

# RS31386 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
- Adjustable short circuit current limit
- Fast trip short-circuit protection
- Fault indication and fault type output
- Selectable Latch-off mode or hiccup mode for input OV, over current, short circuit, over-temperature protections.
- Input to output short circuit detection
- 5x5mm LGA package
- RoHS compliant and Green

## Applications

- Disk Drives
- PCI and PCIe cards
- Servers
- Networking
- Hotswap

## Description

The RS31386 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 set with a resistor between OCREF and ground. Also, the device has integrated current sense and provides 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.

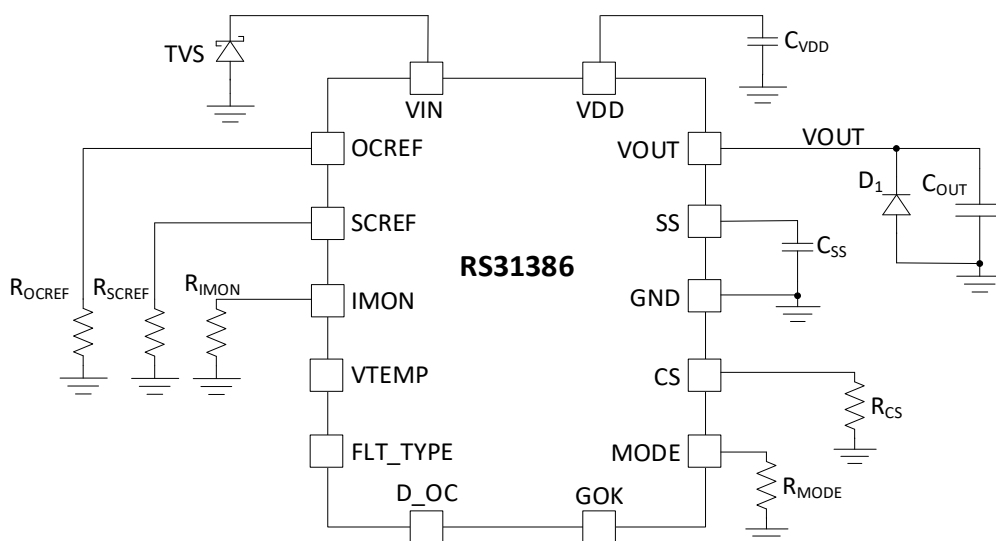
In addition, the device provides fault indication (GOK), fault type (FLT\_TYPE) signal to the system for monitoring and control.

RS31386 can be connected in parallel for higher current applications.

