RS31385 RS31387 Stackable 50A eFuse with Hot Swap Protection and Current Monitoring

Features

- Wide input voltage range: 4V to 16V
- Integrated 0.8mΩ Pass MOSFET
- Accurate current monitor
- Adjustable output soft start time
- Paralleled operation for higher current applications
- Adjustable current limit
- Fixed 100A Short circuit current limit
- Fast trip short-circuit protection
- Fault indication and fault type output
- Input OV, over current, short circuit, over-temperature protections. Latch mode for RS31385, auto-retry mode for RS31387
- Input to output short circuit detection
- 5x5mm LGA package
- RoHS compliant and Green

Applications

- PCI and PCIe cards
- Servers
- Networking
- Hotswap

Description

The RS31385 is an active circuit protection device with integrated MOSFET used to limit current and voltage to safe levels during fault conditions.

The current limit level can be configured by the resistor between CLREF and ground. Additionally, the device includes an integrated current sense and offers current monitor signal.

To limit the inrush current during device turn-on, the output soft start time can be set by a capacitor between SS and ground.
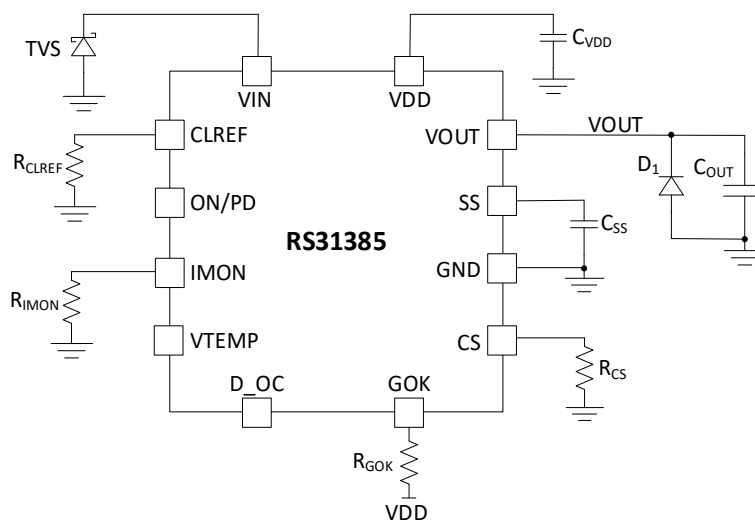
Moreover, the device provides a fault indication (GOK) to the system for monitoring and control.

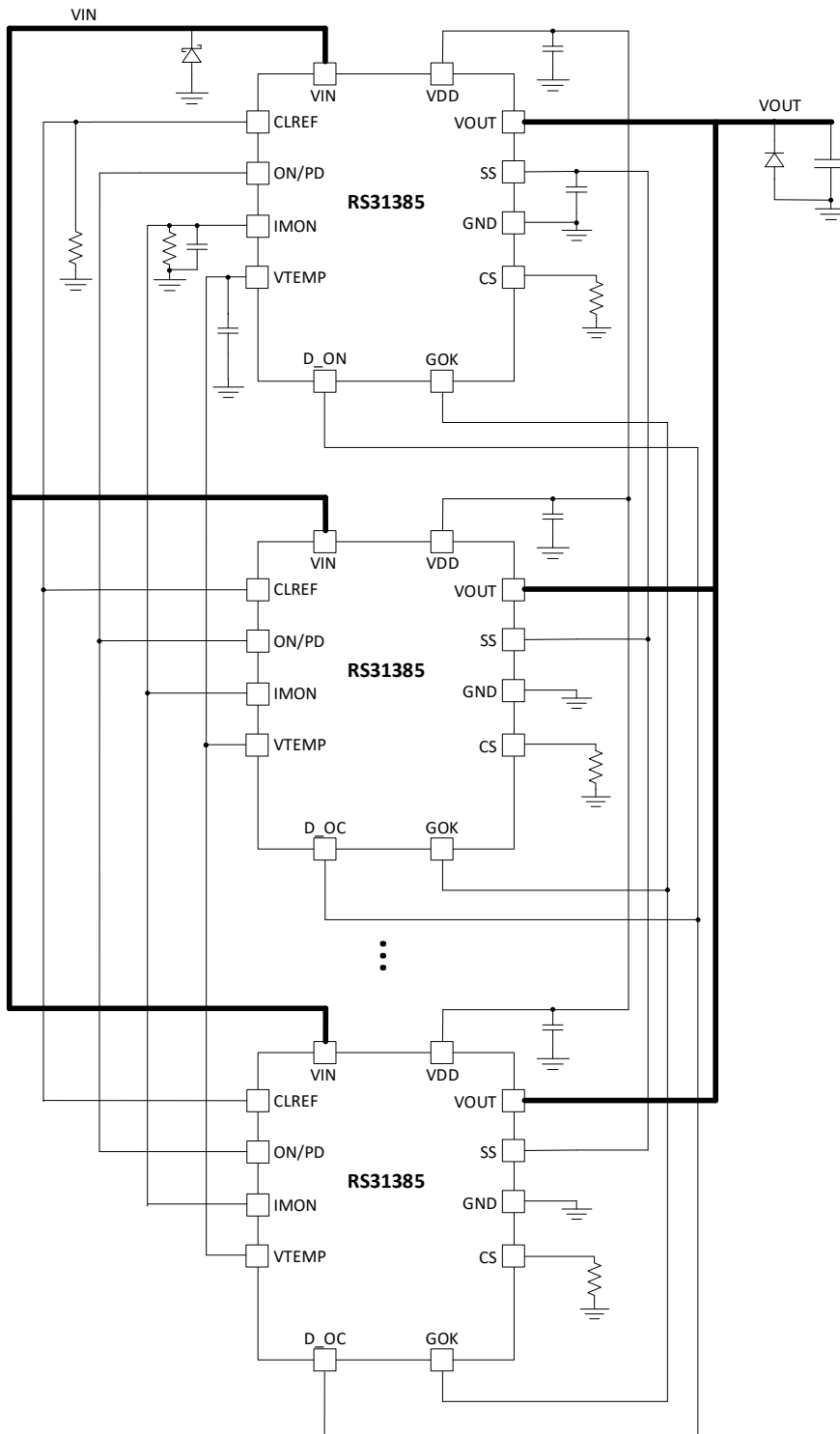For higher current applications, the RS31385 can be connected in parallel.

