

# Features

# Power Module

- Wide Vin 4.3 to 65VDC
- High power density (LxWxH = 12.19x12.19x3.75)
- Wide operating temperature -40°C to +95°C at full load
- Efficiency up to 89%, no need for heatsinks
- 6-sided shielding
- Thermally and EMI enhanced 25 pad LGA package
- Low profile

# RECOM DC/DC Converter

## RPMH-0.5

### 0.5 Amp Single Output



EN55032 compliant

### Description

The RPMH-0.5 series is a wide input voltage, 0.5A non-isolated switching regulator power module. The module accepts with up to 65VDC input and provides a trimmable output from 2.6 up to 28VDC and comes complete with a full set of features including adjustable output, sequencing, soft-start control, on/off control, and power good signals. The ultra-compact module has a profile of only 3.75mm, but with an efficiency of up to 89%, the device can operate at full load in ambient temperatures as high as +95°C and with power derating up to 105°C without forced air cooling. The package is complete with 6-sided shielding for optimal EMC performance and excellent heat management.

### Selection Guide

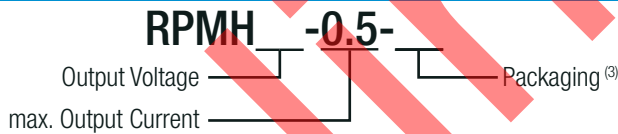
Part Number	Input Voltage Range <sup>(1)</sup> [VDC]	Output Voltage [VDC]	Vout Adjust Range [VDC]	Output Current max. [A]	Efficiency typ. [%]	Max Capacitive typ. Load <sup>(2)</sup> [µF]
RPMH3.3-0.5	4.3 - 65	3.3	2.64 - 3.63	0.5	72	80000
RPMH5.0-0.5	6 - 65	5	4 - 5.5	0.5	77	50000
RPMH12-0.5	13.5 - 65	12	7.2 - 13.2	0.5	82	20000
RPMH15-0.5	16.5 - 65	15	9 - 16.5	0.5	85	13200
RPMH24-0.5	25.5 - 65	24	15 - 28	0.5	89	9400

#### Notes:

Note1: Input voltage must be higher than desired output voltage. Check buck mode and 100% duty cycle mode

Note2: Max. Cap Load is tested at nominal input and full resistive load

### Model Numbering



#### Notes:

Note3: Add suffix "-CT" for tube packaging for more details refer to "PACKAGING INFORMATION" without suffix, standard tape and reel packaging

### Specifications @ Ta= 25°C, nom. Vin, full load, with output cap <sup>(4)</sup> after warm-up unless otherwise stated

BASIC CHARACTERISTICS					
Parameter	Condition		Min.	Typ.	Max.
Internal Input Filter			capacitor		
Input Voltage Range	Buck mode	3.3Vout	4.3VDC		65VDC
		5.0Vout	6VDC		
		12Vout	13.5VDC		
		15Vout	16.5VDC		
		24Vout	25.5VDC		
	100% duty cycle mode <sup>(5)</sup>	Vout= Vin - Vdrop	3VDC		4.3VDC
		3.3Vout			6VDC
		5.0Vout			13.5VDC
		12Vout			16.5VDC
		15Vout			25.5VDC
		24Vout			
Absolute Maximum Input Voltage					68VDC
Undervoltage Lockout (UVLO)	DC-DC ON		2.6VDC		2.95VDC
	DC-DC OFF		2.35VDC		2.6VDC

continued on next page



www.recom-power.com/eval-ref-boards

#### Notes:

Note4: Output capacitor required. Please refer to "Output Capacitor".

