



Vincotech

<i>flowNPC 0</i>	650 V / 100 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">Features</p> <ul style="list-style-type: none"> Latest High Efficient IGBT Technology Optimized Chipset for Active Power High Reactive Power Capability </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">Target applications</p> <ul style="list-style-type: none"> Solar Inverters </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">Types</p> <ul style="list-style-type: none"> 10-PF07NIA100S505-P927F53T </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">flow 0 12 mm housing</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #ccc; 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	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	84	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	120	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	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	82	A
Repetitive peak forward current	I_{FRM}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	118	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Switch

Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C		75	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	225	A
Turn off safe operating area		$T_j \leq 175\text{ °C}$, $V_{CE} \leq 650\text{ V}$	300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	95	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F		50	A
Repetitive peak forward current	I_{FRM}		100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	71	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Sw.Inv.Diode

Peak repetitive reverse voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F		50	A
Repetitive peak forward current	I_{FRM}		100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	71	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 _{max} - 25)	°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			8,75	mm
Comparative Tracking Index	CTI		> 200	

*100 % tested in production



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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 Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,001	25	3,2	4	4,8	V
Collector-emitter saturation voltage	V_{CEsat}		15		100	25 125 150		1,39 1,48 1,51	1,75	V
Collector-emitter cut-off current	I_{CES}		0	650		25			100	μA
Gate-emitter leakage current	I_{GES}		20	0		25			200	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							6200		pF
Output capacitance	C_{oes}	$f = 1$ Mhz	0	25		25		176		
Reverse transfer capacitance	C_{res}							24		
Gate charge	Q_g		15	520	100	25		240		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,79		K/W
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Buck Diode

Static

Forward voltage	V_F				100	25 125 150		1,61 1,58 1,57	1,92	V
Reverse leakage current	I_R			650		25			5,3	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,81		K/W
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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	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,001	25	4,2	5	5,8	V
Collector-emitter saturation voltage	V_{CESat}		15		75	25 125 150		1,10 1,08 1,09	1,45	V
Collector-emitter cut-off current	I_{CES}		0	650		25			40	μA
Gate-emitter leakage current	I_{GES}		20	0		25			100	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							11625		pF
Output capacitance	C_{oes}	$f = 1$ Mhz	0	25		25		150		
Reverse transfer capacitance	C_{res}							30		
Gate charge	Q_g		15	520	75	25		436		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						1,00		K/W
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Boost Diode

Static

Forward voltage	V_F				50	25 125 150		1,50 1,44 1,42	1,92	V
Reverse leakage current	I_R			650		25			2,65	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						1,34		K/W
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Characteristic Values

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

Boost Sw.Inv.Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{DS} [V]	I_D [A]	I_F [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F			50		25 125 150		1,50 1,44 1,42	1,92	V
Reverse leakage current	I_R		650			25			2,65	µA

Thermal

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)		1,34		K/W

Thermistor

Parameter	Symbol	Conditions	T_j [°C]	Min	Typ	Max	Unit
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
Vincotech NTC Reference						I	



10-PF07NIA100S505-P927F53T

target datasheet

Vincotech

Ordering Code & Marking																	
Version				Ordering Code													
without thermal paste 12 mm housing with press-fit pins				10-PF07NIA100S505-P927F53T													
<table border="1"> <thead> <tr> <th rowspan="2">Text</th> <th>Name</th> <th>Date code</th> <th>UL & VIN</th> <th>Lot</th> <th>Serial</th> </tr> </thead> <tbody> <tr> <td>NN-NNNNNNNNNNNNNNNN-TTTTTTVV</td> <td>WWYY</td> <td>UL VIN</td> <td>LLLLL</td> <td>SSSS</td> </tr> </tbody> </table>							Text	Name	Date code	UL & VIN	Lot	Serial	NN-NNNNNNNNNNNNNNNN-TTTTTTVV	WWYY	UL VIN	LLLLL	SSSS
Text	Name	Date code	UL & VIN	Lot	Serial												
	NN-NNNNNNNNNNNNNNNN-TTTTTTVV	WWYY	UL VIN	LLLLL	SSSS												
NN-NNNNNNNNNNNNNNNN TTTTTTVV WWYY UL VIN LLLLL SSSS																	
Datamatrix		Type&Ver	Lot number	Serial	Date code												
		TTTTTTVV	LLLLL	SSSS	WWYY												

Pin table			
Pin	X	Y	Function
1	33,6	0	G12
2	30,8	0	S12
3	22	0	DC-
4	19,2	0	DC-
5	10,1	0	GND
6	2,8	0	S14
7	0	0	G14
8	0	7,1	Ph
9	0	9,9	Ph
10	0	12,7	Ph
11	0	15,5	Ph
12	0	22,6	G13
13	2,8	22,6	S13
14	10,1	22,6	GND
15	19,2	22,6	DC+
16	22	22,6	DC+
17	30,8	22,6	S11
18	33,6	22,6	G11
19	33,6	14,8	Therm1
20	33,6	8,2	Therm2
21	Not assembled		
22	Not assembled		

center of press-fit pinhead
for connection parameter see the handling instruction

