



/ Revised record

A	2019-7-10				
B	2021-11-2 6				



/ Descriptions

BRCL3230BSE	/	BRCL3230BSE
	MOSFET	
BRCL3230BSE	ESOP-8	
	BRCL3230BSE	

The BRCL3230BSE series product is a high integration solution for lithium-ion/polymer battery protection. BRCL3230BSE contains advanced power MOSFET, high-accuracy voltage detection circuits and delay circuits.

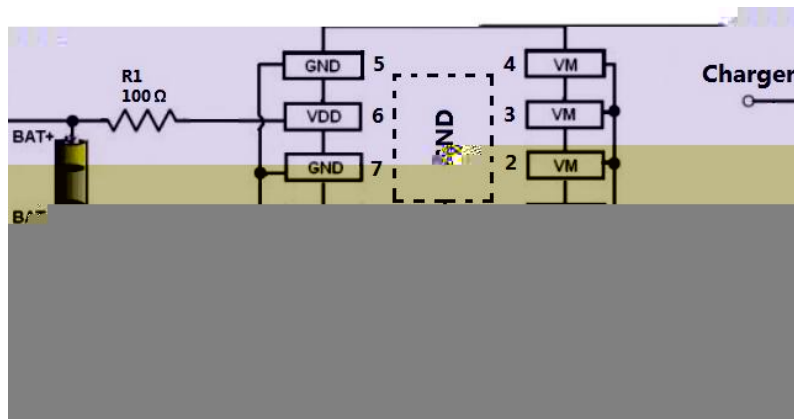
BRCL3230BSE is put into an ultra-small ESOP-8 package makes it an ideal solution in limited space of battery pack. BRCL3230BSE has all the protection functions required in the battery application including overcharging, overdischarging, overcurrent and load short circuiting protection etc. The low standby current drains little current from the cell while in storage. The device is not only targeted for digital cellular phones, but also for any other Li-Ion and Li-Poly battery-powered information appliances requiring long-term battery life.

/ Features

- ◆ 15mΩ MOSFET
- ◆ ESOP-8
- ◆
- ◆
- ◆
- ◆ 2 1 2
- ◆
- ◆ 0V
- ◆ 7.0uA , 4.0uA ;
- ◆
- ◆ Integrate advanced power MOSFET with Equivalent of 15mΩ $R_{DS(ON)}$;
- ◆ Ultra-small ESOP-8 package;
- ◆ No capacitance is required for peripheral circuits;
- ◆ Over-temperature Protection;
- ◆ Overcharge Current Protection;
- ◆ Three-step Overcurrent Detection: Overdischarge Current1, Overdischarge Current2, Load Short Circuiting;
- ◆ Charger detection function;
- ◆ 0V battery charging function, delay times are generated inside, High-accuracy voltage detection.
- ◆ Low Current Consumption, Operation Mode: 7.0uA typ, Power-down Mode: 4.0uA typ ;
- ◆ HF Product.

/ Applications

One-Cell lithium-ion battery pack; Lithium-Polymer battery pack.



(1)

(2)

Notes

- (1) The chip power consumption shall not exceed the maximum power consumed by the package.
- (2) This product has anti-static protection function, but do not exceed the maximum capacity of the



/Parameter

/Symbol

/Value



Equivalent FET on Resistance						
Equivalent FET on Resistance	R_{DS}	$V_{dd}=3.6V$ $I_{VM}=1A$		15	20	mΩ
Over temperature protection						
Over Temperature Protection	OTP		125	140	155	
Over Temperature Recovery Degree	OTPR		100	115	130	
Delay time						
Overcharge Current Detection Delay Time	T_{OCC}	$V_{dd}=3.6V$	5.6	8	10.4	ms
Overcharge Voltage Detection Delay Time	T_{CU}	$V_{DD}=3.6V \sim 4.4V$	95	135	ent	n



/ Functional Description

BRCL3230BSE

MOSFET

15mΩ

The BRCL3230BSE monitors the voltage and current of a battery and protects it from being damaged due to overcharge voltage, overdischarge voltage, overdischarge current, and short circuit conditions by disconnecting the battery from the load or charger. The peripheral circuit is very simple. The MOSFET is integrated and its $R_{DS(ON)}$ is as low as 15mΩ typical.

/ Normal Operating mode

If no exception condition is detected, charging and discharging can be carried out freely. This condition is called the normal operating mode.

/ Overcharge Condition

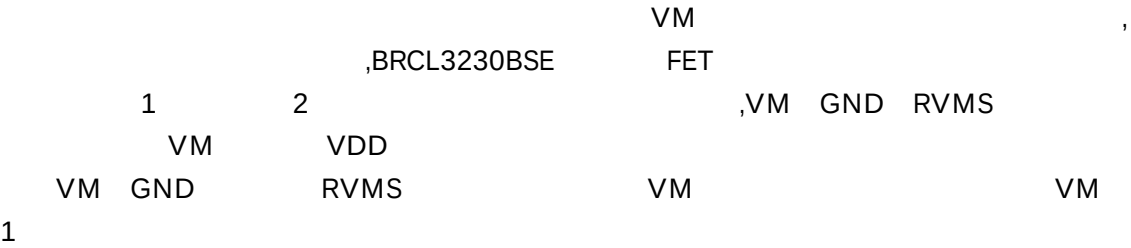
TCU		BRCL3230BSE		FET		VCU ,	
1			VCL	BRCL3230BSE			
2							

BRCL3230BSE

Rev.B Nov.-2021

DATA SHEET

/ Overcurrent Condition



0V / 0V Battery Charging Function

-
- Figure 1 consists of three schematic diagrams labeled (1), (2), and (3), illustrating measurement configurations for a proposed method.
- (1)** A single channel configuration. It shows a central block with three inputs: **IC** (Input Current), **OV** (Output Voltage), and **VDL** (Voltage Drop Length). The output is labeled **IC**.
 - (2)** A differential channel configuration. It shows a central block with three inputs: **IC**, **OV**, and **VDL**. The outputs are labeled with single and double quotes: **"**, **"**, **"**, **"**, **"**, and **"**.
 - (3)** A differential channel configuration. It shows a central block with two inputs: **VM** (Voltage Measurement) and **GND** (Ground). The outputs are labeled **VM** and **GND**.

