

RSM3203 • RSM3204 • RSM3205 5.5V, 1A • 2A • 3A Buck μ Modules

Features

High-Efficiency Power Conversion

- Wide 2.4V to 5.5V input voltage range
- Output current options:
 - 1A (RSM3203)
 - 2A (RSM3204)
 - 3A (RSM3205)
- Constant-On-Time (COT) control for fast transient response
- 1% output voltage accuracy
- 4MHz switching frequency

Flexible System Optimization

- Selectable PFM/PWM or forced-PWM operation
- 4 selectable output voltage options via TRIM
- Integrated output discharge
- Power-good (PGOOD) output

Integrated Protection

- Overcurrent protection
- Short-circuit protection

Package & Integration

- Integrated inductor
- Ultra-low 1.1mm profile
- Compact 2.0mm $\times$ 2.5mm, 10-pin LGA package

Applications

- Server and Telecom Voltage Regulators
- Graphics Card Core Regulators
- Power Modules

Description

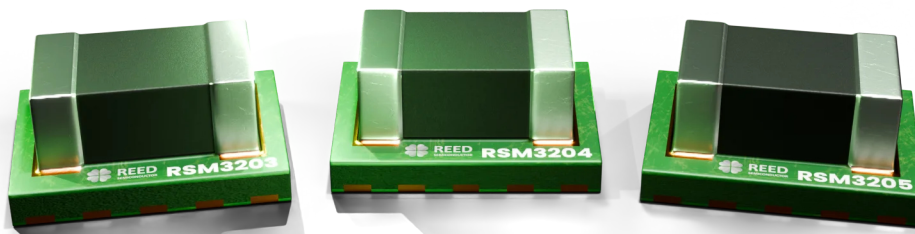
The RSM3203, RSM3204, and RSM3205 are ultra-compact, high-efficiency buck power modules with integrated inductors, delivering 1A, 2A, and 3A of output current, respectively. Housed in a 2.0mm $\times$ 2.5mm LGA package with an ultra-low 1.1mm profile, the family enables highly integrated power conversion for space- and height-constrained applications. The modules operate from a 2.4V to 5.5V input range, making them well suited for compact point-of-load power rails.

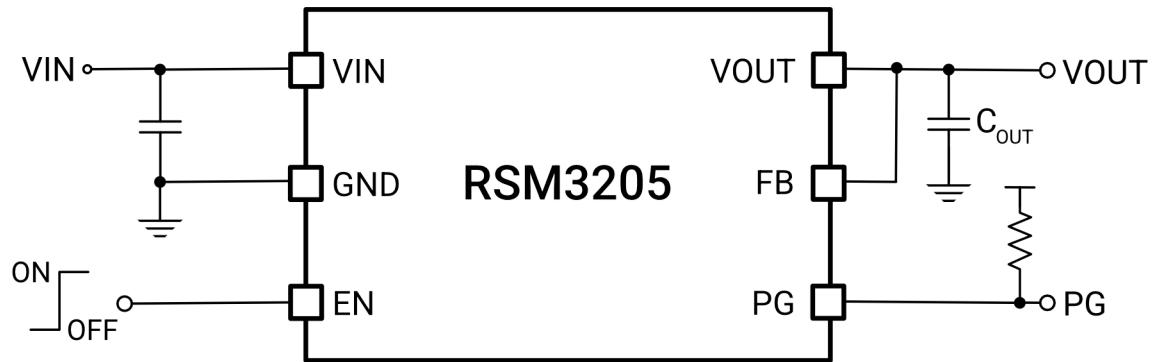
The modules use Constant-On-Time (COT) control for fast transient response and operate at up to 4MHz switching frequency, helping minimize external component size. 1% output voltage accuracy and four selectable output-voltage options through the TRIM pin simplify power-rail configuration while reducing the number of required external components.

Selectable PFM/PWM or forced-PWM operation allows designers to optimize light-load efficiency or maintain fixed-frequency operation. Integrated power-good monitoring and output discharge, together with overcurrent and short-circuit protection, provide robust power management and system protection.

