

Features Evaluation Module

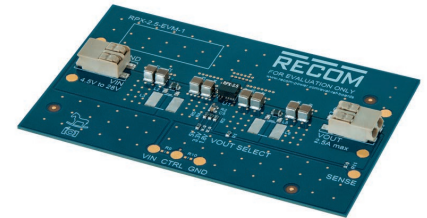
- Evaluation platform for RPX-2.5 buck regulator module
- Thermal design considerations included
- EMI Class B filter
- Easy evaluation of output voltage selection, control and sensing functions

Description

The RPX-2.5-EVM-1 generates a constant output voltage selectable from 1.8V, 3.3V or 5V from a DC input in the range of 4.5 – 28V (6V – 28V for the 5V output). It has a maximum continuous output current of 2.5 A.

All the functions of the RPX-2.5 such as output voltage selection, control, and output sense can be readily evaluated. Also the behavior in overload or over-temperature can be evaluated easily before it is designed in.

The evaluation board also contains the filter components to meet EMC Class B levels. Alternate component positions are included to allow experimentation to optimize the EMC performance depending on operating conditions and budget.



Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [A]
RPX-2.5-EVM-1	4.5 - 28	1.8, 3.3	2.5
	6 - 28	5	2.5

Quick Start Guide

1. Connect P1 to power supply (observe correct polarity!)
2. Connect P2 to the load (no load operation is allowed)
3. The evaluation module is preset to 5Vout.
The output voltage can be selected with values of 1.8V and 3.3V, by desoldering the 0 Ohm resistor near 5V and adding a 0 Ohm resistor to the respective places as seen in the board silkscreen.
4. The sense pin is connected to the RPX output pin, so the preset voltage is very accurate at the output of the RPX. To compensate for any losses of the filter, remove the resistor at R1, and solder a zero ohm resistor at R11.
5. CTRL/UVLO
The device is preset as normally on. It can be disabled by pulling the CTRL pin to GND. UVLO is preset to around 4.1V. Fit R9/R10 to set the UVLO voltage.

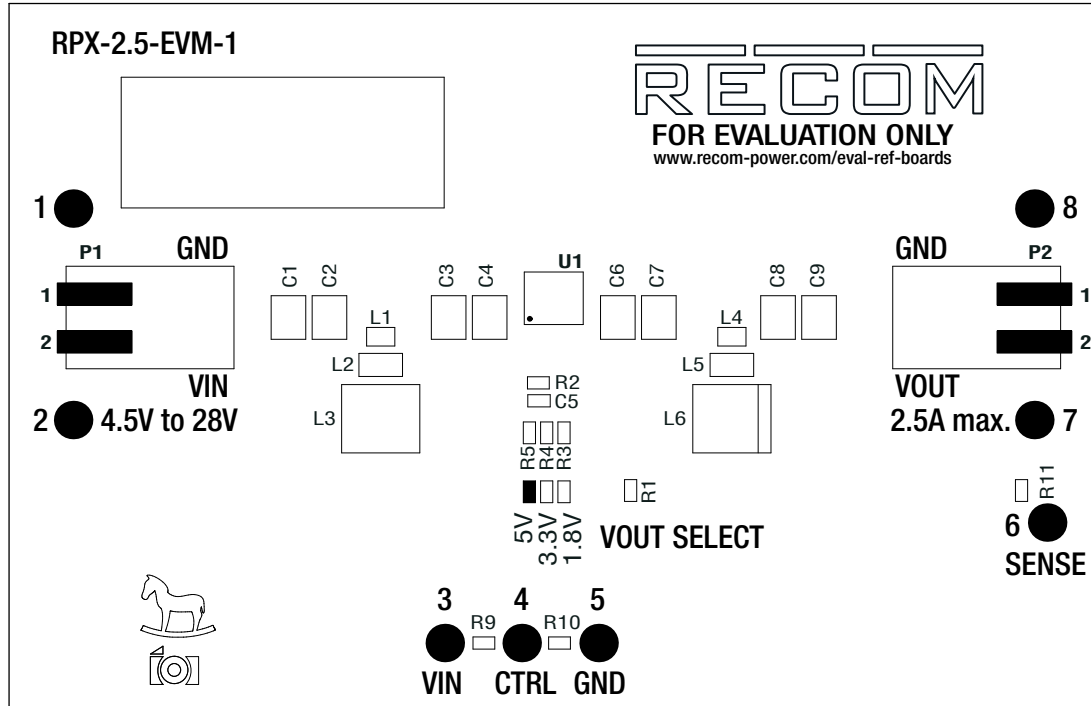


Caution:

ESD sensitive. Always follow ESD preventative procedures when handling the product!

