Descriptions

The RLCS200 is a small, single channel load switch using P-Channel MOSFET for minimum power loss. Advanced gate control design supports operating voltages as low as 1.5 V with minimal increase in ON-Resistance and power loss. It is designed for load switching applications with ultra-low quiescent current (0.5uA) and ultra-low standby current (150nA).The RLCS200 offers industry leading True Reverse Current Blocking performance. It minimizes reverse current flow in the event that the VOUT pin voltage exceeds the VIN voltage. The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy. The RLCS200 is available in WLCSP-4L package. Standard products are Pb-free and Halogen-free.

Features

- Input Voltage Range ： 1.5V~5.5V
- Main switch Ron ： 32mΩ (VIN=5.5V Typ)
- Quiescent current ： 0.4uA
- Standby current ： 80nA
- Maximum Output current ： 2A
- Reverse Current Blocking（RCB）
- Controlled Rise Time：570us at 3.3VIN
- Quick Output Discharge (QOD) : 85Ω (typ)
- Compact package: WLCSP-4L

Applications

- Wearables
- Smartphones
- Tablets
- Portable Speakers

Typical Applications

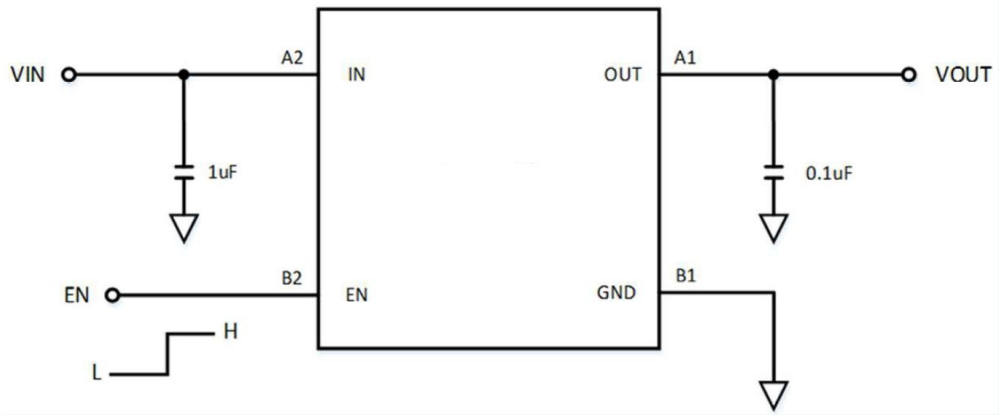


Fig. 1 Typical Applications

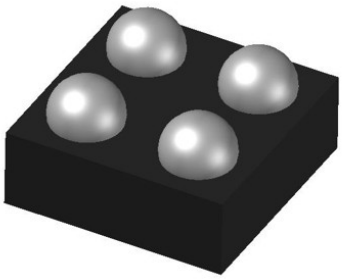
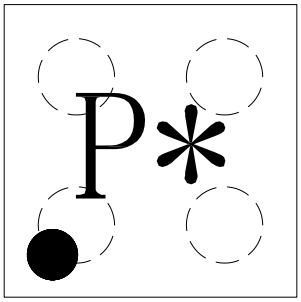


Fig. 2 WLCSP-4L



P= RLCS200
* =Month Code
Fig. 3 Marking (Top-Through View)

Pin Information

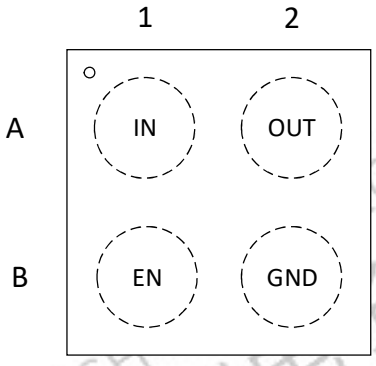


Fig. 4 Pin Information（Top-Through View）

Pin	Symbol	Description
A1	IN	Input pin
A2	OUT	Output pin
B1	EN	Enable (Active high)
B2	GND	Ground