The RSM3203/04/05 are offered in a compact 2.0mm $\times$ 2.5mm $\times$ 1.1mm, 10-pin LGA package, making them well suited for optical modules, smartphones, wearable electronics, camera modules, and compact industrial IoT applications.

PART NUMBER	IOUT (A)	PACKAGE	SIZE
RSM3203	1	LGA-10	2 $\times$ 2.5mm
RSM3204	2	LGA-10	2 $\times$ 2.5mm
RSM3205	3	LGA-10	2 $\times$ 2.5mm



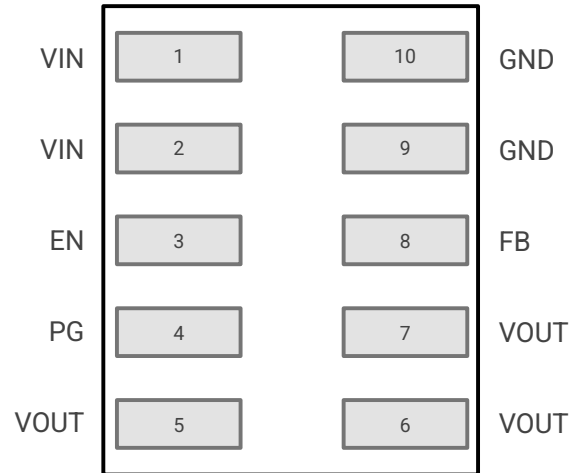
Typical Application Schematic

Device Comparison Table

PART NUMBER	IOUT (A)	V _{FB} (V)	MODE
RSM3203AR	1	0.6	PFM/PWM
RSM3203BR	1	1.2	PFM/PWM
RSM3203CR	1	1.8	PFM/PWM
RSM3203DR	1	2.5	PFM/PWM
RSM3203ER	1	3.3	PFM/PWM
RSM3203FR	1	0.6	Forced PWM
RSM3204AR	2	0.6	PFM/PWM
RSM3204BR	2	1.2	PFM/PWM
RSM3204CR	2	1.8	PFM/PWM
RSM3204DR	2	2.5	PFM/PWM
RSM3204ER	2	3.3	PFM/PWM
RSM3204FR	2	0.6	Forced PWM
RSM3205AR	3	0.6	PFM/PWM
RSM3205FR	3	0.6	Forced PWM

Ordering Information

PART NUMBER	PACKAGE	SIZE	MSL RATING	SHIPPING METHOD	PACKAGE MARKING
RSM3203AR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3203BR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3203CR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3203DR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3203ER	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3203FR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204AR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204BR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204CR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204DR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204ER	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3204FR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3205AR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD
RSM3205FR	LGA-10	2.0 × 2.5mm	Level-3	3000u Tape & Reel	TBD

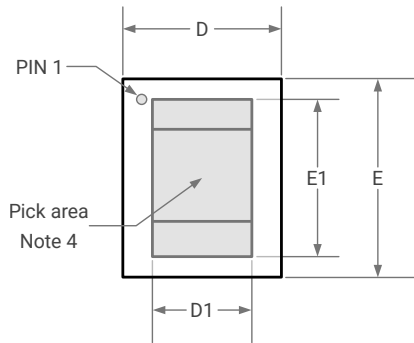
Package Reference**LGA-10 (2.0 × 2.5mm)**

