RS31340 16V, 10A Circuit Breaker eFuse with Precision Current Monitor

Features

High-Current Power Path Protection

- Wide 2.97V to 16V operating range
- Integrated 5.8mΩ pass MOSFET
- Up to 10A continuous current capability

Precision Current Monitoring & Circuit Protection

- Integrated accurate current monitor output (ILIM)
- Circuit-breaker protection response
- Adjustable 1.5A to 10A current limit
- Adjustable transient overcurrent blanking timer (ITIMER) for high transient loads
- Fast-trip short-circuit protection

Adjustable Input Protection & Control

- Adjustable input overvoltage lockout (OVLO)

Enable input with adjustable UVLO threshold

- Adjustable output slew rate (dV/dt)
- Fast-response overvoltage protection

Intelligent System Monitoring

- Power-good output (PG) for system monitoring
- Fault indication output (FLT)

Thermal Protection & Reliability

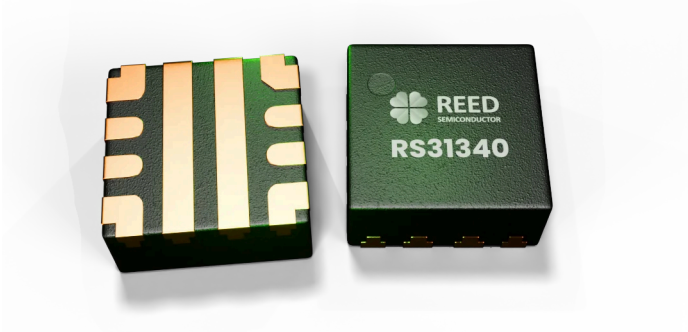
- Built-in over-temperature protection

RS31340 Package & Compliance

- 2 × 2 QFN-10 Package
- RoHS compliant and Green

Applications

- USB PD protection
- PCI and PCIe cards
- Appliances and power tools
- Smartphones and tablets
- Industrial systems



Description

The RS31340 is an active circuit protection device that integrates a low 5.8mΩ MOSFET to provide comprehensive fault protection and accurate current monitoring for 2.97V to 16V power rails. Designed for applications requiring up to 10A of load current, the device protects downstream circuitry from overcurrent, short-circuit, overvoltage, and overtemperature fault conditions while minimizing power loss.

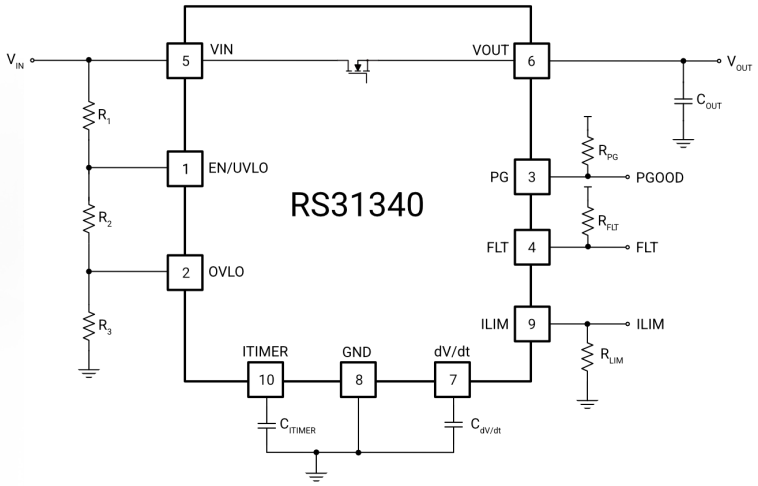
The output current limit is programmable from 1.5A to 10A using a single external resistor connected to the ILIM pin. A programmable overcurrent blanking timer allows brief load transients without nuisance shutdown, while fast short-circuit protection rapidly disconnects the load during severe fault conditions. Accurate load current monitoring is provided through the ILIM pin, simplifying system telemetry and diagnostics.

The RS31340 operates as a circuit breaker, disconnecting the load when the programmed current limit is exceeded. Adjustable output slew rate reduces inrush current during startup, while programmable input UVLO enables flexible system power sequencing.

The device also integrates programmable input overvoltage protection, fault (FLT) or power-good (PG) indication depending on the selected device option, and overtemperature protection to ensure robust operation in demanding applications.

The RS31340 is offered in a compact 10-pin, 2mm × 2mm QFN package.

