RS53203 • RS53204 • RS53205 5.5V, 1A • 2A • 3A Buck Converters

Features

High-Efficiency Power Conversion

- Wide 2.4V to 5.5V input voltage range
- Output current options:
  - 1A (RS53203)
  - 2A (RS53204)
  - 3A (RS53205)
- 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

- Compact 0.8mm × 1.2mm, 6-pin WLCSP package

Applications

- Optical modules
- Smart phones
- Wearable electronics
- Camera modules

Description

The RS53203, RS53204, and RS53205 are compact, high-efficiency synchronous step-down converters delivering up to 1A, 2A, and 3A, respectively. Operating from a 2.4V to 5.5V input, the devices are optimized for space-constrained point-of-load applications requiring high power density and a minimal external component count.

The devices support PFM/PWM and forced-PWM operating modes. In PFM/PWM mode, the converter automatically transitions between PFM and PWM operation to improve efficiency at light loads. Forced-PWM mode maintains a 4MHz switching frequency for predictable switching behavior and compact external components.

Four selectable output-voltage options provide design flexibility while simplifying implementation. Integrated features include Power Good, output discharge, overcurrent protection, and short-circuit protection.

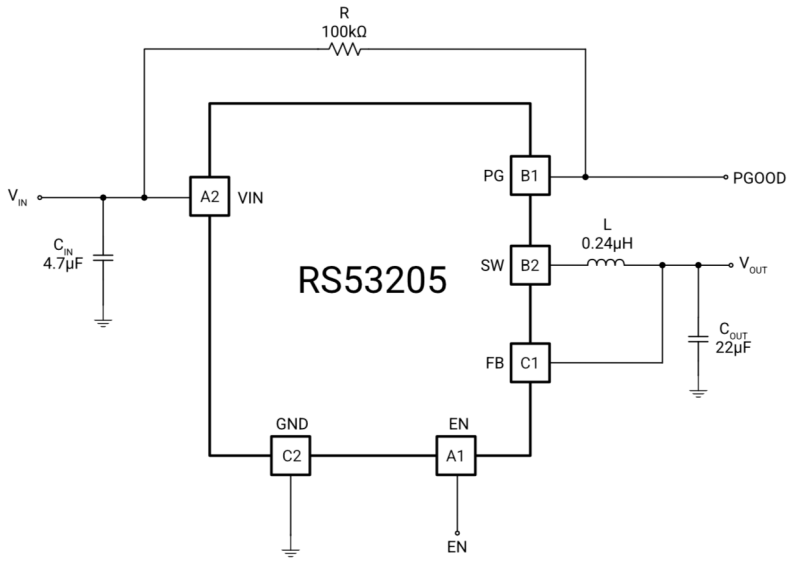
The RS53203/04/05 are offered in a compact 0.8mm × 1.2mm, 6-pin WLCSP package, making them well suited for optical modules, smartphones, wearable electronics, camera modules, and compact IoT systems.

PART NUMBER	IOUT (A)	PACKAGE	SIZE
RS53203	1	WLCSP-6	0.8 × 1.2mm
RS53204	2	WLCSP-6	0.8 × 1.2mm
RS53205	3	WLCSP-6	0.8 × 1.2mm



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Typical Application Schematic



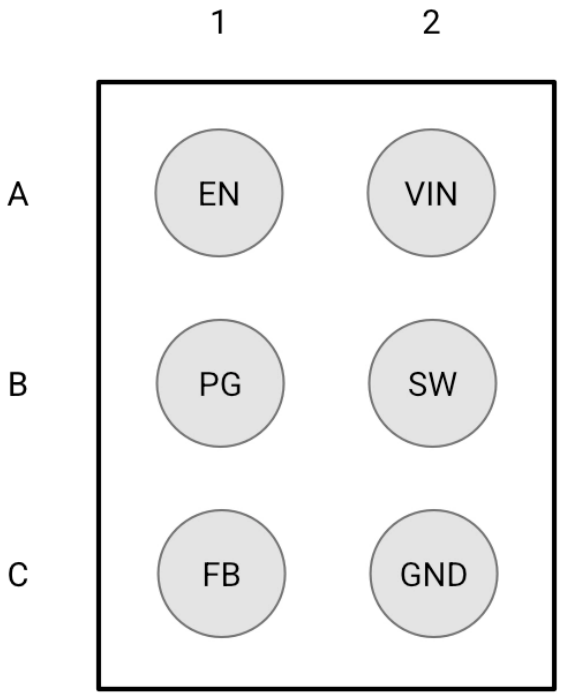
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Ordering Information