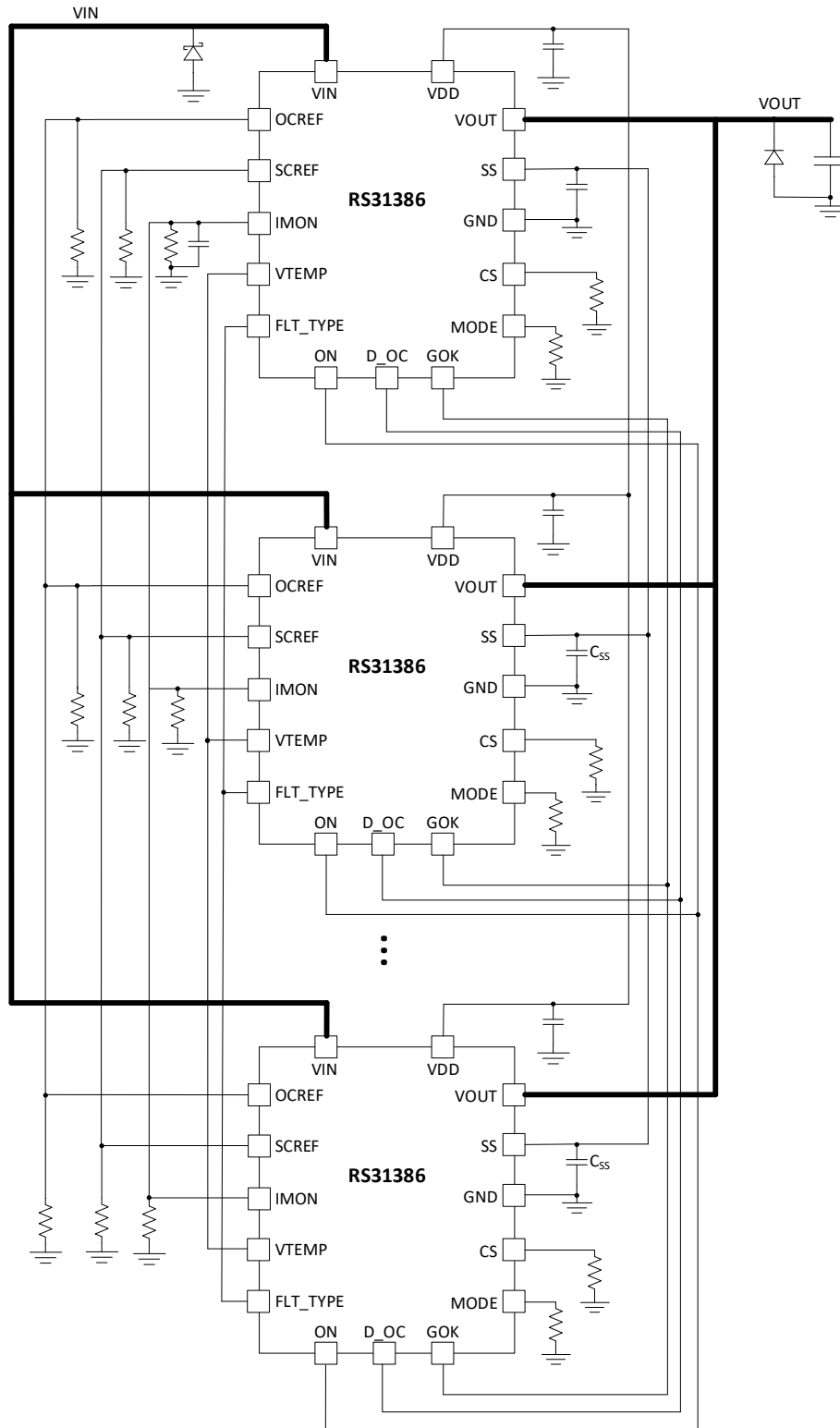
The device is available in LGA-32, 5x5 mm package.

