



**fastPACK 1 H**

**650 V / 40 mΩ**

**Features**

- High speed H-Bridge
- High efficiency MOS Technology
- Enhanced body diode
- Integrated capacitors
- Thermistor
- Flexible open emitter topology

**Target applications**

- Power Supply
- Solar
- UPS

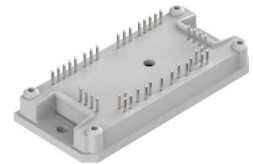
**Types**

- 10-FY074PA040CR-L581F78
- 10-PY074PA040CR-L581F78Y

**flow 1 12mm housing**

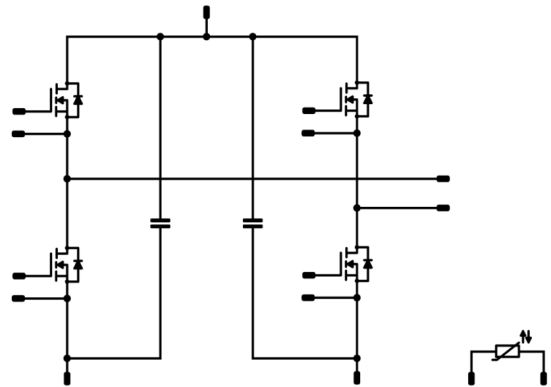


Press-fit pins



Solder pins

**Schematic**





Vincotech

**10-FY074PA040CR-L581F78**  
**10-PY074PA040CR-L581F78Y**  
 target datasheet

## Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
<b>H-Bridge Switch</b>				
Drain-source voltage	$V_{DSS}$		650	V
Drain current	$I_D$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	37	A
Peak drain current	$I_{DM}$	$t_p$ limited by $T_{jmax}$	255	A
Avalanche energy, single pulse	$E_{AS}$	$I_D = 13,7\text{ A}$ $V_{DD} = 50\text{ V}$	2185	mJ
Avalanche energy, repetitive	$E_{AR}$	$I_D = 13,7\text{ A}$ $V_{DD} = 50\text{ V}$	3,31	mJ
Avalanche current, repetitive	$I_{AR}$	$t_p$ limited by $T_{jmax}$ $PAV = E_{AR} \cdot f$	13,7	A
MOSFET $dv/dt$ ruggedness	$dv/dt$	$V_{DS} = 0/400\text{ V}$	50	V/ns
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	132	W
Gate-source voltage	$V_{GSS}$		$\pm 20$	V
Reverse diode $dv/dt$	$dv/dt$		50	V/ns
Maximum Junction Temperature	$T_{jmax}$		150	°C

## DC Link Capacitance

Maximum DC voltage	$V_{MAX}$		630	V
Operation Temperature	$T_{op}$		-55...+125	°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 Voltage	$t_p = 2s$	4000	V
Creepage distance				min. 12,7	mm
Clearance				min. 12,7	mm
Comparative Tracking Index	CTI			> 200	



Vincotech

**10-FY074PA040CR-L581F78**  
**10-PY074PA040CR-L581F78Y**  
 target datasheet

### 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

Drain-source on-state resistance	$r_{DS(on)}$		10		33,1	25 125 150		41 80	44	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}$			0,0033	25 125	3,5	4	4,5	V
Gate to Source Leakage Current	$I_{GSS}$		20	0		25 125			100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$		0	650		25 125			3,5	μA
Internal gate resistance	$r_g$							0,7		Ω
Gate charge	$Q_g$							300		nC
Gate to source charge	$Q_{GS}$		0/10	480	49,6	25		54		
Gate to drain charge	$Q_{GD}$							165		
Short-circuit input capacitance	$C_{ISS}$							8400		pF
Short-circuit output capacitance	$C_{OSS}$	f=1MHz	0	100		25		400		
Reverse transfer capacitance	$C_{rSS}$							20		

##### Reverse Diode Static

Reverse Diode forward voltage	$V_{SD}$		0		68,5	25		1		V
-------------------------------	----------	--	---	--	------	----	--	---	--	---

##### Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda=3,4$ W/mK						0,53		K/W
-------------------------------------	---------------	---	--	--	--	--	--	------	--	-----