Typical Application Circuit



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Device Comparison Table

PART NUMBER	OVERVOLTAGE PROTECTION	OVERCURRENT RESPONSE	FAULT REPONSE
RS31340A	Adjustable OVLO	Circuit Breaker	Latch-off
RS31341B	Adjustable OVLO	Circuit Breaker	Auto-retry

Note: OVC = Overvoltage Clamp, OVLO = Overvoltage Lock-out

Ordering Information

PART NUMBER	PACKAGE	SIZE	MSL RATING	SHIPPING METHOD	PACKAGE MARKING
RS31340AR	QFN - 10	2 × 2	Level - 2	3000u Tape & Reel	340A
RS313340BR	QFN - 10	2 × 2	Level - 2	3000u Tape & Reel	340B

Top Marking



Line 1

- R: Prefix of Reed Semiconductor (RS replaced by RE for engineering lot)
- Y: Year code
- W: Week code
- S: Assembly site code

Line 2

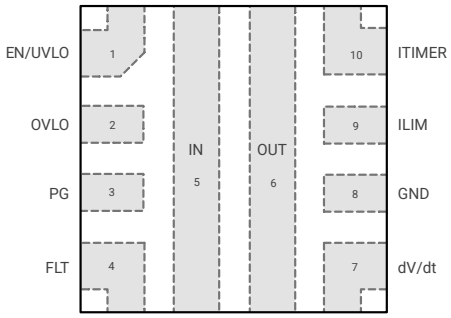
- PPPP; Truncated part number

Line 3

- LLL: Lot code

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Package Reference



Top View - RS31340

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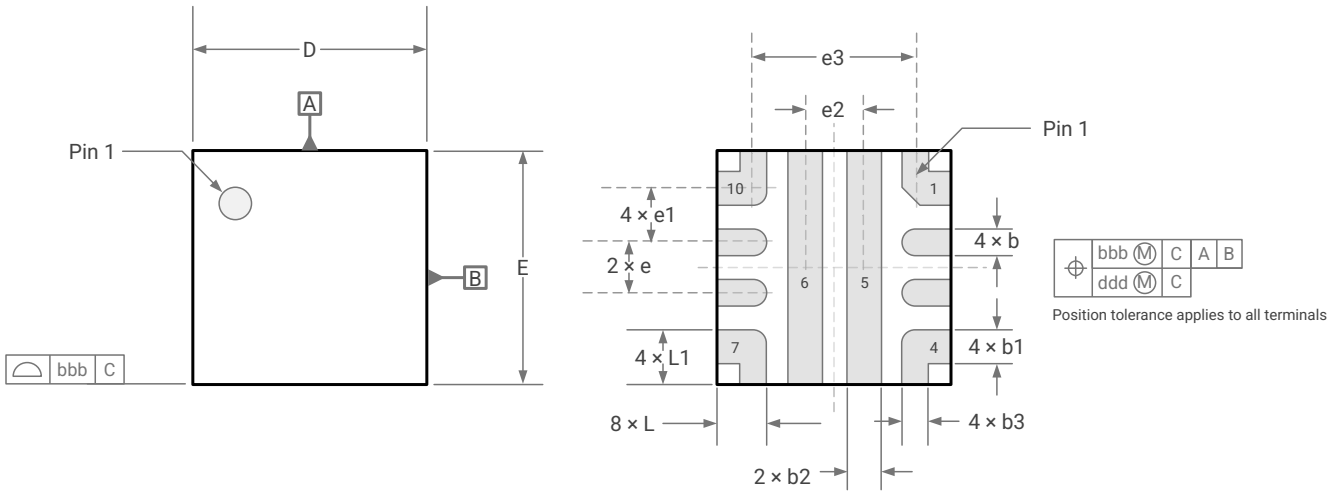
Pin Descriptions

PIN	NAME	TYPE	DESCRIPTION
1	EN/UVLO	I	Active-high enable and UVLO input. Pull high to enable the device and pull low to disable it. Connect to a resistor divider from VIN to GND to set the input UVLO threshold. Do not leave this pin floating.
2	OVLO	I	RS313305/RS31337: Input overvoltage lockout input. Connect to a resistor divider from VIN to GND to set the OVLO threshold. This pin also functions as an active-low enable input. Do not leave this pin floating.
3	PG	O	RS31336/RS31337: Power Good output. Open-drain output that asserts high (with an external pull-up) when the internal MOSFET is fully enhanced and the PGTH input exceeds the programmed threshold.
4	FLT	O	RS31335: Fault output. Open-drain output pulled low when a fault condition is detected.
5	IN	P	Input supply voltage. Connect to the protected power source.
6	OUT	P	Protected output voltage. Connect to the load.
7	dV/dt	I	Output slew-rate control. Connect a capacitor from this pin to GND to program the output voltage rise time during turn-on.
8	GND	G	Device ground. Connect directly to the system ground plane.
9	ILIM	I	Current-limit set and current-monitor output. Connect a resistor from ILIM to GND to program the output current limit. The ILIM voltage provides an analog indication of output current. Do not leave this pin floating.
10	ITIMER	I	Overcurrent blanking timer. Connect a capacitor from ITIMER to GND to set the transient overcurrent blanking time, allowing temporary load transients above the programmed current limit but below the fast-trip threshold. Leave the pin open for the fastest Overcurrent response.

