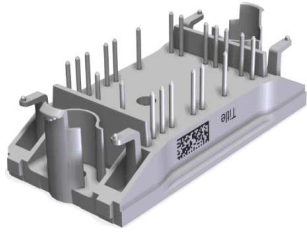
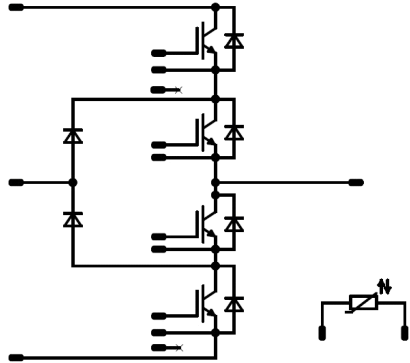




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<i>flow</i> NPC 0	650 V / 30 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;"><b>Features</b></p> <ul style="list-style-type: none"> <li>Neutral Point clamped inverter</li> <li>Reactive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

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>Buck Switch</b>				
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



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## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
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### 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	$V_{GES}$		$\pm 20$	V
Short circuit ratings	$t_{SC}$ $V_{CC}$	$T_j \leq 150\text{ °C}$ $V_{GE} = 15\text{ V}$	6 360	$\mu\text{s}$ 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



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## 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	$T_{top}$		-40...(T <sub>max</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			min. 12,7	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

#### 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	$C_{ies}$	$f = 1 \text{ MHz}$	0	25		25			2100		pF
Reverse transfer capacitance	$C_{res}$								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 $\lambda = 3,4 \text{ W/mK}$							1,67		K/W
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### 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 $\lambda = 3,4 \text{ W/mK}$							1,27		K/W
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## Characteristic Values

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

### Boost Switch

#### Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$				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

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							1,71		K/W
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### Boost Diode

#### Static

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

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							2,87		K/W
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### Boost Sw. Protection Diode

#### Static

Forward voltage	$V_F$					10	25 150		1,60 1,56	1,95	V
Reverse leakage current	$I_r$			600			25			27	µA

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							2,87		K/W
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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	

#### Thermistor

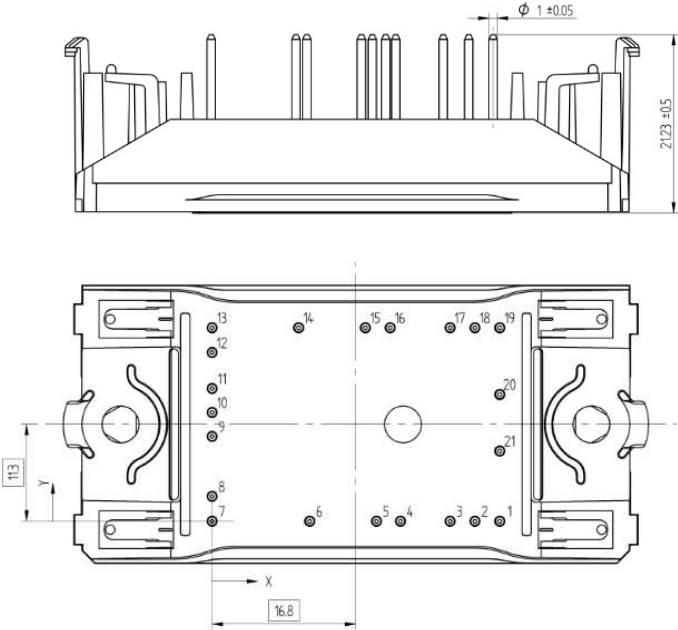
Rated resistance	R					25		21,5		kΩ
Deviation of $R_{100}$	$\Delta_{R/R}$	$R_{100} = 1486 \Omega$				100	-4,5		+4,5	%
Power dissipation	P					25		210		mW
Power dissipation constant						25		3,5		mW/K
B-value	$B_{(25/50)}$					25		3884		K
B-value	$B_{(25/100)}$					25		3964		K
Vincotech NTC Reference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



