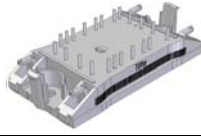
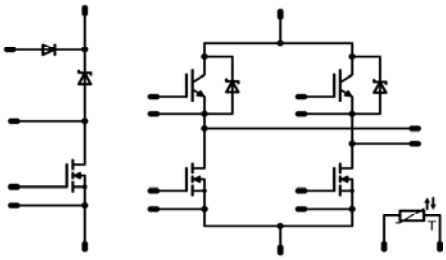


flowSOL 0 BI	600V/18A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #000080; color: white; margin: 0;">Features</p> <ul style="list-style-type: none"> High efficiency Ultra fast switching frequency Low inductive design SiC in boost and H bridge </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #000080; color: white; margin: 0;">Target Applications</p> <ul style="list-style-type: none"> Transformerless solar inverters </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #000080; color: white; margin: 0;">Types</p> <ul style="list-style-type: none"> FZ06BIA099FS </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #000080; color: white; margin: 0;">flow0 housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #000080; color: white; margin: 0;">Schematic</p>  </div>

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Bypass Diode				
Repetitive peak reverse voltage	V_{RRM}		1600	V
Forward current per diode	I_{FAV}	DC current	$T_h=80^\circ\text{C}$ 28 $T_c=80^\circ\text{C}$ 38	A
Surge forward current	I_{FSM}	$t_p=10\text{ms}$	$T_j=25^\circ\text{C}$ 220	A
I2t-value	I^2t		220	A^2s
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$	$T_h=80^\circ\text{C}$ 33 $T_c=80^\circ\text{C}$ 50	W
Maximum Junction Temperature	T_{jmax}		150	$^\circ\text{C}$
Input Boost MOSFET				
Drain to source breakdown voltage	V_{DS}		600	V
DC drain current	I_D	$T_j=T_{jmax}$	$T_h=80^\circ\text{C}$ 16 $T_c=80^\circ\text{C}$ 22	A
Pulsed drain current	I_{Dpulse}	t_p limited by T_{jmax}	112	A
Power dissipation	P_{tot}	$T_j=T_{jmax}$	$T_h=80^\circ\text{C}$ 54 $T_c=80^\circ\text{C}$ 96	W
Gate-source peak voltage	V_{GS}		± 20	V
Maximum Junction Temperature	T_{jmax}		150	$^\circ\text{C}$

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit	
Input Boost Diode					
Peak Repetitive Reverse Voltage	V_{RRM}	$T_j=25^{\circ}\text{C}$	600	V	
DC forward current	I_F	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	12	A
			$T_c=80^{\circ}\text{C}$	17	
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	$T_c=110^{\circ}\text{C}$	34	A
Power dissipation	P_{tot}	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	23	W
			$T_c=80^{\circ}\text{C}$	41	
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$	

Buck Diode

Peak Repetitive Reverse Voltage	V_{RRM}	$T_j=25^{\circ}\text{C}$	600	V	
DC forward current	I_F	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	8	A
			$T_c=80^{\circ}\text{C}$	11	
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	$T_c=110^{\circ}\text{C}$	17	A
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	17	W
			$T_c=80^{\circ}\text{C}$	31	
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$	

Buck MOSFET

Drain to source breakdown voltage	V_{DS}		600	V	
DC drain current	I_D	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	16	A
			$T_c=80^{\circ}\text{C}$	22	
Pulsed drain current	I_{Dpulse}	t_p limited by T_{jmax}	$T_c=25^{\circ}\text{C}$	112	A
Power dissipation	P_{tot}	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	54	W
			$T_c=80^{\circ}\text{C}$	96	
Gate-source peak voltage	V_{GS}		± 20	V	
Maximum Junction Temperature	T_{jmax}		150	$^{\circ}\text{C}$	

Boost IGBT

Collector-emitter break down voltage	V_{CE}		600	V	
DC collector current	I_C	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	22	A
			$T_c=80^{\circ}\text{C}$	27	
Repetitive peak collector current	I_{Cpuls}	t_p limited by T_{jmax}		60	A
Power dissipation per IGBT	P_{tot}	$T_j=T_{jmax}$	$T_h=80^{\circ}\text{C}$	50	W
			$T_c=80^{\circ}\text{C}$	75	
Gate-emitter peak voltage	V_{GE}		± 20	V	
Short circuit ratings	t_{SC}	$T_j \leq 150^{\circ}\text{C}$	6	μs	
	V_{CC}	$V_{GE}=15\text{V}$	360	V	
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$	