Specifications (measured @ Ta= 25°C, full load and after warm-up unless otherwise stated)

Component Placement



Connector Description

P1

Pin	Name	Description
1	GND	Common GND
2	VIN	Positive Input Voltage (observe correct polarity!)

P2

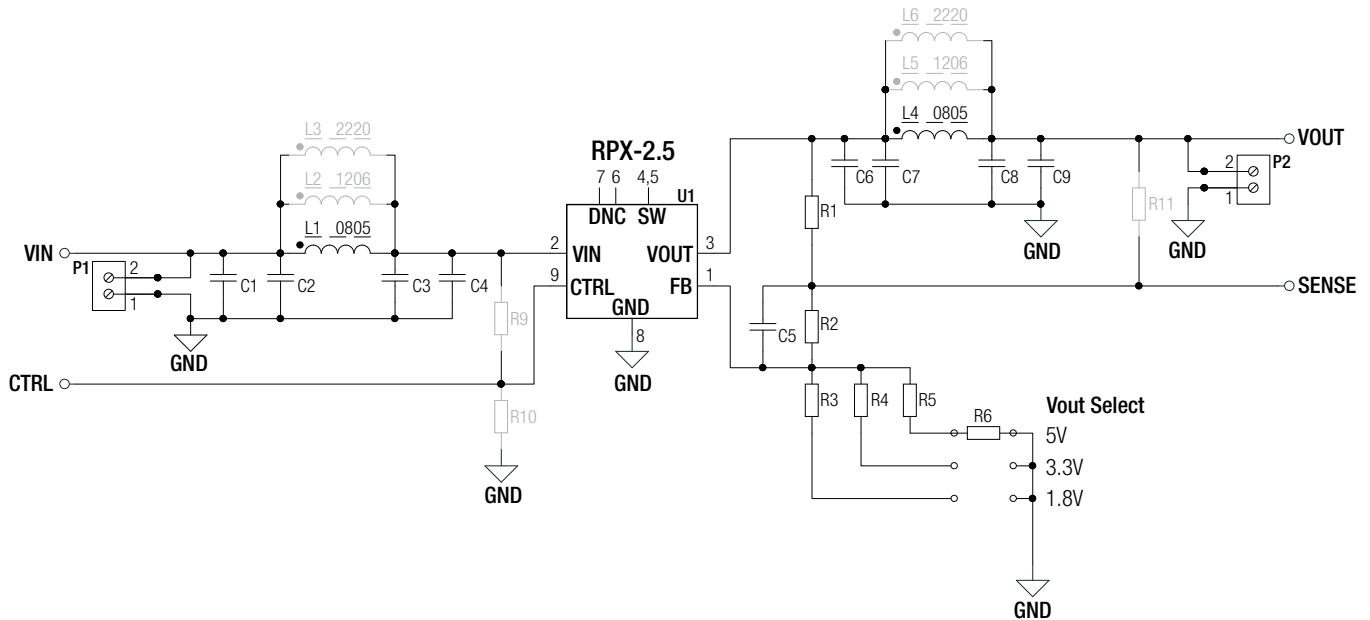
Pin	Name	Description
1	GND	Common GND
2	VOUT	Positive Output Voltage

Pads direct Connection

Pin	Name	Description
1	GND	Common GND
2	VIN	Positive Input Voltage
3	VIN	Positive Input Voltage (after input filter)
4	CTRL	CTRL Pin (leave open if not used)
5	GND	Common GND
6	SENSE	Output Voltage Sense Pin (leave open if not used)
7	VOUT	Positive Output Voltage
8	GND	Common GND

Specifications (measured @ Ta= 25°C, full load and after warm-up unless otherwise stated)

Schematic



Description

U1: RPX-2.5 power module

C1,C2,L1,L2,L3,C3,C4: allow placement of various sized components to test input filter design. The populated filter is designed to meet EN55022 class B

C6,C7,L4,L5,L6,C8,C9: allow placement of various sized components to test output filter design. The populated filter is designed to meet EN55022 class B

R9 and R10: configure CTRL/UVLO. These resistors are not populated. The preset of RPX-2.5 is always on. Refer to RPX-2.5 datasheet for more information.

