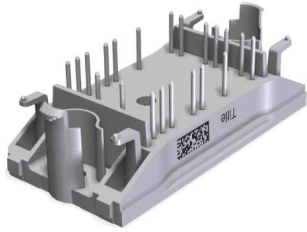
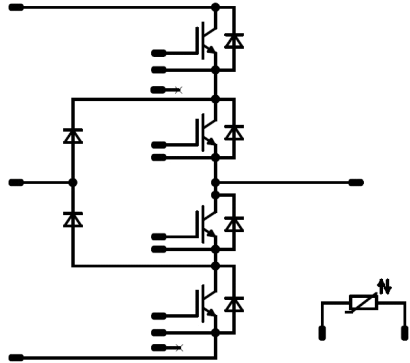




Vincotech

<i>flow NPC 0</i>	650 V / 30 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">Features</p> <ul style="list-style-type: none"> Neutral Point clamped inverter Reactive power capability Low inductance layout </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">Target applications</p> <ul style="list-style-type: none"> Solar inverter UPS </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Types</p> <ul style="list-style-type: none"> 10-F007NIA030SM01-P965F49 </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">flow0 17mm housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Schematic</p>  </div>

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Buck Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	28	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	90	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	57	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum Junction Temperature	T_{jmax}		175	°C



Vincotech

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
-----------	--------	-----------	-------	------

Buck Diode

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	17	A
Repetitive peak forward current	I_{FRM}		52	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	75	W
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Switch

Collector-emitter voltage	V_{CES}		600	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	30	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	90	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	56	W
Gate-emitter voltage	V_{GES}		±20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq 150\text{ °C}$ $V_{GE} = 15\text{ V}$	6 360	µs V
Maximum junction temperature	T_{jmax}		175	°C

Boost Diode

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	14	A
Repetitive peak forward current	I_{FRM}		20	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	33	W
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Sw. Protection Diode

Peak Repetitive Reverse Voltage	V_{RRM}		600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	14	A
Repetitive peak forward current	I_{FRM}		20	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	33	W
Maximum Junction Temperature	T_{jmax}		175	°C



Vincotech

Maximum Ratings

$T_j = 25\text{ °C}$, 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_{top}		-40...(T _{max} - 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			min. 12,7	mm
Comparative Tracking Index	CTI		> 200	



Vincotech

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

Static

Parameter	Symbol	$V_{GE} = V_{CE}$	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Gate-emitter threshold voltage	$V_{GE(th)}$					0,0003	25	3,3	4	4,7	V
Collector-emitter saturation voltage	V_{CEsat}		15			30	25 125		1,69 1,92	2,22	V
Collector-emitter cut-off current	I_{CES}		0	650			25			40	μA
Gate-emitter leakage current	I_{GES}		20	0			25			120	nA
Internal gate resistance	r_g								none		Ω
Input capacitance	C_{ies}								2100		pF
Reverse transfer capacitance	C_{res}	$f = 1$ MHz	0	25			25		7,7		
Gate charge	Q_g		15	520	30		25		70		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							1,67		K/W
-------------------------------------	---------------	---	--	--	--	--	--	--	------	--	-----

Buck Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F				12	25 125 150		1,32 1,50 1,54	1,55	V
Reverse leakage current	I_r			650		25			240	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							1,27		K/W
-------------------------------------	---------------	---	--	--	--	--	--	--	------	--	-----



Vincotech

Characteristic Values

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

Boost Switch

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Gate-emitter threshold voltage	$V_{GE(th)}$		$V_{GE} = V_{CE}$		0,00043	25	5	5,8	6,5	V
Collector-emitter saturation voltage	V_{CEsat}			15	30	25 125 150	1,1	1,51 1,71 1,78	1,9	V
Collector-emitter cut-off current	I_{CES}			0	600	25			1,6	μA
Gate-emitter leakage current	I_{GES}			20	0	25			300	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							1630		pF
Output capacitance	C_{oes}	$f = 1$ MHz		0	25	25		108		
Reverse transfer capacitance	C_{res}							50		
Gate charge	Q_g			15	480	30	25		167	nC