The device is available in LGA-32, 5x5 mm package.

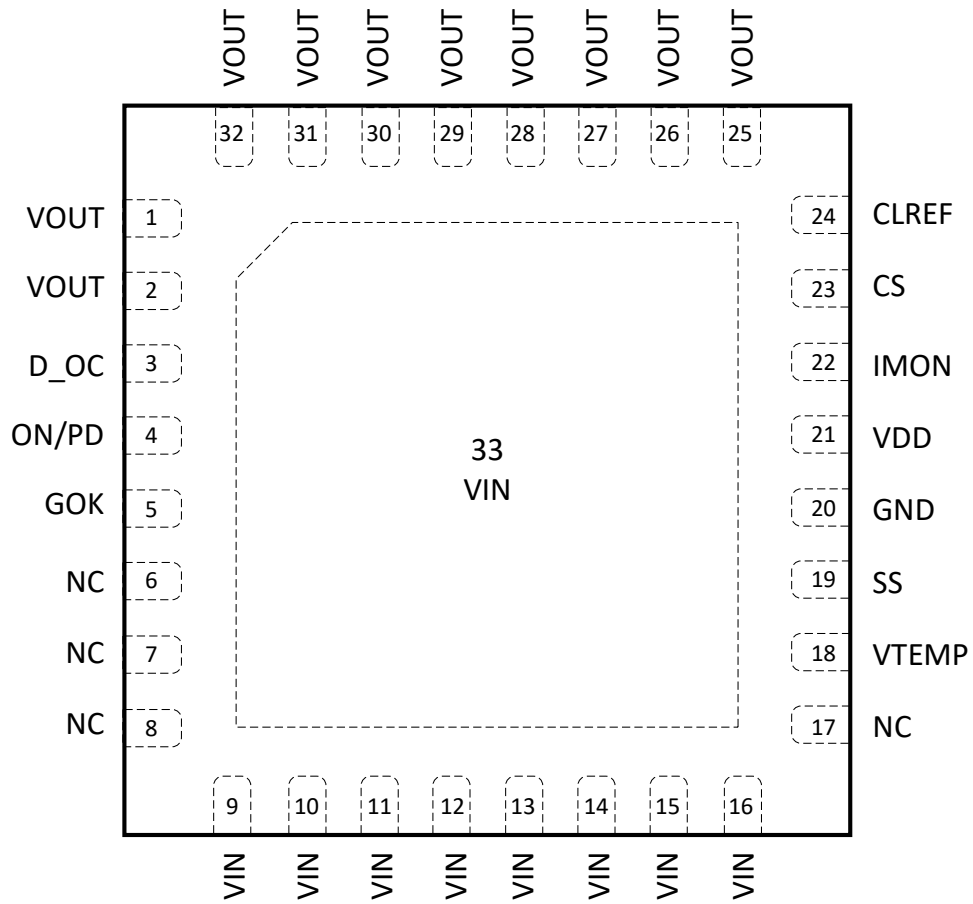| PART NUMBER	PACKAGE	BODY SIZE
RS31385	LGA-32	5x5 mm
RS31387	LGA-32	5x5 mm