PART NUMBER	PACKAGE	BODY SIZE
RS31386	LGA-32	5x5 mm

## Typical Application Circuit



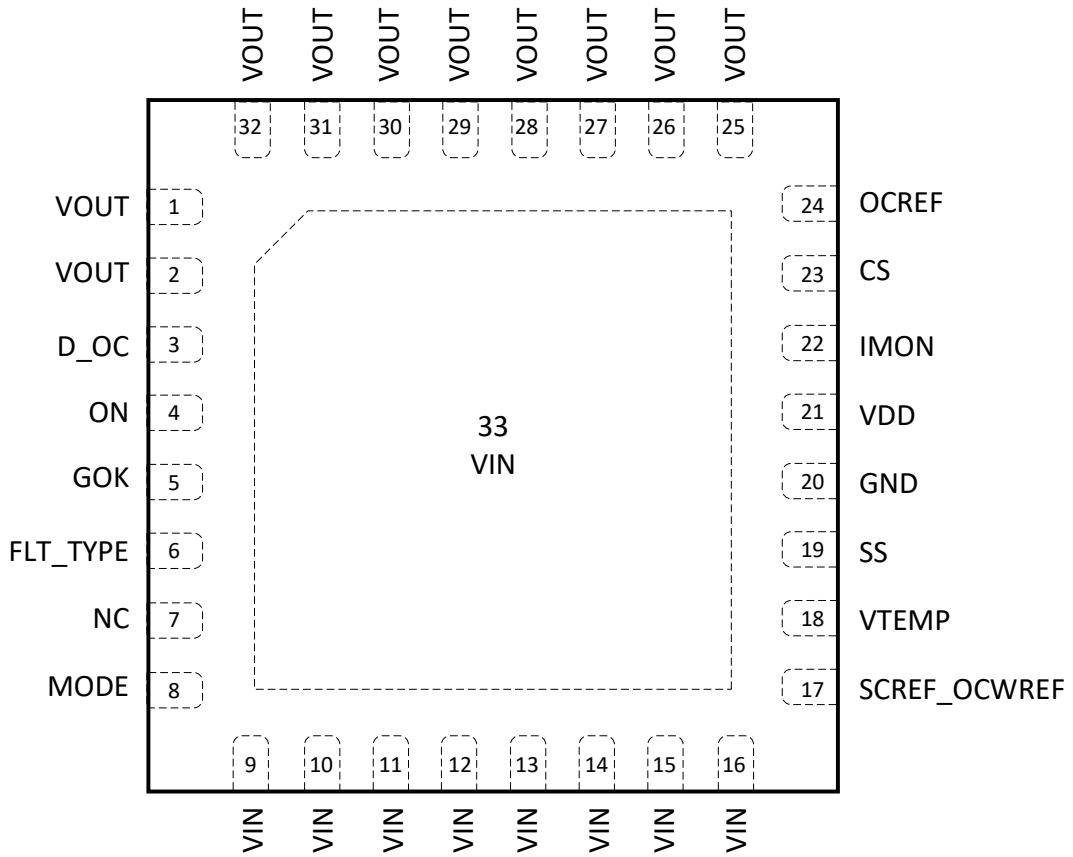
**Typical Application**



**Parallel Operation**

**Package Reference**

**Top View**

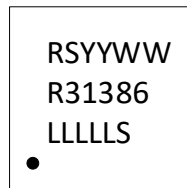


**LGA-32 (5x5 mm)**

## Order Information

Part Number	Package	Size	MSL	Shipping Method	Package Marking
RS31386T	LGA-32	5x5 mm	Level-3	250u Tape & Reel	R31386
RS31386R	LGA-32	5x5 mm	Level-3	3000u Tape & Reel	R31386

## Top Marking



### Line 1

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

### Line 2

- R31386: Truncated part number

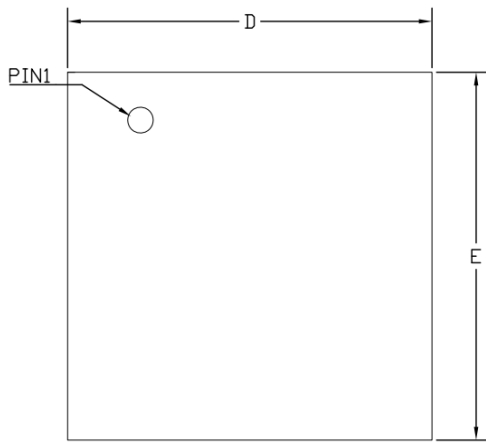
### Line 3

- LLLLL: Lot code
- S: Assembly site code

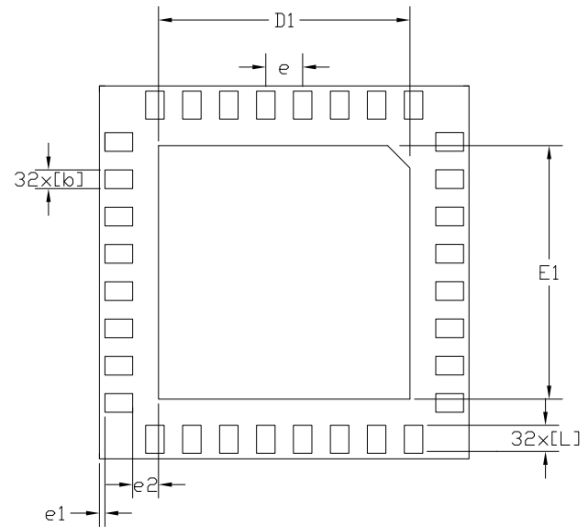
## Pin Description

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	I	Enable input. Pull high to turn on the power FET and pull low to turn off the power FET.
5	GOK	O	Open drain output of fault indication. GOK asserts low and latches when fault occurs.
6	FLT_TYPE	O	Voltage output of fault type indication.
7	NC		No connect pin
8	MODE	O	Mode selection pin. A resistor to GND sets the mode of operation.
9-16, 33	VIN	I	Power input pin.
17	SCREF_ OCWREF	O	Short circuit current limit selection pin. A resistor to GND sets the short circuit current limit after VDD ramps up. This pin also sets OC warning threshold at slave mode.
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 1 $\mu$ F decoupling capacitor.
22	IMON	O	Current monitor signal output. A current source (10 $\mu$ A) 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 OCREF to determine over current limit.
24	OCREF	I	Current limit reference voltage. Connect a resistor from this pin to GND to set the over current limit comparator reference.