13,23 ±0,1
16,4 ±0,5

16,8

113

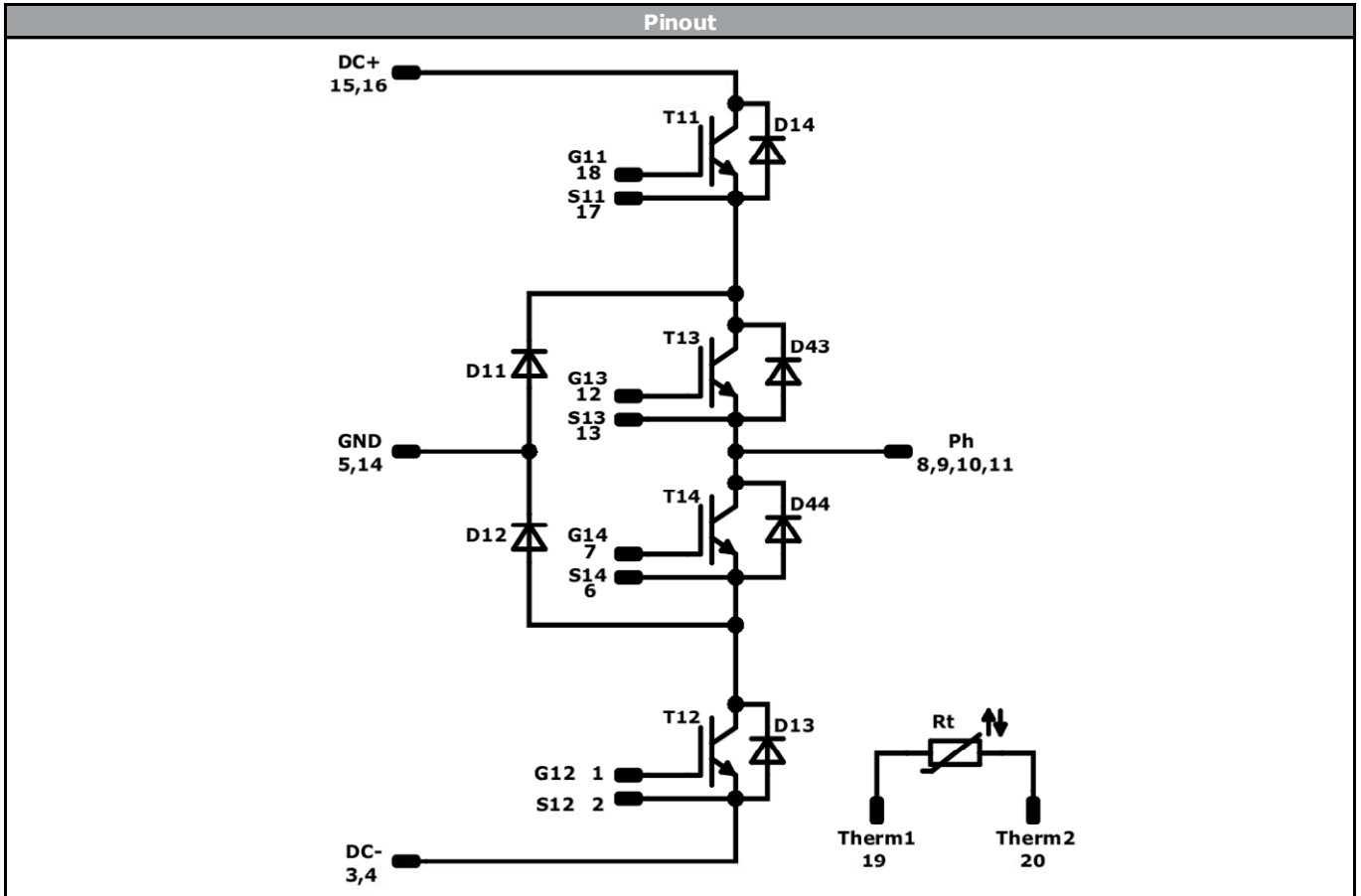
Y

X

Tolerance of pinpositions ±0,5mm 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	650 V	100 A	Buck Switch	
D11, D12	FWD	650 V	100 A	Buck Diode	
T13, T14	IGBT	650 V	75 A	Boost Switch	
D13, D14	FWD	650 V	50 A	Boost Diode	
D43, D44	FWD	650 V	50 A	Boost Sw.Inv.Diode	
Rt	NTC			Thermistor	




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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-PF07NIA100S505-P927F53T-T1-14	24 May. 2018		

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

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