Table 1

Order information

Device	Package	Shipping
RLCS200WL4/R6	WLCSP-4L	3K /Reel

Table 2

Block Diagram

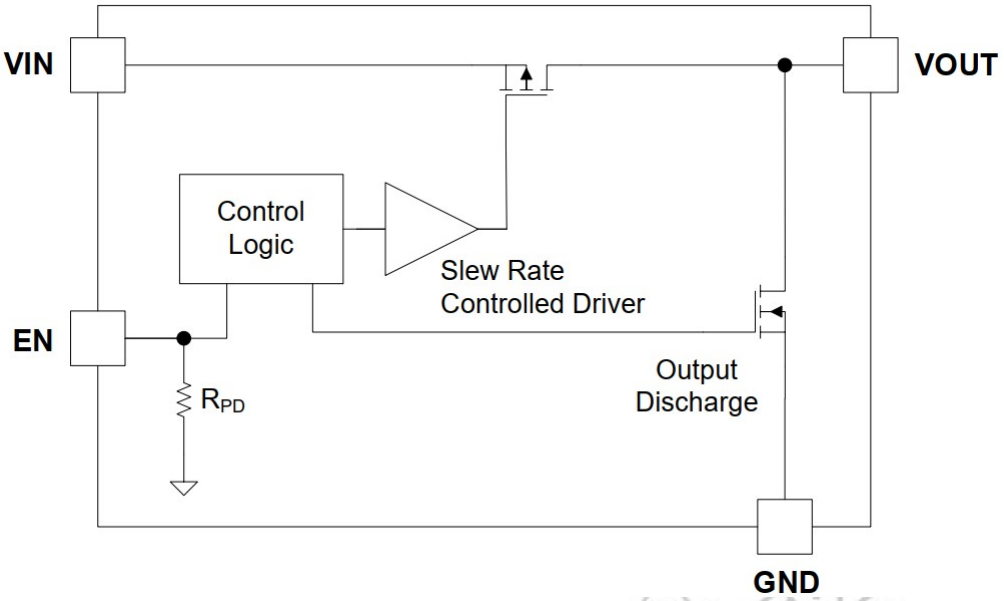


Fig. 5 Block Diagram

Absolute Maximum Ratings

The absolute maximum ratings are stress ratings only. Stresses exceeding the range in Table 3 might cause substantial damage to the device. Functional operation of the device under other conditions is not implied. Prolonged exposure to extreme conditions might affect device reliability.

Parameter	Symbol	Condition	Min.	Max.	Unit
Input voltage	V_{IN}		-0.3	6	V
Output voltage	V_{OUT}		-0.3	6	V
Enable voltage	V_{EN}		-0.3	6	W
Maximum continuous switch current	I_{MAX}			2	A
Maximum junction temperature	$T_{J,MAX}$			125	℃
Lead Temperature	T_{LEAD}	Soldering, 10 sec.		300	℃
Storage Temperature Range	T_{STG}		-65	150	℃
Human Body Model，JESD22-A114	HBM		4000		V
Charged Device Model,JESD22-C101	CDM		2000		V
MSL			Level 1		

Table 3

Thermal Information

Parameter	Symbol	Value	Unit
Junction-to-Ambient thermal resistance*1	$R_{\theta JA}$		℃/W

Table 4

*1:Surface mounted on FR-4 Board using 2 oz, 4 layer board,PCB board size is 3*3 square inches

