



flowBOOST 1 dual

1200 V / 40 mOhm

Features

- Dual Booster
- High Performance Flying Capacitor Topology
- Latest SiC Technology
- Integrated flying capacitors
- Integrated DC link capacitors
- Integrated NTC
- Low inductance housing

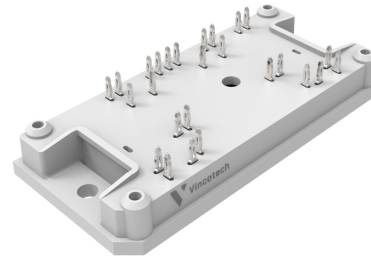
Target applications

- Power Supply
- Solar Inverters
- UPS

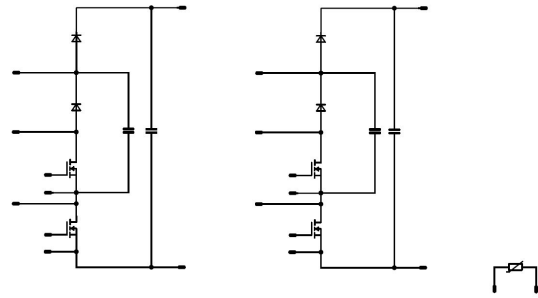
Types

- 10-PY12B2A040MS-LP25L08Y

flow 1 12 mm housing



Schematic





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10-PY12B2A040MS-LP25L08Y
target datasheet

Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Boost Switch				
Drain-source voltage	V_{DSS}		1200	V
Drain current	I_D	$T_j = T_{jmax}$	30	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	87	W
Gate-source voltage	V_{GSS}		0 / 20	V
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F		30	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	210	A
Surge current capability	I^2t	Single Half Sine Wave, $t_p = 8,3\text{ ms}$ $T_j = 25\text{ °C}$	225	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	102	W
Maximum junction temperature	T_{jmax}		175	°C

Flying Capacitor

Maximum DC voltage	V_{MAX}		1000	V
Operation Temperature	T_{op}		0 ... 125	°C

Capacitor (DC)

Maximum DC voltage	V_{MAX}		1500	V
Operation Temperature	T_{op}		0 ... 125	°C



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Maximum Ratings

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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			min. 12,7	mm
Clearance			12,02	mm
Comparative Tracking Index	CTI		≥ 600	



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target datasheet

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	

Boost Switch

Static

Drain-source on-state resistance	$r_{DS(on)}$		18		15	25 150		40 49,1		mΩ
Gate-source threshold voltage	$V_{GS(th)}$		0		0,0015	25	4,1	4,9	5,7	V
Zero Gate Voltage Drain Current	I_{DSS}		0	0	0	25		2	20	μA
Internal gate resistance	r_g								2,5	Ω

Thermal

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

Static

Forward voltage	V_F				30	25 150		1,35 1,6	1,5	V
Reverse leakage current	I_R			1200		25 150		120 480	900	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4 \text{ W/mK}$ (PSX)						0,93		K/W
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Flying Capacitor

Static

Capacitance	C							47		nF
Tolerance								-10	10	%



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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							33		nF
Tolerance							-10		10	%
Dissipation factor		$f = 1$ kHz				25		2,5		%

Thermistor

Static

Rated resistance	R					25		22		k Ω
Deviation of R100	$A_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant						25		1,5		mW/K
B-value	$B_{(25/50)}$					25		3962		K
B-value	$B_{(25/100)}$					25		4000		K
Vincotech Thermistor Reference									I	