Thermal

Parameter	Symbol	Material	λ [W/mK]	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material	$\lambda = 3,4$ W/mK			1,71	K/W

Boost Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F				10	25 125		1,67 1,56	1,87	V
Reverse leakage current	I_r				650	25			0,14	μA

Thermal

Parameter	Symbol	Material	λ [W/mK]	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material	$\lambda = 3,4$ W/mK			2,87	K/W

Boost Sw. Protection Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F				10	25 150		1,60 1,56	1,95	V
Reverse leakage current	I_r				600	25			27	μA

Thermal

Parameter	Symbol	Material	λ [W/mK]	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material	$\lambda = 3,4$ W/mK			2,87	K/W



Vincotech

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	

Thermistor

Rated resistance	R					25		21,5		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1486 \Omega$				100	-4,5		+4,5	%
Power dissipation	P					25		210		mW
Power dissipation constant						25		3,5		mW/K
B-value	$B_{(25/50)}$					25		3884		K
B-value	$B_{(25/100)}$					25		3964		K
Vincotech NTC Reference									F	



Vincotech

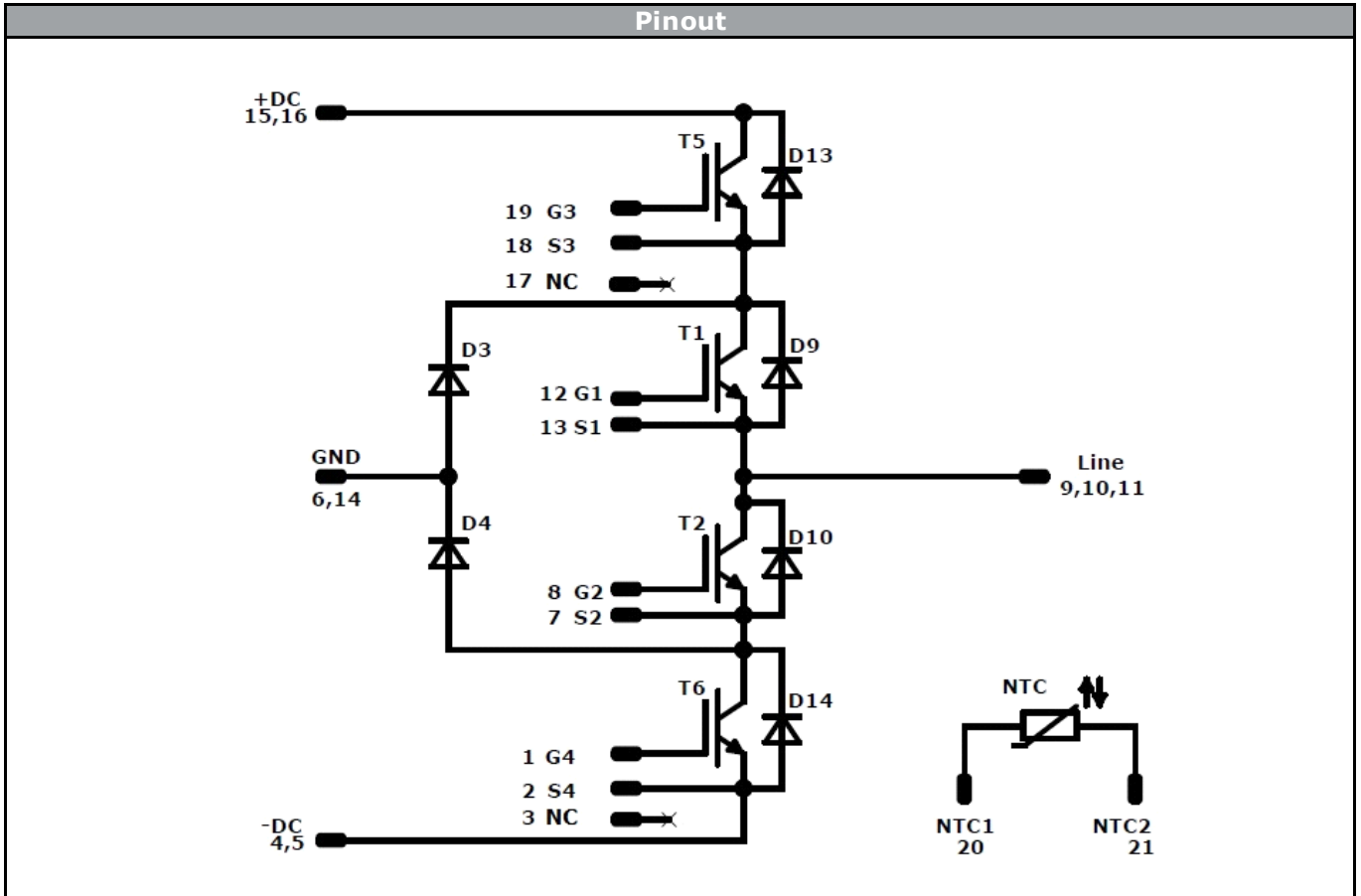
Ordering Code & Marking							
Version				Ordering Code			
without thermal paste 17mm housing with solder pins				10-F007NIA030SM01-P965F49			
NN-NNNNNNNNNNNNNN TTTTIV WWYY UL VIN LLLLL SSSS		Text	Name	Date code	UL & VIN	Lot	Serial
			NN-NNNNNNNNNNNNNN-TTTTIV	WWYY	UL VIN	LLLLL	SSSS
			Datamatrix	Type&Ver	Lot number	Serial	Date code
			TTTTTIV	LLLLL	SSSS	WWYY	