This function enables the charging of a connected battery whose voltage is 0V by self-discharge. When connects to a charger , the discharging control FET is off and the charging current flows through the internal parasitic diode in the discharging control FET. If the battery voltage becomes equal to or higher than the overdischarge release voltage (VDL), the normal condition returns.

Notes

- (1) Some battery providers do not recommend charging of completely discharged batterd

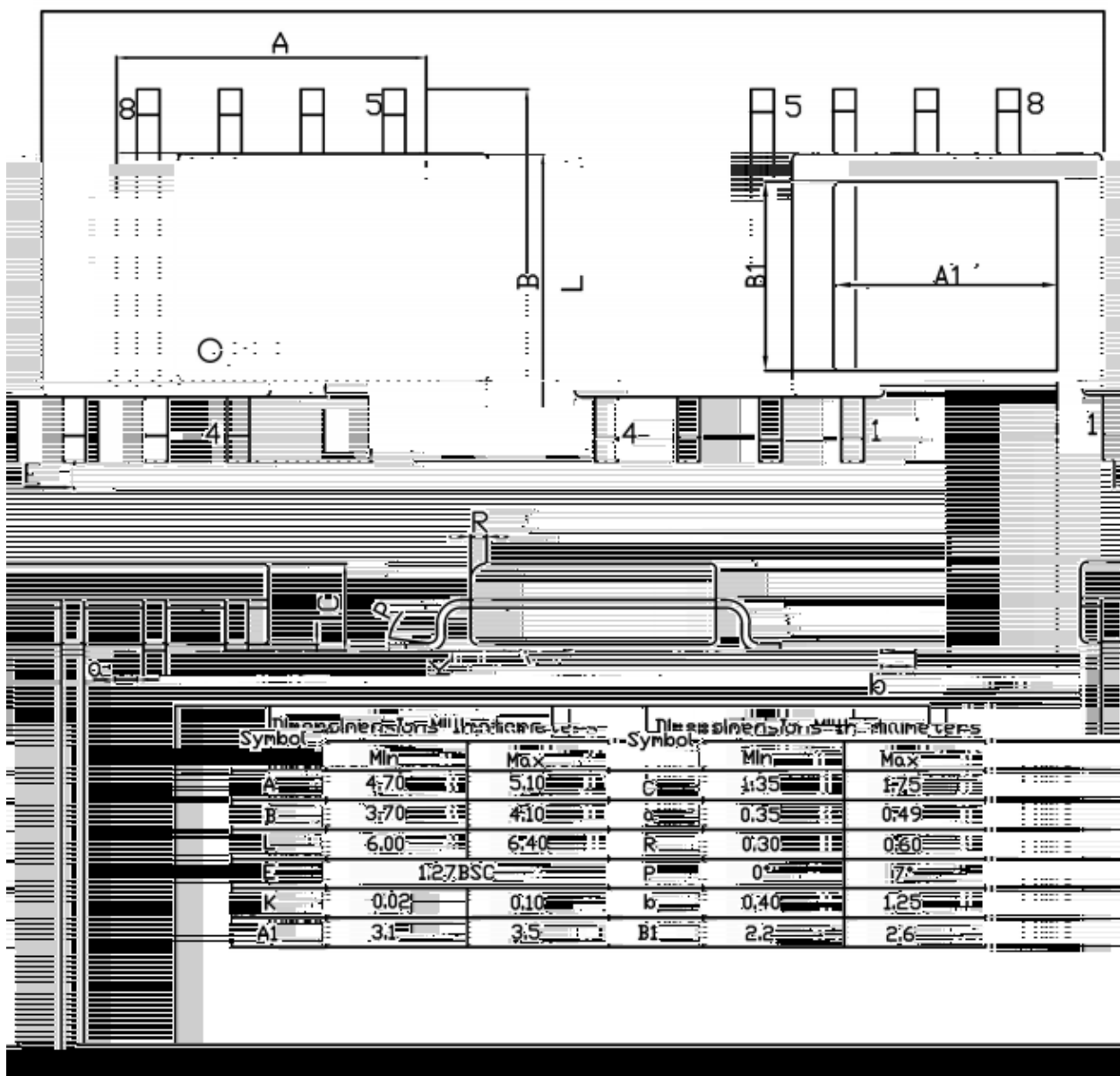
BRCL3230BSE

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/ Package Dimensions

ESOP-8

Unit:mm





/ Marking Instructions



BR:

3230B

Note:

BR:

Company Code

3230B:

Product Type.

****:

Lot No. Code, code change with Lot No.



() / Temperature Profile for IR Reflow Soldering(Pb-Free)

Note:

1 150 180 60 90sec; 1.Preheating:150~180°C, T