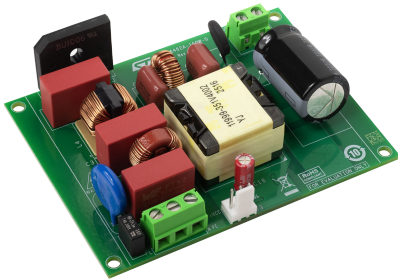


150 W transition mode PFC based on L6462A (with GaN)

Features



- Input voltage range: 90 to 265 Vac, 47 to 63 Hz
- Regulated output voltage: 400 Vdc
- Rated output power: 150 W
- Total Harmonic Distortion (THD): < 5% at full load and < 15% down to 20% load
- Peak efficiency: 98%
- Mains harmonics: meets IEC61000-3-2
- EMI: according to EN55022 Class-B
- No heatsink required

Applications

- PFC preregulator for:
 - AC-DC adapters and other EN-61000-3-2 compliant applications
 - LED-based lamps and luminaries

Description

The **EVL6462A-150W-G** evaluation board implements a gallium nitride (GaN) 150 W Power Factor Correction (PFC) Preregulator. The PFC is designed with L6462A, which is a Transition Mode (TM) current mode 6-pin boost PFC controller. It is suitable for all SMPS up to 150 W and it is compliant with IEC61000-3-2 standard.

The use of GaN technology leads to lower switching losses and high-power density, increasing overall efficiency, the compactness, and scalability of the application.

Product status link	
150W TM PFC reference design	EVL6462A-150W-G
Current mode 6-pin boost PFC controller	L6462A

1 Specifications

Table 1. EVL6462A-150W-G - specifications

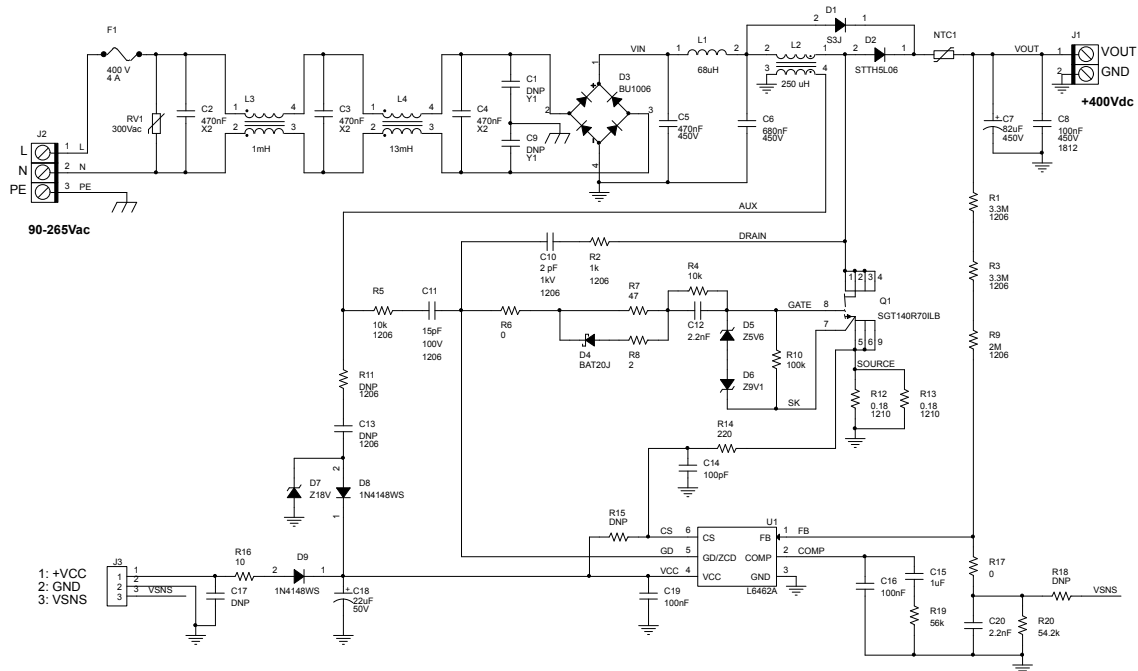
Parameter	Value
AC input voltage	90 to 265 Vac
Minimum line frequency	47 Hz
DC output voltage	400 V
Rated output current	0.375 A
Rated output power	150 W
Hold-up time	10 ms (V_{DROP} after hold-up time: 350 V)
Minimum switching frequency	62 kHz
Efficiency	98.00% at 230 Vac, full load 96.2% at 115 Vac, full load
Board size	88.9 x 66.8 (WxH) mm, active area 76.7 x 66.8 (WxH) mm Maximum component height: 20 mm

