

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 98%, no need for heatsinks
- 6-sided shielding
- Thermally and EMI enhanced 25 pad LGA package
- Compact DOSA-compatible footprint
- Low profile

RECOM
DC/DC Converter

RPM-2.0

**2 Amp
Single
Output**



EN55032 compliant

Description

The RPM-2.0 series is a 2A 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 98%, 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 ⁽¹⁾ [μF]
RPM3.3-2.0	3 - 17	3.3	0.9 - 6.0	2	90 - 98	800
RPM5.0-2.0	3 - 17	5	0.9 - 6.0	2	92 - 98	800

Notes:

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

Model Numbering

RPM **-2.0**
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	3.4VDC 5.1VDC	12VDC	17VDC
	100% duty cycle mode ⁽²⁾	Vout= Vin - Vdrop	3.3Vout 5Vout	3VDC		3.4VDC 5.1VDC
Absolute Maximum Input Voltage						20VDC
Undervoltage Lockout (UVLO)		DC-DC ON		2.6VDC	2.7VDC	2.8VDC
		DC-DC OFF		2.8VDC	2.9VDC	3.0VDC
Input Current		nom. Vin= 12VDC	3.3Vout 5Vout		0.6A 0.9A	
Quiescent Current					30μA	
Internal Power Dissipation			3.3Vout 5Vout			0.7W 0.8W
continued on next page						



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Specifications (measured @ $T_a = 25^\circ\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

Parameter	Condition	Min.	Typ.	Max.
Output Voltage Trimming ⁽³⁾		0.9VDC		6VDC
Minimum Dropout Voltage (V_{drop}) ⁽⁴⁾	$V_{in \text{ min.}} = V_{drop} + V_{out}$		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		1.2 μ A	
Standby Current	DC-DC OFF		15 μ A	
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			42000 μ F 800 μ F

Notes:

Note2: As input approaches output voltage set point, device enters 100% duty cycle mode. In 100% duty cycle mode, V_{out} equals V_{in} 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 22 μ F MLCC across output (low ESR)

Efficiency vs. Load

