

RS31515 Stackable 6V to 60V, 15A eFuse with Current Monitoring

Features

Electrical & Power Features

- The RS31515 supports a wide input voltage range: 6V to 60V
- Maximum 15A output current
- Integrated 7mΩ power MOSFET

Monitoring & Control

- Integrated current sense and current monitor
- Adjustable current limit threshold
- Adjustable output soft start time and insertion delay time

Protection Features

- Input OV, output short-circuit, over-temperature, FET short protections
- Fault indication signal
- Selectable protection mode: Latch or auto-retry

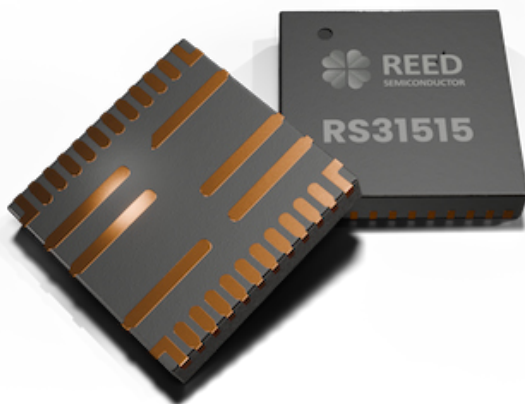
Scalability & System Integration

- Paralleled operation for higher current applications

Applications

- AI accelerator and graphics cards
- Servers and high-performance computing
- Networking equipment
- Telecom power systems

PART NUMBER	PACKAGE	SIZE
RS31515	QFN-30	5 × 5 mm

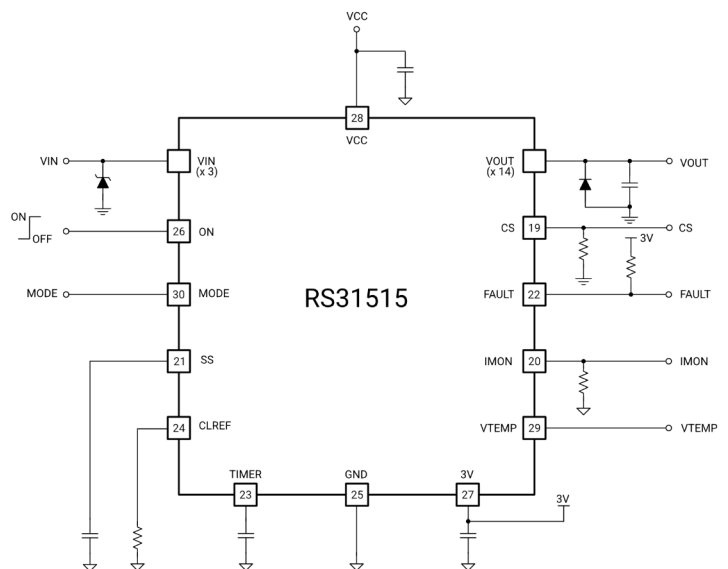


Description

The RS31515 is a high-performance integrated 60V, 15A eFuse that delivers robust circuit protection, precise current control, and integrated current monitoring for industrial, server, networking, and telecommunications applications. With a low 7mΩ integrated MOSFET, the device minimizes power loss while supporting continuous load currents up to 15A, making it ideal for high-efficiency power distribution systems.