Vincotech

Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}$ [V]	$V_{CE}$ [V]	$I_C$ [A]	$T_i$ [°C]	Min	Typ	Max		
		$V_{GS}$ [V]	$V_{GS}$ [V]	$I_D$ [A]	$I_F$ [A]					
<b>DC Link Capacitance</b>										
Capacitance	$C$						100			nF
Tolerance							-10		+10	%
<b>Thermistor</b>										
Rated resistance	$R$					25		22		kΩ
Deviation of R100	$\Delta_{R/R}$	R100=1484 Ω				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	

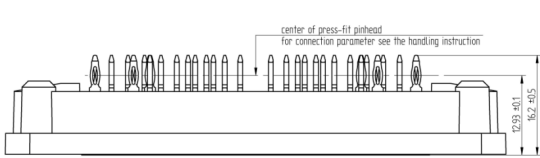
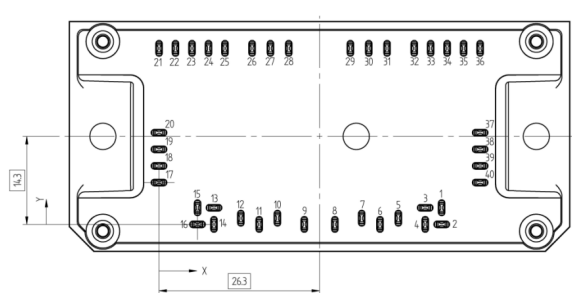


Vincotech

**10-FY074PA040CR-L581F78**  
**10-PY074PA040CR-L581F78Y**  
 target datasheet

Ordering Code & Marking						
Version			Ordering Code			
without thermal paste with Solder pins 12mm housing			10-FY074PA040CR-L581F78			
without thermal paste with Press-fit pins 12mm housing			10-PY074PA040CR-L581F78Y			
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		

