



Vincotech

10-FZ07B2A042UF01-PB53L93

target datasheet

flowBOOST 0 dual

600 V / 40 A

Features

- High efficiency dual booster
- Low Inductance Layout
- Ultra fast switching frequency
- Integrated temperature sensor

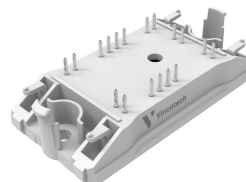
Target applications

- Power Supply
- Solar Inverters

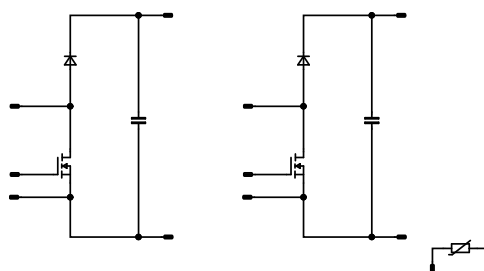
Types

- 10-FZ07B2A042UF01-PB53L93

flow 0 12 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
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Boost Switch

Drain-source voltage	V_{DS}		650	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	30	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	125	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	45	W
Gate-source voltage	V_{GS}		± 25	V
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	20	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	92	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$	180	A
Surge current capability	I^2t		162	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	57	W
Maximum junction temperature	T_{jmax}		175	°C

Capacitor (DC)

Maximum DC voltage	V_{MAX}		630	V
Operation Temperature	T_{op}		-55 ... 150	°C



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

Parameter	Symbol	Conditions	Value	Unit
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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
Isolation voltage	V_{isol}	AC Voltage $t_p = 1\text{ min}$	2500	V
Creepage distance			>12,7	mm
Clearance			9,1	mm
Comparative Tracking Index	CTI		≥ 200	



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Characteristic Values

Parameter	Symbol	Conditions					Values			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	

Boost Switch

Static

Drain-source on-state resistance	$r_{DS(on)}$		12		30	25 125		42 59	52	mΩ
Gate-source threshold voltage	$V_{GS(th)}$		0		0,01	25	4	5	6	V
Gate to Source Leakage Current	I_{GSS}		20	0		25		6	20	μA
Zero Gate Voltage Drain Current	I_{DSS}		0	650		25		0,7	150	μA
Internal gate resistance	r_g							4,5		Ω
Gate charge	Q_g		-5/12	400	30	25		43		nC
Short-circuit input capacitance	C_{iss}	$f = 100 \text{ kHz}$	0	100	0	25		1500		pF
Short-circuit output capacitance	C_{oss}							200		
Reverse transfer capacitance	C_{rss}							2,2		
Diode forward voltage	V_{SD}		0		20	25		1,5	1,75	V

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						2,11		K/W
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Boost Diode

Static

Forward voltage	V_F				20	25		1,5	1,8	V
Reverse leakage current	I_R	$V_r = 650 \text{ V}$				25		24	120	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						1,68		K/W
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Characteristic Values

Parameter	Symbol	Conditions					Values			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	

Capacitor (DC)

Static

Capacitance	C	DC bias voltage = 0 V				25		33		nF
Tolerance							-5		5	%

Thermistor

Static

Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ± 1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ± 1 %						4000		K
Vincotech Thermistor Reference									I	



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Ordering Code	
Version	Ordering Code
Without thermal paste	10-FZ07B2A042UF01-PB53L93
With thermal paste (4,4 W/mK, PTM6000)	10-FZ07B2A042UF01-PB53L93-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-FZ07B2A042UF01-PB53L93-/3/

Marking						
Text	Name		Date code	UL & VIN	Lot	Serial
	NN-NNNNNNNNNNNNNN- TTTTTVV		WWYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTVV	LLLLL	SSSS	WWYY		