PART NUMBER	PACKAGE	SIZE	MSL RATING	SHIPPING METHOD	PACKAGE MARKING	CURRENT (A)	VFB (V)
RS53203AR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	203A	1	0.6
RS53203BR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	203B	1	1.2
RS53203CR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	203C	1	1.8
RS53203DR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	203D	1	2.5
RS53203ER	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	203E	1	3.3
RS53204AR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	204A	2	0.6
RS53204BR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	204B	2	1.2
RS53204CR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	204C	2	1.8
RS53204DR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	204D	2	2.5
RS53204ER	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	204E	2	3.3
RS53205AR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	205A	3	0.6
RS53205BR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	205B	3	1.2
RS53205CR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	205C	3	1.8
RS53205DR	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	205D	3	2.5
RS53205ER	WLCSP-6	2.0 × 2.5mm	Level-1	3000u Tape & Reel	205E	3	3.3

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Package Reference



WLCSP-6 (0.8 × 1.2mm)

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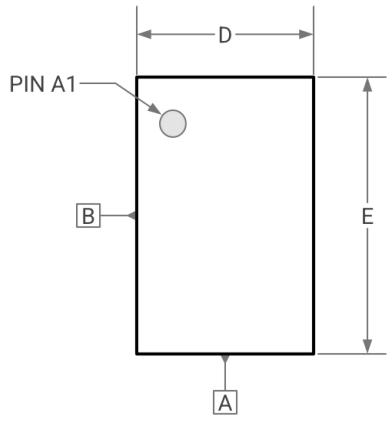
Pin Descriptions

PIN	NAME	TYPE	DESCRIPTION
A1	EN	I	Active-high enable input. An internal pulldown resistor is disconnected when the device is enabled and the output voltage is in regulation, and reconnected when a low level is detected on EN.
A2	VIN	P	Power input. Connect a 4.7μF or larger ceramic bypass capacitor close to the VIN pin.
B1	PG	O	Open-drain power good output. Connect to VIN or another pull-up supply through a 1kΩ to 100kΩ resistor.
B2	SW	P	Switch node. Connect to the output inductor.
C1	FB	I	Output-voltage feedback input. Connect directly to V_{OUT} when using the internal reference voltage. For other output voltages, connect to V_{OUT} through a resistor divider.
C2	GND	G	Ground. Connect close to the GND terminals of the input and output capacitors.

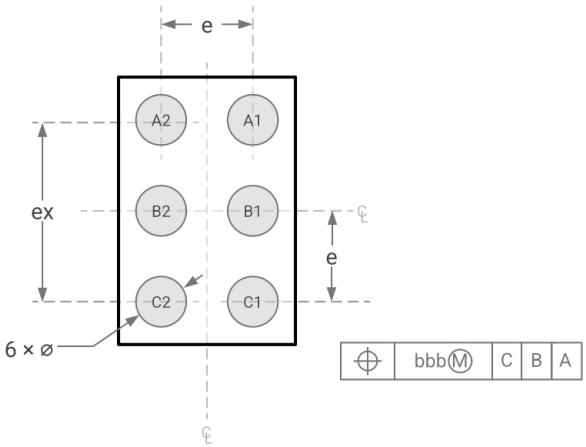
Type: I = Input, O = Output, I/O = Bidirectional, P = Power, G = Ground, — = No Connect.

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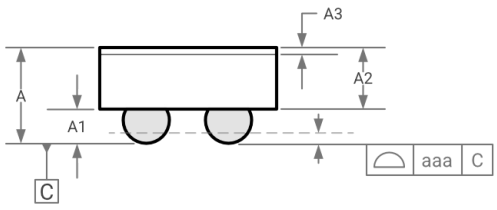
Package Dimensions