Table 2. EVL6462A-150W-G - connectors

Reference	Type	Description
J1	PCB terminal	DC regulated output voltage
J2	PCB terminal	AC input voltage
J3	PCB terminal	VCC supply and output for external 1.2 V VSNS signal

2 Schematics diagrams

Figure 1. EVL6462A-150W-G - schematic



3 Bill of material

Table 3. EVL6462A-150W-G - bill of material

Item	Q.ty	Ref	Description	Value	Manufacturer	Part number
1	3	C2, C3, C4	CAP, film, 470 nF, $\pm 10\%$, 275 Vac, TH	470nF	Würth Elektronik	890324025039CS
2	1	C5	CAP, film, 470 nF, $\pm 10\%$, 450 Vdc, TH	470nF	Panasonic	ECWFD2W474Q1
3	1	C6	CAP, film, 680 nF, $\pm 5\%$, 450 Vdc, TH	680nF	Panasonic	ECWFD2W684P1
4	1	C7	CAP, AL 82 μ F, $\pm 20\%$, 450 Vdc, TH	82 μ F	Rubycon	450HXW82MEFR16X25
5	1	C8	CAP, CER, 100 nF, 450 V, $\pm 10\%$, X7R, 1812	100nF	Std	Std
6	1	C10	CAP, CER, 2 pF, 1 kV, $\pm 5\%$, C0G/NP0, 1206	2 pF	Std	Std
7	1	C11	CAP, CER, 15 pF, 50 V, $\pm 10\%$, X7R, 1206	15pF	Std	Std
8	1	C12	CAP, CER, 2.2 nF, 50 V, $\pm 10\%$, X7R, 0805	2.2nF	Std	Std
9	1	C14	CAP, CER, 100 pF, 50 V, $\pm 10\%$, X7R, 0805	100pF	Std	Std
10	1	C15	CAP, CER, 1 μ F, 50 V, $\pm 10\%$, X7R, 0805	1 μ F	Std	Std
11	2	C16, C19	CAP, CER, 100 nF, 50 V, $\pm 10\%$, X7R, 0805	100nF	Std	Std
12	1	C18	CAP, AL, 22 μ F, $\pm 20\%$, 50 Vdc, TH	22 μ F	Würth Elektronik	860040672001
13	1	C20	CAP, CER, 2.2 nF, 50 V, $\pm 10\%$, X7R, 0805	2.2nF	Std	Std
14	1	D1	Diode, rectifier, 600 V, 3 A, SMC	S3J	onsemi	S3J or equivalent
15	1	D2	Diode, ultrafast, 600 V, 5 A, TH	STTH5L06	STMicroelectronics	STTH5L06
16	1	D3	Diode, P-N-Bridge, 600 V, 3.2 A, TH	BU1006	Vishay General semiconductor	BU1006-E3/45 or equivalent
17	1	D4	Diode, Schottky, 23 V, 1 A, SOD323	BAT20J	STMicroelectronics	BAT20JFILM or equivalent
18	1	D5	Diode, zener, 5.6 V 500 mW, SOD523	Z5V6	onsemi	SZMM5Z5V6T5G
19	1	D6	Diode, zener, 9.1 V, 500 mW, SOD523	Z9V1	onsemi	SZMM5Z9V1T5G
20	1	D7	Diode, zener, 18 V, 300 mW, SOD523	Z18V	Diodes Incorporated	BZT52C18T-7 or equivalent
21	2	D8, D9	Diode, switching, 75 V, 150 mA, SOD323	1N4148WS	Vishay General semiconductor	1N4148WS-E3-08 or equivalent
22	1	F1	Fuse, 4 A, 300 Vac, TH	36914000000	Littelfuse	36914000000 or equivalent
23	1	J1	Terminal block, 5.08 mm, 2x1, TH		Würth Elektronik	691213510002 or equivalent
24	1	J2	Terminal block, 5.08 mm, 3x1, TH		Würth Elektronik	691213510003 or equivalent

