Vincotech

10-FY07HVA100S5-L986F08
10-PY07HVA100S5-L986F08Y
target datasheet

flow PACK 1 H6.5 — **650 V / 100 A**

Features

- For one-phase solar applications
- Innovative H6.5 topology
- LVRT (Low voltage ride throught) capability
- Fast IGBT S5
- Chipset optimized for switching frequencies up to 25kHz
- NTC

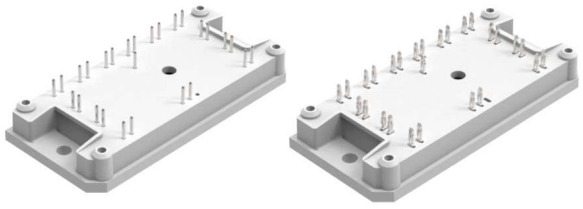
Target applications

- Solar
- Special Application

Types

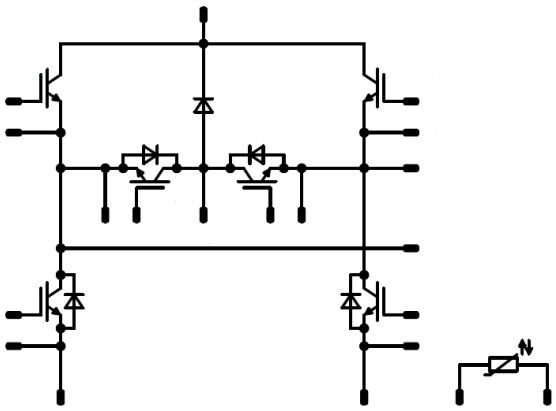
- 10-FY07HVA100S5-L986F08
- 10-PY07HVA100S5-L986F08Y

flow 1 12mm housing



solder pin — Press-fit pin

Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
High Buck Switch / Low Buck Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ T_s = 80 °C	83	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 °C	125	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum Junction Temperature	T_{jmax}		175	°C

Maximum Ratings

T_j = 25 °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 °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 °C	99	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum junction temperature	T_{jmax}		175	°C
Buck Diode / High Boost Diode / Low Boost Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ T_s = 80 °C	59	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	150	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ T_s = 80 °C	78	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 s	4000	V
Creepage distance			min. 12,7	mm
Clearance		solder pin / Press-fit pins 12mm housing	7,99 / 8,3	mm
Comparative Tracking Index	CTI		> 200	

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	
High Buck Switch / Low 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		1,35	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}	f = 1 MHz	0	25		25		6200		pF
Output capacitance	C_{oes}							176		
Reverse transfer capacitance	C_{res}							24		
Gate charge	Q_g		15	520	100	25		240		nC
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,76		K/W
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		1,05	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}	f = 1 MHz	0	25		25		11625		pF
Reverse transfer capacitance	C_{res}							30		
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						0,96		K/W

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	
Buck Diode / High Boost Diode / Low Boost Diode										
Static										
Forward voltage	V_F				75	25 125 150		1,53 1,49 1,47	1,77	V
Reverse leakage current	I_r			650		25			3,8	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material λ = 3,4 W/mK						1,22		K/W
Thermistor										
Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 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	

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Ordering Code & Marking

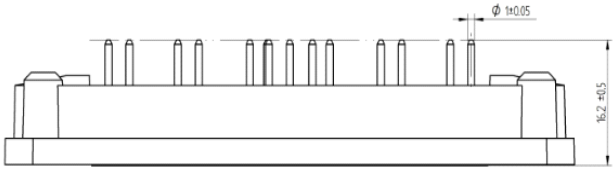
Version	Ordering Code
without thermal paste 12mm housing with solder pins	10-FY07HVA100S5-L986F08
without thermal paste 12mm housing with Press-fit pins	10-PY07HVA100S5-L986F08Y

	Name		Date code	UL & VIN	Lot	Serial
Text	NN-NNNNNNNNNNNNN-TTTTTTVV		WWYY	UL VIN	LLLLL	SSSS
	Type&Ver	**Lot number**	**Serial**	**Date code**		
Datamatrix	TTTTTTTVV	LLLLL	SSSS	WWYY		