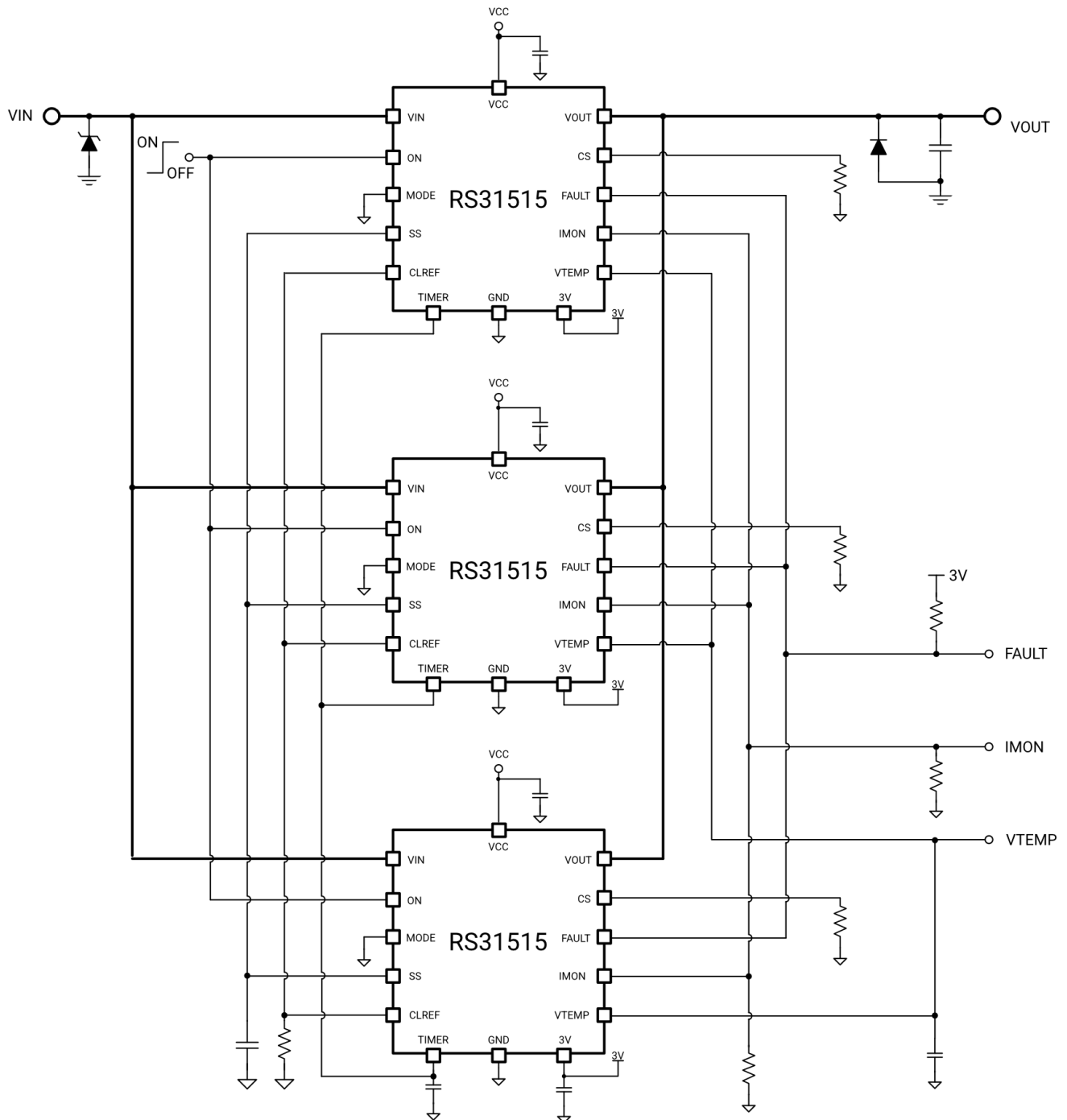
An external resistor connected to CLREF programs the current limit, while the integrated current-sense amplifier provides a high-accuracy monitor output for real-time system diagnostics and power management. Programmable soft-start and insertion delay allow designers to control inrush current during startup, improving system reliability and reducing stress on downstream components.