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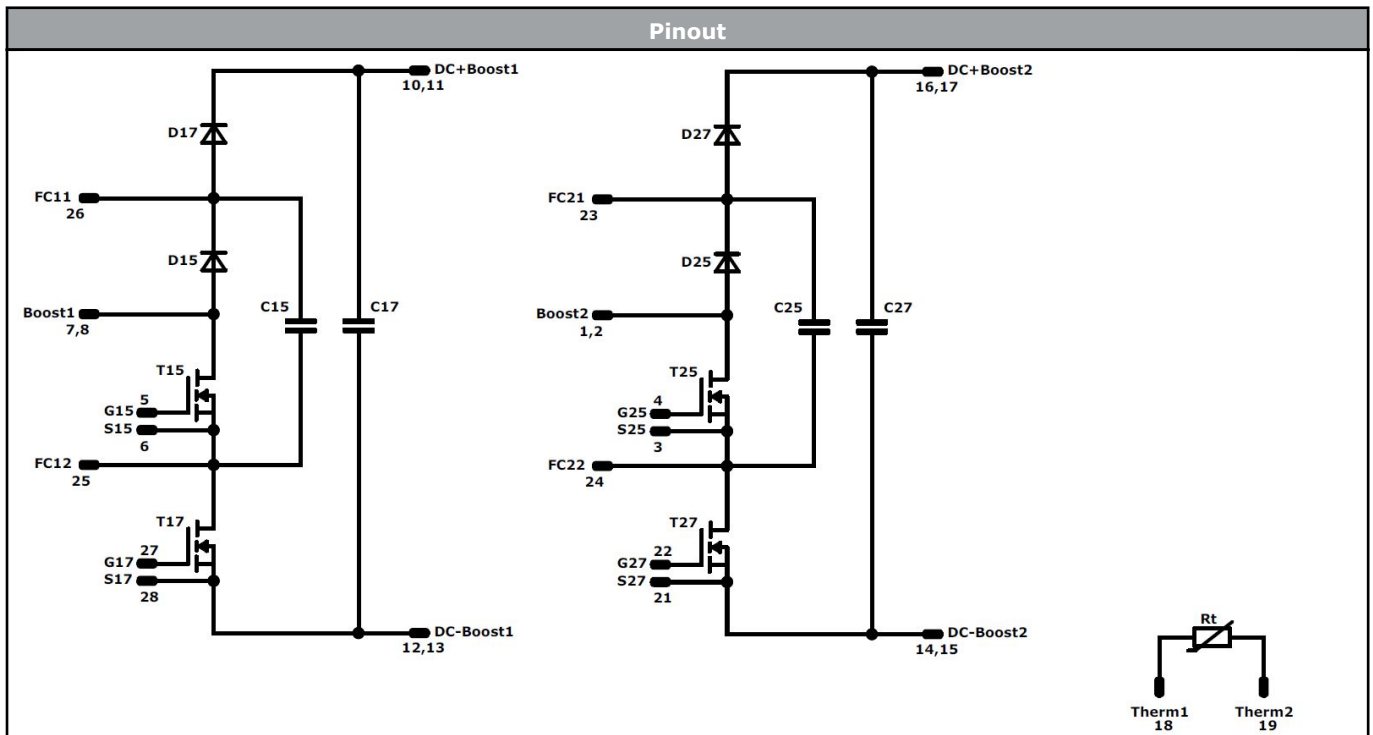
10-PY12B2A040MS-LP25L08Y
target datasheet

Ordering Code & Marking								
Version				Ordering Code				
without thermal paste with 12 mm housing with press-fit pins				10-PY12B2A040MS-LP25L08Y				
with thermal paste with 12 mm housing with press-fit pins				10-PY12B2A040MS-LP25L08Y-/3/				
NN-NNNNNNNNNNNNNN TTTTITTV WWYY UL VIN LLLLL SSSS			Text	Name	Date code	UL & VIN	Lot	Serial
				NN-NNNNNNNNNNNNNN-TTTTITTV	WWYY	UL VIN	LLLLL	SSSS
			Datamatrix	Type&Ver	Lot number	Serial	Date code	
			TTTTITTV	LLLLL	SSSS	WWYY		

Pin table [mm]				Outline	
Pin	X	Y	Function		
1	52,5	2,7	Boost2		
2	52,5	0	Boost2		
3	46	0	S25		
4	43	1,4	G25		
5	9,5	1,4	G15		
6	6,5	0	S15		
7	0	0	Boost1		
8	0	2,7	Boost1		
9	not assembled				
10	8,6	28,5	DC+Boost1		
11	11,3	28,5	DC+Boost1		
12	20,3	28,5	DC-Boost1		
13	23	28,5	DC-Boost1		
14	26	28,5	DC-Boost2		
15	28,7	28,5	DC-Boost2		
16	37,7	28,5	DC+Boost2		
17	40,4	28,5	DC+Boost2		
18	49,5	28,5	Therm1		
19	52,5	28,5	Therm2		
20	not assembled				
21	42,1	8,35	S27		
22	39,1	8,85	G27		
23	38,65	23,4	FC21		
24	32,25	23,4	FC22		
25	16,75	23,4	FC12		
26	10,35	23,4	FC11		
27	13,4	8,85	G17		
28	10,4	8,35	S17		



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Identification					
ID	Component	Voltage	Current	Function	Comment
T15, T17, T25, T27	MOSFET	1200 V	30 A	Boost Switch	
D15, D17, D25, D27	FWD	1200 V	30 A	Boost Diode	
C15, C25	Capacitor	1000 V		Flying Capacitor	
C17, C27	Capacitor	1500 V		Capacitor (DC)	
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 1</i> packages see vincotech.com website.

Package data
Packaging data for <i>flow 1</i> 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-PY12B2A040MS-LP25L08Y-T1-14	25 Nov. 2019	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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