



Vincotech

10-PY12S2A036MR02-L869L98Y

target datasheet

flowBOOST 1 symmetric dual

1200 V / 36 mΩ

Features

- Symmetric Boost for 1500Vdc applications
- Full SiC for ultra high speed frequencies
- Integrated Bypass diode

Target applications

- Solar Inverters

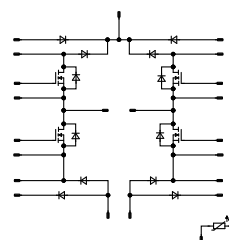
Types

- 10-PY12S2A036MR02-L869L98Y

flow 1 12 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Boost Switch				
Drain-source voltage	V_{DS}		1200	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	34	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	102	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	101	W
Gate-source voltage	V_{GS}		-2 / 21	V
		dynamic	-6 / 23	
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	36	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	94	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	142	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	128	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Sw. Protection Diode

Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	99	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	480	A
Surge current capability	I^2t		1100	A²s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	127	W
Maximum junction temperature	T_{jmax}		150	°C



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Maximum Ratings

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Parameter	Symbol	Conditions	Value	Unit
ByPass Diode				
Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	64	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	200	A
Surge current capability	I^2t		200	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	92	W
Maximum junction temperature	T_{jmax}		150	°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
Creepage distance			>12,7	mm
Clearance			9,49	mm
Comparative Tracking Index	CTI		≥ 600	



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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	$r_{DS(on)}$		18		21	25 150		36 81	45	mΩ
Gate-source threshold voltage	$V_{GS(th)}$		0		0,0111	25	2,8		4,8	V
Gate to Source Leakage Current	I_{GSS}		-2	0		25	-100			nA
Gate to Source Leakage Current	I_{GSS}		21	0		25			100	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	1200		25		1	25	μA
Internal gate resistance	r_g							4		Ω
Gate charge	Q_g	0/18	800	21	25			91		nC
Gate to source charge	Q_{GS}							20		
Gate to drain charge	Q_{GD}							24		
Short-circuit input capacitance	C_{iss}	$f = 1 \text{ Mhz}$	0	800	0	25		2335		pF
Short-circuit output capacitance	C_{oss}							70		
Reverse transfer capacitance	C_{rss}							5		
Diode forward voltage	V_{SD}		0		21	25		3,3		V

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{foil}=220 \text{ W/mK}$ (KU-ALF5)						0,94		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	$V_r = 1200 \text{ V}$				25		60	500	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{foil}=220 \text{ W/mK}$ (KU-ALF5)						0,74		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	

Boost Sw. Protection Diode

Static

Forward voltage	V_F			40	25				1,5	V
Reverse leakage current	I_R	$V_r = 1600$ V			25 150				100 2000	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{foil}=220$ W/mK (KU-ALF5)						0,55		K/W
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ByPass Diode

Static

Forward voltage	V_F			18	25				1,5	V
Reverse leakage current	I_R	$V_r = 1600$ V			25 150				100 1000	μ A

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{foil}=220$ W/mK (KU-ALF5)						0,76		K/W
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Thermistor

Static

Rated resistance	R				25		22			k Ω
Deviation of R_{100}	$\Delta R/R$	$R_{100} = 1484$ Ω			100	-5		5		%
Power dissipation	P				25		130			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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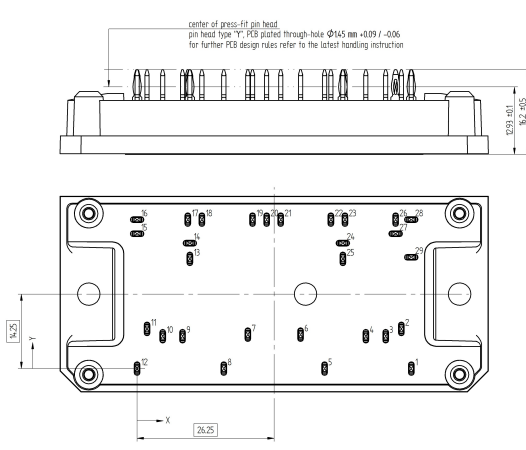
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Ordering Code	
Version	Ordering Code
Without thermal paste	10-PY12S2A036MR02-L869L98Y

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

Outline				
Pin table [mm]				
Pin	X	Y	Function	
1	52,5	0	DC-In2	
2	50,6	7,6	S25	
3	47,6	6,2	G25	
4	43,8	6,2	Boost-2	
5	35,9	0	DC+In2	
6	31,3	6,5	Boost+2	
7	21,2	6,5	Boost+1	
8	16,6	0	DC+In1	
9	8,7	6,2	Boost-1	
10	4,9	6,2	G15	
11	1,9	7,6	S15	
12	0	0	DC-In1	
13	10,1	21	G17	
14	10,1	24	S17	
15	0	25,8	DC-Boost1	
16	0	28,5	DC-Boost1	
17	9,7	28,5	N1	
18	12,4	28,5	N1	
19	22,1	28,5	DC+Boost	
20	24,8	28,5	DC+Boost	
21	27,5	28,5	DC+Boost	
22	37,1	28,5	N2	
23	39,8	28,5	N2	
24	39,4	24	S27	
25	39,4	21	G27	
26	49,5	28,5	DC-Boost2	
27	49,5	25,8	DC-Boost2	
28	52,5	28,5	Therm1	
29	52,5	21,3	Therm2	