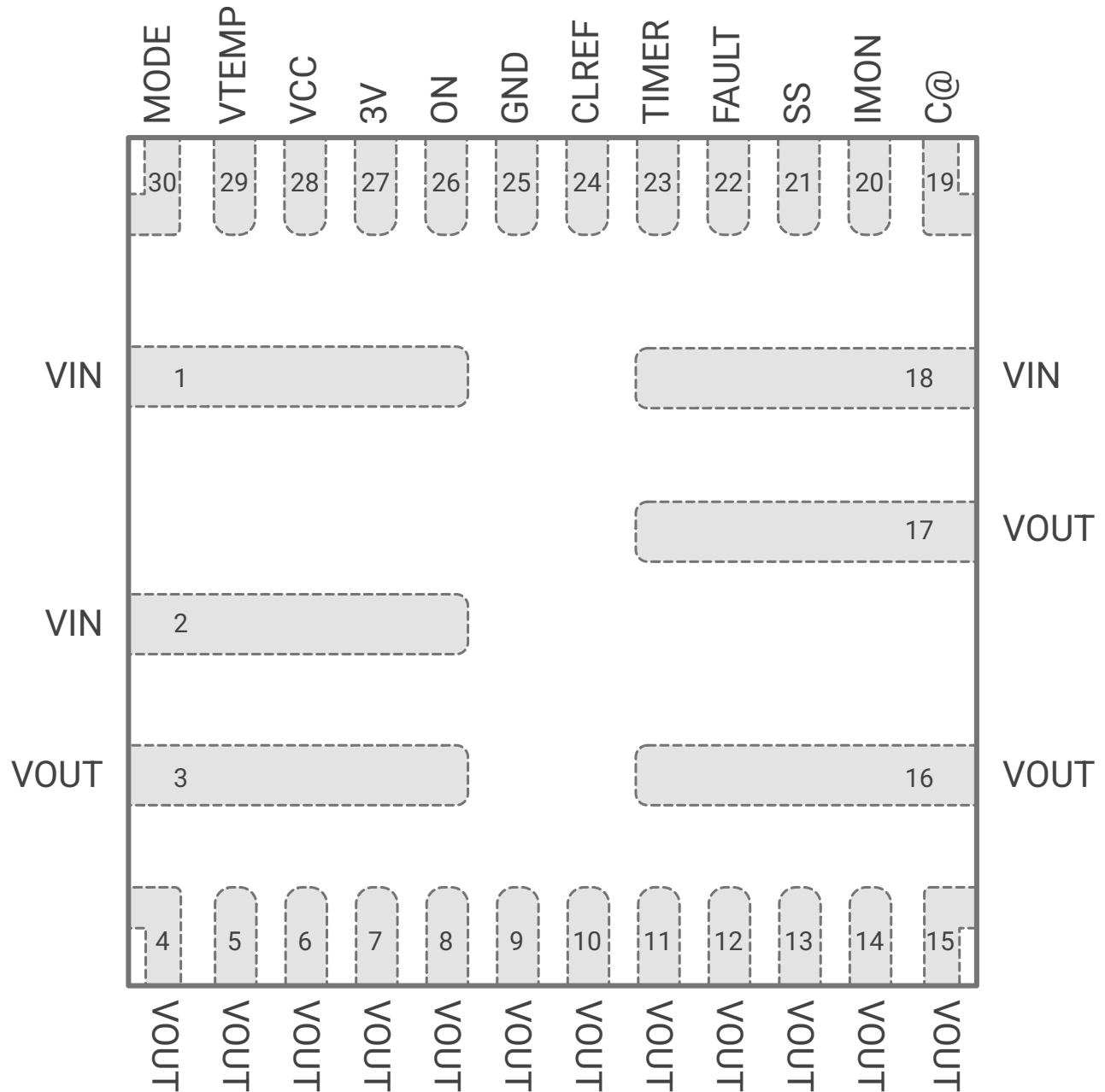
Comprehensive protection features—including adjustable overcurrent limiting, input overvoltage protection, short-circuit protection, and overtemperature protection—help safeguard both the power source and connected loads. Designers can select either latch-off or auto-retry fault recovery to match system requirements, while multiple RS31515 devices can be operated in parallel to support higher-current applications. The device is offered in a compact 5 mm × 5 mm QFN-30 package, providing a space-efficient solution for high-density power systems.