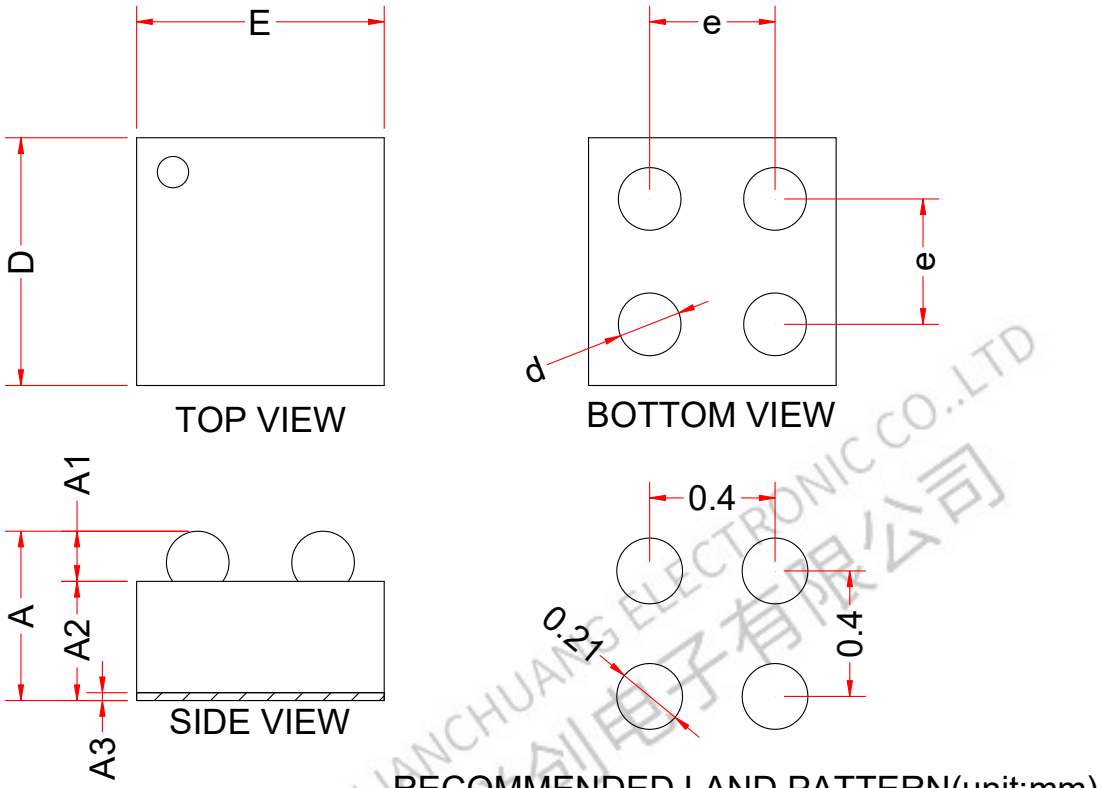
Recommended Operation Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}	1.5		5.5	V
Enable voltage	V_{EN}	0		5.5	V
Output voltage	V_{OUT}	0		5.5	V
Operating Junction Temperature	T_J	-40		125	℃
Operating Ambient Temperature	T_A	-40		85	℃

Table 5

Electrical Characteristics (Ta=25℃, VIN=3.3V unless otherwise noted)

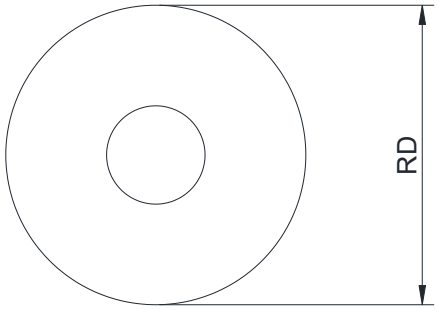
WLCSP-4L



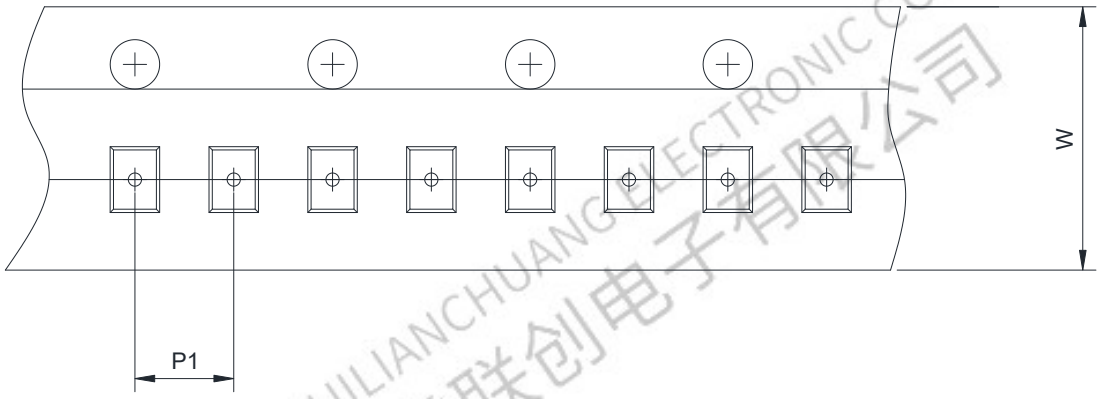
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.510	0.550	0.590
A1	0.148	0.168	0.188
A2	0.362	0.382	0.402
A3	0.025REF		
D	0.770	0.790	0.810
E	0.770	0.790	0.810
e	0.400 BSC		
d	0.186	0.206	0.226

