

Features

Power Module

- High power density (L*W*H = 12.19*12.19*3.75)
- Wide operating temperature -40°C to +107°C at full load
- Efficiency up to 99%, no need for heatsinks
- 6-sided shielding
- Thermally and EMI enhanced 25 pin LGA package
- Compact DOSA-compatible footprint
- Low profile



RPM-1.0

1 Amp Single Output



Description

The RPM-1.0 series is a 1A non-isolated switching regulator power module 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 99%, the device can operate at full load in ambient temperatures as high as +107°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 [VDC]	Output Voltage [VDC]	Vout Adjust Range [VDC]	Output Current max. [A]	Efficiency typ. [%]	Max. Capacitive Load ⁽¹⁾ [µF]
RPM3.3-1.0	3 - 17	3.3	0.9 - 6.0	1	94 - 99	800
RPM5.0-1.0	3 - 17	5	0.9 - 6.0	1	92 - 99	800

Notes:

Note1: Max. Cap Load is tested at nominal input and full resistive load



EN55032 compliant

Model Numbering

RPM - 1.0
 Output Voltage max. Output Current

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

BASIC CHARACTERISTICS						
Parameter		Condition	Min.	Typ.	Max.	
Internal Input Filter					capacitor	
Input Voltage Range	Buck mode		3.3Vout 5Vout	3.35VDC 5.05VDC	12VDC	17VDC
	100% duty cycle mode ⁽²⁾	Vout= Vin - Vdrop	3.3Vout 5Vout	3VDC		3.35VDC 5.05VDC
Absolute Maximum Input Voltage						20VDC
Undervoltage Lockout (UVLO)		DC-DC ON DC-DC OFF		2.6VDC 2.8VDC	2.7VDC 2.9VDC	2.8VDC 3.0VDC
Input Current		nom. Vin= 12VDC	3.3Vout 5Vout		0.3A 0.45A	
Quiescent Current					30µA	
Internal Power Dissipation			3.3Vout 5Vout			0.27W 0.32W

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

Parameter	Condition	Min.	Typ.	Max.
Output Voltage Trimming ⁽³⁾		0.9VDC		6VDC
Minimum Dropout Voltage (Vdrop) ⁽⁴⁾	Vin min. = Vdrop + Vout		50mV/A	
Minimum Load		0%		
Start-up Time	without using soft start function/ power up using CTRL function		1.6ms 1.5ms	
Rise-time			1.4ms	
ON/OFF CTRL	DC-DC ON DC-DC OFF		Open or 0.9V < V _{CTRL} < Vin Short or -0.3V < V _{CTRL} < 0.45VDC	
Input Current of CTRL Pin	DC-DC OFF		1.2µA	
Standby Current	DC-DC OFF		15µA	
Internal Operating Frequency			1.25MHz	
Output Ripple and Noise ⁽⁵⁾	20MHz BW, 800hm @ 100MHz		60mVp-p	
Absolute Maximum Capacitive Load	below 1 second start up + C _{ss} = 3700nF below 1 second start up without softstart mode			42000µF 800µF

Notes:

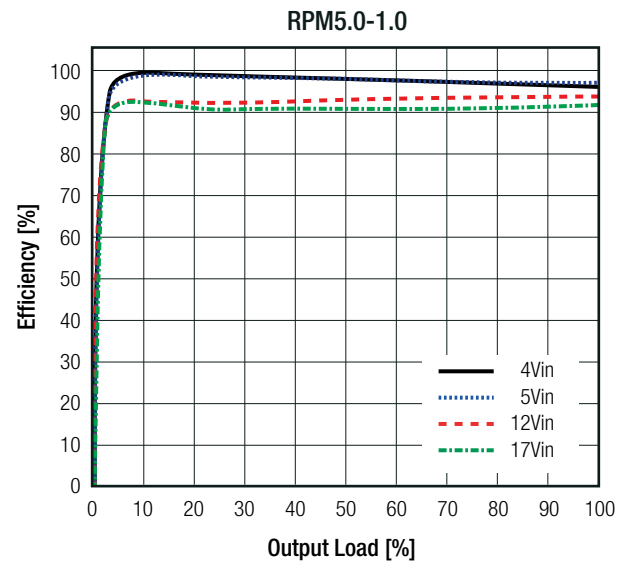
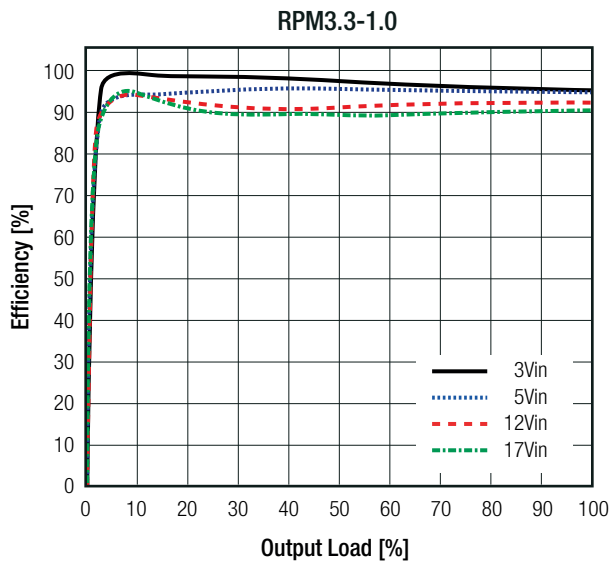
Note2: As input approaches output voltage set point, device enters 100% duty cycle mode. in 100% duty cycle mode, Vout equals Vin minus dropout voltage (see Dropout vs. Load graph)

Note3: For more detailed information, please refer to trim table or calculation on page RPM-3

Note4: Required dropout voltage per 1A output current to be within accuracy (see Dropout vs. Load graph)

Note5: Measurements are made with a 22µF MLCC across output (low ESR)

Efficiency vs. Load



Dropout Voltage vs. Load