Pin Descriptions

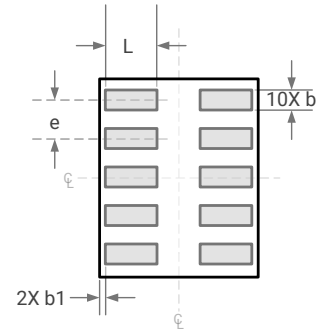
PIN	NAME	TYPE	DESCRIPTION
1, 2	VIN	P	Power input. Connect a 4.7 μ F or larger ceramic bypass capacitor close to the VIN pins.
3	EN	I	Enable input with internal pulldown resistor. Drive high to enable the device and low to disable it. The internal pulldown resistor is disconnected after the device is enabled and the output voltage is in regulation.
4	PG	O	Open-drain power-good output. Pull up to VIN or another suitable supply through a resistor (approximately 100k Ω).
5 – 7	VOUT	P	Regulated output voltage.
8	FB	I	Output voltage feedback and sense input. Connect directly to VOUT when used as a VOUT pin, or connect to the midpoint of the VOUT resistor divider when used as an FB pin. Keep the connection short to minimize noise pickup.
9, 10	GND	G	Ground. Connect close to the ground terminals of the input and output capacitors.

Type: I = Input, O = Output, I/O = Bidirectional, P = Power, G = Ground, – = No Connect.