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
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Thermal Properties

Storage temperature	T_{stg}		-40...+125	$^{\circ}\text{C}$
Operation temperature under switching condition	T_{op}		-40...+($T_{j\text{max}}$ - 25)	$^{\circ}\text{C}$

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		
Bypass Diode										
Forward voltage	solar inverte				10	$T_j=25^\circ C$ $T_j=125^\circ C$	0,7	1,06 0,99	1,3	V
Threshold voltage (for power loss calc. only)	V_{th}					$T_j=25^\circ C$ $T_j=125^\circ C$		0,90 0,75		V
Slope resistance (for power loss calc. only)	r_t					$T_j=25^\circ C$ $T_j=125^\circ C$		0,01 0,02		Ω
Reverse current	I_r			1200		$T_j=25^\circ C$ $T_j=125^\circ C$			0,05	mA
Thermal resistance chip to heatsink per chip	Z06BIA099	Thermal grease thickness \leq 50um $\lambda = 1$ W/mK						2,12		K/W

Input Boost MOSFET

Static drain to source ON resistance	$R_{DS(on)}$		10		18	$T_j=25^\circ C$ $T_j=125^\circ C$		0,09 0,2		Ω	
Gate threshold voltage	$V_{(GS)th}$	VGS=VDS			0,0012	$T_j=25^\circ C$ $T_j=125^\circ C$	2,5	3	3,5	V	
Gate to Source Leakage Current	I_{gss}		20	0		$T_j=25^\circ C$ $T_j=125^\circ C$			200	nA	
Zero Gate Voltage Drain Current	I_{dss}		0	600		$T_j=25^\circ C$ $T_j=125^\circ C$			25000	nA	
Turn On Delay Time	$t_{d(ON)}$	Rgoff=1,7 Ω Rgon=1,7 Ω	13	400	18	$T_j=25^\circ C$ $T_j=125^\circ C$		15		ns	
Rise Time	t_r					$T_j=25^\circ C$ $T_j=125^\circ C$		12			
Turn off delay time	$t_{d(OFF)}$					$T_j=25^\circ C$ $T_j=125^\circ C$		75			
Fall time	t_f					$T_j=25^\circ C$ $T_j=125^\circ C$		6			
Turn-on energy loss per pulse	E_{on}					$T_j=25^\circ C$ $T_j=125^\circ C$		tbd		mWs	
Turn-off energy loss per pulse	E_{off}					$T_j=25^\circ C$ $T_j=125^\circ C$		tbd			
Total gate charge	Q_g	Rgon=1,7 Ω	10	480	18	$T_j=25^\circ C$ $T_j=125^\circ C$		119		nC	
Gate to source charge	Q_{gs}					$T_j=25^\circ C$ $T_j=125^\circ C$		14			
Gate to drain charge	Q_{gd}					$T_j=25^\circ C$ $T_j=125^\circ C$		61			
Input capacitance	C_{iss}	f=1MHz	0	100		$T_j=25^\circ C$		2660		pF	
Output capacitance	C_{oss}								154		
Reverse transfer capacitance	C_{rss}								100		
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness \leq 50um $\lambda = 1$ W/mK						1,3		K/W	