R1: populated zero ohm resistor for direct output voltage measurement. If sense is desired at a different location, for example after the filter or directly at the load), unsolder R1, and connect sense to the new measurement point.

R11: sense point for output voltage after the filter. To set sense point here, remove R1 and solder a zero ohm resistor at R11.

VOUT Selection: The output voltage can be selected with values of 1.8V, 3.3V, and 5V by shorting a zero ohm resistor to the respective places as seen in the board silkscreen.

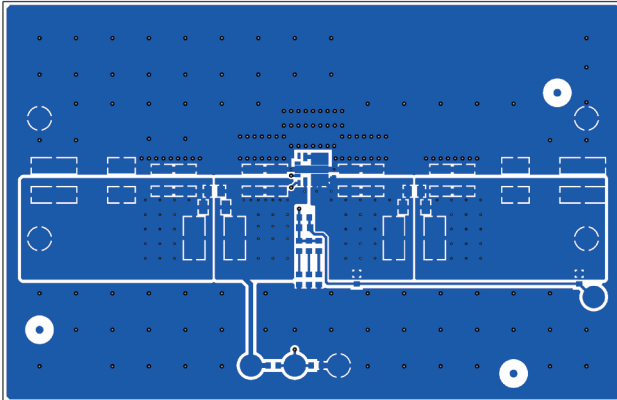
Specifications (measured @ Ta= 25°C, full load and after warm-up unless otherwise stated)

DIMENSION AND PHYSICAL CHARACTERISTICS

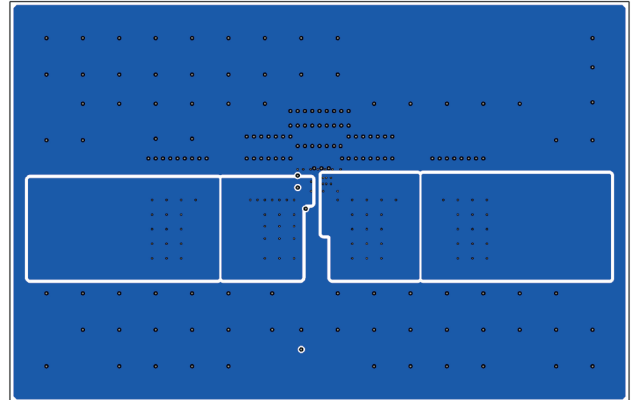
Parameter	Type	Value
Dimension (LxWxH)		85.0 x 55.0 x 5.9mm
Weight		18.8g typ.

