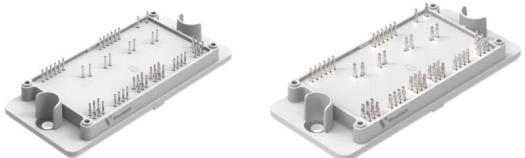
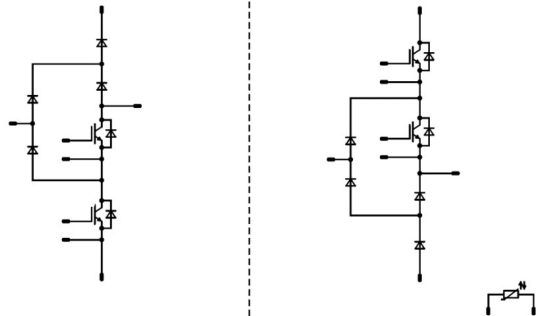




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<i>flow NPC 2</i>	1200 V / 300 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">Features</p> <ul style="list-style-type: none"> Enhanced efficiency Enables high switching frequencies Low inductive package Allows four quadrant operation </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;">Target applications</p> <ul style="list-style-type: none"> UPS </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"> 30-FT07NIB300S502-LE06F58 30-PT07NIB300S502-LE06F58Y </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><i>flow 2 12 mm housing</i></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	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	215	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	900	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	254	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
Boost Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	215	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	900	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	254	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum junction temperature	T_{jmax}		175	°C
Buck Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	229	A
Repetitive peak forward current	I_{FRM}		600	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	224	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	229	A
Repetitive peak forward current	I_{FRM}		600	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	224	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost Sw. Inv. Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	178	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	1780	A
Surge current capability	I^2t		7920	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	195	W
Maximum Junction Temperature	T_{jmax}		150	°C



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Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Buck Sw. Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	36	A
Repetitive peak forward current	I_{FRM}		60	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	59	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost Sw. Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	36	A
Repetitive peak forward current	I_{FRM}		60	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	59	W
Maximum Junction Temperature	T_{jmax}		175	°C
Boost D. Protection Doide				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	36	A
Repetitive peak forward current	I_{FRM}		60	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	59	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_{op}		-40...(T _{jmax} - 25)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage* $t_p = 2\text{ s}$	4000	V
		Equivalent AC Voltage min 12,7	2500	V
Creepage distance			min. 12,7	mm
Clearance			9,89	mm
Comparative Tracking Index	CTI		> 200	

* 100% tested in production



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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

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,003	25	3,2	4	4,8	V
Collector-emitter saturation voltage	V_{CEsat}		15		300	25 125 175		1,42 1,55 1,65	1,75	V
Collector-emitter cut-off current	I_{CES}		0	650		25			200	μA
Gate-emitter leakage current	I_{GES}		20	0		25			400	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							18000		pF
Output capacitance	C_{oes}	$f = 1$ MHz	0	25		25		520		
Reverse transfer capacitance	C_{res}							68		
Gate charge	Q_g		15	520	300	25		656		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,37		K/W
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Boost Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,003	25	3,2	4	4,8	V
Collector-emitter saturation voltage	V_{CEsat}		15		300	25 125 175		1,42 1,55 1,65	1,75	V
Collector-emitter cut-off current	I_{CES}		0	650		25			200	μA
Gate-emitter leakage current	I_{GES}		20	0		25			400	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}							18000		pF
Output capacitance	C_{oes}	$f = 1$ MHz	0	25		25		520		
Reverse transfer capacitance	C_{res}							68		
Gate charge	Q_g		15	520	300	25		656		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,37		K/W
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30-FT07NIB300S502-LE06F58
30-PT07NIB300S502-LE06F58Y
 target datasheet

Characteristic Values

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

Buck Diode

Static

Forward voltage	V_F				300	25		1,35	1,92	V
Reverse leakage current	I_r			650		25			15,2	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,42		K/W
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Boost Diode

Static

Forward voltage	V_F				300	25		1,35	1,92	V
Reverse leakage current	I_r			650		25			15,2	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,42		K/W
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Boost Sw. Inv. Diode

Static

Forward voltage	V_F				150	25 125 150		1,10 1,05 1,05	1,3	V
Reverse leakage current	I_r			1600		25 150			100 2200	μ A

Thermal

Buck Sw. Protection Diode

Static

Forward voltage	V_F				30	25 150		1,64 1,56	1,87	V
Reverse leakage current	I_r			650		25			0,36	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						1,61		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]	I_C [A] I_D [A]	I_F [A]	T_j [°C]	Min	Typ	Max	

Boost Sw. Protection Diode

Static

Forward voltage	V_F				30	25 150		1,64 1,56	1,87	V
Reverse leakage current	I_r			650		25			0,36	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						1,61		K/W
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Boost D. Protection Doide

Static

Forward voltage	V_F				30	25 150		1,64 1,56	1,87	V
Reverse leakage current	I_r			650		25			0,36	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						1,61		K/W
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Thermistor

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	



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Ordering Code & Marking						
Version			Ordering Code			
without thermal paste			30-FT07NIB300S502-LE06F58			
without thermal paste with Press-fit pins			30-PT07NIB300S502-LE06F58Y			
NN-NNNNNNNNNNNN TTTTWW WWYY UL VIN LLLL SSSS						
Text	Name		Date code	UL & VIN	Lot	Serial
	N-NNNNNNNNNNNNNN-TTTTTTV		WWYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTTV	LLLLL	SSSS	WWYY		