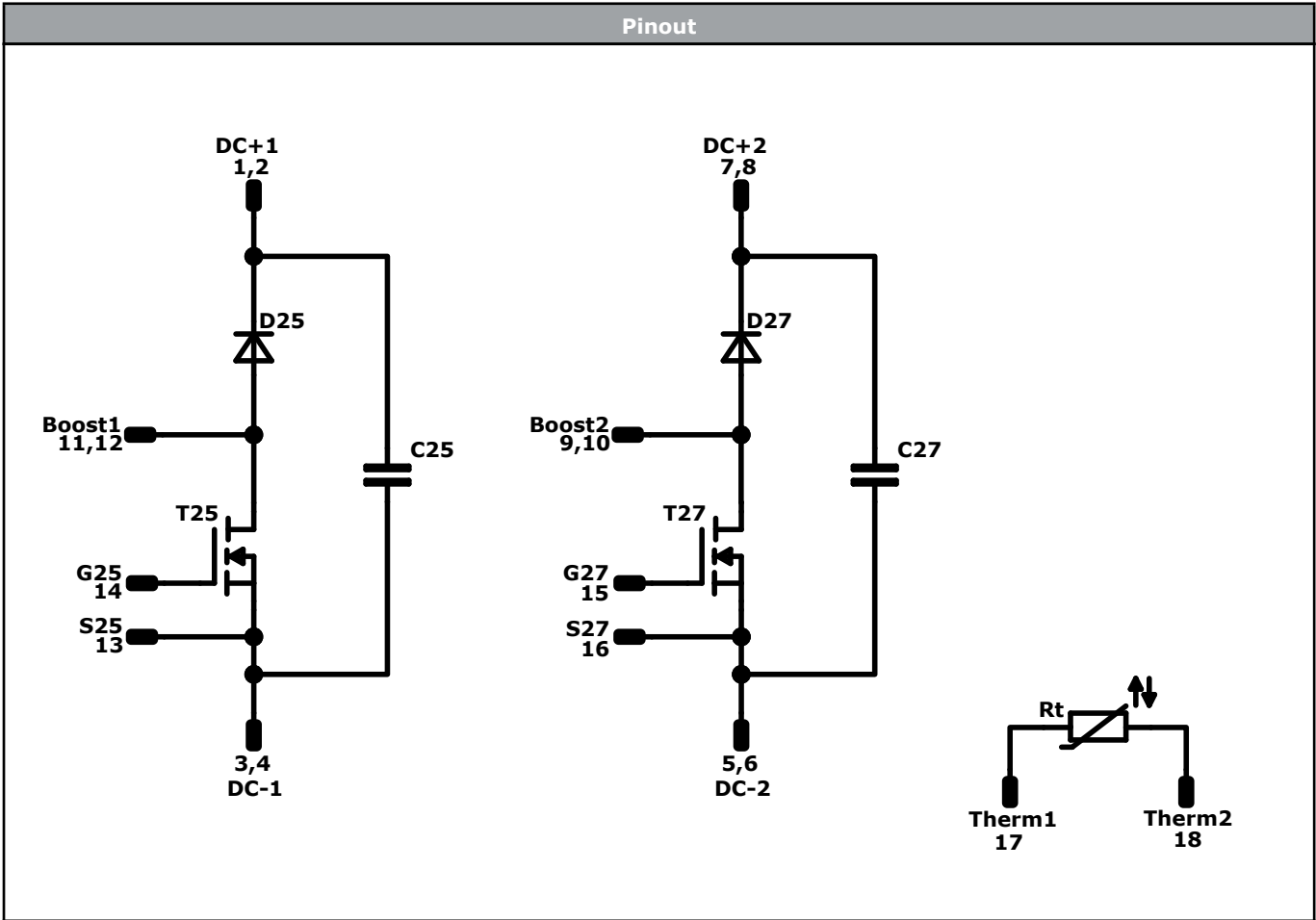
Outline				
Pin table [mm]				Function
Pin	X	Y		
1	0	22,3		DC+1
2	3	22,3		DC+1
3	12,15	22,3		DC-1
4	15,15	22,3		DC-1
5	18,15	22,3		DC-2
6	21,15	22,3		DC-2
7	30,3	22,3		DC+2
8	33,3	22,3		DC+2
9	33,3	3		Boost2
10	33,3	0		Boost2
11	0	3		Boost1
12	0	0		Boost1
13	9,15	0		S25
14	12,15	0		G25
15	15,15	0		G27
16	18,15	0		S27
17	33,3	14,15		Therm1
18	33,3	11,15		Therm2

Tolerance of pinposition: $\pm 0.5\text{mm}$ at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Identification					
ID	Component	Voltage	Current	Function	Comment
T25, T27	MOSFET	650 V	42 mΩ	Boost Switch	
D25, D27	FWD	650 V	20 A	Boost Diode	
C25, C27	Capacitor	630 V		Capacitor (DC)	
Rt	Thermistor			Thermistor	



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Packaging instruction				
Standard packaging quantity (SPQ) 135	>SPQ	Standard	<SPQ	Sample
Handling instruction				
Handling instructions for <i>flow 0</i> packages see vincotech.com website.				
Package data				
Package data for <i>flow 0</i> packages see vincotech.com website.				
Vincotech thermistor reference				
See Vincotech thermistor reference table at 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-FZ07B2A042UF01-PB53L93-T1-14	14 Jun. 2021		

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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