Typical Application Schematic

Parallel Operation

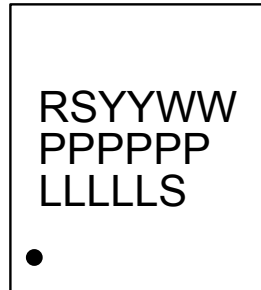


Package Reference

Top View
LGA-24 (5 × 6 mm)

Ordering Information

PART NUMBER	PACKAGE	SIZE	MSL RATING	SHIPPING METHOD	PACKAGE MARKING
RS31511AR	LGA - 24	5 × 6 mm	Level - 3	3000u Tape & Reel	R1511A
RS31511BR	LGA - 24	5 × 6 mm	Level - 3	3000u Tape & Reel	R1511B

Top Marking



Line 1

- RS: Prefix of Reed Semiconductor (RS replaced by RE for engineering lot)
- YY: Year code
- WW: Week code

Line 2

- P P P P P P; Truncated part number

Line 3

- L L L L L: Lot code
- S: Assembly site code

Note: To improve clarity, this datasheet explicitly identifies all configurable ordering options. Earlier part numbers that omitted default option designators remain valid and fully supported.

Absolute Maximum Ratings

	MIN	MAX	UNIT
VIN, VOUT	-0.3	65	V
VIN (25ns)		85	V
OtherPins	-0.3	6.5	V
Continuous power dissipation $T_A = 25^\circ\text{C}$		5.6	W
Junction Temperature	-40	150	$^\circ\text{C}$
Storage Temperature	-65	150	$^\circ\text{C}$
Lead Soldering Temperature		260	$^\circ\text{C}$

Note: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress limits only and do not imply functional operation. Prolonged exposure to absolute maximum rating conditions may affect device reliability.

Recommended Operating Conditions

	MIN	MAX	UNIT
VIN	9	60	V
I_{OUT}	0	15	A
Operating Junction Temperature	-40	125	$^\circ\text{C}$

Note: Operation outside the recommended operating conditions is not guaranteed.

Thermal Ratings

THERMAL METRIC	QFN-30	UNIT
Junction to Top Characterization, Ψ_{JT}	9.5	$^\circ\text{C}/\text{W}$
Junction to Ambient, Θ_{JA}	22	$^\circ\text{C}/\text{W}$

ESD Ratings

ELECTROSTATIC DISCHARGE	STANDARD	RATING	UNIT
Human Body Model (HBM)	ANSI/ESDA/JEDEC JS-001 ⁽¹⁾	± 2000	V
Charge Device Model (CDM)	JEDEC JESD22-101 ⁽²⁾	± 1000	V

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

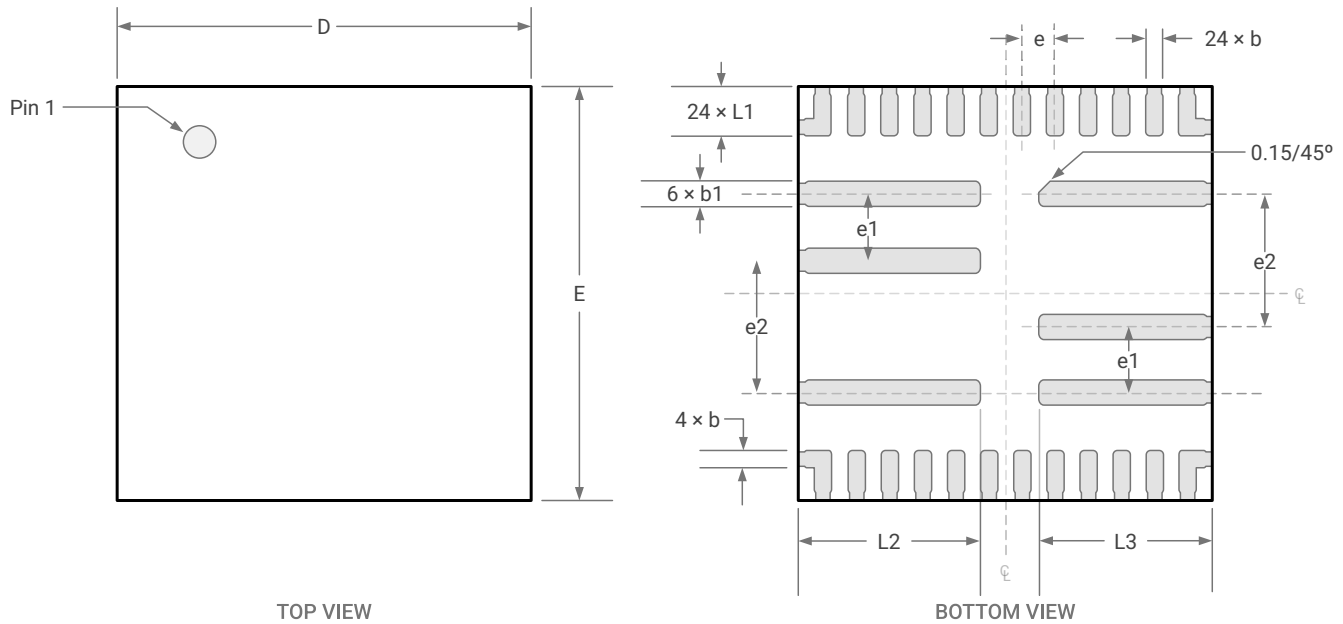
(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

