

WÜRTH ELEKTRONIK
MORE THAN YOU EXPECT



QUICK START GUIDE

**Mag1°C Power Module Evaluation
Board for 171032401 TO263-7EP**

Evaluation Board 178032401

Version 3.2

SCHEMATIC

Features



EN55032
Class B



ADJ. SS



ADJ. Freq.



UVLO



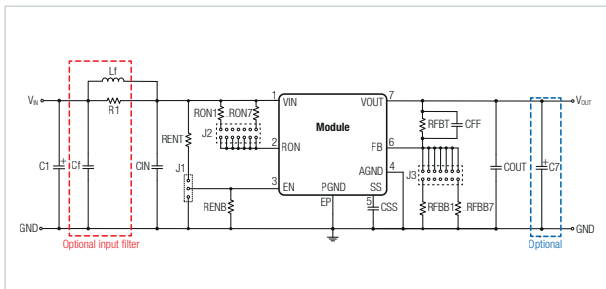
OCP



OTP



T_j 105 °C



According to the 12V industrial rail standard, the UVLO level is set to 9V using the resistors highlighted with UVLO on the EVB. The additional aluminium electrolytic capacitor C1 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 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.

For the datasheet of the power module visit us at: <https://www.we-online.de/katalog/de/MAGIC-VDRM>



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	Mag ³ C VDRM (171032401)
C1	Aluminum electrolytic capacitor 220 µF/50 V (860160675026)
CIN	2 x Ceramic chip capacitor 4.7 µF/50 V (885012209048)
CSS	Ceramic chip capacitor 4.7 nF/50 V (885012007067)
CCF	Ceramic chip capacitor 22 nF/50 V (885012207094)
COUT	2 x Ceramic chip capacitor 4.7 µF/50 V (885012209048)
C7	Through hole electrolytic capacitor (optional)
Cf	2 x Ceramic chip capacitor 4.7 µF/50 V (optional) (885012209048)
Lf	Filter inductor, 6.8 µH, PD2 (optional) (744774068)
R1	0 Ω resistor bridge
RENT	124 kΩ
RENB	18.7 kΩ
RFBT	10 kΩ
J1	Jumper for EN connection to either V _{IN} (device enabled) or GND (device disabled) 61300311121)
J2	Jumper for output voltage selection. Only one resistor should be selected at a time (61301621121)
J3	Jumper for output voltage selection. Only one resistor should be selected at a time (61301621121)

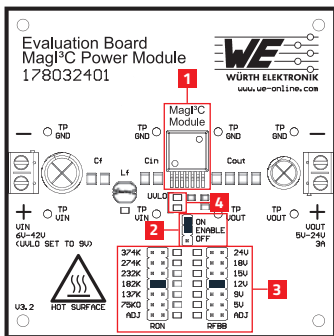
Ref. Des.	Description Order Code	
RFBB	Set by jumper	384 Ω for V _{OUT} = 24 V
		464 Ω for V _{OUT} = 18 V
		562 Ω for V _{OUT} = 15 V
		715 Ω for V _{OUT} = 12 V (default setting)
		976 Ω for V _{OUT} = 9 V
		1.91 kΩ for V _{OUT} = 5 V
		To be soldered for adjustable output voltage
		$R_{FBB} = \frac{R_{FBT}}{0.8V} \cdot V_{OUT} - 1$
RON	Set by jumper	374 kΩ for V _{OUT} = 24 V
		274 kΩ for V _{OUT} = 18 V
		232 kΩ for V _{OUT} = 15 V
		182 kΩ for V _{OUT} = 12 V (default setting)
		137 kΩ for V _{OUT} = 9 V
		75 kΩ for V _{OUT} = 5 V
		To be soldered for adjustable frequency
		$R_{ON} = \frac{V_{OUT}}{1.3 \cdot 10^{-10} \cdot f_{sw(cm)}}^*$

*Switching frequency in continuous conduction mode

For Layout, Gerber and Step files visit us on
www.we-online.de/catalog/en/magic-vdrm



OVERVIEW



Description

V_{IN} 6 – 42 V

V_{OUT} 5 – 24 V

I_{OUT} 3 A

- 1 VDRM Variable Step Down Regulator Module TO263-7EP
- 2 Jumpers (J1) for ENABLE & shut off the module
- 3 Jumpers to set predefined output voltage V_{OUT}
- 4 Resistors to set UVLO level
- 5 Terminal block screw connectors for V_{IN} and V_{OUT}
 - Default jumper position

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.



WARNING! – Hot surface, please don't touch. Unit is capable to produce temperatures above 85 °C. Still hot for several minutes after shut down.