Input Boost Diode

Forward voltage	V_F				8	$T_j=25^\circ C$ $T_j=150^\circ C$		1,6 1,9		V
Reverse leakage current	I_{rm}		10	480	8	$T_j=25^\circ C$ $T_j=150^\circ C$			400	μA
Peak recovery current	I_{RRM}	Rgon=1,7 Ω	10	480	8	$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		A
Reverse recovery time	t_{rr}					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		ns
Reverse recovery charge	Q_{rr}					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		μC
Reverse recovered energy	E_{rec}					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		mWs
Peak rate of fall of recovery current	$di(rec)max/dt$					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		A/ μs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness \leq 50um $\lambda = 1$ W/mK						3,00		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			
Buck Diode											
Diode forward voltage	V_F				4	$T_j=25^\circ C$ $T_j=150^\circ C$		1,60 1,90		V	
Peak reverse recovery current	I_{RRM}	Rgon=1,7 Ω	10	480	4	$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		A	
Reverse recovery time	t_{rr}					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		ns	
Reverse recovered charge	Q_{rr}					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		μC	
Peak rate of fall of recovery current	$di(rec)max/dt$					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		A/ μs	
Reverse recovered energy	Erec					$T_j=25^\circ C$ $T_j=150^\circ C$		tbd		mWs	
Thermal resistance chip to heatsink per chip	R_{thJH}					Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$					4
Buck MOSFET											
Static drain to source ON resistance	$R_{ds(on)}$		10		18	$T_j=25^\circ C$ $T_j=125^\circ C$		90 200		m Ω	
Gate threshold voltage	$V_{(GS)th}$			$V_{DS}=V_{GS}$	0,0012	$T_j=25^\circ C$ $T_j=125^\circ C$	2,5	3	3,5	V	
Gate to Source Leakage Current	I_{gss}		20	0		$T_j=25^\circ C$ $T_j=125^\circ C$			200	nA	
Zero Gate Voltage Drain Current	I_{dss}		0	600		$T_j=25^\circ C$ $T_j=125^\circ C$			25000	nA	
Turn On Delay Time	$t_{d(ON)}$	Rgoff=1,7 Ω Rgon=1,7 Ω	13	400	18	$T_j=25^\circ C$ $T_j=125^\circ C$		15		ns	
Rise Time	t_r					$T_j=25^\circ C$ $T_j=125^\circ C$		12			
Turn off delay time	$t_{d(OFF)}$					$T_j=25^\circ C$ $T_j=125^\circ C$		75			
Fall time	t_f					$T_j=25^\circ C$ $T_j=125^\circ C$		6			
Turn-on energy loss per pulse	E_{on}					$T_j=25^\circ C$ $T_j=125^\circ C$		tbd			mWs
Turn-off energy loss per pulse	E_{off}					$T_j=25^\circ C$ $T_j=125^\circ C$		tbd			
Total gate charge	Q_g							119		nC	
Gate to source charge	Q_{gs}		10	480	18	$T_j=25^\circ C$		14			
Gate to drain charge	Q_{gd}							61			
Input capacitance	C_{iss}							2660			
Output capacitance	C_{oss}	f=1MHz	0	100		$T_j=25^\circ C$		154		pF	
Reverse transfer capacitance	C_{rss}							100			
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$						1,30		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		

Boost IGBT

Gate emitter threshold voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0,0029	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$	5	5,8	6,5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		7	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		1,20 1,25		V
Collector-emitter cut-off incl diode	I_{CES}		0	600		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			0,14	mA
Gate-emitter leakage current	I_{GES}		20	0		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			350	nA
Integrated Gate resistor	R_{gint}							none		Ω
Input capacitance	C_{ies}	f=1MHz	0	25		$T_j=25^{\circ}C$		1100		pF
Output capacitance	C_{oss}							71		
Reverse transfer capacitance	C_{rss}							32		
Gate charge	Q_{Gate}		15	480	20	$T_j=25^{\circ}C$		120		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness \leq 50um $\lambda = 1$ W/mK						1,92		K/W