Pin Descriptions

PIN	NAME	TYPE	DESCRIPTION
1, 2, 18	VIN	P	Power input. Connect to the input supply using short, wide copper traces. Place a TVS diode from VIN to GND for transient suppression, selecting appropriate standoff and clamping voltages for the application.
3 - 17	VOUT	P	Power output. Connect to the load using short, wide copper traces to minimize voltage drop and improve thermal performance. A Schottky diode from VOUT to GND (anode to GND, cathode to VOUT) may be added to clamp negative voltage transients.
19	CS	O	Current-sense input. The voltage on this pin is compared with the CLREF reference voltage to determine the programmable overcurrent limit.
20	IMON	O	Current monitor output. This pin sources a current proportional to the load current. Connect a resistor from IMON to GND to convert the output current into a proportional voltage for system monitoring and diagnostics.
21	SS	I	Soft-start programming input. Connect a capacitor from SS to GND to set the output voltage ramp-up time during startup and reduce inrush current.
22	FAULT	O	Open-drain fault indicator output. Pulls low when a fault condition is detected. Requires an external pull-up resistor to the desired logic supply.
23	TIMER	I	Timing configuration input. Connect a capacitor from TIMER to GND to program the insertion delay, overcurrent blanking time, and auto-retry period (when auto-retry mode is selected).
24	CLREF	I	Current-limit reference input. Connect a resistor from CLREF to GND to program the overcurrent limit threshold.
25	GND	G	Signal ground. Connect directly to the system ground plane using a low-impedance connection.
26	ON	I	Enable input. Drive high to turn on the internal MOSFET and enable the output. Drive low to disable the output.
27	3V	P	3V LDO output. Internal 3V regulator output. Bypass to GND with a minimum 2.2 μ F ceramic capacitor placed close to the pin.
28	VCC	P	4.5V LDO output. Internal 4.5V regulator output. Bypass to GND with a minimum 2.2 μ F ceramic capacitor placed close to the pin.
29	VTEMP	O	Temperature monitor output. Provides an analog output proportional to the internal die temperature. Connect a 1nF capacitor from VTEMP to GND for noise filtering.
30	MODE	I	Fault response configuration input. Selects the protection recovery mode. Pull MODE low to enable auto-retry operation. Leave MODE floating or pull it high to the 3V or VCC rail to enable latch-off operation following a fault.