Item	Q.ty	Ref	Description	Value	Manufacturer	Part number
25	1	J3	Header, KK254, 2.54 mm, 3x1, TH		molex	22-27-2031 or equivalent
26	1	L1	Inductor, 68 uH, 0.055 Ω , 2.8 A, TH	68uH	Würth Elektronik	7447033
27	1	L2	PFC choke, QE23-17.5V	250 uH	Yu Jing Technology	11999-351V400210
28	1	L3	CMC, 1 mH, 2 A, TH	1mH	Würth Elektronik	744821201
29	1	L4	CMC, 13 mH, 2 A, TH	13mH	KEMET	SCF-02-130JV
30	1	NTC1	Thermistor NTC, 2.2 Ω , 20%, 11.5 mm disc	NTC-B57236S0	TDK	B57236S0229M000 or equivalent
31	1	Q1	eGaN, 700 V, 0.14 Ω , PowerFLAT 8x8	SGT140R70ILB	STMicroelectronics	SGT140R70ILB
32	1	RV1	Varistor, 470 V, 4.5 kA, TH	B72214S0301K101	TDK	B72214S0301K101 or equivalent
33	2	R1, R3	RES, SMD, 3.3 M, 1%, 0.25 W, 1206	3.3M	Std	Std
34	1	R2	RES, SMD, 1 k, 1%, 0.25 W, 1206	1k	Std	Std
35	1	R4	RES, SMD, 10 k, 1%, 0.125 W, 0805	10k	Std	Std
36	1	R5	RES, SMD, 10 k, 1%, 0.25 W, 1206	10k	Std	Std
37	2	R6, R17	RES, SMD, 0, 1%, 0.125 W, 0805	0	Std	Std
38	1	R7	RES, SMD, 47, 1%, 0.125 W, 0805	47	Std	Std
39	1	R8	RES, SMD, 2, 1%, 0.125 W, 0805	2	Std	Std
40	1	R9	RES, SMD, 2 M, 1%, 0.25 W, 1206	2M	Std	Std
41	1	R10	RES, SMD, 100 k, 1%, 0.125 W, 0805	100k	Std	Std
42	2	R12, R13	RES, SMD, 0.18, 1%, 0.5 W, 1210	0.18	Std	Std
43	1	R14	RES, SMD, 220, 1%, 0.125 W, 0805	220	Std	Std
44	1	R16	RES, SMD, 10, 1%, 0.125 W, 0805	10	Std	Std
45	1	R19	RES, SMD, 56 k, 1%, 0.125 W, 0805	56k	Std	Std
46	1	R20	RES, SMD, 54.2 k, 0.1%, 0.125 W, 0805	54.2k	Std	Std
47	1	U1	Current mode 6-pin boost PFC controller, SOT23	L6462A	STMicroelectronics	L6462A
48	1	PCB1	P.C.B. EVL6462A-150W-G			

Figure 4. EVL6462A-150W-G – Top layer (top view)

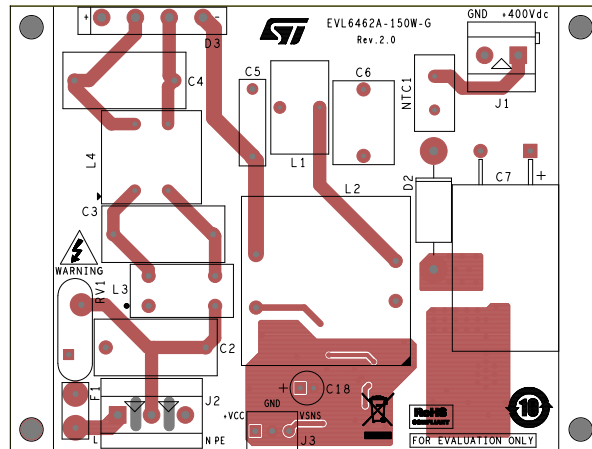
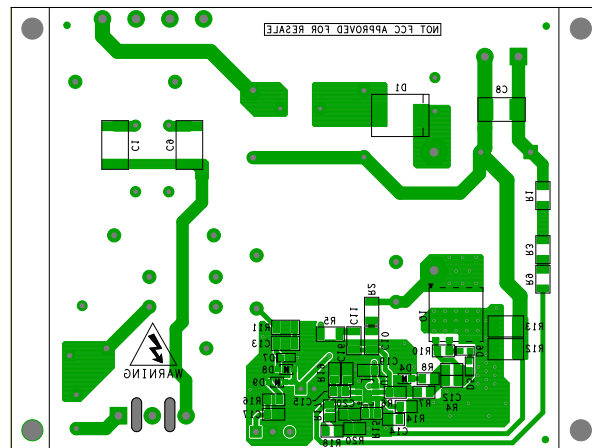


Figure 5. EVL6462A-150W-G – Bottom layer (bottom view)



5 Waste and recycling

The evaluation board is not to be disposed as an urban waste. At the end of its life cycle, differentiated waste collection must be followed. Consult the local authorities for more information on the proper disposal channels and recycling centers. It is mandatory to collect separately the evaluation board and make sure it is delivered to the appropriate waste management and recycling centers. As of 15 August 2018, in all the countries belonging to the European Union, the evaluation board is subject to the requirements of WEEE directive 2012/19/EU, and therefore it is forbidden to dispose the evaluation board as undifferentiated waste or with other domestic waste. Incorrect disposal of the evaluation board may damage the environment and may incur fines based on specific countries' rules, regulations, and laws.

Revision history

Table 4. Document revision history

Date	Version	Changes
03-Jul-2026	1	Initial release.

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