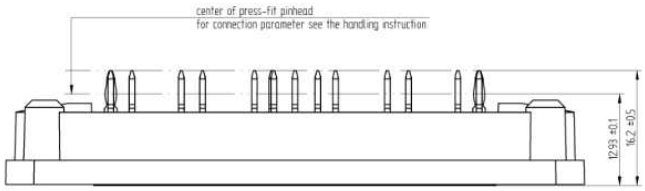
Outline

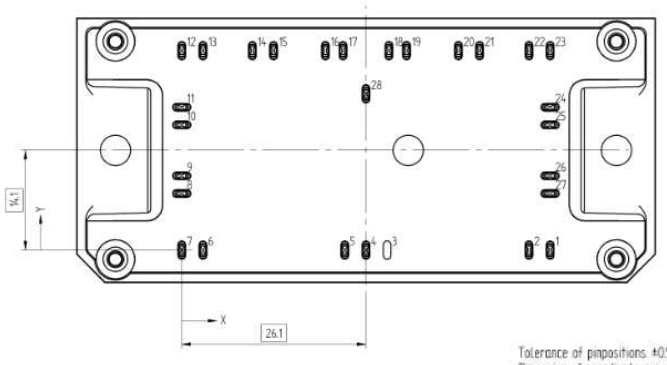
Pin table [mm]			
Pin	X	Y	Function
1	52,2	0	G14
2	49,2	0	S14
3	Not assembled		
4	26,1	0	Therm2
5	23,1	0	Therm1
6	3	0	S12
7	0	0	G12
8	0	8	DC+
9	0	10,5	DC+
10	0	17,7	DC-1
11	0	20,2	DC-1
12	0	28,2	G11
13	3	28,2	S11
14	10	28,2	G21
15	13	28,2	S21
16	20,35	28,2	Ph2
17	22,85	28,2	Ph2
18	29,35	28,2	Ph1
19	31,85	28,2	Ph1
20	39,2	28,2	S22
21	42,2	28,2	G22
22	49,2	28,2	S13
23	52,2	28,2	G13
24	52,2	20,2	DC-2
25	52,2	17,7	DC-2
26	52,2	10,5	DC+
27	52,2	8	DC+
28	26,1	22,1	A20

solder pin

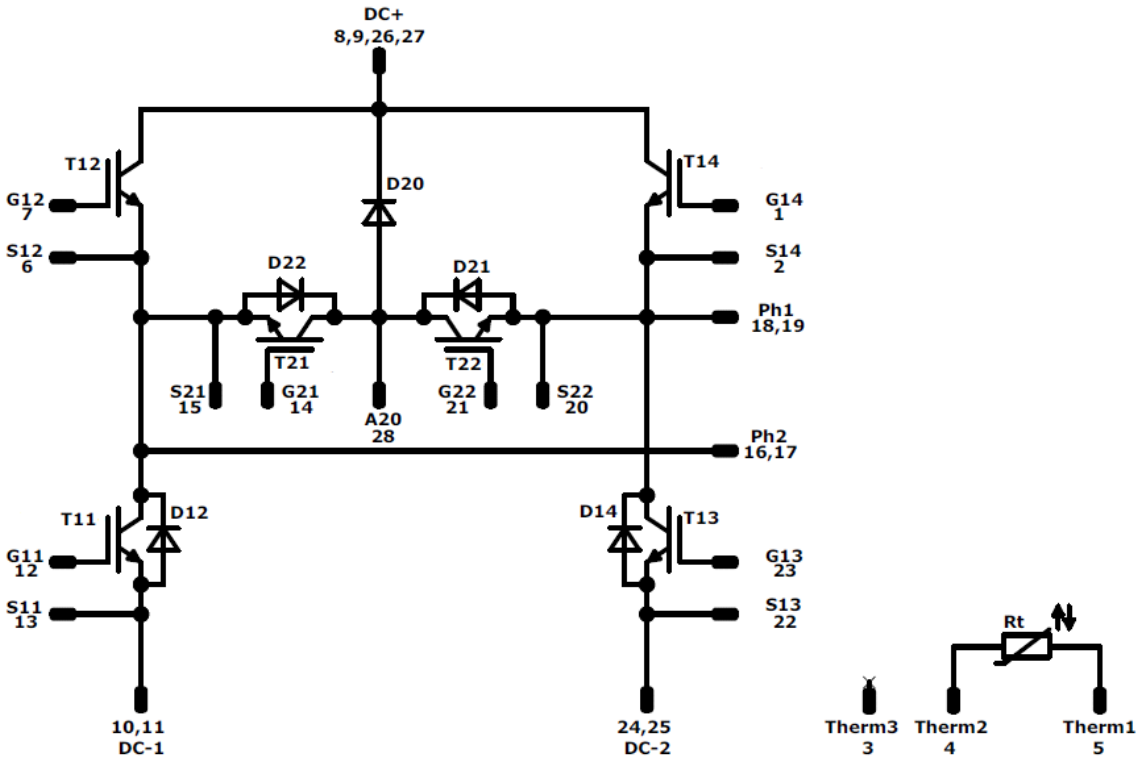


Press-fit pin





Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11-T14	IGBT	650 V	100 A	High Buck Switch / Low Buck Switch	
D21, D22	FWD	650 V	75 A	Buck Diode	
T21, T22	IGBT	650 V	75 A	Boost Switch	
D20	FWD	650 V	75 A	High Boost Diode	
D12, D14	FWD	650 V	75 A	Low Boost Diode	
Rt	Thermistor			Thermistor	

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

Handling instruction
Handling instructions for *flow* 1 packages see vincotech.com website.

Package data
Package data for *flow* 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-xY07HVA100S5-L986F08x-T1-14	26 Jul. 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.

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