

250 W transition mode PFC based on L6462A (with MOSFET)



Product status link

[EVL6462A-250W-M](#)

Features

- Universal input voltage range: 90 to 264 Vac with 47 Hz to 63 Hz frequency
- Regulated output voltage: 400 Vdc
- Maximum output power: 250 W
- Total Harmonic Distortion (THD): < 5% at full load and < 15% down to 20% load
- Peak efficiency: 97.4%
- Mains harmonics: meets EN61000-3-2 Class-D and JEITA-MITI Class-D
- EMI: according to EN55022 Class-B

Application

- PFC pre-regulators for:
 - AC-DC adapters and other EN61000-3-2 or JEITA-MITI compliant applications
 - LED-based lamps and luminaires

Description

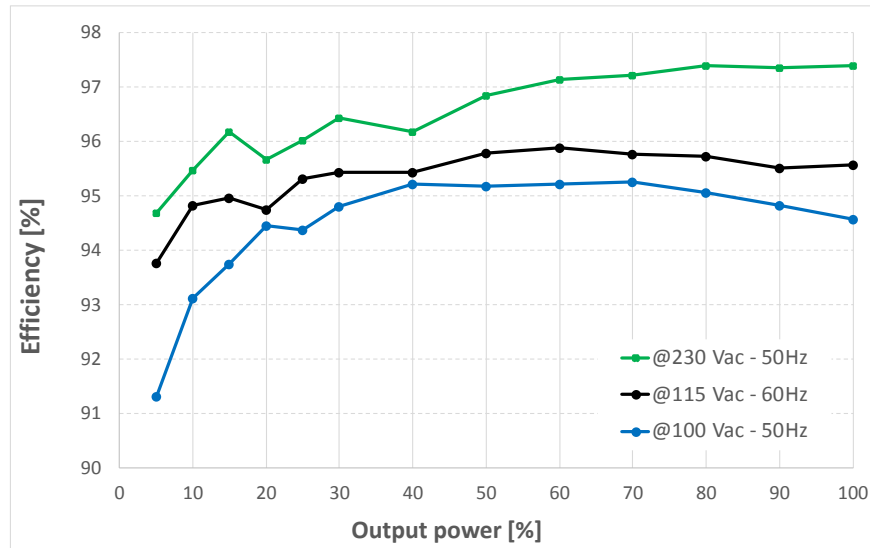
The [EVL6462A-250W-M](#) demonstration board, based on the new L6462A transition mode power factor controller, implements a 250 W wide-range input PFC pre-regulator.

Thanks to the L6462A small package (SOT23-6L) and to its embedded IPs, this design offers a minimal component count, a simple and easy design, high efficiency, and very low input current distortion (THD) under all operating conditions.