Outline							
Pin table [mm]				Pin table [mm]			
Pin	X	Y	Function	Pin	X	Y	Function
1	70	6	DC+2	52	48,7	24,05	G13
2	70	3	DC+2	53	59,2	22	S11
3	70	0	DC+2	54	62,2	22	G11
4	67,5	3	DC+2				
5	67,5	0	DC+2				
6	65	0	DC+2				
7	57,75	0	GND2				
8	55,25	0	GND2				
9	52,75	0	GND2				
10	50,25	0	GND2				
11	43	3	DC-2				
12	43	0	DC-2				
13	40,5	3	DC-2				
14	40,5	0	DC-2				
15	38	3	DC-2				
16	38	0	DC-2				
17	32	3	DC-1				
18	32	0	DC-1				
19	29,5	3	DC-1				
20	29,5	0	DC-1				
21	27	3	DC-1				
22	27	0	DC-1				
23	19,75	0	GND1				
24	17,25	0	GND1				
25	14,75	0	GND1				
26	12,25	0	GND1				
27	5	3	DC+1				
28	5	0	DC+1				
29	2,5	3	DC+1				
30	2,5	0	DC+1				
31	0	3	DC+1				
32	0	0	DC+1				
33	32,25	23,55	S12				
34	29,25	23,55	G12				
35	19,95	23,95	S14				
36	16,95	25,55	G14				
37	2	36	Ph1				
38	4,5	36	Ph1				
39	7	36	Ph1				
40	9,5	36	Ph1				
41	12	36	Ph1				
42	14,5	36	Ph1				
43	38	36	Ph2				
44	40,5	36	Ph2				
45	43	36	Ph2				
46	45,5	36	Ph2				
47	48	36	Ph2				
48	50,5	36	Ph2				
49	64,2	36,6	Therm1				
50	70,6	36,55	Therm2				
51	45,7	24,05	S13				

Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance

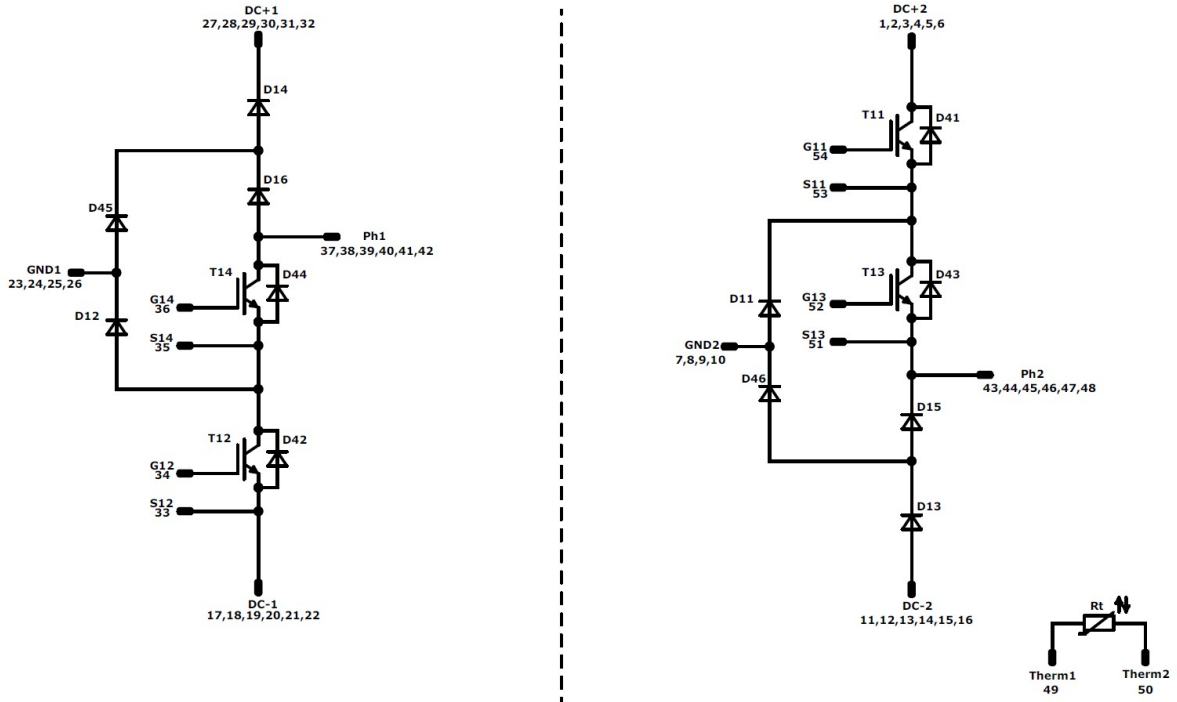
center of press-fit pinhead
for connection parameter use the handling instruction

Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11,T12	IGBT	650 V	300 A	Buck Switch	
T13,T14	IGBT	650 V	300 A	Boost Switch	
D11,D12	FWD	650 V	300 A	Buck Diode	
D13,D14	FWD	650 V	300 A	Boost Diode	
D15,D16	FWD	1600 V	150 A	Boost Sw. Inv. Diode	
D41,D42	FWD	650 V	30 A	Buck Sw. Protection Diode	
D43,D44	FWD	650 V	30 A	Boost Sw. Protection Diode	
D44,D45	FWD	650 V	30 A	Boost D. Protection Diode	
Rt	Thermistor			Thermistor	




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Packaging instruction			
Standard packaging quantity (SPQ) 36	>SPQ	Standard	<SPQ Sample

Handling instruction
Handling instructions for <i>flow 2</i> packages see vincotech.com website.

Package data
Package data for <i>flow 2</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
30-xT07NIB300S502-LE06F58x-T1-14	11 May. 2017		

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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