Typical Application Circuit

Typical Application

Parallel Operation

Package Reference

Top View

LGA-32 (5x5 mm)

Order Information

Part Number	Protection Mode	Package/Size	MSL	Shipping Method	Package Marking
RS31385T	Latch	LGA-32, 5x5 mm	Level-3	250u Tape & Reel	R31385
RS31385R	Latch	LGA-32, 5x5 mm	Level-3	3000u Tape & Reel	R31385
RS31387T	Auto-retry	LGA-32, 5x5 mm	Level-3	250u Tape & Reel	R31387
RS31387R	Auto-retry	LGA-32, 5x5 mm	Level-3	3000u Tape & Reel	R31387

Top Marking

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RSYYWW
PPPPPP
LLLLLS
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Line 1

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

Line 2

- PPPPPP: Truncated part number

Line 3

- LLLLL: Lot code
- S: Assembly site code

Pin Description

| No.	NAME	TYPE	Description
1, 2, 25-32	VOUT	O	Power output. A Schottky diode can be placed between VOUT and GND to clamp negative voltage spike.
3	D_OC	O	Open drain output of over current indication.
4	ON/PD	I	Power FET on/off control or output voltage pull-down mode control. Drive ON/PD above 1.4V to turn on power FET. Drive ON/PD low to turn off power FET. Force ON/PD to about 1V to pull down Vout with an internal 500Ω resistor after a 2.1ms delay. For RS31385, toggling ON/PD can not turn on the power FET after fault latch-off. Recycling VIN or VCC is required to turn on the power FET after fault latch-off.
5	GOK	O	Open drain output of fault indication. GOK asserts low and latches when fault occurs.
6,7, 8	NC		No connect pin
9-16, 33	VIN	I	Power input pin.
17	NC		No connect pin
18	VTEMP	O	Temperature sense output.
19	SS	O	Soft start setting pin. A capacitor to GND sets the soft start time during power up.
20	GND	G	Signal ground
21	VDD	O	Internal 3.3V LDO output. Connect this pin to GND with 1µF or larger value decoupling capacitor.
22	IMON	O	Current monitor signal output. A current source (10 µA) from this pin through a resistor to GND provides the current information of the power FET.
23	CS	O	Current sense output. The voltage on this pin is compared with CLREF to determine the over current limit.
24	CLREF	I	Current limit reference voltage. Connect a resistor from this pin to GND to set the over current limit comparator reference.

## Package Dimension
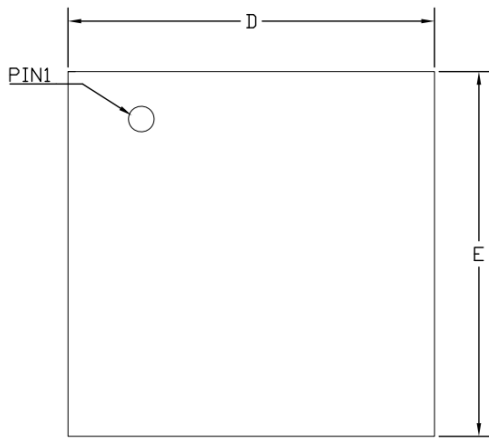
TOP VIEW
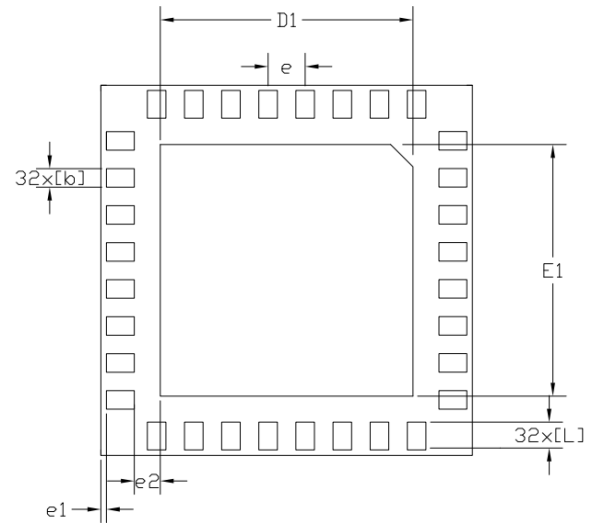
BOTTOM VIEW
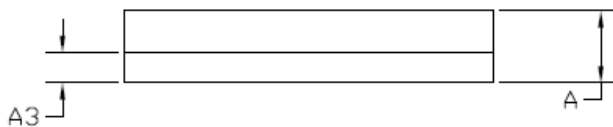
SIDE VIEW

