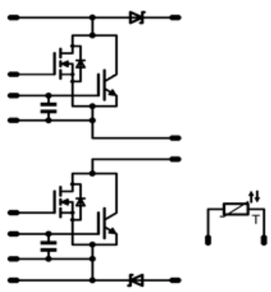
flowBoost0 **600V/110A PS***

Features
- *PS: 2x 110A parallel switch (100A IGBT and 99mΩ MOSFET)
- high speed IGBT with C6 MOSFET and SiC buck diodes
- high efficiency dual booster
- ultra fast switching frequency
- low inductance layout

flow0 12mm housing


Target Applications
- solar inverter
- UPS

Schematic


Types
- 10-FZ06NBA110FP-M306L28

Maximum Ratings

Tj=25°C, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
Input Boost IGBT					
Collector-emitter break down voltage	V_{CE}			600	V
DC collector current	I_C	$T_j=T_jmax$	$T_h=80°C$ $T_c=80°C$	72 96	A
Repetitive peak collector current	I_{Cpulse}	t_p limited by T_jmax		400	A
Power dissipation per IGBT	P_{tot}	$T_j=T_jmax$	$T_h=80°C$ $T_c=80°C$	131 199	W
Gate-emitter peak voltage	V_{GE}			±20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j≤125°C$ $V_{GE}=15V$		5 400	μs V
Maximum Junction Temperature	T_jmax			175	°C
Input Boost FWD					
Peak Repetitive Reverse Voltage	V_{RRM}	$T_j=25°C$		600	V
DC forward current	I_F	$T_j=T_jmax$	$T_h=80°C$ $T_c=80°C$	49 63	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_jmax		210	A
Power dissipation per Diode	P_{tot}	$T_j=T_jmax$	$T_h=80°C$ $T_c=80°C$	88 133	W
Maximum Junction Temperature	T_jmax			175	°C

Maximum Ratings

Tj=25°C, unless otherwise specified

Parameter	Symbol	Condition		Value	Unit
Input Boost MOSFET					
Drain to source breakdown voltage	V_{DS}			600	V
DC drain current	I_D	$T_j=T_j$max	T_h=80°C T_c=80°C	17 19	A
Pulsed drain current	I_{Dpulse}	t_p limited by $T_j$max	T_c=25°C	112	A
Power dissipation	P_{tot}	$T_j=T_j$max	T_h=80°C T_c=80°C	67 101	W
Gate-source peak voltage	Vgs			±20	V
Maximum Junction Temperature	$T_j$max			150	°C
Thermal Properties					
Storage temperature	T_{stg}			-40…+125	°C
Operation temperature under switching condition	T_{op}			-40…+(Tjmax - 25)	°C
Insulation Properties					
Insulation voltage	V_{is}	t=2s	DC voltage	4000	V
Creepage distance				min 12,7	mm
Clearance				min 12,7	mm

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V] or V_{GS} [V]	V_r [V] or V_{CE} [V] or V_{DS} [V]	I_C [A] or I_F [A] or I_D [A]	T_j	Min	Typ	Max	
Input Boost IGBT *										
Gate emitter threshold voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0.0008	Tj=25°C Tj=150°C	4.1	5.1	5.7	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		100	Tj=25°C Tj=150°C		1.85	2.3	V
Collector-emitter cut-off current incl. Diode	I_{CES}		0	600		Tj=25°C Tj=150°C			40	uA
Gate-emitter leakage current	I_{GES}		±20	0		Tj=25°C Tj=150°C			100	nA
Integrated Gate resistor	R_{gint}							tbd.		Ω
Input capacitance	C_{ies}							5920		pF
Output capacitance	C_{oss}	f=1MHz	0	25		Tj=25°C		232		pF
Reverse transfer capacitance	C_{rss}							192		
Gate charge	Q_{Gate}		15	480	100	Tj=25°C		630		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						0.72		K/W

* see dynamic characteristic at **MosFET**

Parameter	Symbol	Conditions	V_{GE} [V] or V_{GS} [V]	V_r [V] or V_{CE} [V] or V_{DS} [V]	I_C [A] or I_F [A] or I_D [A]	T_j	Min	Typ	Max	Unit
Input Boost FWD										
Diode forward voltage	V_F				48	Tj=25°C Tj=125°C		1.55 1.69	1.75	V
Peak reverse recovery current	I_{RRM}					Tj=25°C Tj=125°C		tbd.		A
Reverse recovery time	t_{rr}					Tj=25°C Tj=125°C		tbd.		ns
Reverse recovered charge	Q_{rr}	Rgon=4 Ω **	15	350	77	Tj=25°C Tj=125°C		tbd.		μC
Peak rate of fall of recovery current	di(rec)max /dt					Tj=25°C Tj=125°C		tbd.		A/μs
Reverse recovered energy	Erec					Tj=25°C Tj=125°C		tbd.		mWs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						1.10		K/W
Input Boost MOSFET										
Static drain to source ON resistance	$R_{ds(on)}$		10		18.1	Tj=25°C Tj=150°C		90 230	99	mΩ
Gate threshold voltage	$V_{(GS)th}$		$V_{DS}=V_{GS}$		0.00121	Tj=25°C Tj=125°C	2.5	3	3.5	V
Gate to Source Leakage Current	I_{gss}		20	0		Tj=25°C Tj=125°C			100	nA
Zero Gate Voltage Drain Current	I_{dss}		0	600		Tj=25°C Tj=125°C			5	uA
Turn On Delay Time	$t_{d(ON)}$					Tj=25°C Tj=125°C		tbd.		
Rise Time	t_r					Tj=25°C Tj=125°C		tbd.		ns
Turn off delay time	$t_{d(OFF)}$	Rgon=1,7 Ω ** Rgoff=1,7 Ω **	±13	350	77	Tj=25°C Tj=125°C		tbd.		
Fall time	t_f					Tj=25°C Tj=125°C		tbd.		
Turn-on energy loss per pulse	E_{on}					Tj=25°C Tj=125°C		tbd.		mWs
Turn-off energy loss per pulse	E_{off}					Tj=25°C Tj=125°C		tbd.		
Total gate charge	Q_g							119		
Gate to source charge	Q_{gs}		10	480	18.1	Tj=25°C		14		nC
Gate to drain charge	Q_{gd}							61		
Input capacitance	C_{iss}	f=1MHz	0	100		Tj=25°C		2660		pF
Output capacitance	C_{oss}							154		
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um λ = 1 W/mK						1.05		K/W

