

WÜRTH ELEKTRONIK
MORE THAN YOU EXPECT



QUICK START GUIDE

**Mag12C Power Module Evaluation
Board for 1710X3802 LGA-12EP**

Evaluation Board 1780X3802

Version 1.0

SCHEMATIC

Features



EN55032
Class B



FIX SS



ADJ. Freq.



Sync.



PG



UVLO



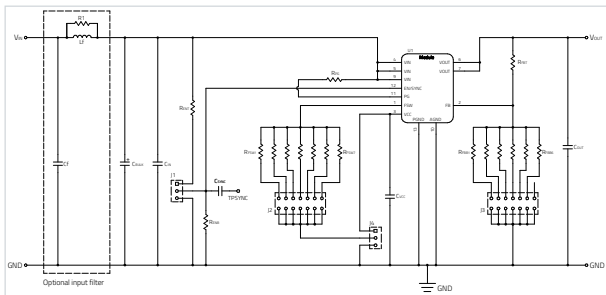
OCP



ОТР



T, 85°C



The additional aluminum electrolytic capacitor C_{BULK} is only for evaluation board protection purposes. It is mounted at the termination of the supply line and provides slight damping of possible oscillations of the series resonance circuit represented by the inductance of the supply line and the input capacitance. It is not essential for operation.

For accurate V_{IN} and V_{OUT} voltage measurements it is recommended to measure directly at the test pins placed beside the input and output capacitors C_{IN} and C_{OUT} . It is **not** recommended to use this evaluation board with input and output wire lengths longer than 1 m.

To optimize the EMI performance connect the R_{FSW} resistor to VCC to enable spread spectrum behavior.

For the datasheet of the power module
visit us at: [https://www.we-online.com/
catalog/en/MAGIC-VDLM](https://www.we-online.com/catalog/en/MAGIC-VDLM)



This product is highly sensitive to electrostatic discharge (ESD). As such, always use proper ESD precautions when handling. Failing to follow the aforementioned recommendations can result in severe damage to the part.



WARNING! – Before operating read the attached important notice document!

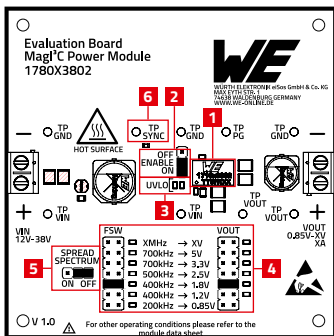
Ref. Des.	Description Order Code
U1	MagI ³ C Power Module (1710X3802)
C_{BULK}	Aluminum Electrolytic Capacitor 220 μ F/50V (865060657012)
C_{IN}	2 x Ceramic Chip Capacitor 4.7 μ F / 50V / X7R, 1210 (885012209048)
C_{VCC}	Ceramic Chip Capacitor 1 μ F / 16V / X7R, 0805 (885012207051)
C_{OUT}	2 x Ceramic Chip Capacitor 47 μ F / 16V (885012109011)
C9	Aluminum Polymer Capacitor 220 μ F/16V (875115350002)
Cf	2 x Ceramic Chip Capacitor 4.7 μ F / 50V / X7R, 1210 (optional) (885012209048)
Lf	Filter inductor, 1 μ H, PD2 (optional) (7447732010)
R1	0 Ω resistor bridge
R_{ENT}	1.8 M Ω
R_{ENB}	200 k Ω
R_{PG}	1 M Ω
R_{FBT}	402 k Ω
J1	Jumper for EN connection to either VIN (device enabled) or GND (device disabled) (61301421121)
J2	Jumper for switching frequency selection. Only one resistor should be selected at a time (61301421121)
J3	Jumper for output voltage selection. Only one resistor should be selected at a time (61301421121)

Ref. Des.	Description Order Code	
J4	Jumper to enable & disable spread spectrum behavior (61301421121)	
TP SYNC	Connect an external square wave signal to this pin for a custom switching frequency.	
C _{SYNC}	Ceramic Chip Capacitor 1 nF / 25 V / NPO, 0603 (885012006044)	
R _{FBB}	Set by jumper	30.1 kΩ for V _{OUT} = 12 V (1A/2A version)
		64.9 kΩ for V _{OUT} = 6 V (3A version)
		80.6 kΩ for V _{OUT} = 5 V
		137 kΩ for V _{OUT} = 3.3 V
		205 kΩ for V _{OUT} = 2.5 V
		357 kΩ for V _{OUT} = 1.8 V (default setting)
		976 kΩ for V _{OUT} = 1.2 V
R _{FSW}	Set by jumper	open for V _{OUT} = 0.85 V
		18.2 kΩ for F _{sw} = 1.5 MHz (1A/2A version)
		10 kΩ for F _{sw} = 1 MHz (3A version)
		5.6 kΩ for F _{sw} = 700 kHz
		3.3 kΩ for F _{sw} = 500 kHz
		0 Ω for F _{sw} = 400 kHz (default setting)
		1.8 kΩ for F _{sw} = 200 kHz

For Layout, Gerber and Step files visit us on
www.we-online.com/catalog/en/MAGIC-VOLM



OVERVIEW



Description

V_{IN} 3.5 – 38V

V_{OUT} 0.85V to 6V
at I_{OUT} = 3A
0.85V to 13V
at I_{OUT} ≤ 2.5A
I_{OUT} 1A/2A/3A

- 1** VDLM Variable Step Down LGA Module LGA12-EP
- 2** Jumpers (J1) for ENABLE & shut off the Module
- 3** Resistors for UVLO set to 12 V
- 4** Jumpers to set predefined output voltage V_{OUT} and fsw
- 5** Jumpers to enable & disable spread spectrum behavior
- 6** Connect an external square wave signal to this pin to synchronize to an external clock. For conditions see 1710x3802 datasheet.
- 7** Terminal block screw connectors for V_{IN} and V_{OUT}

Absolute maximum ratings Caution:

Exceeding the abs. max. values given in the datasheet may affect the device negatively and may cause permanent damage.

This evaluation board is intended to be operated in a research and development environment under the supervision of qualified technicians and engineers who are trained and experienced in the safe use of electronics. This evaluation board was designed and tested according to CISPR32 Class B standards under Würth Elektronik laboratory test conditions, as indicated in the data

sheet of the corresponding power module. Operation in other test setups may cause unintended electrical behavior and exceed the stated performance and limits imposed by the CISPR32 Class B standards. This evaluation board is not intended for usage in final applications. This evaluation board is not intended for resale.

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