Vincotech

10-FZ07NIA050SM-P925F58

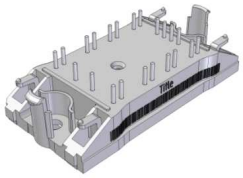
target datasheet

flow **NPC 0** **650 V / 50 A**

Features

- High Efficiency three-level half-bridge
- High efficiency IGBT
- Neutral point-Clamped inverter
- Clip-In PCB mounting
- Low Inductance Layout

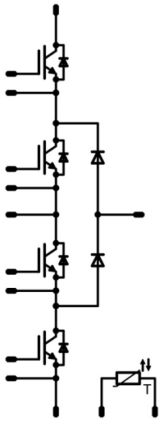
flow 0 12mm housing



Target applications

- Solar inverters
- UPS
- Power supplies

Schematic



Types

- 10-FZ07NIA050SM-P925F58

Maximum Ratings

T_j=25°C, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
Buck Switch\Out. Boost Switch					
Collector-emitter voltage	V_{CES}			650	V
Collector current	I_C	T_j=$T_j$max	T_S=80°C	43	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_j$max		150	A
Total power dissipation	P_{tot}	T_j=$T_j$max	T_S=80°C	84	W
Gate-emitter voltage	V_{GES}			±20	V
Maximum Junction Temperature	T_{jmax}			175	°C

Parameter	Symbol	Conditions		Value	Unit
Buck Diode\Out. Boost Diode					
Peak Repetitive Reverse Voltage	V_{RRM}			650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$	T_h = 80°C	49	A
Repetitive peak forward current	I_{FRM}			100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_h = 80°C	62	W
Maximum Junction Temperature	T_{jmax}			175	°C

Parameter	Symbol	Conditions		Value	Unit
Out. Boost Inverse Diode					
Peak Repetitive Reverse Voltage	V_{RRM}			650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$	T_h = 80°C	48	A
Repetitive peak forward current	I_{FRM}			100	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_h = 80°C	70	W
Maximum Junction Temperature	T_{jmax}			175	°C

Module Properties

Parameter	Symbol	Conditions		Value	Unit
Thermal Properties					
Storage temperature	T_{stg}			-40…+125	°C
Operation Junction Temperature	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 9,75	mm
Comparative Tracking Index	CTI			>200	

Characteristic Values

Buck Switch\Out. 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}			0,0005	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 λ=3,4W/mK						1,13		K/W

Buck Diode\Out. Boost Diode

Parameter	Symbol	Conditions					Value			Unit
				V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max	
Static										
Forward voltage	V_F				50	25 125 150		1,35	1,77	V
Reverse leakage current	I_r			650		25 150			2,65	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material λ=3,4W/mK						1,54		K/W

Out. Boost Inverse Diode

Parameter	Symbol	Conditions					Value			Unit
				V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max	
Static										
Forward voltage	V_F				50	25 125 150		1,63 1,54 -	1,9	V
Reverse leakage current	I_r			650		25 150			27 -	µA
Thermal										
Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material λ=3,4W/mK						1,36		K/W