**Specifications** (@ Ta= 25°C, nom. Vin, full load, with output cap <sup>(4)</sup> after warm-up unless otherwise stated)

Parameter	Condition		Min.	Typ.	Max.
Input Current	nom. Vin= 48VDC	3.3Vout		48mA	
		5.0Vout		68mA	
		12Vout		152mA	
		15Vout		184mA	
		24Vout		281mA	
Quiescent Current	nom. Vin= 48VDC	3.3Vout, 5.0Vout		16µA	150µA
		others		50µA	
Internal Power Dissipation	nom. Vin= 48VDC	3.3Vout		0.64W	
		5.0Vout		0.75W	
		12Vout, 15Vout		1.32W	
		24Vout		1.48W	
Output Voltage Trimming <sup>(6)</sup>			2.64VDC		28VDC
Minimum Dropout Voltage (Vdrop) <sup>(7)</sup>	Vin min. = Vdrop + Vout	3.3Vout, 5Vout		2V/A	
		others		3V/A	
Minimum Load			0%		
Start-up Time	without using soft start function/ power up by using CTRL function			1.5ms	
Rise-time				900µs	
ON/OFF CTRL	DC-DC ON DC-DC OFF		Open or 1.22V < V <sub>CTRL</sub> < Vin Short or -0.3V < V <sub>CTRL</sub> < 1.14VDC		
Standby Current	DC-DC OFF		15µA		
Internal Operating Frequency	3.3Vout 5.0Vout 12Vout, 15Vout, 24Vout			300kHz 400kHz 600kHz	
Output Ripple and Noise <sup>(8)</sup>	20MHz BW	3.3Vout		20mVp-p	100mVp-p
		5.0Vout		35mVp-p	
		12Vout		40mVp-p	
		15Vout, 24Vout		30mVp-p	

**Notes:**

Note5: As input approaches output voltage set point, device enters 100% duty cycle mode. In 100% duty cycle mode, Vout equals Vin minus dropout voltage (refer to **"Dropout Voltage vs. Load"**)

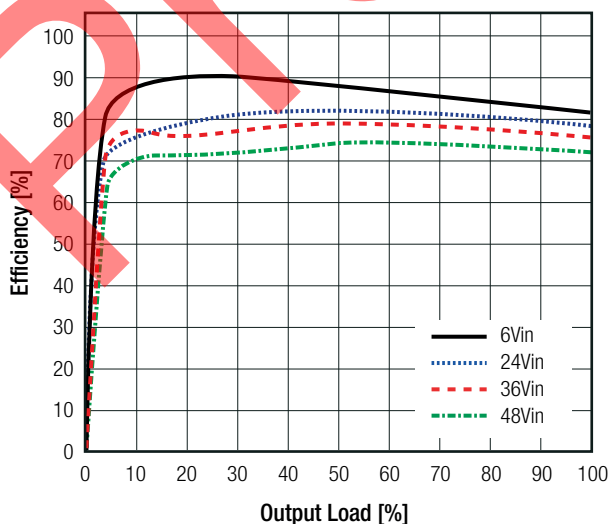
Note6: For more detailed information, please refer to **"OUTPUT VOLTAGE TRIMMING"**

Note7: Required dropout voltage per 1A output current to be within accuracy (refer to **"Dropout Voltage vs. Load"**)

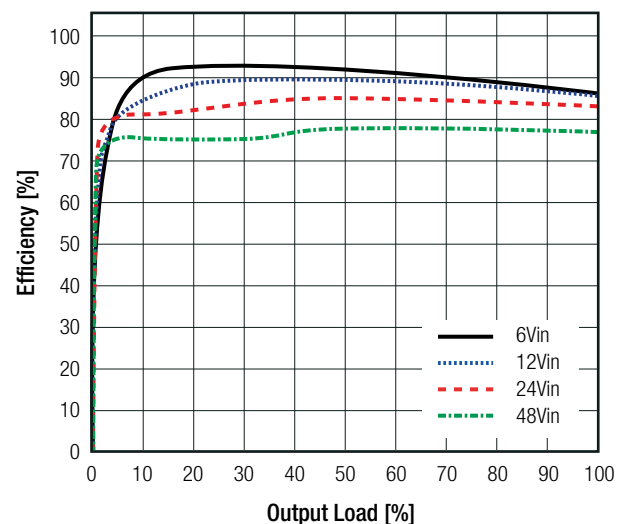
Note8: Measurements are made with a 22µF MLCC across output (low ESR)

**Efficiency vs. Load**

RPMH3.3-0.5



RPMH5.0-0.5



continued on next page