

# Features

# Power Module

- High power density (L\*W\*H = 12.19\*12.19\*3.75)
- Wide operating temperature -40°C to +105°C at full load
- Efficiency up to 97%, no need for heatsinks
- 6-sided shielding
- Thermally and EMI enhanced 25 pad LGA package
- Compact DOSA-compatible footprint
- Low profile



## RPM-3.0

# 3 Amp Single Output



## Description

The RPM-3.0 series is a 3A 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 97%, the device can operate at full load in ambient temperatures as high as +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 [VDC]	Output Voltage [VDC]	Vout Adjust Range [VDC]	Output Current max. [A]	Efficiency typ. [%]	Max. Capacitive Load <sup>(1)</sup> [µF]
RPM3.3-3.0	3 - 17	3.3	0.9 - 6.0	3.0	87 - 97	800
RPM5.0-3.0	3 - 17	5	0.9 - 6.0	3.0	90 - 97	800

### Notes:

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



EN55032 compliant

## Model Numbering

RPM      -3.0  
 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	3.45VDC 5.15VDC	12VDC	17VDC
	100% duty cycle mode <sup>(2)</sup>	Vout= Vin - Vdrop	3.3Vout 5Vout	3VDC		3.45VDC 5.15VDC
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		1.0A 1.4A	
Quiescent Current					30µA	
Internal Power Dissipation			3.3Vout 5Vout			1.4W 1.6W

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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 <sup>(3)</sup>		0.9VDC		6VDC
Minimum Dropout Voltage (Vdrop) <sup>(4)</sup>	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 $0.9V < V_{CTRL} < V_{in}$ 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 <sup>(5)</sup>	20MHz BW, 80Ω@ 100MHz		60mVp-p	
Absolute Maximum Capacitive Load	below 1 second start up + C <sub>ss</sub> = 3700nF below 1 second start up without softstart mode			42000μF 800μF

**Notes:**

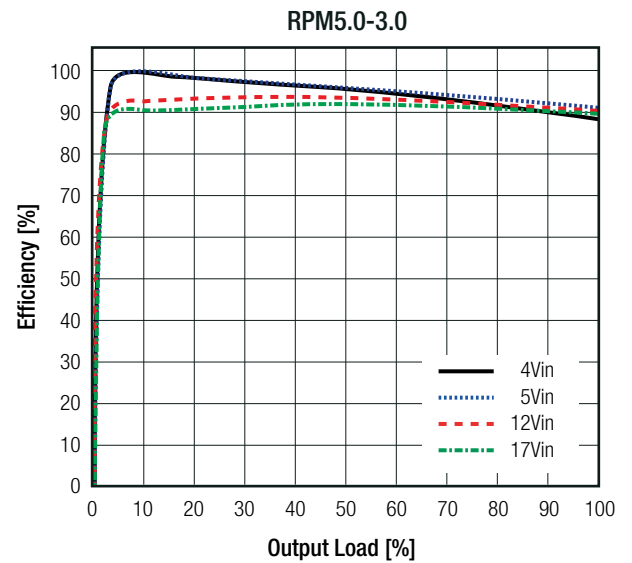
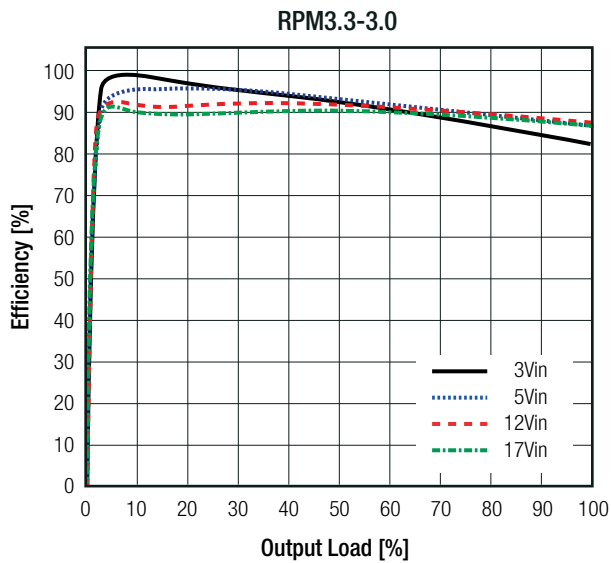
Note2: As input approaches output voltage set point, device enters 100% duty cycle mode. In 100% duty cycle mode, Vout equals Vin minus dropout voltage (see Dropout vs. Load graph)

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**