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

Package Dimensions



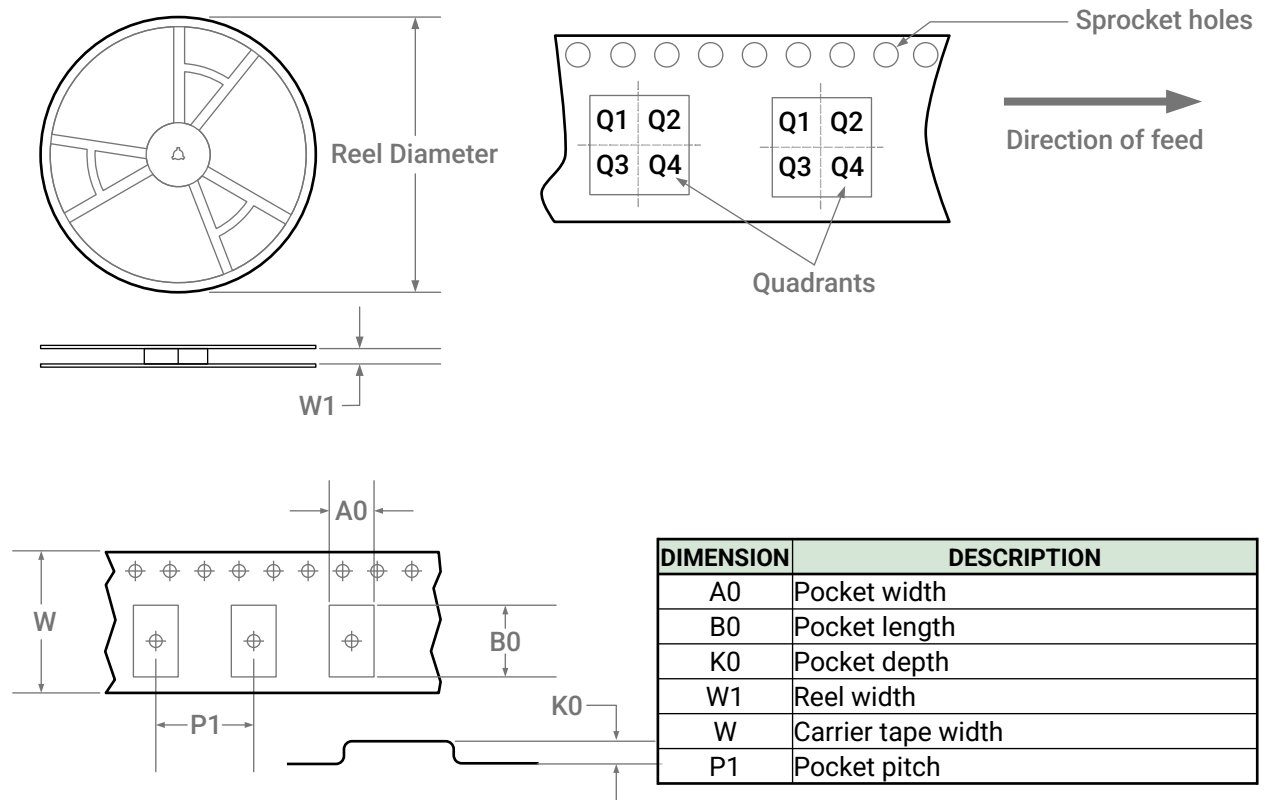
Notes

1. All dimensions are in millimeters.
2. Lead coplanarity: 0.1 mm max.
3. Drawing is not to scale.

REF	MIN	NOM	MAX
A	0.800	0.850	0.900
A1	—	—	0.050
A3	0.203 Ref.		
D	4.90	5.00	5.10
E	4.90	5.00	5.10
b	0.150	0.200	0.250
b1	0.250	0.300	0.350
e	0.40 BSC		
e1	0.80 BSC		
e2	1.60 BSC		
L1	0.550	0.600	0.650
L2	2.150	2.200	2.350
L3	2.050	2.100	2.150