Layout

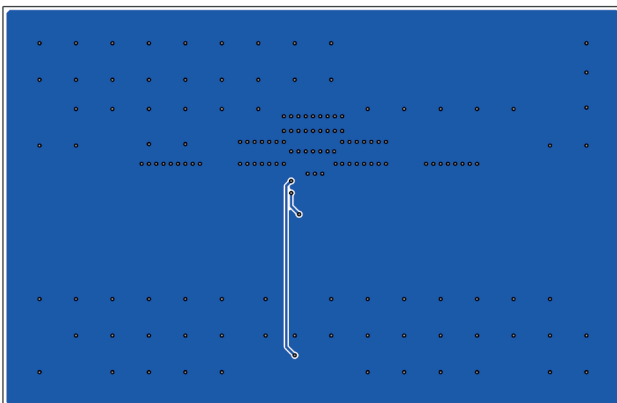
Top Layer



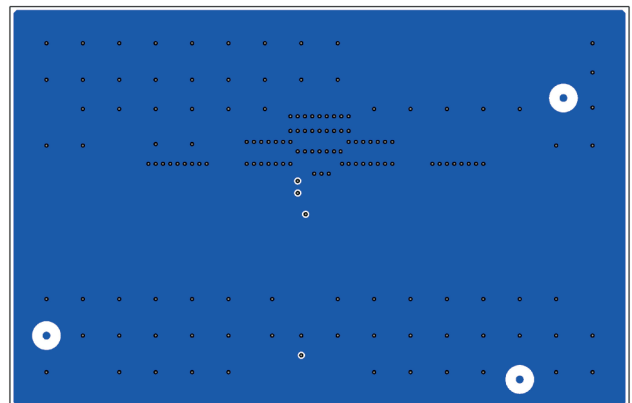
Layer 2



Layer 3



Bottom Layer



Notes:

Note1: Visit www.recom-power.com/eval-ref-boards to download the Gerber files

BOM

Comp.	Description	Manufacturer Part Number	Manufacturer	Remarks
C1	10µF 50V X7R 1210	CL32B106KBJNNNE	Samsung Electro-Mechanics	
C2	10µF 50V X7R 1210	CL32B106KBJNNNE	Samsung Electro-Mechanics	
C3	10µF 50V X7R 1210	CL32B106KBJNNNE	Samsung Electro-Mechanics	
C4	10µF 50V X7R 1210	CL32B106KBJNNNE	Samsung Electro-Mechanics	
C5	330pF 50V X7R 0603	CL10B331KB8NNNC	Samsung Electro-Mechanics	
C6	47µF 10V X7R 1210	GRM32ER71A476KE15L	Murata Electronics	
C7	47µF 10V X7R 1210	GRM32ER71A476KE15L	Murata Electronics	

continued on next page

Specifications (measured @ Ta= 25°C, full load and after warm-up unless otherwise stated)

Comp.	Description	Manufacturer Part Number	Manufacturer	Remarks
C8	47µF 10V X7R 1210	GRM32ER71A476KE15L	Murata Electronics	
C9	47µF 10V X7R 1210	GRM32ER71A476KE15L	Murata Electronics	
L1	FERRITE BEAD 300 OHM 0805 1LN	742792031	WÜRTH Electronics	
L2	FERRITE BEAD 300 OHM 1206 1LN	742792121	WÜRTH Electronics	not mounted
L3	FERRITE BEAD 300 OHM 2220 1LN	HI2220R301R-10	Laird-Signal Integrity Products	not mounted
L4	FERRITE BEAD 300 OHM 0805 1LN	742792031	WÜRTH Electronics	
L5	FERRITE BEAD 300 OHM 1206 1LN	742792121	WÜRTH Electronics	not mounted
L6	FERRITE BEAD 300 OHM 2220 1LN	HI2220R301R-10	Laird-Signal Integrity Products	not mounted
P1	CONNECTOR	2060-452/998-404	WAGO	
P2	CONNECTOR	2060-452/998-404	WAGO	
R1	ZERO OHM JUMPER 0603 0W1	CRCW06030000Z0EAC	VISHAY DALE	
R2	14K7 OHM 1% 0603 0W1	CRCW060314K7FKEA	VISHAY DALE	
R3	7K32 OHM 1% 0603 0W1	CRCW06037K32FKEA	VISHAY DALE	
R4	3K24 OHM 1% 0603 0W1	CRCW06033K24FKEA	VISHAY DALE	
R5	2K OHM 1% 0603 0W1	CRCW06032K00FKEAC	VISHAY DALE	
R6	ZERO OHM JUMPER 0603 0W1	CRCW06030000Z0EAC	VISHAY DALE	
R9	68K OHM 1% 0603 0W1	CRCW060368K0FKEAC	VISHAY DALE	not mounted
R10	10K OHM 1% 0603 0W1	CRCW060310K0FKEAC	VISHAY DALE	not mounted
R11	ZERO OHM JUMPER 0603 0W1	CRCW06030000Z0EAC	VISHAY DALE	not mounted
U1	RPX-2.5 MODULE	RPX-2.5 MODULE	RECOM	

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)		114.0 x 60.0 x 28.0mm
Packaging Quantity		1pc

Contents

- RPX-2.5-EVM-1 Evaluation Module
- Terms and Conditions

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.