



# Vincotech

<i>flow</i> PACK 1 H	1200 V / 40 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><b>Features</b></p> <ul style="list-style-type: none"> <li>High speed IGBT</li> <li>Fast, soft reverse Diode</li> <li>Open emitter topology</li> <li>Integrated thermistor</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><b>Target applications</b></p> <ul style="list-style-type: none"> <li>Charger</li> <li>SMPS</li> <li>Solar</li> <li>Welding</li> <li>ESS</li> </ul> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><b>Types</b></p> <ul style="list-style-type: none"> <li>10-PY124PA040FV-L588F88Y</li> <li>10-FY124PA040FV-L588F88</li> </ul> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><i>flow</i> 1 12 mm housing</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span>solder pins</span> <span>press-fit pins</span> </div> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #ccc; margin: 0;"><b>Schematic</b></p> </div>

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>H-Bridge Switch</b>				
Collector-emitter voltage	$V_{CES}$		1200	V
Collector current	$I_C$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	55	A
Repetitive peak collector current	$I_{CRM}$	$t_p$ limited by $T_{jmax}$	160	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	130	W
Gate-emitter voltage	$V_{GES}$		±20	V
Maximum Junction Temperature	$T_{jmax}$		175	°C



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**10-PY124PA040FV-L588F88Y**  
**10-FY124PA040FV-L588F88**  
 target datasheet

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>H-Bridge Diode</b>				
Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Continuous (direct) forward current	$I_F$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	25	A
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	61	W
Maximum Junction Temperature	$T_{jmax}$		175	°C

## Module Properties

### 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 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		with press-fit pins / with solder pins	7,92 / 8,1	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] $V_{GS}$ [V] $V_r$ [V]	$I_C$ [A] $I_D$ [A] $I_F$ [A]	$T_j$ [°C]	Min	Typ	Max		

### H-Bridge Switch

#### Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$			0,04	25 125	5	6,8	7,3	V
Collector-emitter saturation voltage	$V_{CEsat}$		15		40	25 125	1,5	1,80	2,5	V
Collector-emitter cut-off current	$I_{CES}$		0	1200		25 125			50	μA
Gate-emitter leakage current	$I_{GES}$		25	0		25 125			250	nA
Internal gate resistance	$r_g$							none		Ω
Input capacitance	$C_{ies}$	$f = 100$ KHz	0	30		25		4300		pF
Output capacitance	$C_{oes}$							180		
Reverse transfer capacitance	$C_{res}$							100		
Gate charge	$Q_g$		15	600	40	25		370		nC

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,73		K/W
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### H-Bridge Diode

#### Static

Forward voltage	$V_F$				25	25 150		2,47 2,49	2,74	V
Reverse leakage current	$I_r$			1200		25 150			60 3300	μA

#### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						1,56		K/W
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## Characteristic Values

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

### Thermistor

Rated resistance	$R$				25		22		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1484 \Omega$			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 12 mm housing with press-fit pins			10-PY124PA040FV-L588F88Y			
with thermal paste 12 mm housing with solder pins			10-FY124PA040FV-L588F88			
NN-NNNNNNNNNNNNNN TTTTIVVWWYY UL VIN LLLL SSSS						
Text	Name		Date code	UL & VIN	Lot	Serial
	NN-NNNNNNNNNNNNNN-TTTTIVV		W WYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTIVV	LLLLL	SSSS	W WYY		

