Features

Power Module

- Buck regulator power module with integrated shielded inductor
- 28V maximum input voltage
- 2.5A maximum output current
- SCP, OCP, OTP, OVP and UVLO protection
- 4.5mm x 4mm low profile QFN package
- Flip-Chip technology for improved thermal management
- Efficiency up to 91%

RECOM
DC/DC Converter

RPX-2.5

2.5 Amp QFN Package

Description

The RPX-2.5 is a buck converter with integrated inductor in a tiny 4.5mm x 4mm x 2mm thermally-enhanced QFN package (the smallest in its class). The input range is from 4.5 to 28VDC, allowing 5V, 12V or 24V supply voltages to be used. The output voltage can be set with two resistors in the range from 1.2V up to 6V. The output current is up to 2.5A and is fully protected against continuous short-circuits, output overcurrent or over-temperature faults. The enable pin features an internal pull-up current source, so will operate with open-drain, open-collector, logic gate or switched inputs (leave open if not used).

Selection Guide

Part Number	Input Voltage Range [VDC] (1)	Vout Adjust Range [VDC] (1)	Output Current max. [A]	Efficiency max. (2) [%]	Max. Capacitive Load (3) [µF]
RPX-2.5	4.5-28	1.2-6	2.5	91	500

Notes:

Note1: Refer to ***"Safe Operating Area"***

Note2: Efficiency is tested at Vin= 12V, Iout= 1A, Vout= 5V

Note3: Max. Cap Load is tested at nominal input and full resistive load

Model Numbering

RPX-2.5-CT

Output Current — Packaging (4)

Notes:

Note4: add suffix "-CT" for bag packaging for more details refer to ***"PACKAGING INFORMATION"***
without suffix, standard tape and reel packaging

Specifications (measured @ ta= 25°C, 12Vin, 3.3Vout, full load unless otherwise stated, refer to test set up)

ABSOLUTE MAXIMUM RATINGS

Parameter	Condition	Min.	Typ.	Max.
Absolute Maximum Voltage (5)	Vin	-0.3VDC		30VDC
	CTRL, FB	-0.3VDC		7VDC
	SW	-0.3VDC		30VDC
	SW transient	-5VDC		30VDC
	Vout	-0.3VDC		7VDC
Shock	according to MIL-STD-883D, method 2002.3; 1ms, 1/2 sine, mounted			1500G
Vibration	according to MIL-STD-883D, method 2007.7; 20Hz-2kHz			20G
Operating IC Junction Temperature (T_J)		-40°C		+125°C
Operating Ambient Temperature (T_{AMB})		-40°C		+85°C
Storage Temperature (T_{STO})		-55°C		+150°C

Notes:

Note5: Stresses beyond those listed under absolute maximum ratings can cause permanent damage to the device. (Values are at non-operating)

EVAL BOARD available

Specifications (measured @ ta= 25°C, 12Vin, 3.3Vout, full load unless otherwise stated, refer to test set up)

OPERATING RATINGS

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		4.5VDC (6)		28VDC
Under Voltage Lockout (UVLO) (default setting) (7)	DC-DC ON DC-DC OFF	3.8VDC 3.3VDC	4.1VDC 3.6VDC	4.4VDC 3.9VDC
Output Voltage Adjust Range	refer to ***"OUTPUT VOLTAGE SETTING"***	1.2VDC		6VDC
CTRL Voltage Range		0VDC		6VDC
CTRL ON/OFF Thresholds	DC-DC ON (or open) DC-DC OFF (or short to GND)	 1.1VDC	1.21VDC 1.19VDC	1.28VDC
Input Current of CTRL Pin	V_{CTRL} = 1.5VDC (DC-DC ON)		1.6µA	
	V_{CTRL}= 1VDC (DC-DC OFF)		0.7µA	
Standby Current	DC-DC OFF		2µA	
Output Current		0A		2.5A (8)
Start-up Time	power on by using CTRL (without C_{OUT})		10ms 6ms	
Rise-time	(internal soft start)		5ms	
Switching Frequency		550kHz	750kHz	1MHz
Output Ripple and Noise (9)	20Mhz BW		22mVp-p	

Notes:

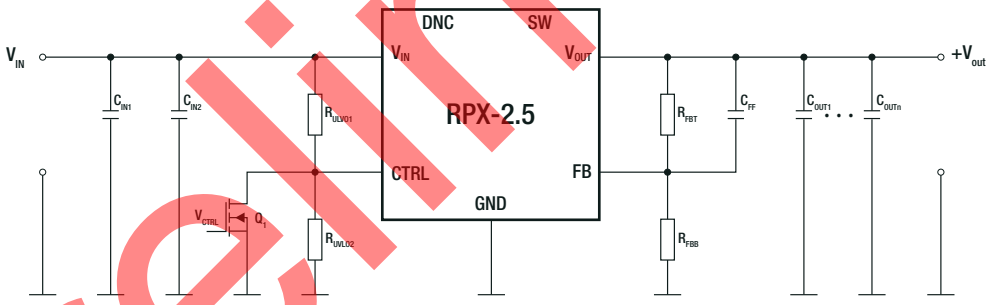
Note6: The minimum recommended input voltage is 4.5 V or (V_{OUT} × 1.3), whichever is greater

Note7: Refer to ***"UNDER VOLTAGE LOCKOUT SETTING"***

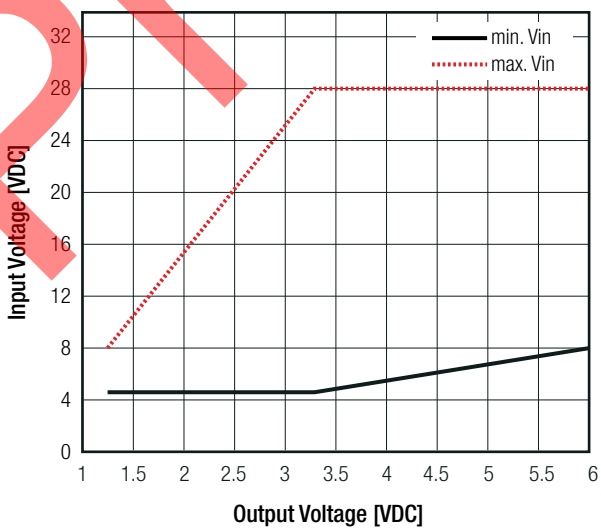
Note8: The maximum output current that the RPX can deliver is a function of input voltage, output voltage, and ambient temperature

Note9: Measurement with C_{IN1}= 10µF, 50V 1210 ceramic, C_{IN2}= 100µF, 35V electrolytic and $C_{OUT1,2}$= 47µF 16V, ceramic capacitors

Test Set-up



Safe Operating Area



Typical operating conditions

Nominal Vin	Vout	Iout , max
24VDC	5VDC	2.0A
24VDC	3.3VDC	2.1A
12VDC	5VDC	2.5A
12VDC	3.3VDC	2.5A
5VDC	3.3VDC	2.5A
5VDC	1.2VDC	2.5A