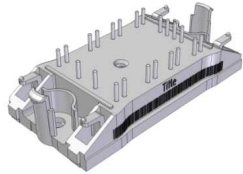
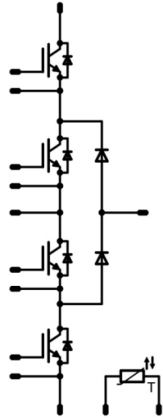




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<i>flow NPC 0</i>	<b>650 V / 50 A</b>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><b>Features</b></p> <ul style="list-style-type: none"> <li>High Efficiency three-level half-bridge</li> <li>High efficiency IGBT</li> <li>Neutral point-Clamped inverter</li> <li>Clip-In PCB mounting</li> <li>Low Inductance Layout</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><b>Target applications</b></p> <ul style="list-style-type: none"> <li>Solar inverters</li> <li>UPS</li> <li>Power supplies</li> </ul> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><b>Types</b></p> <ul style="list-style-type: none"> <li>10-FZ07NIA050SM-P925F58</li> </ul> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><i>flow 0 12mm housing</i></p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><b>Schematic</b></p>  </div>

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>Buck Switch \ Out. Boost Switch</b>				
Collector-emitter voltage	$V_{CES}$		650	V
Collector current	$I_C$	$T_j=T_{jmax}$ $T_S=80^{\circ}\text{C}$	43	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{jmax}$	150	A
Total power dissipation	$P_{tot}$	$T_j=T_{jmax}$ $T_S=80^{\circ}\text{C}$	84	W
Gate-emitter voltage	$V_{GES}$		$\pm 20$	V
Maximum Junction Temperature	$T_{jmax}$		175	$^{\circ}\text{C}$



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Parameter	Symbol	Conditions	Value	Unit
<b>Buck Diode\Out. Boost Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		650	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	49	A
Repetitive peak forward current	$I_{FRM}$		100	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	62	W
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
<b>Out. Boost Inverse Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		650	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	48	A
Repetitive peak forward current	$I_{FRM}$		100	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	70	W
Maximum Junction Temperature	$T_{jmax}$		175	$^\circ\text{C}$

## Module Properties

Parameter	Symbol	Conditions	Value	Unit
<b>Thermal Properties</b>				
Storage temperature	$T_{stg}$		-40...+125	$^\circ\text{C}$
Operation Junction Temperature	$T_{jop}$		-40...+( $T_{jmax} - 25$ )	$^\circ\text{C}$

## Isolation Properties

Isolation voltage	$V_{isol}$	DC voltage	$t_p=2s$	4000	V
Creepage distance				min 12,7	mm
Clearance				min 9,75	mm
Comparative Tracking Index	CTI			>200	



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## Characteristic Values

### Buck Switch\Out. Boost Switch

Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}$ [V]	$V_{CE}$ [V]	$I_C$ [A]	$T_j$ [°C]	Min	Typ	Max		
<b>Static</b>										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$			0,0005	25 125	3,3	4	4,7	V
Collector-emitter saturation voltage	$V_{CEsat}$		15		50	25 125 150	1	1,82 2,00 -	2,22	V
Collector-emitter cut-off current	$I_{CES}$		0	650		25 125			40	μA
Gate-emitter leakage current	$I_{GES}$		20	0		25 125			120	nA
Internal gate resistance	$r_g$							none		Ω
Input capacitance	$C_{ies}$							3000		pF
Output capacitance	$C_{oes}$	f=1 MHz	0	25	25			50		
Reverse transfer capacitance	$C_{res}$							11		
Gate charge	$Q_g$		15	520	50	25		120		nC

### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						1,13		K/W
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### Buck Diode\Out. Boost Diode

Parameter	Symbol	Conditions					Value			Unit
		$V_r$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max			
<b>Static</b>										
Forward voltage	$V_F$				50	25 125 150		1,35	1,77	V
Reverse leakage current	$I_r$			650		25 150			2,65	μA

### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						1,54		K/W
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### Out. Boost Inverse Diode

Parameter	Symbol	Conditions					Value			Unit
				$V_r$ [V]	$I_F$ [A]	$T_j$ [°C]	Min	Typ	Max	
<b>Static</b>										
Forward voltage	$V_F$				50	25 125 150		1,63 1,54 -	1,9	V
Reverse leakage current	$I_r$			650		25 150			27 -	$\mu$ A
<b>Thermal</b>										
Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						1,36		K/W

### Thermistor

Parameter	Symbol	Conditions					Value			Unit
			$V_{GE}$ [V]	$V_{CE}$ [V]	$I_C$ [A]	$T_{j1}$ [°C]	Min	Typ	Max	
Rated resistance	R					25		21,5		k $\Omega$
Deviation of R100	$\Delta_{R/R}$	R100=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	