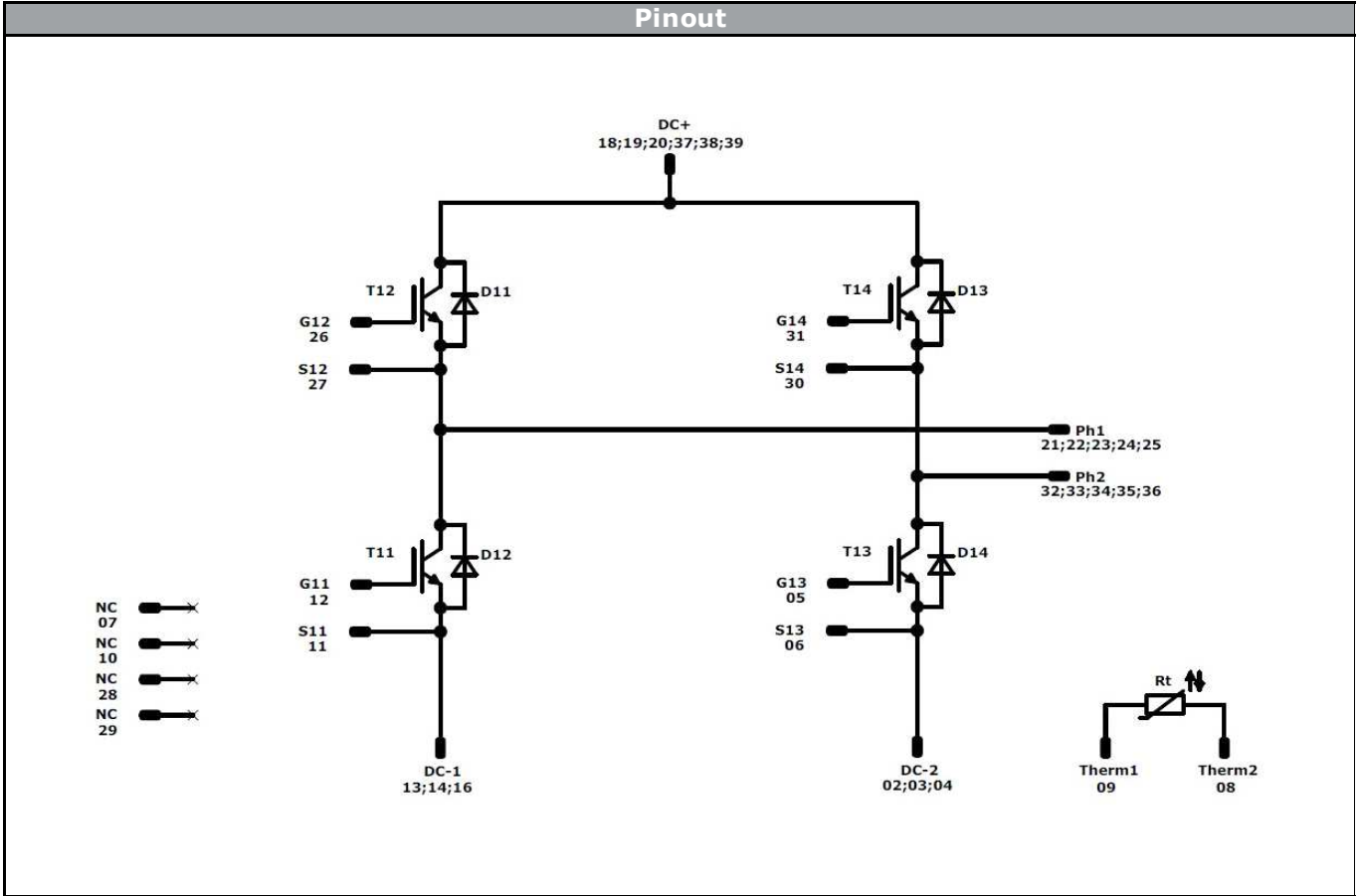
Outline							
Pin table [mm]							
Pin	X	Y	Function				
1			Not assembled				
2	46,3	0	DC-2				
3	43,6	2,7	DC-2				
4	43,6	0	DC-2				
5	39,2	1	G13				
6	36,2	0	S13				
7	33,2	1	NC				
8	28,8	0	Therm2				
9	23,8	0	Therm1				
10	19,4	1	NC				
11	16,4	0	S11				
12	13,4	1	G11				
13	9	2,7	DC-1				
14	9	0	DC-1				
15			Not assembled				
16	6,3	0	DC-1				
17			Not assembled	Pin table [mm]			
18	0	9,5	DC+	Pin	X	Y	Function
19	0	12,2	DC+	30	34,35	28,6	S14
20	0	14,9	DC+	31	37,35	28,6	G14
21	0	28,6	Ph1	32	41,8	28,6	Ph2
22	2,7	28,6	Ph1	33	44,5	28,6	Ph2
23	5,4	28,6	Ph1	34	47,2	28,6	Ph2
24	8,1	28,6	Ph1	35	49,9	28,6	Ph2
25	10,8	28,6	Ph1	36	52,6	28,6	Ph2
26	15,25	28,6	G12	37	52,6	14,9	DC+
27	18,25	28,6	S12	38	52,6	12,2	DC+
28	21,25	28,6	NC	39	52,6	9,5	DC+
29	31,35	28,6	NC	40			Not assembled

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>					
ID	Component	Voltage	Current	Function	Comment
T11, T12, T13, T14	IGBT	1200 V	40 A	H-Bridge Switch	
D11, D12, D13, D14	FWD	1200 V	25 A	H-Bridge Diode	
Rt	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.			
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-xY124PA040FV-L588F88x-T4-14	5 Jul. 2017	Corrected schematic	1, 6

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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