 Note: For the **Boost IGBT** only LF switching allowed

Thermistor

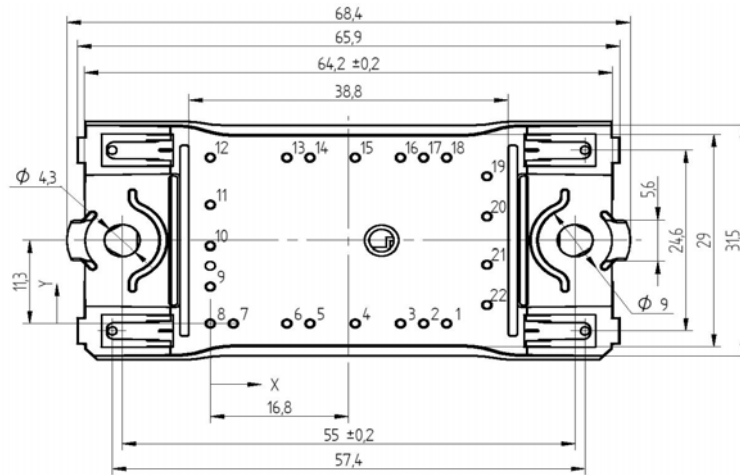
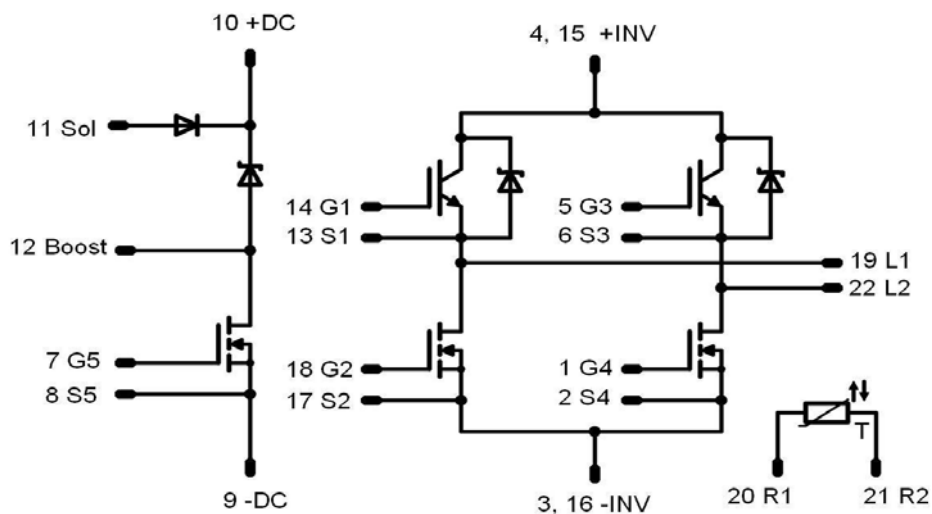
Rated resistance*	R_{25}	Tol. $\pm 5\%$				$T_j=25^{\circ}C$	20,9	22	23,1	k Ω
	R_{100}					$T_j=100^{\circ}C$		1486		Ω
Power dissipation	P					$T_j=25^{\circ}C$		200		mW
B-value	$B_{(25/100)}$	Tol. $\pm 3\%$				$T_j=25^{\circ}C$		3998		K

Ordering Code and Marking - Outline - Pinout
Ordering Code & Marking

	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-FZ06BIA099FS-P893E	P893E	P893E

Outline

Pin table		
Pin	X	Y
1	28,7	0
2	25,9	0
3	23,1	0
4	17,6	0
5	12,1	0
6	9,3	0
7	2,8	0
8	0	0
9	0	5,05
10	0	10,55
11	0	16,15
12	0	22,6
13	9,3	22,6
14	12,1	22,6
15	17,6	22,6
16	23,1	22,6
17	25,9	22,6
18	28,7	22,6
19	33,6	20,05
20	33,6	14,55
21	33,6	8,05
22	33,6	2,55


Pinout


PRODUCT STATUS DEFINITIONS

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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[APT50M50JLL](#) [APT50M75JLLU3](#) [APT50N60JCCU2](#) [APT58M80J](#) [APT80F60J](#) [DZ540N26K](#) [B522F-2-YEC](#) [MSTC90-16](#)
[MT16HTF12864AZ-800G1](#) [MT18HTF12872PZ-667G1](#) [MT18HTF25672FDZ-667H1D6](#) [MT18HTF25672PZ-80EH1](#) [MT18RTF25672FDZ-](#)
[667H1D6](#) [MT36HTF51272FZ-667H1D4](#) [MT36HTF51272FZ-667H1D6](#) [MT8HTF12864HTZ-667H1](#) [MT9HTF6472PZ-667G1](#)
[MT9HVF12872PZ-80EH1](#) [MT9HVF6472PZ-667G1](#) [ND104N16K](#) [25.163.0653.1](#) [25.163.2453.0](#) [25.163.4253.0](#) [25.190.2053.0](#) [25.194.3453.0](#)
[25.320.4853.1](#) [25.320.5253.1](#) [25.325.3653.1](#) [25.326.3253.1](#) [25.326.3553.1](#) [25.330.1653.1](#) [25.330.4753.1](#) [25.330.5253.1](#) [25.334.3253.1](#)