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

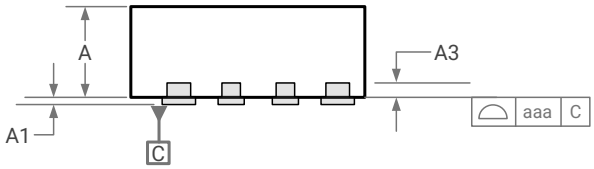
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Package Dimensions



TOP VIEW

BOTTOM VIEW



SIDE VIEW

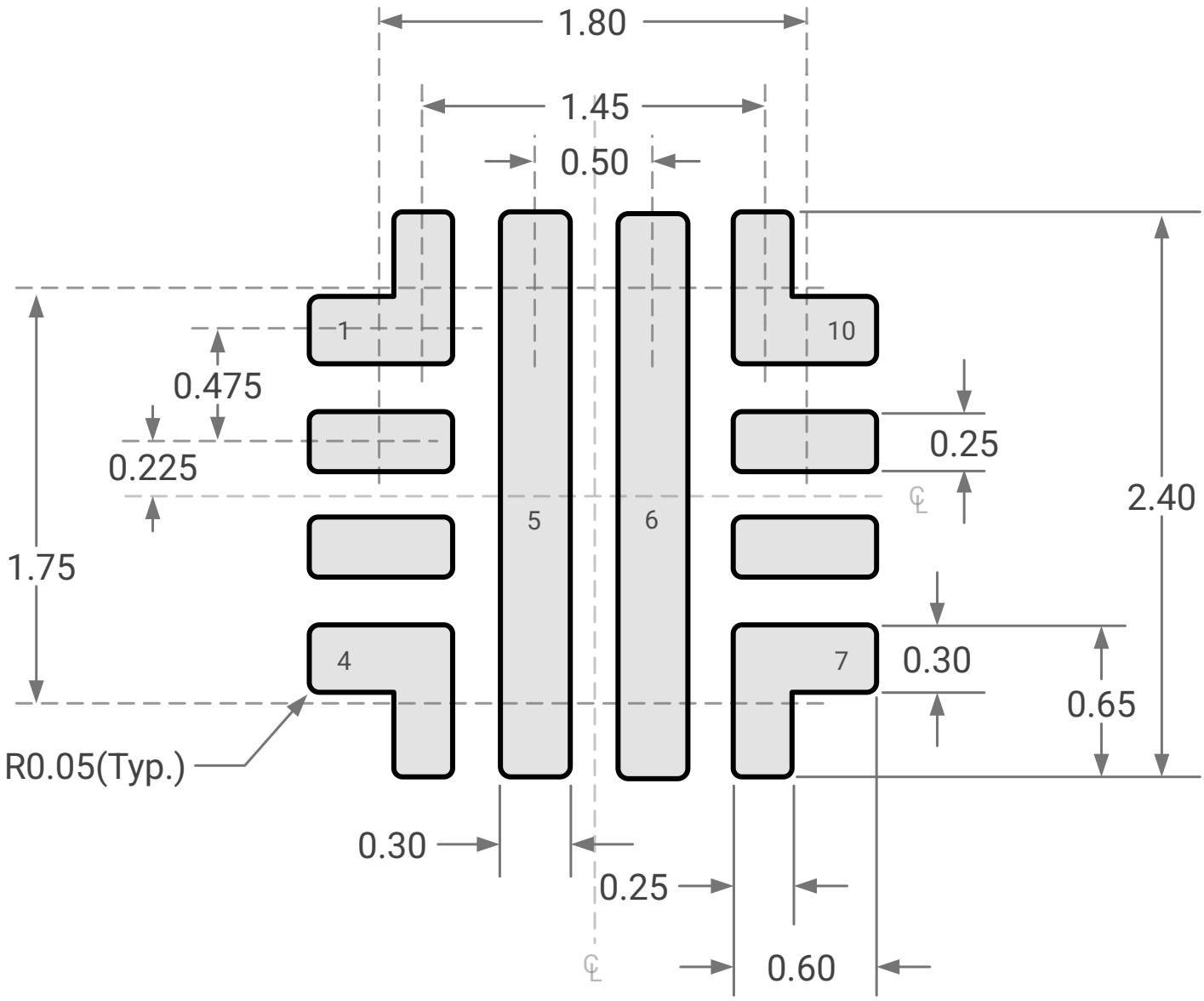
Notes

1. All dimensions are in millimeters.
2. Dimension b is measured 0.15 mm to 0.30 mm from the terminal tip. If an end radius is present, exclude the radius from the measurement.
3. Coplanarity applies to the exposed pad and all terminals.