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

Tape and Reel Information

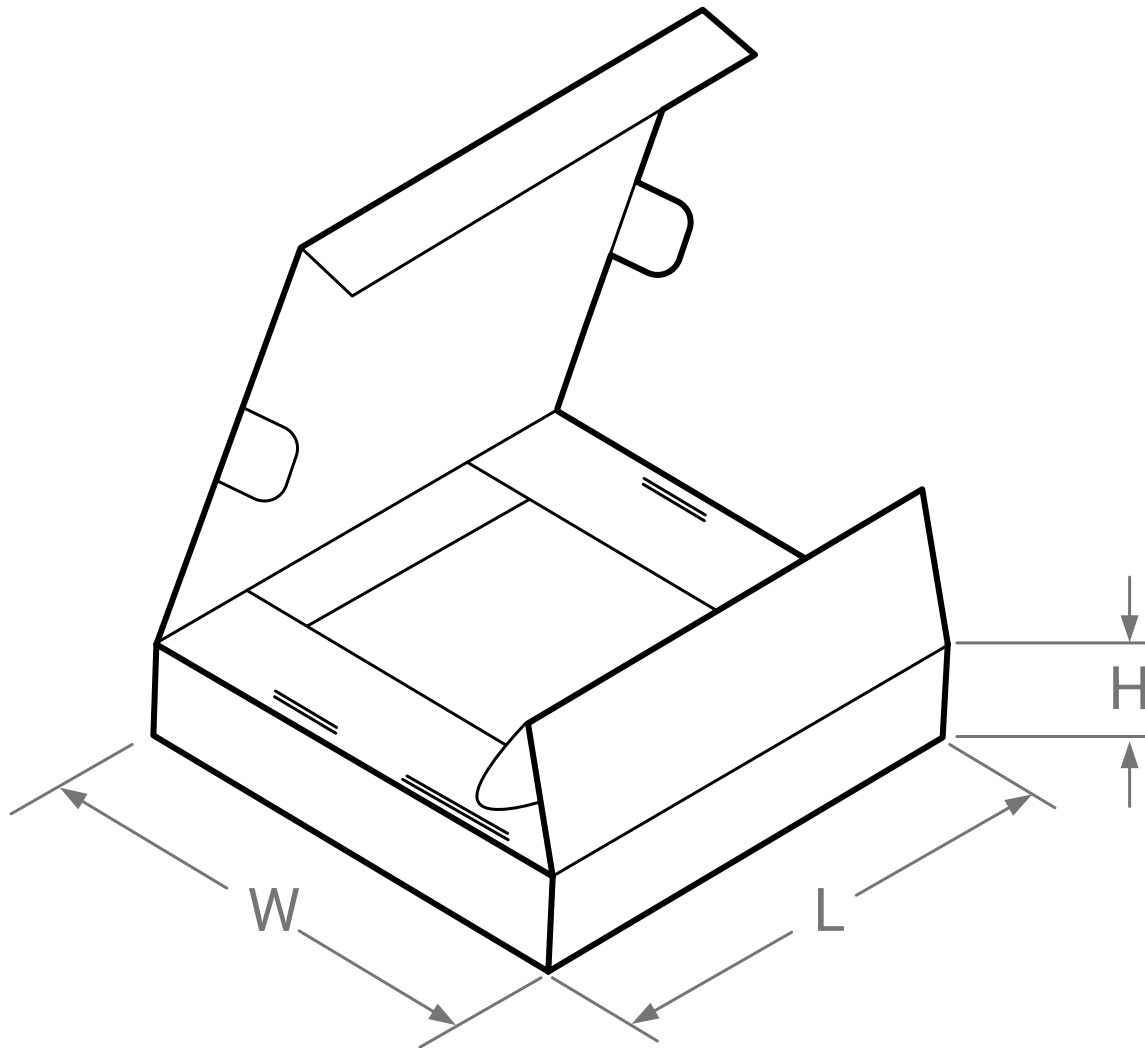


DEVICE SIZE	REEL DIAMETER	W1	A0	B0	K0	P1	W	QUAD
5 × 5	330	12.8	5.25	5.25	1.10	8.00	12.0	Q1

Notes:

1. All dimensions are in millimeters
2. All dimensions are nominal

Pizza Box Dimensions



DEVICE SIZE	UNITS/BOX	L	W	H
5 × 5	5000	355	340	50