SYMBOLS	MIN	NOM	MAX
A	0.800	0.900	1.000
A3	0.360	0.400	0.440
D	4.90	5.00	5.10
E	4.90	5.00	5.10
D1	3.30	3.40	3.50
E1	3.30	3.40	3.50
e	0.500 BSC		
L	0.375 BSC		
b	0.250 BSC		
e1	0.075 BSC		
e2	0.350 BSC		

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15mm AND 0.30mm FROM THE TERMINAL TIP. IF THE TERMINAL HAS THE OPTIONIAL RADIUS ON THE OTHER END OF THE TERMINAL, THE DEMENSION b SHOULD NOT BE MEASURED IN THAT RADIUS AREA.
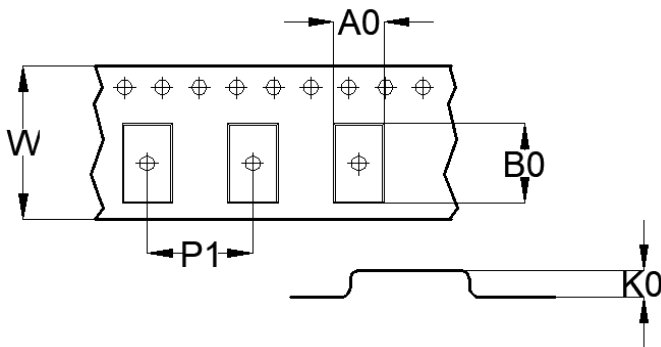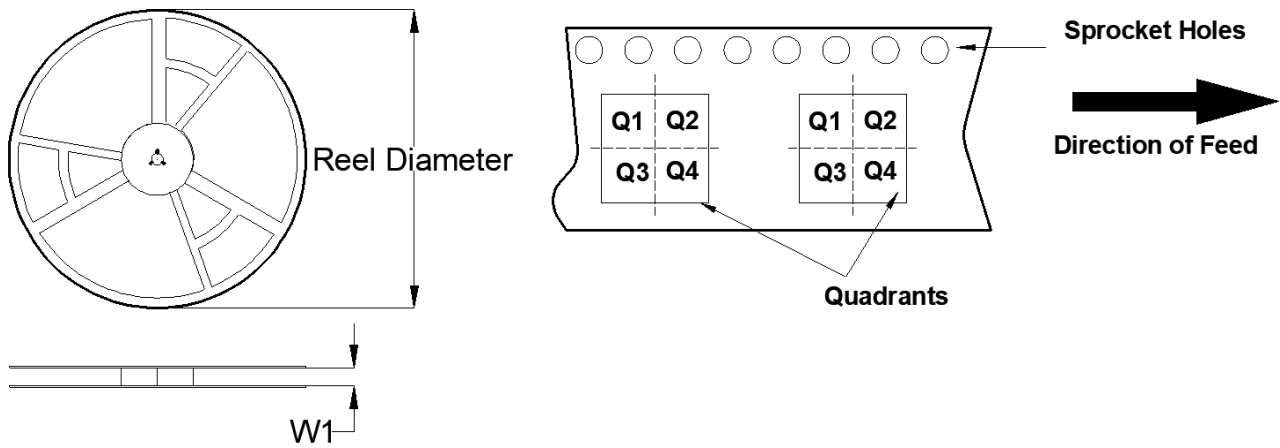3. BILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