TAPE AND REEL INFORMATION

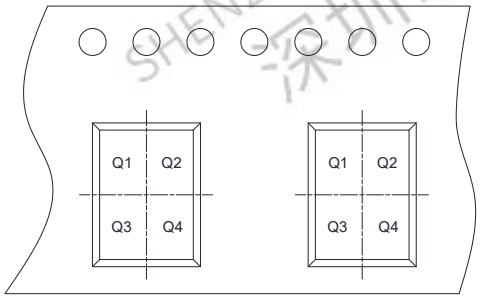
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



User Direction of Feed

RD	Reel Dimension	☑ 7inch	☐ 13inch		
W	Overall width of the carrier tape	☑ 8mm	☐ 12mm	☐ 16mm	
P1	Pitch between successive cavity centers	☐ 2mm	☑ 4mm	☐ 8mm	
Pin1	Pin1 Quadrant	☑ Q1	☐ Q2	☐ Q3	☐ Q4

Important Note

As the RLC product continues to improve gradually, we may experience significant changes. RLC reserves the right to correct, modify, enhance, and amend the products and services they provide, as well as the right to discontinue any product or service. Before placing an order, customers should obtain the latest information to verify that it is current and complete. All products sold must comply with RLC's terms and conditions in order to ensure proper processing of orders. RLC guarantees that the products they sell conform to the terms and conditions applicable to semiconductor sales. Only under this guarantee does RLC consider it necessary to employ testing and quality control measures for their products. Unless mandated by applicable laws requiring strict compliance, there is no obligation for testing all product parameters. RLC does not assume responsibility for customer product design or application. The materials provided contain circuit examples and usage methods solely for reference purposes; they do not guarantee suitability for volume production designs. Additionally, these materials may contain errors that could result in damages incurred by customers; therefore, RLC disclaims any liability in such cases. Customers are advised to use products within the limits specified in these materials while paying particular attention to absolute maximum ratings, operating voltages, and voltage characteristics. Any use of products outside of these specifications absolves RLC from responsibility; customers must accept full responsibility themselves. To minimize risks associated with customer-designed applications, adequate design safety measures should be implemented. When using RLC products, please ensure compliance with relevant laws and regulations pertaining to your country or region regarding application standards as well as testing requirements related to safety performance. For exports of RLC products overseas, it is essential that you adhere strictly to foreign exchange regulations and transaction laws throughout all necessary procedures involved in exportation processes. In case of disposal of any abandoned RLC product(s), please follow appropriate rules and regulations for proper disposal.

RLC products are not designed to be radiation - resistant. Based on the intended usage, customers can incorporate radiation protection measures during the product design process. Under normal circumstances, RLC products do not harm human health. However, since they contain chemicals and heavy metals, do not put them in your mouth. Additionally, the fracture surfaces of wafers and chips can be sharp. When touching them with bare hands, please be careful to avoid injury.Semiconductor products have a certain probability of failure or malfunction. To prevent disruptions and social damages resulting from personal accidents, fire accidents, etc., as well as to avoid malfunctions, customers are required to be responsible for comprehensive design, implementing fire - spread prevention measures, and safety design against misoperation. Please conduct a full assessment of the entire system, and customers can determine its applicability on their own.This material also includes content related to the company's copyright and know - how. The records in this material are not intended to promise or guarantee the implementation and use of the company's and third - party intellectual property and other rights. Without the permission of our company, it is strictly prohibited to reprint, copy any part of this work, or disclose the material information to third parties.

RLC shall not be held responsible for any damage or harm that occurs which is not related to the product itself, as well as for any infringement of third - party rights such as intellectual property rights. For more details about this material, please contact our sales office.