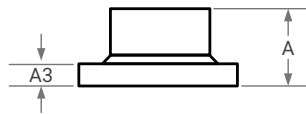
Package Dimensions



TOP VIEW



BOTTOM VIEW

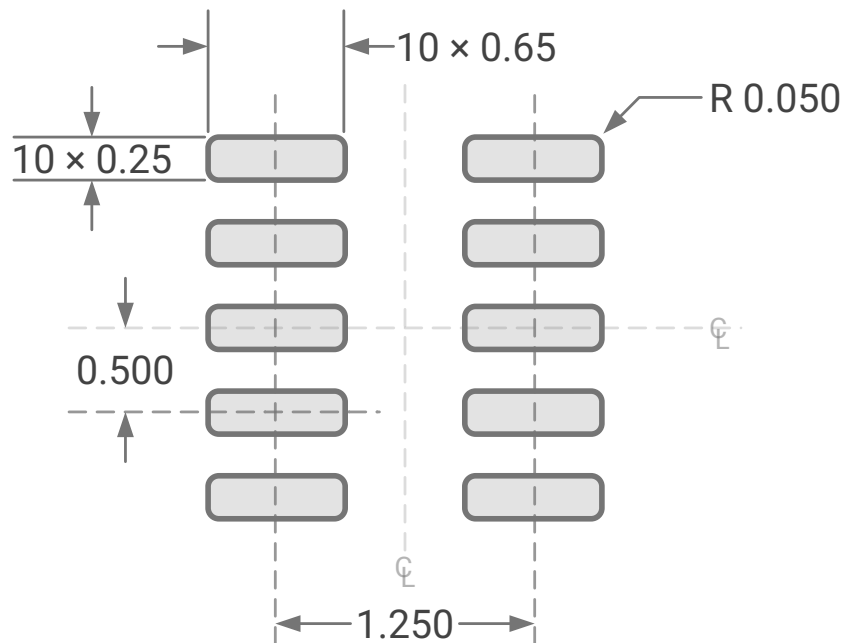


SIDE VIEW

Notes

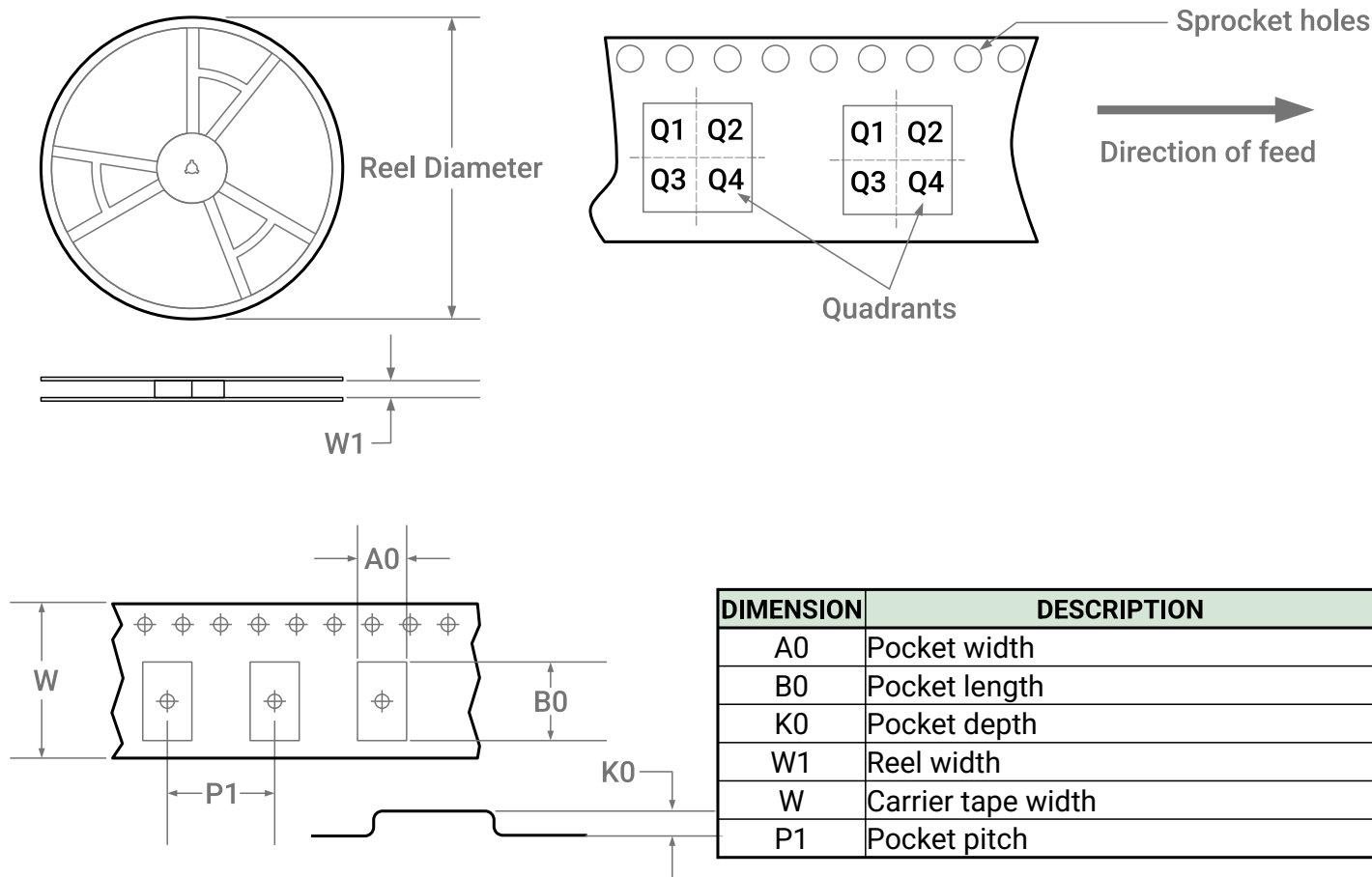
1. All dimensions are in millimeters.
2. Lead coplanarity is 0.1mm maximum.
3. Drawing is not to scale.
4. Recommended pick and place nozzle $\phi 1.3\text{mm}$.

REF	MIN	NOM	MAX
A	—	—	1.1
A3	0.20	0.23	0.26
b	0.20	0.25	0.30
b1	0.05 Typ.		
D	1.90	2.00	2.10
E	2.40	2.50	2.60
D1	1.25 Typ.		
E1	2.00 Typ.		
e	0.50 Typ.		
L	0.60	0.65	0.70