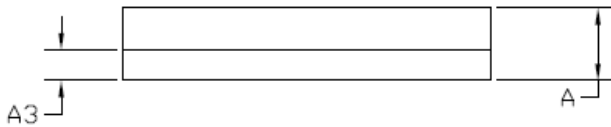
**Package Dimension**



TOP VIEW



BOTTOM VIEW



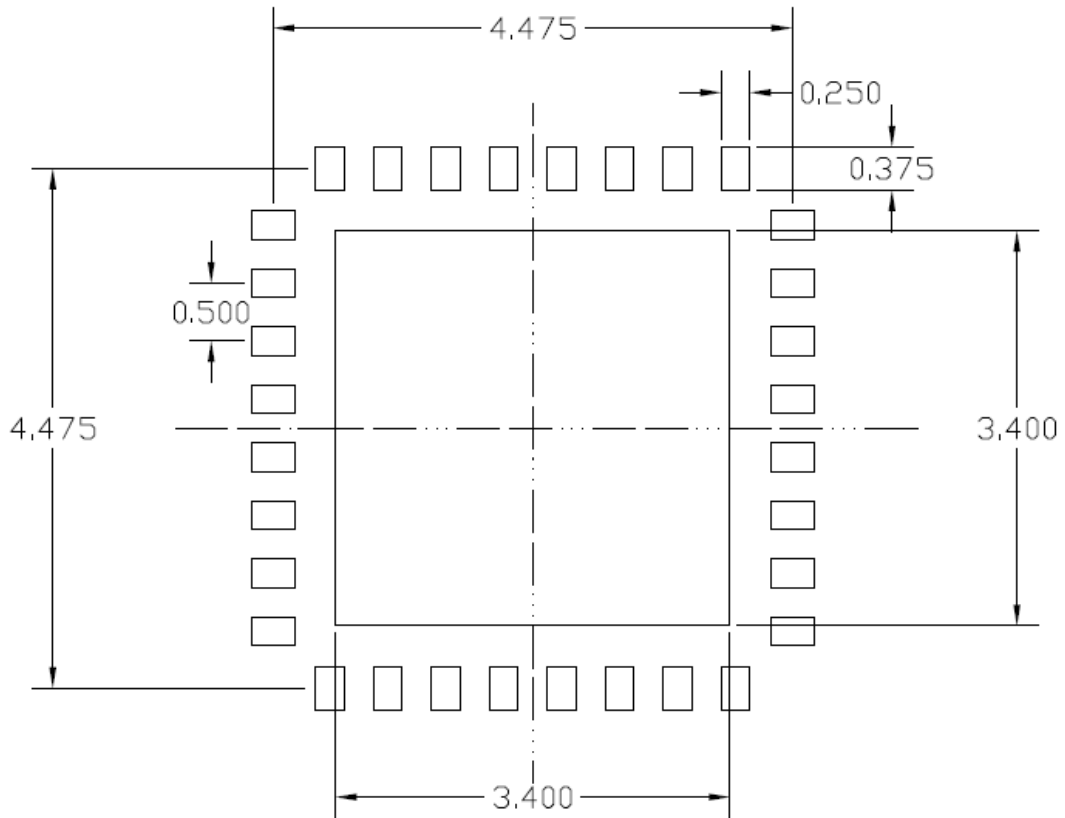
SIDE VIEW

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 OPTIONAL 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.