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

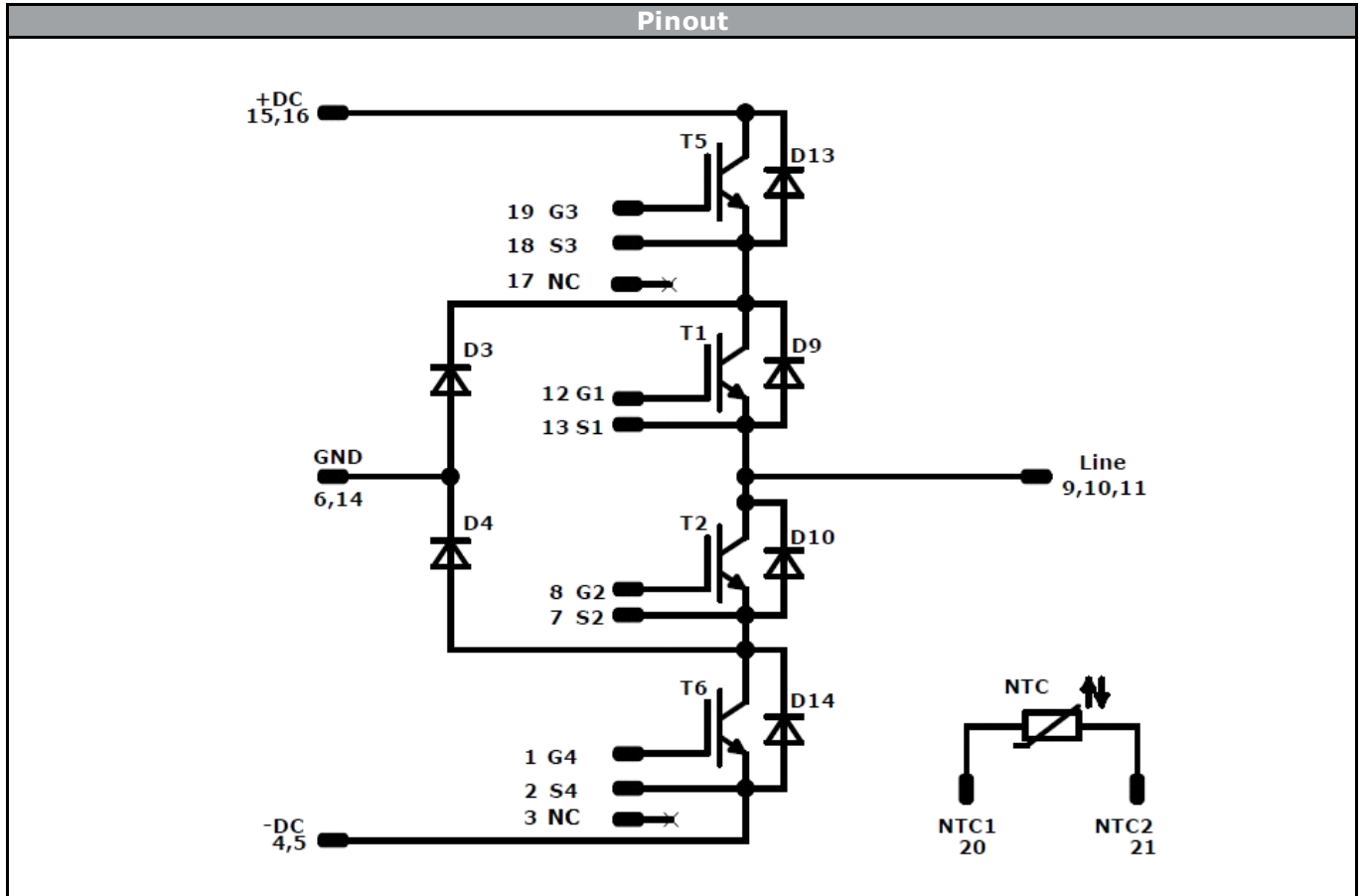
Pin table [mm]			
Pin	X	Y	Function
1	33,6	0	G4
2	30,7	0	S4
3	27,8	0	NC
4	22	0	-DC
5	19,2	0	-DC
6	11,4	0	GND
7	0	0	S2
8	0	2,9	G2
9	0	9,9	Line
10	0	12,7	Line
11	0	15,5	Line
12	0	19,7	G1
13	0	22,6	S1
14	10,1	22,6	GND
15	17,9	22,6	+DC
16	20,8	22,6	+DC
17	27,8	22,6	NC
18	30,7	22,6	S3
19	33,6	22,6	G3
20	33,6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



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<b>Identification</b>					
<b>ID</b>	<b>Component</b>	<b>Voltage</b>	<b>Current</b>	<b>Function</b>	<b>Comment</b>
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	






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Packaging instruction			
Standard packaging quantity (SPQ)	<b>135</b>	>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.

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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.