Recommended Land Pattern**Note:**

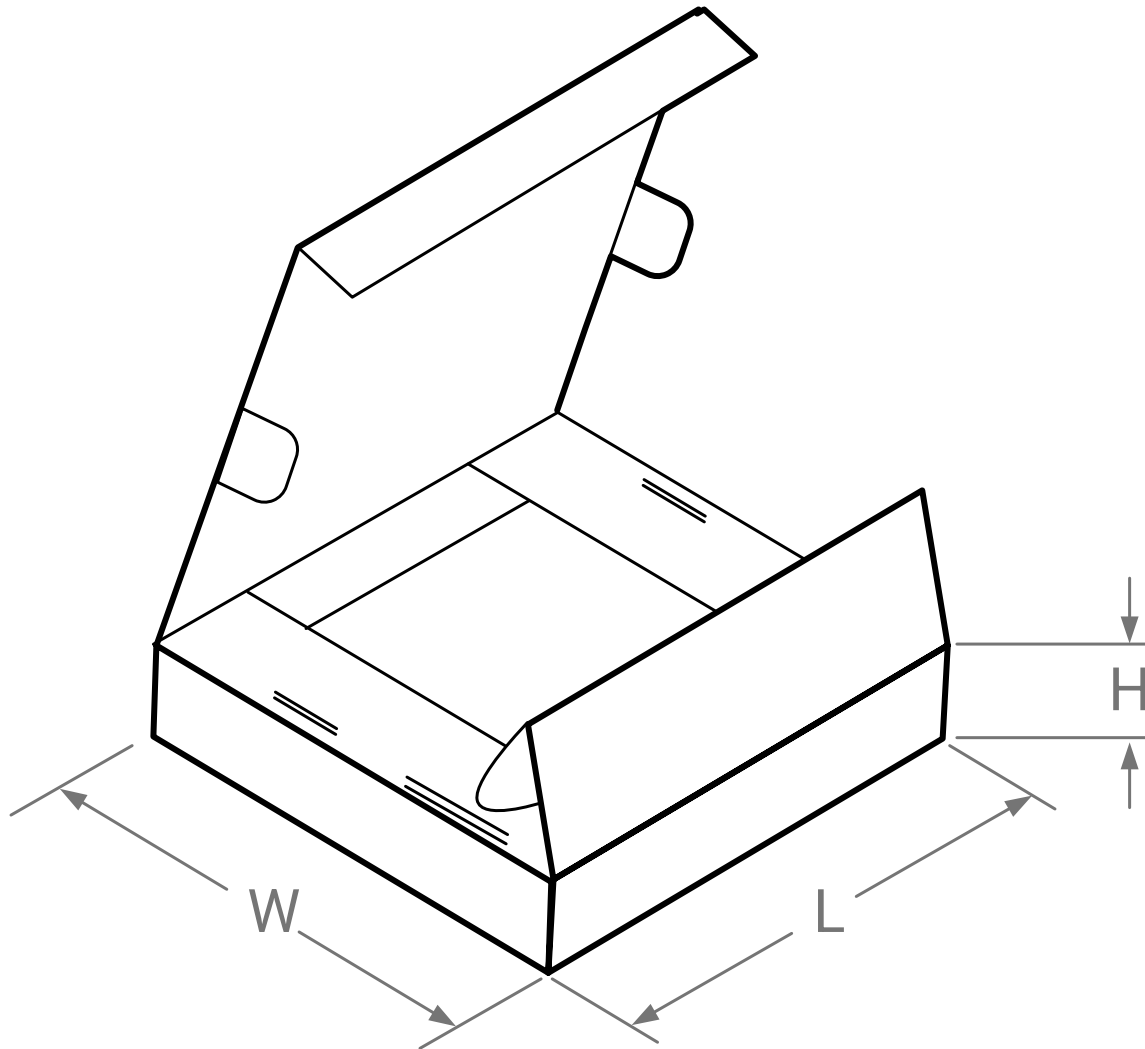
1. All dimensions are in millimeters
2. All measurements are nominal
3. Drawing is not to scale

Tape and Reel Information



PACKAGE SIZE	REEL DIAMETER	W1	A0	B0	K0	P1	W	QUADRANT
2 × 2.5	330	12.4	2.15	2.75	1.25	4.00	12.0	Q1

- Note:
1. All dimensions are nominal
 2. All dimensions are in millimeters (mm)

Pizza Box Dimensions


PACKAGE SIZE	UNITS / BOX	LENGTH	WIDTH	HEIGHT
2 × 2.25	5000	358	340	50

Notes:

1. All measurements are in millimeters;
2. All measurements are nominal.