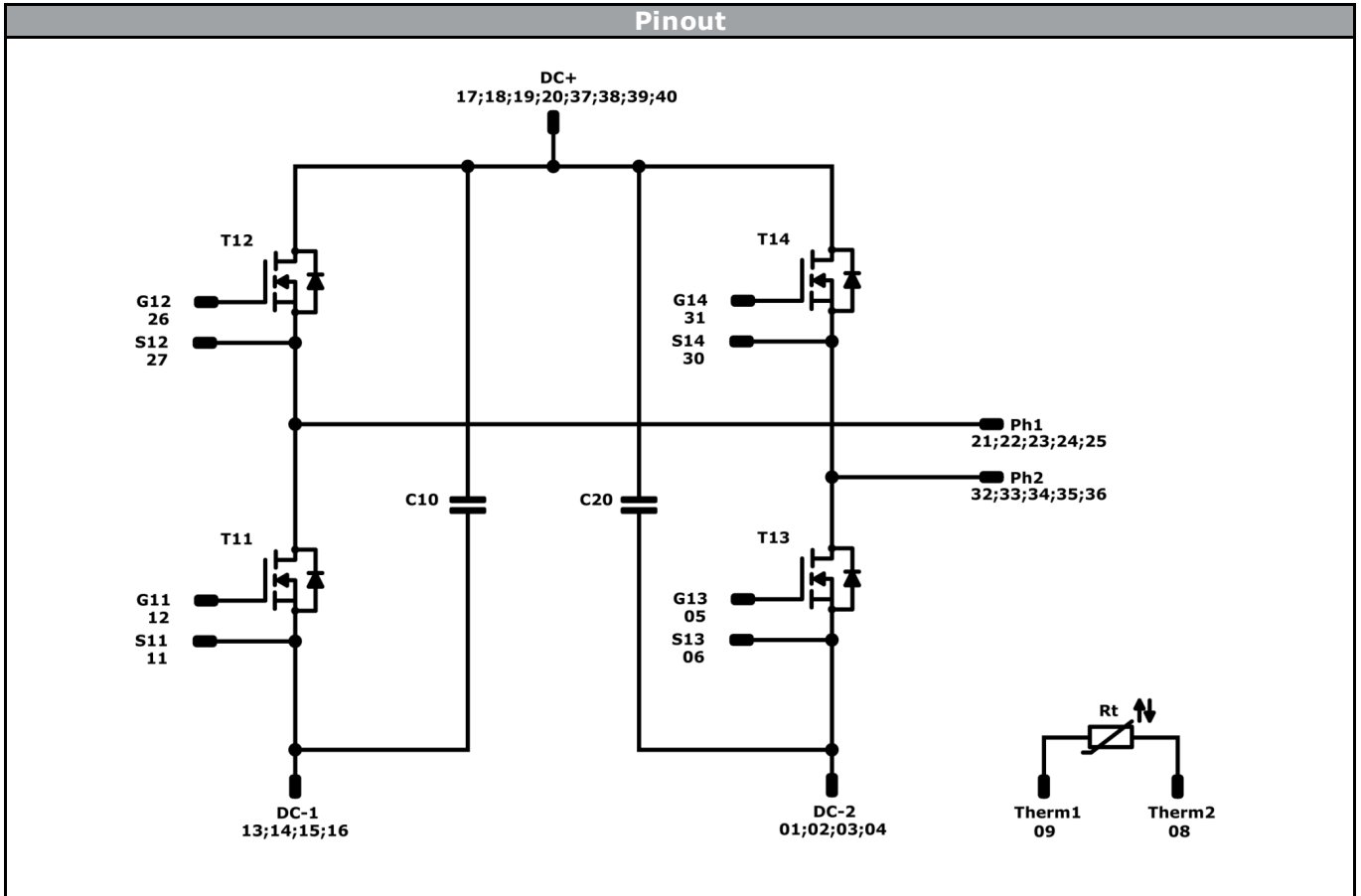
Outline							
Pin table [mm]				Pin table [mm]			
Pin	X	Y	Function	Pin	X	Y	Function
1	46,3	2,7	DC-2	28	21,25	28,6	NC
2	46,3	0	DC-2	29	31,35	28,6	NC
3	43,6	2,7	DC-2	30	34,35	28,6	S14
4	43,6	0	DC-2	31	37,35	28,6	G14
5	39,2	1	G13	32	41,8	28,6	Ph2
6	36,2	0	S13	33	44,5	28,6	Ph2
7	33,2	1	NC	34	47,2	28,6	Ph2
8	28,8	0	Therm2	35	49,9	28,6	Ph2
9	23,8	0	Therm1	36	52,6	28,6	Ph2
10	19,4	1	NC	37	52,6	14,9	DC+
11	16,4	0	S11	38	52,6	12,2	DC+
12	13,4	1	G11	39	52,6	9,5	DC+
13	9	2,7	DC-1	40	52,6	6,8	DC+
14	9	0	DC-1				
15	6,3	2,7	DC-1				
16	6,3	0	DC-1				
17	0	6,8	DC+				
18	0	9,5	DC+				
19	0	12,2	DC+				
20	0	14,9	DC+				
21	0	28,6	Ph1				
22	2,7	28,6	Ph1				
23	5,4	28,6	Ph1				
24	8,1	28,6	Ph1				
25	10,8	28,6	Ph1				
26	15,25	28,6	G12				
27	18,25	28,6	S12				

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



Vincotech



<b>Identification</b>					
<b>ID</b>	<b>Component</b>	<b>Voltage</b>	<b>Current</b>	<b>Function</b>	<b>Comment</b>
T11-T14	MOSFET	650 V	40 mΩ	H-Bridge Switch	
C10, C20	Capacitor	630 V	-	DC Link Capacitance	
Rt	NTC	-	-	Thermistor	



Vincotech

10-FY074PA040CR-L581F78  
10-PY074PA040CR-L581F78Y  
target datasheet

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-xY074PA040CR-L581F78x-T1-14	19 Jan. 2016		

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**

The information, specifications, procedures, methods and recommendations herein (together "information") are presented by Vincotech to reader in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. Vincotech reserves the right to make any changes without further notice to any products to improve reliability, function or design. No representation, guarantee or warranty is made to reader as to the accuracy, reliability or completeness of said information or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe third parties rights or give desired results. It is reader's sole responsibility to test and determine the suitability of the information and the product for reader's intended use.

**LIFE SUPPORT POLICY**

Vincotech products are not authorised for use as critical components in life support devices or systems without the express written approval of Vincotech.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in labelling can be reasonably expected to result in significant injury to the user.
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.