

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 ⁽¹⁾ [VDC]	Output Voltage [VDC]	Vout Adjust Range [VDC]	Output Current max. [A]	Efficiency typ. [%]	Max Capacitive typ. Load ⁽²⁾ [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 ⁽⁴⁾ after warm-up unless otherwise stated)

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

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Notes:

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

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

Parameter	Condition		Min.	Typ.	Max.
Input Current	nom. Vin= 48VDC	3.3Vout 5.0Vout 12Vout 15Vout 24Vout		48mA 68mA 152mA 184mA 281mA	
Quiescent Current	nom. Vin= 48VDC	3.3Vout, 5.0Vout others		16µA 50µA	150µA
Internal Power Dissipation	nom. Vin= 48VDC	3.3Vout 5.0Vout 12Vout, 15Vout 24Vout		0.64W 0.75W 1.32W 1.48W	
Output Voltage Trimming ⁽⁶⁾			2.64VDC		28VDC
Minimum Dropout Voltage (Vdrop) ⁽⁷⁾	Vin min. = Vdrop + Vout	3.3Vout, 5Vout others		2V/A 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 _{CTRL} < Vin Short or -0.3V < V _{CTRL} < 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 ⁽⁸⁾	20MHz BW	3.3Vout 5.0Vout 12Vout 15Vout, 24Vout		20mVp-p 35mVp-p 40mVp-p 30mVp-p	100mVp-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"**)

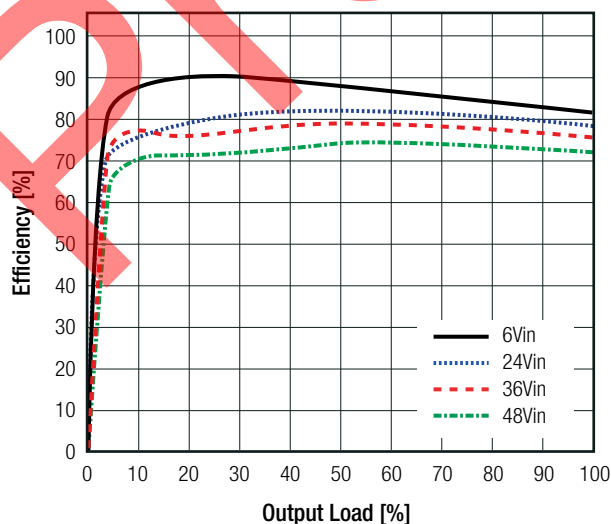
Note6: For more detailed information, please refer to **"OUTPUT VOLTAGE TRIMMING"**

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

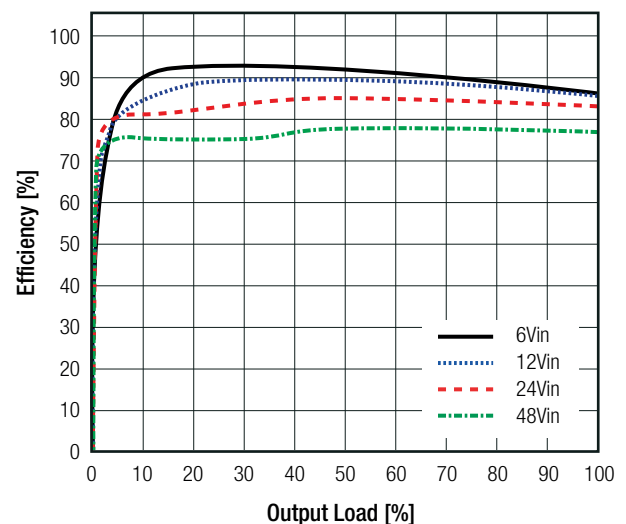
Note8: Measurements are made with a 22µF MLCC across output (low ESR)

Efficiency vs. Load

RPMH3.3-0.5



RPMH5.0-0.5



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