RECOMMENDED LAND PATTERN
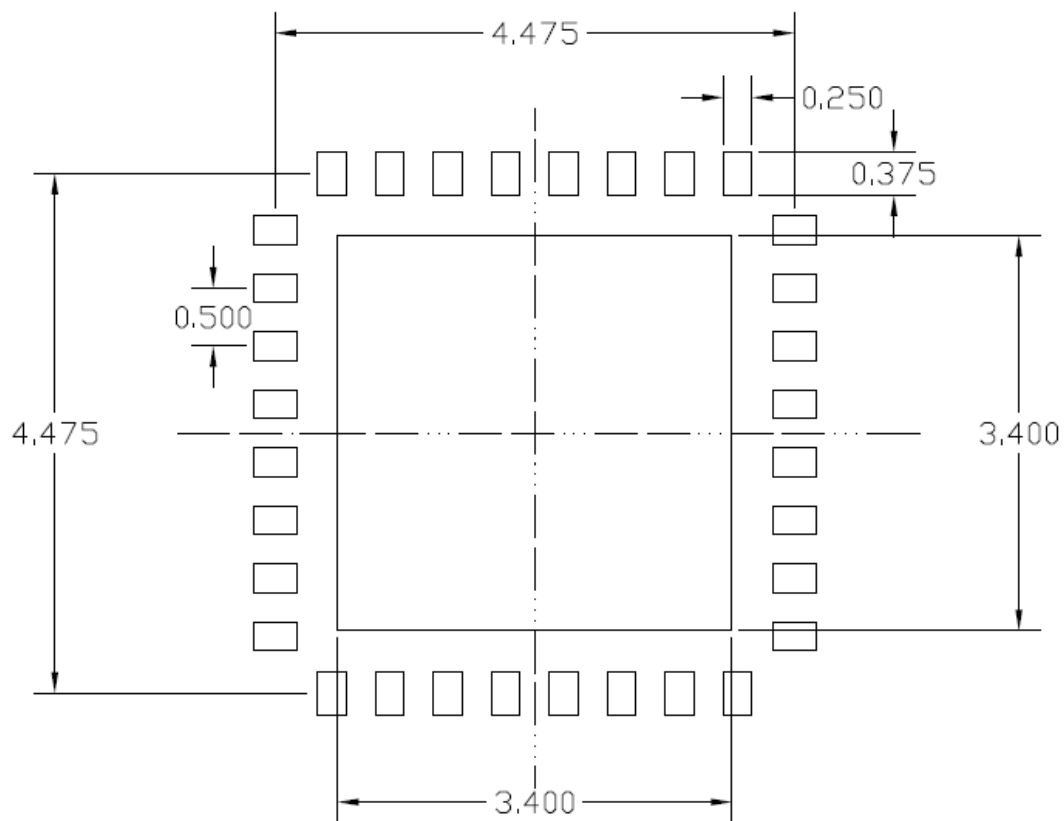
Note:

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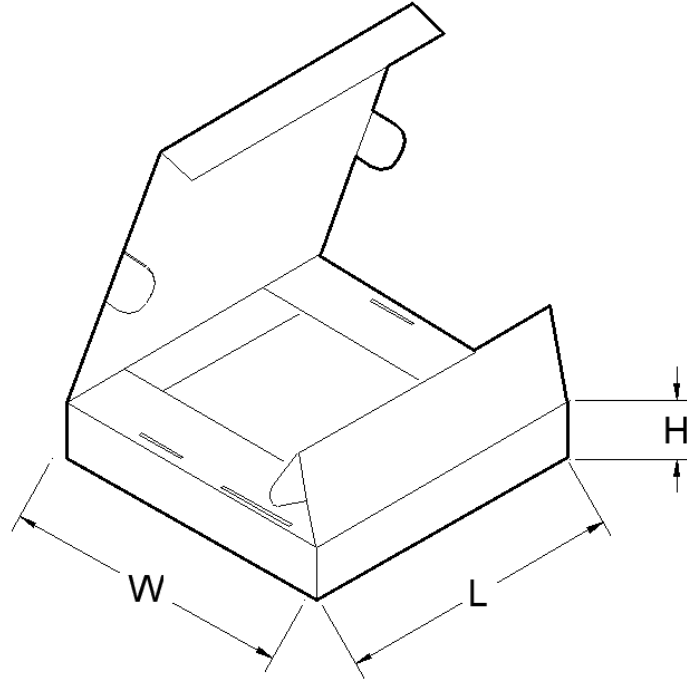2. Drawing is not to scale.

TAPE AND REEL INFORMATION

A0	Pocket width
B0	Pocket length
K0	Pocket thickness
W1	Reel Width
W	Inner width of the carrier tape
P1	Pitch between pocket centers

PKG type (mm)	Reel Diameter (mm)	Reel Width W1(mm)	A0(mm)	B0(mm)	K0(mm)	P1(mm)	W(mm)	Quad
5x5	330	12.4	5.2	5.4	1.10	8.00	12.0	Q2

Note: All the data is nominal

PIZZA BOX DIMENSION

PKG type (mm)	Units/box	Length(mm)	Width(mm)	Height(mm)
5x5	3000	358	340	50

Note: All the data is nominal