TOP VIEW



BOTTOM VIEW



SIDE VIEW

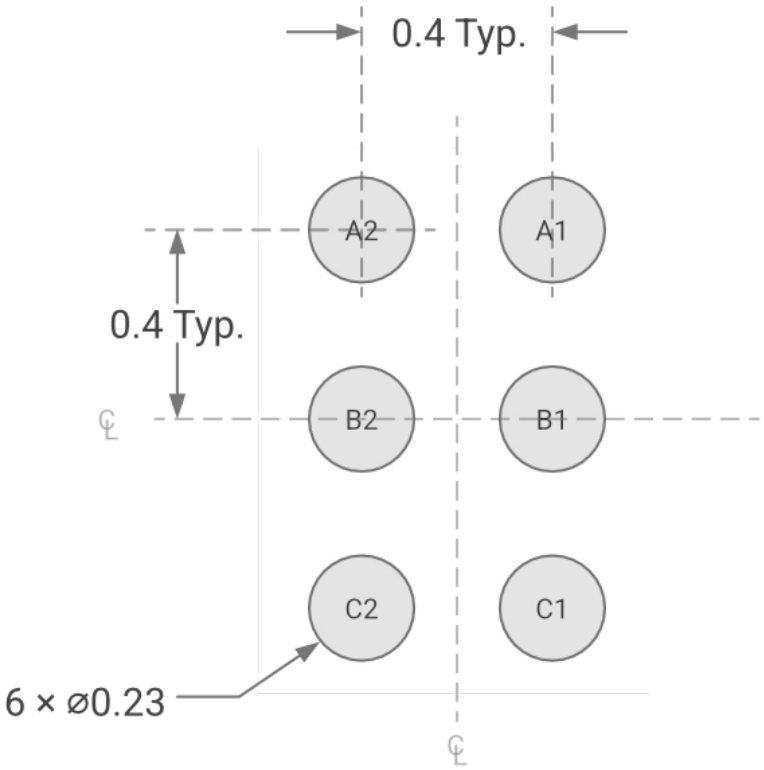
REF	MIN	NOM	MAX
A	—	—	0.50
A1	0.13	0.16	0.19
A2	0.250	0.275	0.300
A3	—	0.025	—
D	1.17	1.19	1.21
E	0.75	0.77	0.79
e	0.40 Typ.		
ex	0.80 Typ.		
Geometric Tolerancing			
aaa	0.05		
bbb	0.15		

Notes

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

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Recommended Land Pattern

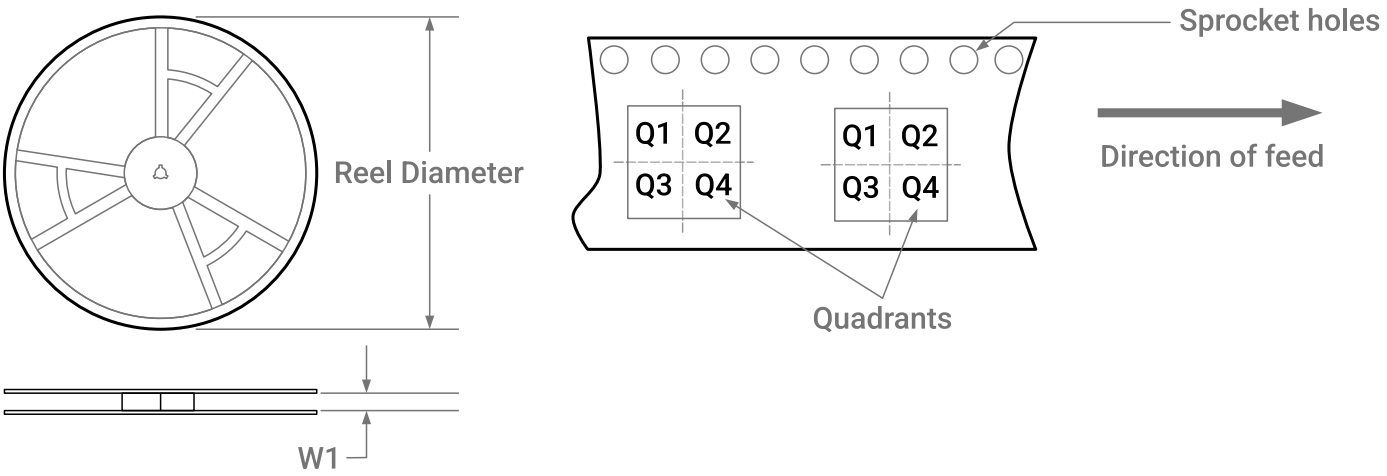


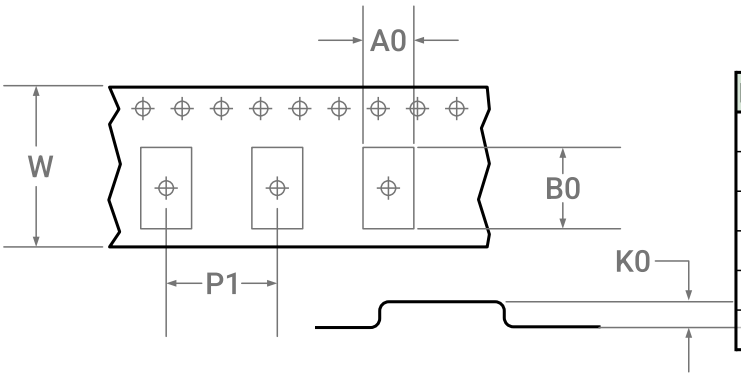
Note:

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

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Tape and Reel Information





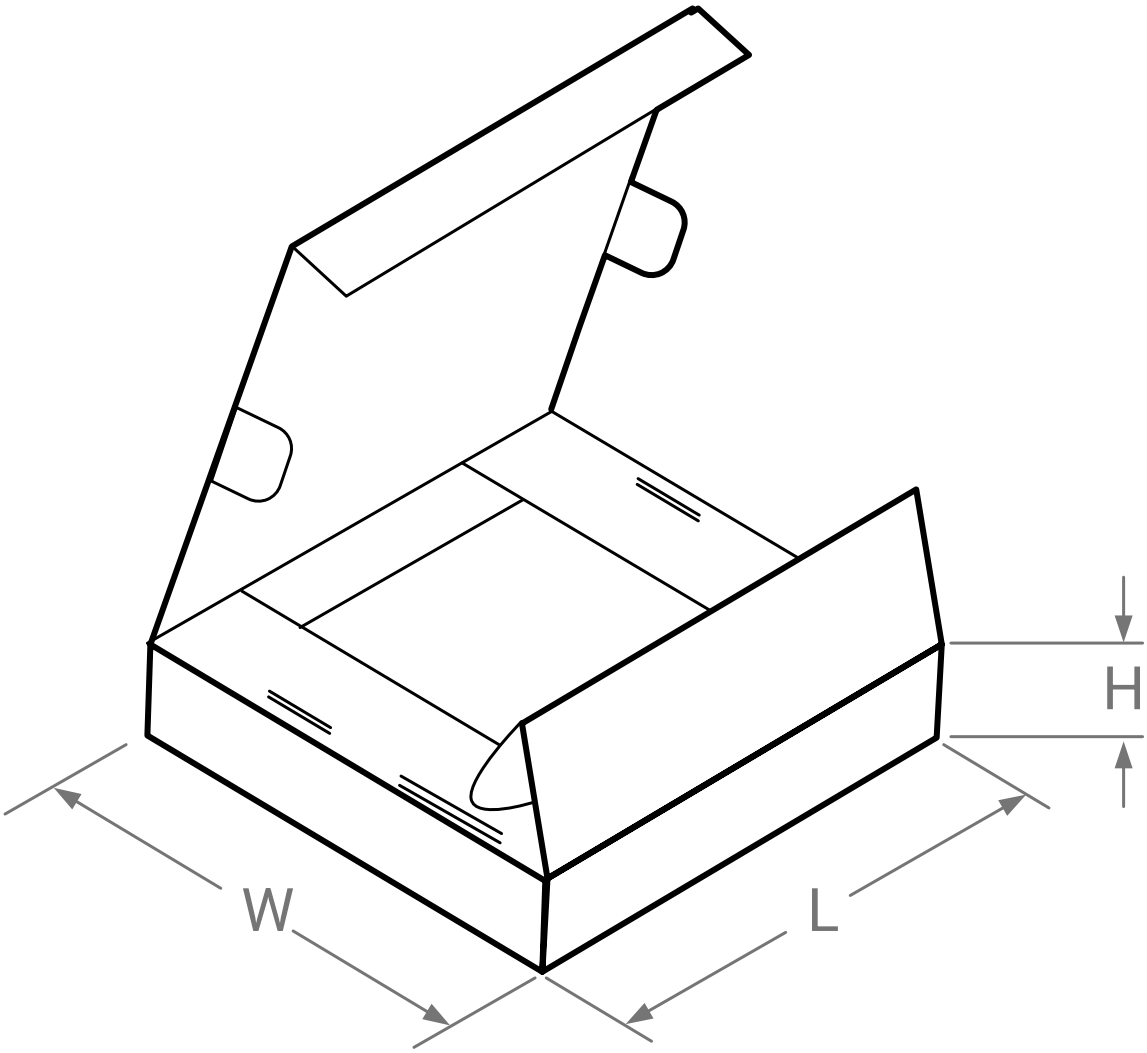
DIMENSION	DESCRIPTION
A0	Pocket width
B0	Pocket length
K0	Pocket depth
W1	Reel width
W	Carrier tape width
P1	Pocket pitch

PACKAGE SIZE	REEL DIAMETER	W1	A0	B0	K0	P1	W	QUADRANT
0.8 × 1.2	179	9.2	0.90	1.30	0.62	4.00	8.0	Q1

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

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Pizza Box Dimensions



PACKAGE SIZE	UNITS / BOX	LENGTH	WIDTH	HEIGHT
0.8 × 1.2	3000	205	200	30

Notes:

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

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