2		
28	12,2	35,95	S13		
29	12,15	32,35	G13		
30	22,2	36,9	Ph2		
31	24,9	36,9	Ph2		
32	27,6	36,9	Ph2		
33	30,3	36,9	Ph2		
34	33	36,9	Ph2		
35	37,9	36,9	Ph1		
36	40,6	36,9	Ph1		
37	43,3	36,9	Ph1		
38	46	36,9	Ph1		
39	48,7	36,9	Ph1		
40	52,3	20,7	G14		
41	49,1	20,7	S14		
42	45,55	19,35	N		

Tolerance of pinpositions: ±0.05mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Identification					
ID	Component	Voltage	Current	Function	Comment
T11, T12	IGBT	950 V	375 A	NPC BUCK Switch	
T13, T14	IGBT	950 V	300 A	NPC BOOST Switch	
D11, D12	FWD	1200 V	100 A	NPC BUCK Diode	
D41, D42	FWD	950 V	150 A	NPC BOOST Diode	
D43, D44	FWD	950 V	150 A	Boost Sw.Inv.Diode	
Rt	Thermistor			NTC	



Packaging instruction				
Standard packaging quantity (SPQ) 36	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for undefined packages see vincotech.com website.

Package data
Packaging data for undefined 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
30-FT10NIA375F9-LQ08F08-T1-14	10 Nov. 2019	Initial Release	

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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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.