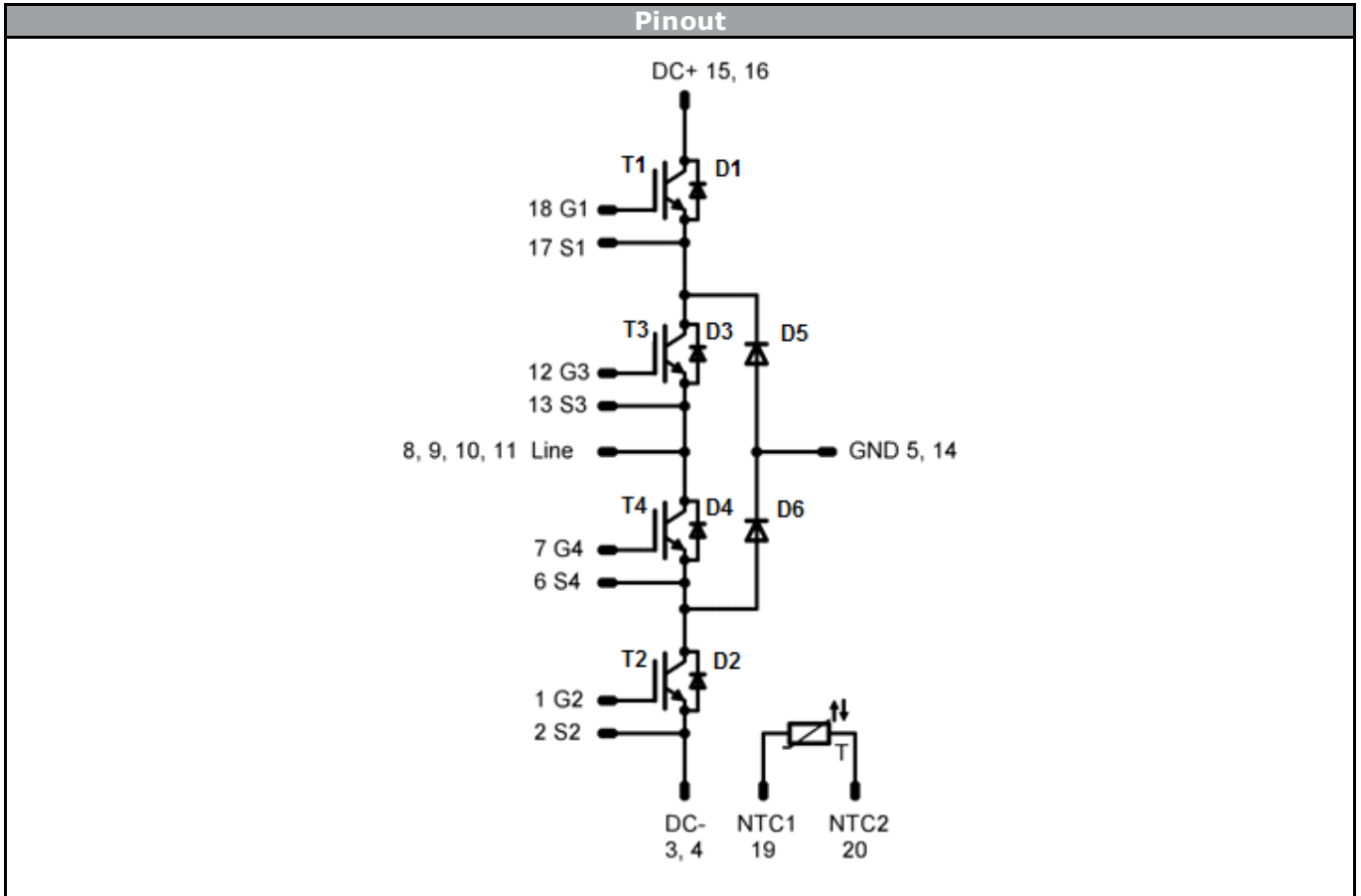
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Ordering Code & Marking							
Version	Ordering Code	in DataMatrix as		in packaging barcode as			
without thermal paste 12mm housing	10-FZ07NIA050SM-P925F58	P925F58		P925F58			
NN-NNNNNNNNNNNNNN NNNNNNNN WWYY UL Vinco LLLLL SSSS		Text	Name	Date code	UL & Vinco	Lot	Serial
			NN-NNNNNNNNNNNNNN	WWYY	UL Vinco	LLLLL	SSSS
		Datamatrix	Type&Ver	Lot number	Serial	Date code	
			TTTTTTTV	LLLLL	SSSS	WWYY	

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



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Identification						
ID	Component	Voltage	Current	Function	Comment	
T1,T2	IGBT	650V	50A	Buck Switch	IGC16T65U8Q	
D5,D6	FWD	650V	50A	Buck Diode	IDC13D65Q8S	
T3,T4	IGBT	650V	50A	Out. Boost Switch	IGC16T65U8Q	
D1,D2	FWD	650V	50A	Out. Boost Diode	IDC13D65Q8S	
D3,D4	FWD	650V	50A	Out. Boost Inverse Diode	SIDC14D65C	
T	NTC			Thermistor		



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

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

Document No.:	Date:	Modification:	Pages
10-FZ07NIA050SM-P925F58-T1-14	29 Jun. 2015		

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.