Pin table [mm]			
Pin	X	Y	Function
1	33,6	0	G4
2	30,7	0	S4
3	27,8	0	NC
4	22	0	-DC
5	19,2	0	-DC
6	11,4	0	GND
7	0	0	S2
8	0	2,9	G2
9	0	9,9	Line
10	0	12,7	Line
11	0	15,5	Line
12	0	19,7	G1
13	0	22,6	S1
14	10,1	22,6	GND
15	17,9	22,6	+DC
16	20,8	22,6	+DC
17	27,8	22,6	NC
18	30,7	22,6	S3
19	33,6	22,6	G3
20	33,6	14,8	NTC1
21	33,6	8,2	NTC2

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



Vincotech



Identification					
ID	Component	Voltage	Current	Function	Comment
T5,T6	IGBT	650 V	30 A	Buck Switch	
D3,D4	FWD	650 V	12 A	Buck Diode	
T1,T2	IGBT	600 V	30 A	Boost Switch	
D13,D14	FWD	650 V	10 A	Boost Diode	
D9,D10	FWD	600 V	10 A	Boost Sw. Protection Diode	
NTC	Thermistor			Thermistor	




Vincotech

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

Handling instruction
Handling instructions for <i>flow 0</i> packages see vincotech.com website.

Package data
Package data for <i>flow 0</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-F007NIA030SM01-P965F49-T1-14	17 Jun. 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.

DISCLAIMER

The information, specifications, procedures, methods and recommendations herein (together "information") are presented by Vincotech to reader in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. Vincotech reserves the right to make any changes without further notice to any products to improve reliability, function or design. No representation, guarantee or warranty is made to reader as to the accuracy, reliability or completeness of said information or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe third parties rights or give desired results. It is reader's sole responsibility to test and determine the suitability of the information and the product for reader's intended use.

LIFE SUPPORT POLICY

Vincotech products are not authorised for use as critical components in life support devices or systems without the express written approval of Vincotech.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in labelling can be reasonably expected to result in significant injury to the user.
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.