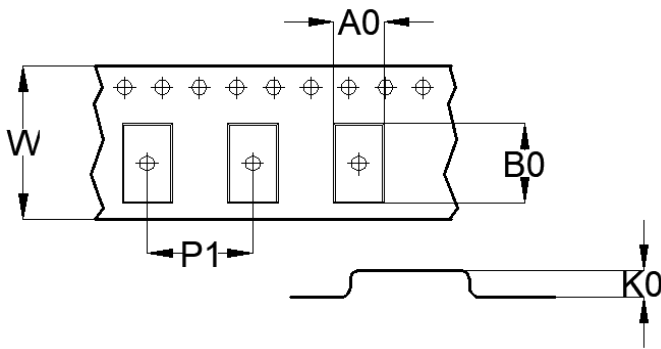
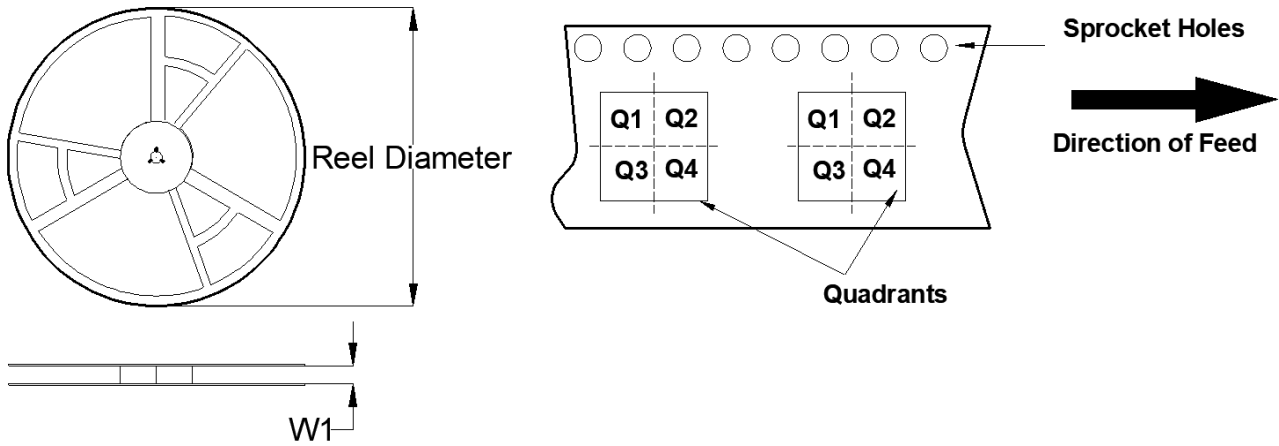
### RECOMMENDED LAND PATTERN



Note:

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

**TAPE AND REEL INFORMATION**



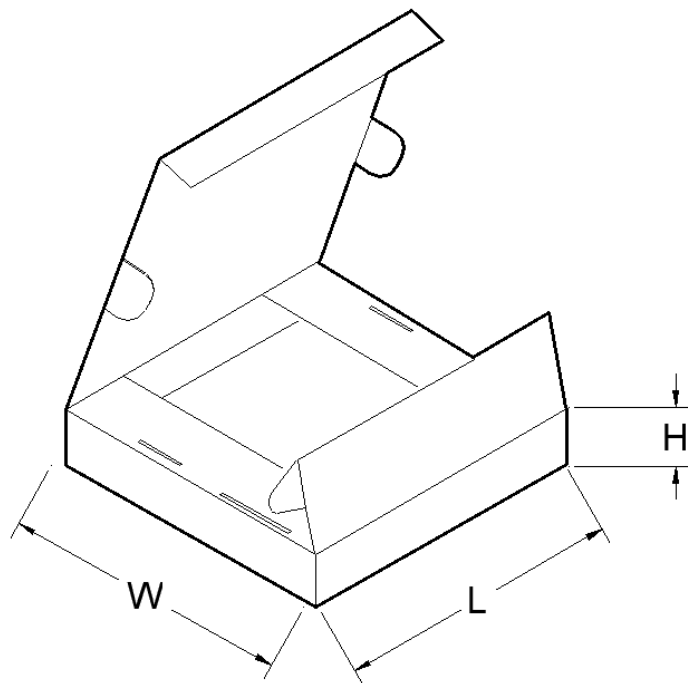
A0	Pocket width
B0	Pocket length
K0	Pocket thickness
W1	Reel Width
W	Inner width of the carrier tape
P1	Pitch between pocket centers

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	Q1

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