4. Drawing is not to scale.

REF	MIN	NOM	MAX
A	0.750	0.850	0.950
A1	—	—	0.050
A3		0.023 Ref.	
D	1.900	2.000	2.100
E	1.900	2.000	2.100
b	0.200	0.250	0.300
b1	0.250	0.300	0.350
b2	0.250	0.300	0.350
b3	0.200	0.250	0.300
e		0.450 BSC	
e1		0.475 BSC	
e2		0.500 Ref.	
e3		1.450 Ref.	
L	0.300	0.400	0.500
L1	0.400	0.450	0.500
Geometric Tolerances			
aaa		0.08	
bbb		0.10	
ddd		0.05	

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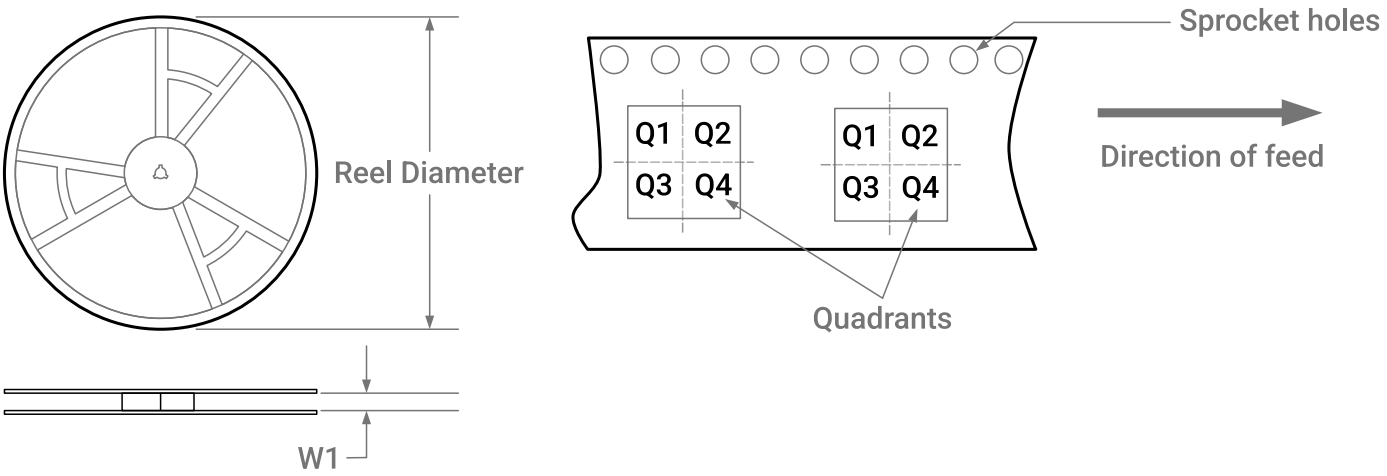
Recommended Land Pattern