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V] or V_{GS} [V]	V_r [V] or V_{CE} [V] or V_{DS} [V]	I_C [A] or I_F [A] or I_D [A]	T_j	Min	Typ	Max	
IGBT gate capacitor										
C value	C							4.7		nF
Thermistor										
Rated resistance*	R_{25}	Tol. ±13%				Tj=25°C		22000		Ω
	R_{100}	Tol. ±5%				Tj=100°C		1486		Ω
Deviation of R100	$D_{R/R}$	R100=1503Ω				Tc=100°C	+5		-5	%/K
Power dissipation	P					Tj=25°C		200		mW
B-value	$B_{(25/100)}$	Tol. ±3%				Tj=25°C		3950		K

Ordering Code and Marking - Outline - Pinout

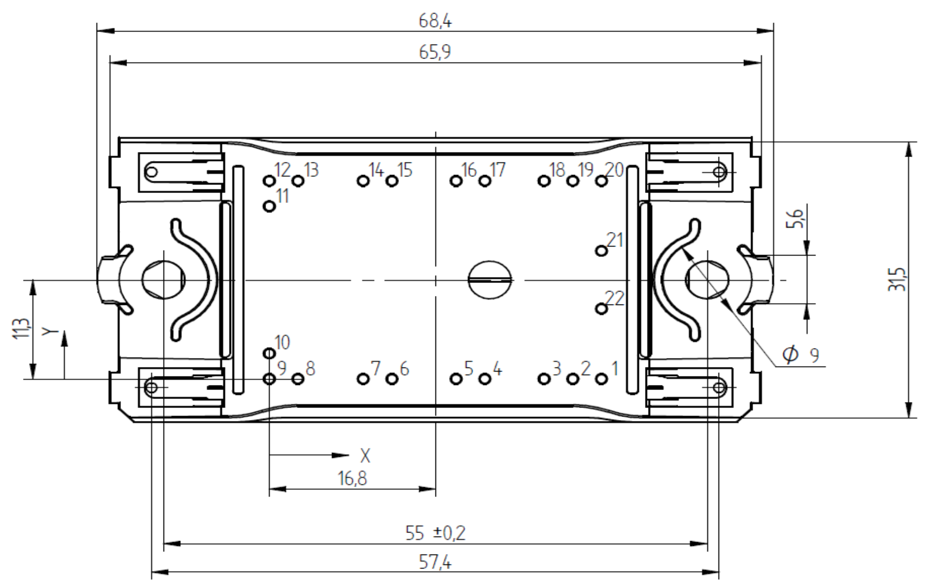
Ordering Code & Marking

Version	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-FZ06NBA110FP-M306L28	M306L28	M306L28

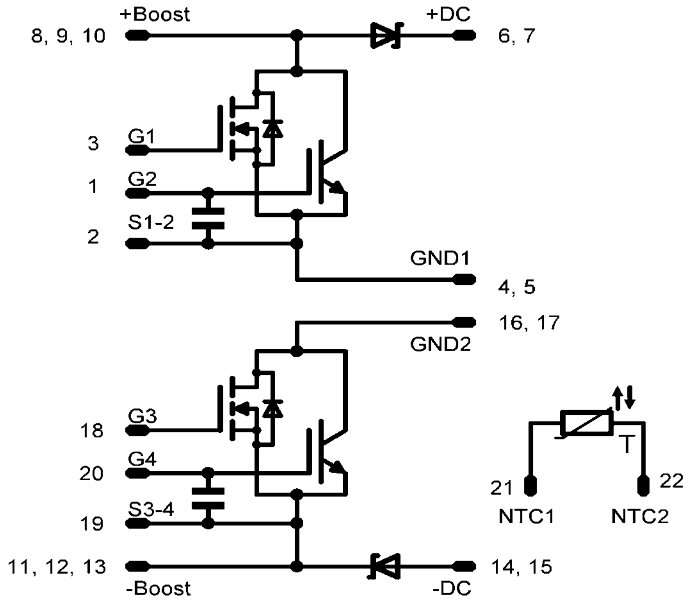
Outline

Pin table

Pin	X	Y
1	33,6	0
2	30,7	0
3	27,8	0
4	21,8	0
5	18,9	0
6	12,4	0
7	9,5	0
8	2,9	0
9	0	0
10	0	2,9
11	0	19,7
12	0	22,6
13	2,9	22,6
14	9,5	22,6
15	12,4	22,6
16	18,9	22,6
17	21,8	22,6
18	27,8	22,6
19	30,7	22,6
20	33,6	22,6
21	33,6	14,6
22	33,6	8



Pinout



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Datasheet Status	Product Status	Definition
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