1 PFC converter's performance

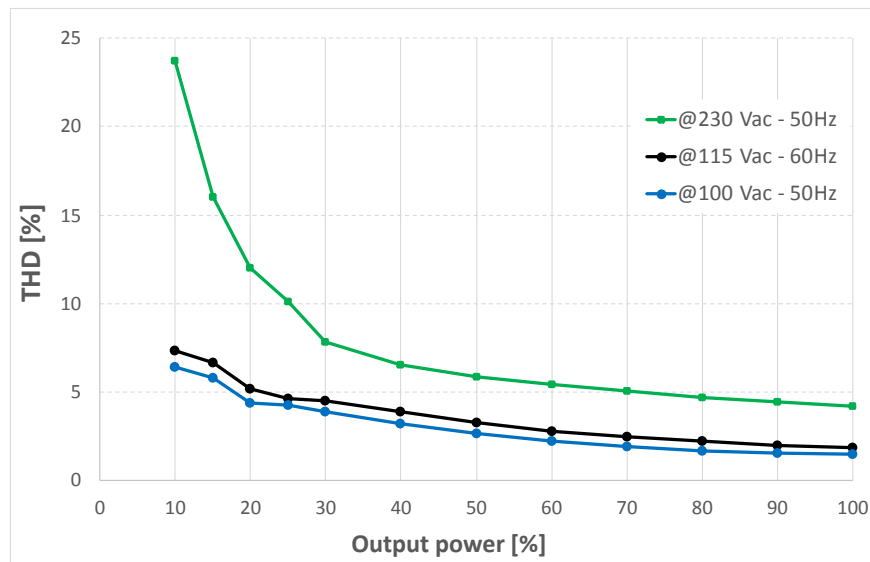
1.1 Efficiency

Figure 1. EVL6462A-250W-M efficiency versus load



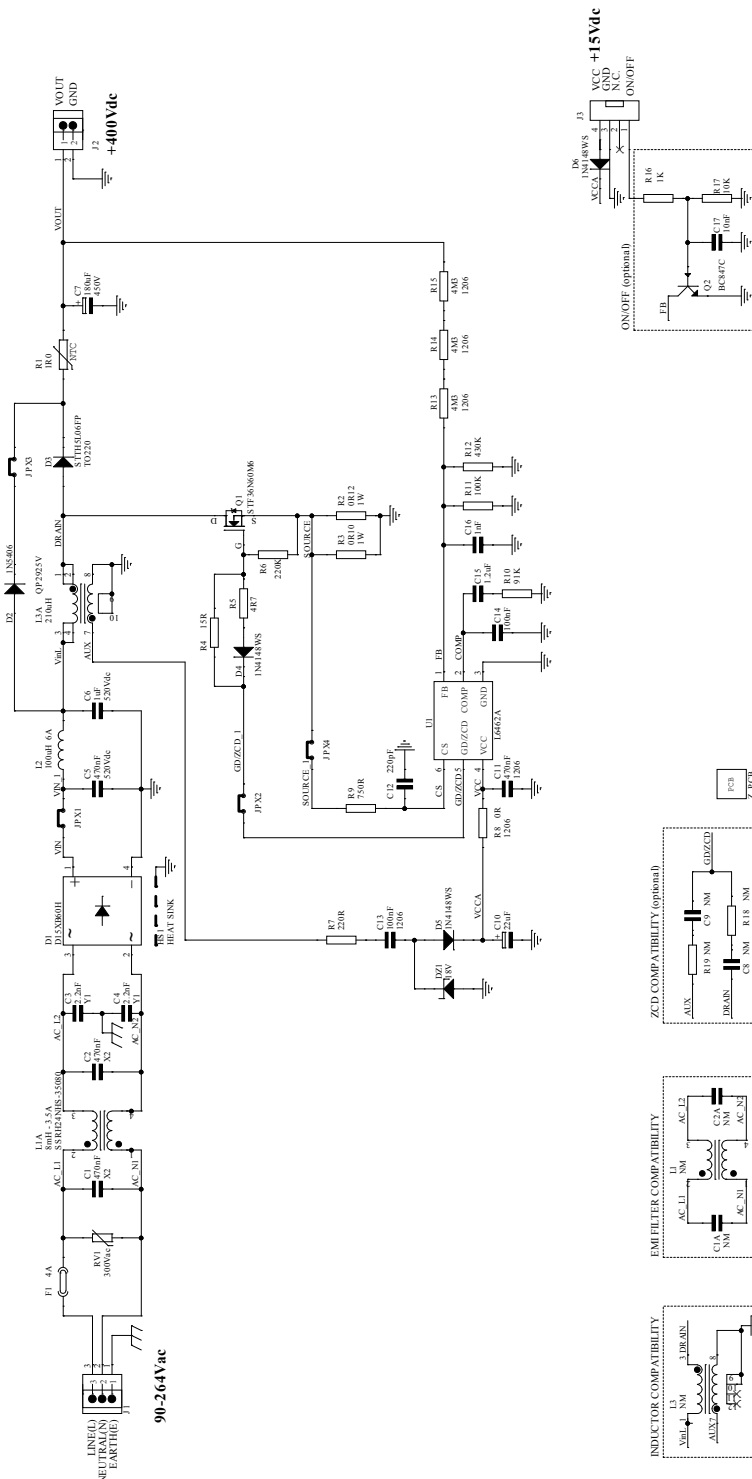
1.2 Input current distortion (THD)

Figure 2. EVL6462A-250W-M input current distortion (THD) versus load



2 Evaluation board schematic

Figure 3. EVL6462A-250W-M evaluation board schematic



3 PCB connectors

Table 1. EVL6462A-250W-M - PCB connectors

Schematic reference	Description
JP1	AC input voltage (90-264 Vac)
JP2	DC regulated output voltage (+400 V)
JP3	1. VCC (supply voltage +15 V) 2. GND (signal ground) 3. NC 4. ON/OFF (enable/disable input - 0/+5 V)