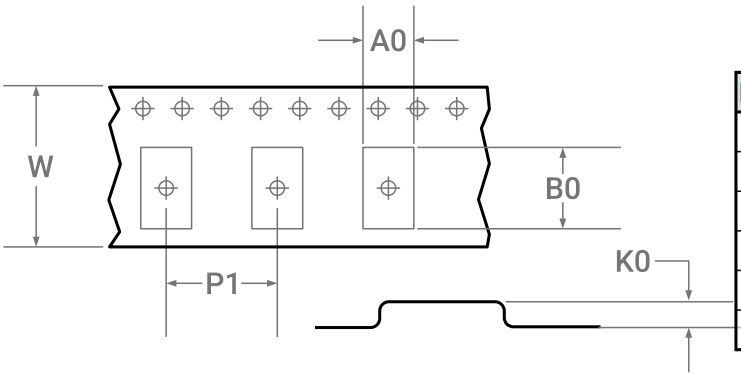


Note: All measurements are nominal

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Tape and Reel Information





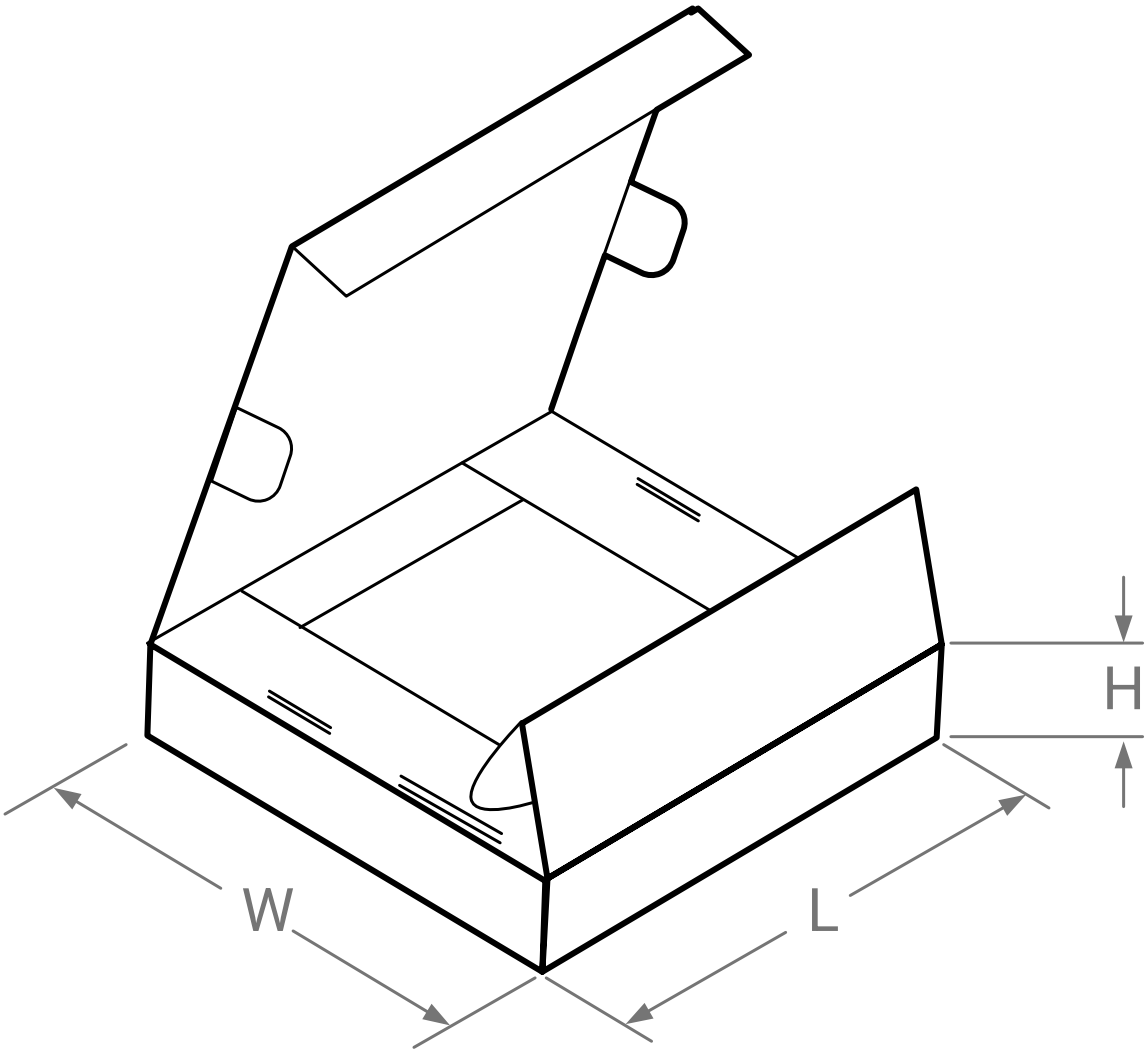
DIMENSION	DESCRIPTION
A0	Pocket width
B0	Pocket length
K0	Pocket depth
W1	Reel width
W	Carrier tape width
P1	Pocket pitch

PACKAGE SIZE	REEL DIAMETER	W1	A0	B0	K0	P1	W	QUADRANT
2 × 2	178	9.5	2.2	2.2	1.1	4.0	8.0	Q2

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
2 × 2	3000	205	200	25

Notes:

1. All measrements are in millimeters;
2. All mesaurements are nominal.

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