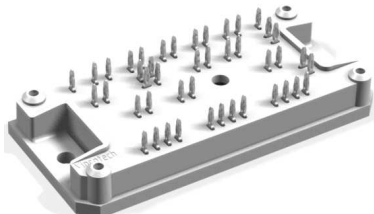
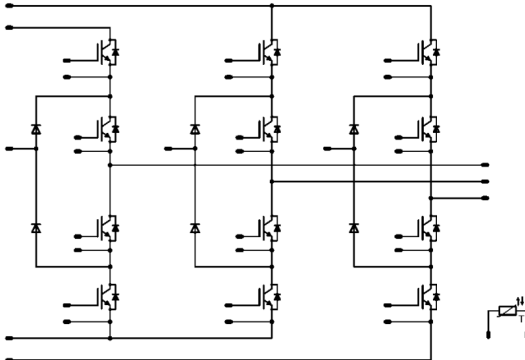




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<i>flow 3xNPC 1</i>	650 V / 50 A
<div style="background-color: #ccc; padding: 2px; text-align: center; font-weight: bold; margin-bottom: 5px;">Features</div> <ul style="list-style-type: none"> NPC with compact design Fast switching with IGBT H5+L5 and Stealth™ Diode Low inductive layout 3 phase design 	<div style="background-color: #ccc; padding: 2px; text-align: center; font-weight: bold; margin-bottom: 5px;"><i>flow 1 12mm housing</i></div> 
<div style="background-color: #ccc; padding: 2px; text-align: center; font-weight: bold; margin-bottom: 5px;">Target applications</div> <ul style="list-style-type: none"> Power Supply Solar UPS 	<div style="background-color: #ccc; padding: 2px; text-align: center; font-weight: bold; margin-bottom: 5px;">Schematic</div> 
<div style="background-color: #ccc; padding: 2px; text-align: center; font-weight: bold; margin-bottom: 5px;">Types</div> <ul style="list-style-type: none"> 10-PY07N3A050SM-M896F04Y 	

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Buck Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	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}		±20	V
Maximum Junction Temperature	T_{jmax}		175	°C



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Parameter	Symbol	Conditions	Value	Unit
Buck Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	33	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	61	W
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$

Parameter	Symbol	Condition	Value	Unit
Boost Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	89	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	225	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	119	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
Boost Diode/Boost Sw. Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	26	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	44	W
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$



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Module Properties

Parameter	Symbol	Conditions	Value	Unit
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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 voltage	$t_p=2s$	4000	V
Creepage distance				min 12,7	mm
Clearance				8,74	mm
Comparative Tracking Index	CTI			>200	



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Characteristic Values

Buck Switch

Parameter	Symbol	Conditions					Value			Unit
		V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max		
Static										
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}	f=1 MHz	0	25	25			3000		pF
Output capacitance	C_{oes}							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

Parameter	Symbol	Conditions					Value			Unit
		V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max			
Static										
Forward voltage	V_F				30	25 125		2,46 2,03	2,6	V
Reverse leakage current	I_r			650		25 150			10	µA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda=3,4W/mK$						1,55		K/W
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Boost Switch

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

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$			0,001	25 125	4,2	5	5,8	V
Collector-emitter saturation voltage	V_{CEsat}		15		75	25 125 150		1,05	1,45	V
Collector-emitter cut-off current	I_{CES}		0	650		25 125			40	μA
Gate-emitter leakage current	I_{GES}		20	0		25 125			100	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}	f=1MHz	0	25	25			11625		pF
Reverse transfer capacitance	C_{res}							30		

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda=3,4W/mK$						0,8		K/W
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Boost Diode/Boost Sw. Protection Diode

Parameter	Symbol	Conditions				Value			Unit
		V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max		

Static

Forward voltage	V_F				20	25 125		1,70 1,58	1,95	V
Reverse leakage current	I_r			650		25 150			27	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda=3,4W/mK$						2,16		K/W
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Thermistor

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	
Rated resistance	R					25		21,5		kΩ
Deviation of R100	$\Delta_{R/R}$	R100=1486 Ω				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	