4 Bill of material

Table 2. EVL6462A-250W-M - Bill of material

Reference	Value	Description	Package	Manufacturer	Part number
C1, C2	470nF	Polypropylene, 275Vac	Radial p.22.5mm	Würth Elektronik	890324026014
C1A, C2A	NM		Radial p.15mm		
C3, C4	2.2nF	Y1 safety	Radial p.10mm	Murata	DE1E3KX222MN4AP01F
C5	470nF	Polyprop. Film, 520Vdc	Radial p.15	Epcos	B32672Z5474K000
C6	1uF	Polyprop. Film, 520Vdc	Radial p.15	Epcos	B32672Z5105K000
C7	180uF	Electrolytic, 450V	Radial p.7.5mm	Rubycon	450BXW180MEFR18X50
C8	NM		SMD1206		
C9	NM		SMD0805		
C10	22uF	Electrolytic	Radial p.2.5mm	Nichicon	UVZ2A220MED
C11	470nF	Electrolytic	SMD1206	AVX	12061C474KAT2A
C12	220pF	MLCC, X7R	SMD0805	Kemet	C0805C221J5GACTU
C13	100nF	MLCC, X7R	SMD1206	TDK	CGA5H2X8R2A104K115
C14	100nF	MLCC, X7R	SMD0805	Kemet	C0805C104K5RACTU
C15	1.2uF	MLCC, X7R	SMD0805	Kemet	C0805C125K4RACTU
C16	1nF	MLCC, X7R	SMD0805	Kemet	C0805C102K5RACTU
C17	10nF	MLCC, X7R	SMD0805	Kemet	C0805C103K5RACTU
D1	600V/15A	Bridge rectifier	5S	Shindengen	D15XB60H
D2	600V/3A	Rectifier diode	DO-201A	Vishay	1N5406
D3	600V/5A	Ultrafast diode	TO-220FP	STMicroelectronics	STTH5L06FP
D4, D5, D6	100V/0.3A	Signal switching diode	SOD-323	onsemi	1N4148WS
DZ1	18V/0.5W	Signal Zener diode	Minimelf	Nxp	BZV55-C18
F1	330V/4A	Time-Lag fuse	Radial p.7.5mm	Littelfuse	36914000000
HS1	-	Heat sink for D1, D3, Q1	DWG length 90mm	Tecnoal	2B-MEC-044
J1	-	PCB screw terminal - 3	p. 5.08mm	Weidmuller	1760500000
J2	-	PCB screw terminal - 2	p. 5.08mm	Weidmuller	1760510000
J3	-	PCB screw terminal - 4	p. 2.54mm	Molex	22-27-2041
JPX1, JPX2, JPX3, JPX4	Short	Isolated wire jumper			
L1	NM	CM Filter			
L1A	8mH/3.5A	CM Filter	DWG	Kemet	SSRH24NHS-35080

Reference	Value	Description	Package	Manufacturer	Part number
L2	100uH/6A	DM Filter	Radial p.8mm	Wurth	7447070
L3	NM				
L3A	210uH	PFC inductor	DWG QP2925V	Yujing	11999-112V500110
Q1	600V/99m	PFC switch	TO-220FP	STMicroelectronics	STF36N60M6
Q2	-	General purpose BJT	SOT23	onsemi	BC847C
R1	1R0	NTC thermistor, 3W	Radial p. 7.5mm	Epcos	B57237S0109M
R2	0R120	Metal film resistor, 1W	PTH	Stackpole	RSMF1JTR120
R3	0R100	Metal film resistor, 1W	PTH	Stackpole	RSMF1JTR100
R4	15R0	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-0715RL
R5	4R7	Resistor, 1/8W	SMD 0805	Multicomp	MC01W080514R7
R6	220k	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-07220KL
R7	220	Resistor, 1/4W	SMD 1206	Yageo	RC1206FR-07220RL
R8	0	Resistor, 1/4W	SMD 1206	Yageo	RC1206JR-070RL
R9	750	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-07750RL
R10	91k	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-0791KL
R11	100k	Resistor, 1/8W – 1%	SMD 0805	Yageo	RC0805FR-07100KL
R12	430k	Resistor, 1/8W – 1%	SMD 0805	Yageo	RC0805FR-07430KL
R13, R14, R15	4M3	Resistor, 1/4W - 1%	SMD 1206	Yageo	RC1206FR-074M3L
R16	1k	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-071KL
R17	10k	Resistor, 1/8W	SMD 0805	Yageo	RC0805FR-0710KL
R18, R19	NM	Resistor, 1/8W	SMD 0805		
RV1	300Vac	Varistor 300Vac	Radial p.7.5mm	Epcos	B72214S0301K101
U1	-	TM PFC controller	SOT23-6L	STMicroelectronics	L6462A
Z_PCB	-	Printed circuit board	88 x110 mm		EVL6462A-250W-M R1.0

Revision history

Table 3. Document revision history

Date	Version	Changes
11-Nov-2025	1	Initial release.

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