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	

Vincotech

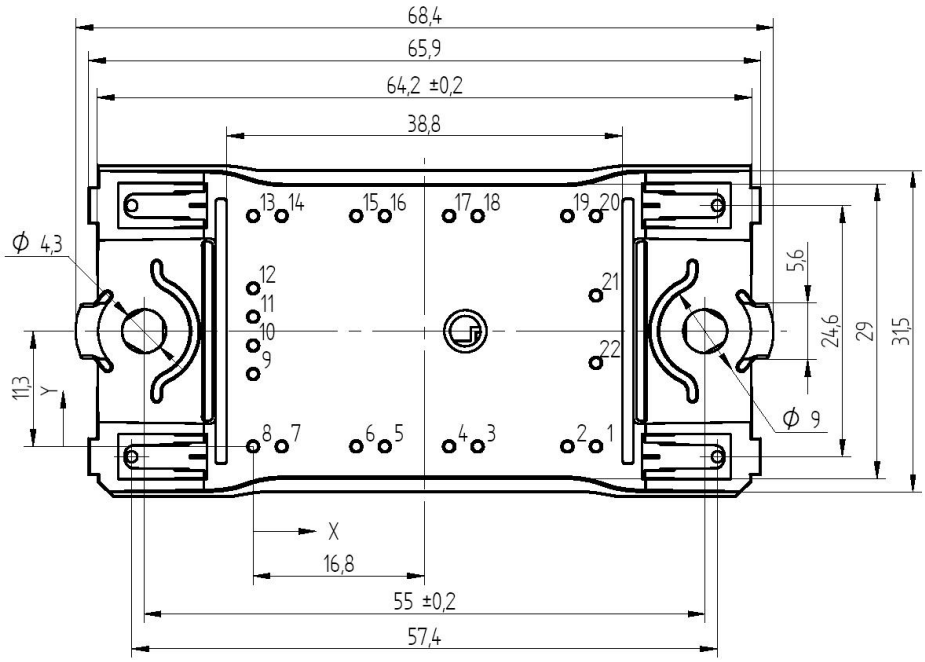
Ordering Code & Marking

Version	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-FZ07NIA050SM-P925F58	P925F58	P925F58

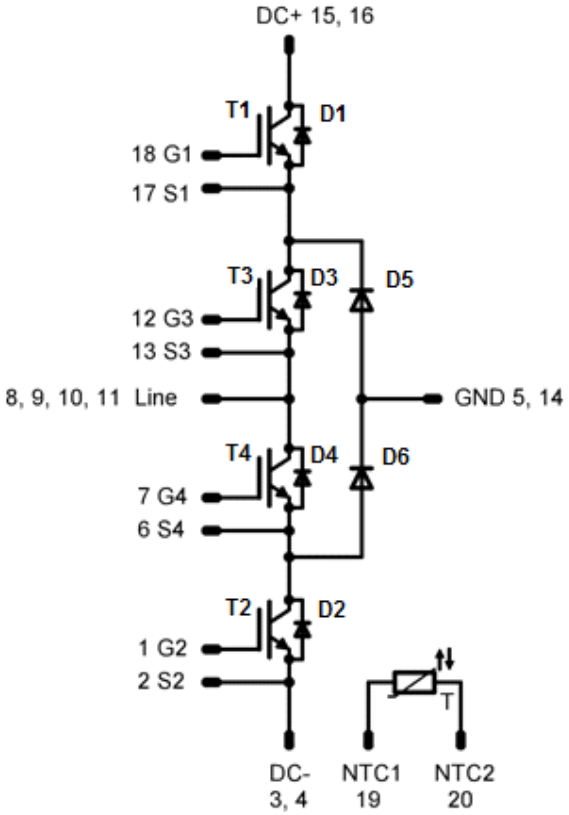
Text	**Name**		**Date code**	**UL & Vinco**	**Lot**	**Serial**
	NN-NNNNNNNNNNNNN-NNNNNNNN		WWYY	UL Vinco	LLLLL	SSSS
Datamatrix	**Type&Ver**	**Lot number**	**Serial**	**Date code**		
	TTTTTTTVV	LLLLL	SSSS	WWYY		

Outline

Pin table [mm]			
Pin	X	Y	Function
1	33,6	0	G2
2	30,8	0	S2
3	22	0	DC-
4	19,2	0	DC-
5	12,9	0	GND
6	10,1	0	S4
7	2,8	0	G4
8	0	0	Line
9	0	7,1	Line
10	0	9,9	Line
11	0	12,7	Line
12	0	15,5	G3
13	0	22,6	S3
14	2,8	22,6	GND
15	10,1	22,6	DC+
16	12,9	22,6	DC+
17	19,2	22,6	S1
18	22	22,6	G1
19	30,8	22,6	NTC1
20	33,6	22,6	NTC2
21	33,6	14,8	N.F.
22	33,6	8,2	N.F.



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T1,T2	IGBT	650V	50A	Buck Switch	IGC16T65U8Q
D5,D6	FWD	650V	50A	Buck Diode	IDC13D65Q8S
T3,T4	IGBT	650V	50A	Out. Boost Switch	IGC16T65U8Q
D1,D2	FWD	650V	50A	Out. Boost Diode	IDC13D65Q8S
D3,D4	FWD	650V	50A	Out. Boost Inverse Diode	SIDC14D65C
T	NTC			Thermistor	

Packaging instruction					
Standard packaging quantity (SPQ)	135	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 0 packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-FZ07NIA050SM-P925F58-T1-14	29 Jun. 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.