10-PY07N3A050SM-M896F04Y

target datasheet

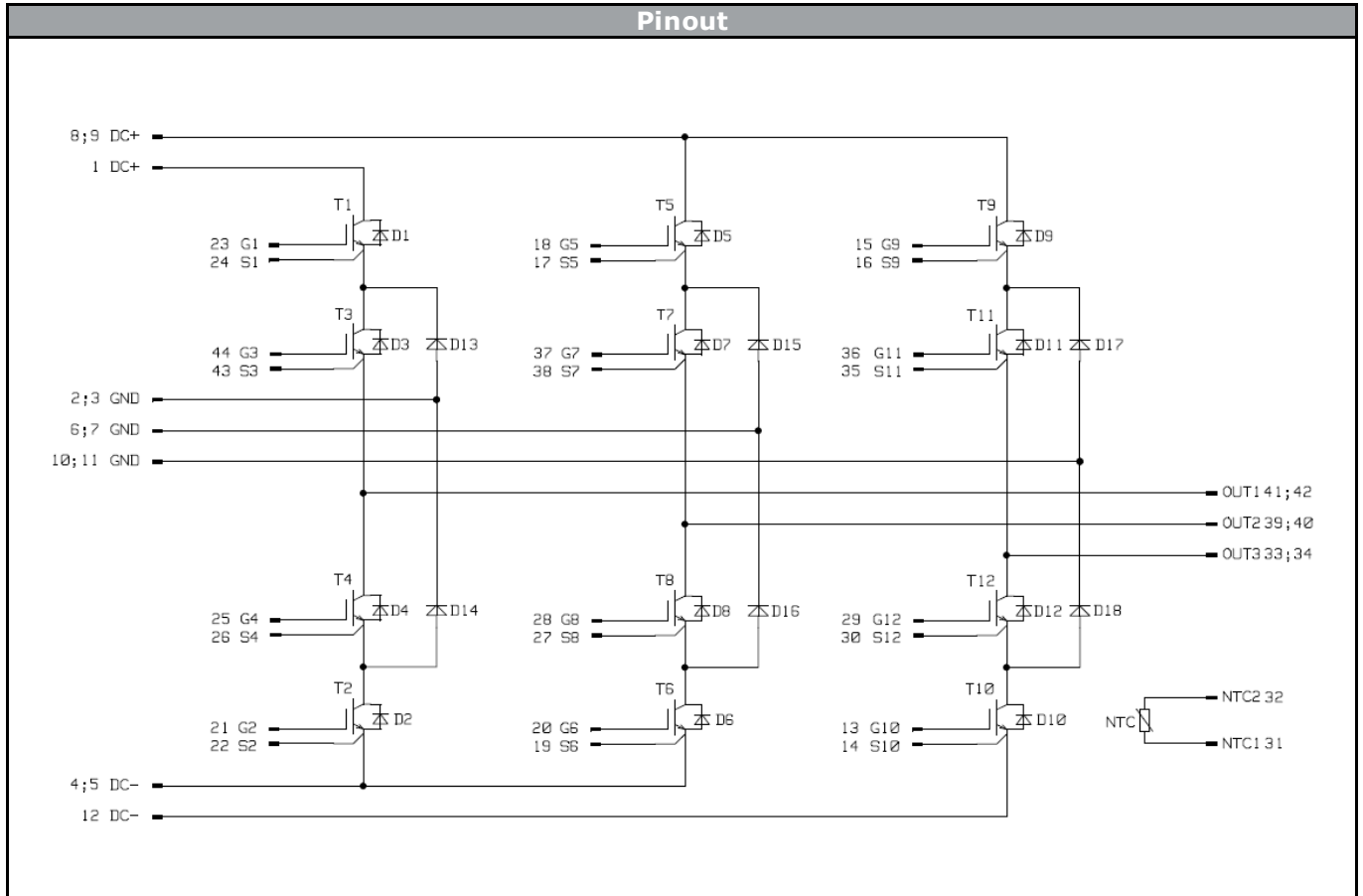
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Ordering Code & Marking							
Version	Ordering Code		in DataMatrix as	in packaging barcode as			
without thermal paste Press-fit pins	10-PY07N3A050SM-M896F04Y		M896F04Y	M896F04Y			
with thermal paste Press-fit pins	10-PY07N3A050SM-M896F04Y-/3/		M896F04Y	M896F04Y-/3/			
NN-NNNNNNNNNNNNNN TTTTIVV WWYY UL Vinco LLLLL SSSS		Text	Name	Date code	UL & Vinco	Lot	Serial
			NN-NNNNNNNNNNNNNN-TTTTIVV	WWYY	UL Vinco	LLLLL	SSSS
		Datamatrix	Type&Ver	Lot number	Serial	Date code	
		TTTTTIVV	LLLLL	SSSS	WWYY		

Outline							
Pin table [mm]				Pin table [mm]			
Pin	X	Y	Function	Pin	X	Y	Function
1	0	28,2	DC+	30	47,35	12,2	S12
2	6	28,2	GND	31	52,2	8,9	NTC1
3	9,7	28,2	GND	32	52,2	5,9	NTC2
4	15,7	28,2	DC-	33	46,75	0	OUT3
5	18,7	28,2	DC-	34	43,95	0	OUT3
6	24,7	28,2	GND	35	40,95	0	S11
7	27,7	28,2	GND	36	37,95	0	G11
8	33,8	28,2	DC+	37	29,2	0	G7
9	36,8	28,2	DC+	38	26,2	0	S7
10	42,8	28,2	GND	39	23,2	0	OUT2
11	46,2	28,2	GND	40	20,4	0	OUT2
12	52,2	28,2	DC-	41	11,8	0	OUT1
13	52,2	23,7	G10	42	9	0	OUT1
14	52,2	20,7	S10	43	6	0	S3
15	41,25	20,6	G9	44	3	0	G3
16	38,25	20,6	S9				
17	32,55	20,6	S5				
18	29,55	20,6	G5				
19	18,7	20,7	S6				
20	18,7	23,7	G6				
21	15,7	23,7	G2				
22	15,7	20,7	S2				
23	4,75	20,6	G1				
24	1,75	20,6	S1				
25	8,35	12,2	G4				
26	11,35	12,2	S4				
27	19,95	12,2	S8				
28	22,95	12,2	G8				
29	44,35	12,2	G12				



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Identification					
ID	Component	Voltage	Current	Function	Comment
T1,T2,T5,T6,T9,T10	IGBT	650V	50A	Buck Switch	
D13,D14,D15 D16,D17,D18	FWD	650V	30A	Buck Diode	
T3,T4,T7,T8,T11,T12	IGBT	650V	75A	Boost Switch	
D1,D2,D5,D6,D9,D10	FWD	650V	20A	Boost Diode	
D3,D4,D7,D8,D11,D12	FWD	650V	20A	Boost Sw. Protection Diode	
NTC	NTC	-	-	Thermistor	



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Packaging instruction			
Standard packaging quantity (SPQ)	100	>SPQ	Standard
		<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> 1 packages see vincotech.com website.

Package data
Package data for <i>flow</i> 1 packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-PY07N3A050SM-M896F04Y-T2-14	17 Nov. 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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