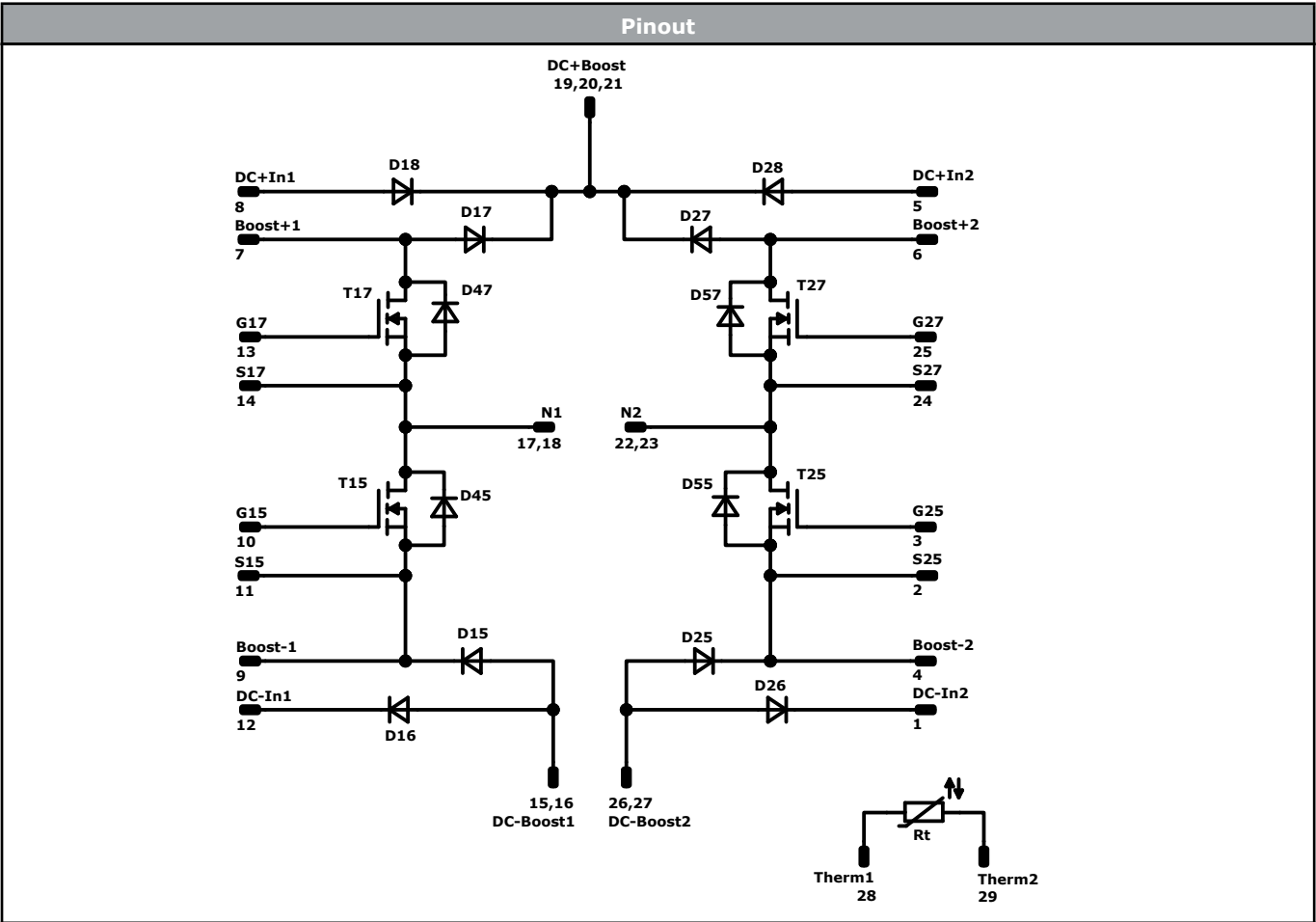


Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Identification					
ID	Component	Voltage	Current	Function	Comment
T15, T17, T25, T27	MOSFET	1200 V	36 mΩ	Boost Switch	
D15, D17, D25, D27	FWD	1200 V	20 A	Boost Diode	
D45, D47, D55, D57	Rectifier	1600 V	40 A	Boost Sw. Protection Diode	
D16, D18, D26, D28	Rectifier	1600 V	18 A	ByPass Diode	
Rt	Thermistor			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.				
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-PY12S2A036MR02-L869L98Y-T1-14	4 Jan. 2022	Initial Release	

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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