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/ Descriptions

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The BRCL3130ZF series product is a high integration solution for lithium-lion/polymer battery protection.BRCL3130ZF contains advanced power MOSFET, high-accuracy voltage detection circuits and delay circuits.
BRCL3130ZF is put into an ultra-small DFN2 2-6L package and only one external component makes it an ideal solution in limited space of battery pack. BRCL3130ZF has all the protection functions required in the battery application including overcharging, overdischarging, overcurrent and load short circuiting protection etc. The accurate overcharging detection voltage ensures safe and full utilization charging.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

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- ◆
- ◆
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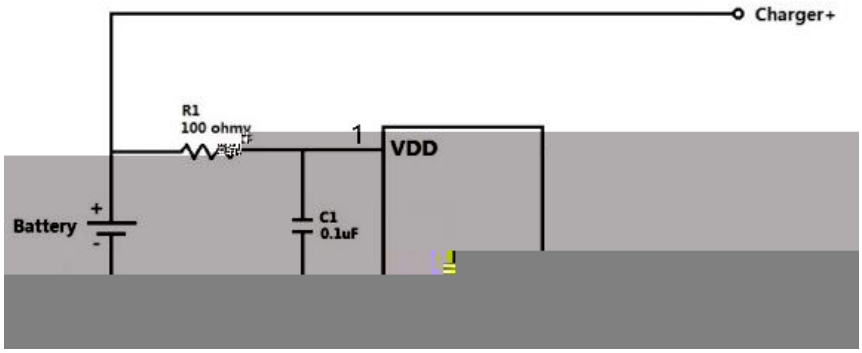
- ◆ Integrate advanced power MOSFET with Equivalent of 50mΩ $R_{DS(ON);}$
- ◆ Ultra-small DFN2×2-6L package;
- ◆ Over-temperature Protection; Overcharge Current Protection; Two-step Overcurrent Detection: Overdischarge Current; Load Short Circuiting.
- ◆ Charger detection function; 0V battery charging function; delay times are generated inside;High-accuracy voltage detection.
- ◆ Low Current Consumption; Operation Mode: 2.8μA typ; Power-down Mode: 1.5μA typ ; RoHS Compliant and Lead (Pb) Free.
- ◆ Halogen-free Product.

/ Applications

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



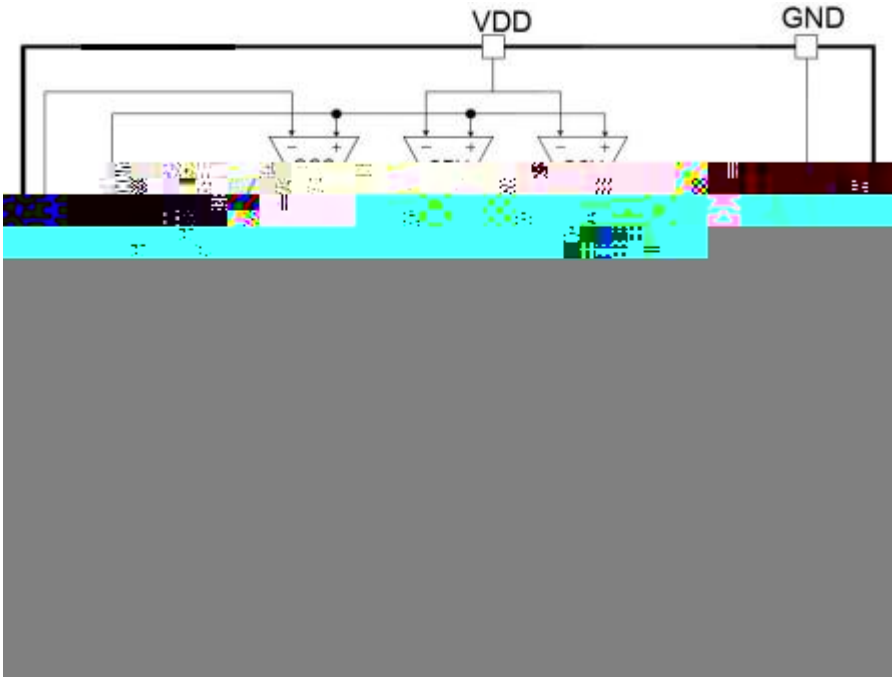
Notes：

(1) The chip power consumption shall not exceed the maximum power consumed by the package.

(2) This product has anti-sic protec on func on, but do not exceed the maximum capacity of the product withs nd s atic elec icity

/Parameter	/Symbol	/Value	/Unit

/ Functionl Block Diagram



/ Functional Description

BRCL3130ZF

MOSFET

50mΩ

The BRCL3130ZF 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 50mΩ 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

VCU ,
TCU BRCL3130ZF FET

1 VCL BRCL3130ZF
2 BRCL3130ZF
VM 0.7V
BRCL3130ZF VCU
VCU BRCL3130ZF VCU
VCU
VM 1
VCU VCU
1 2 VCU
1 2

When the battery voltage becomes higher than the overcharge detection voltage (VCU) during charging under normal condition and the state continues for the overcharge detection delay time (TCU) or longer, the BRCL3130ZF turns the charging control FET off to stop charging. This condition is called the overcharge condition.
The overcharge condition is released in the following two cases:
1 When the battery voltage drops below the overcharge release voltage (VCL), the BRCL3130ZF turns the charging control FET on and returns to the normal condition.
2 When a load is connected and discharging starts, the BRCL3130ZF turns the charging control r x

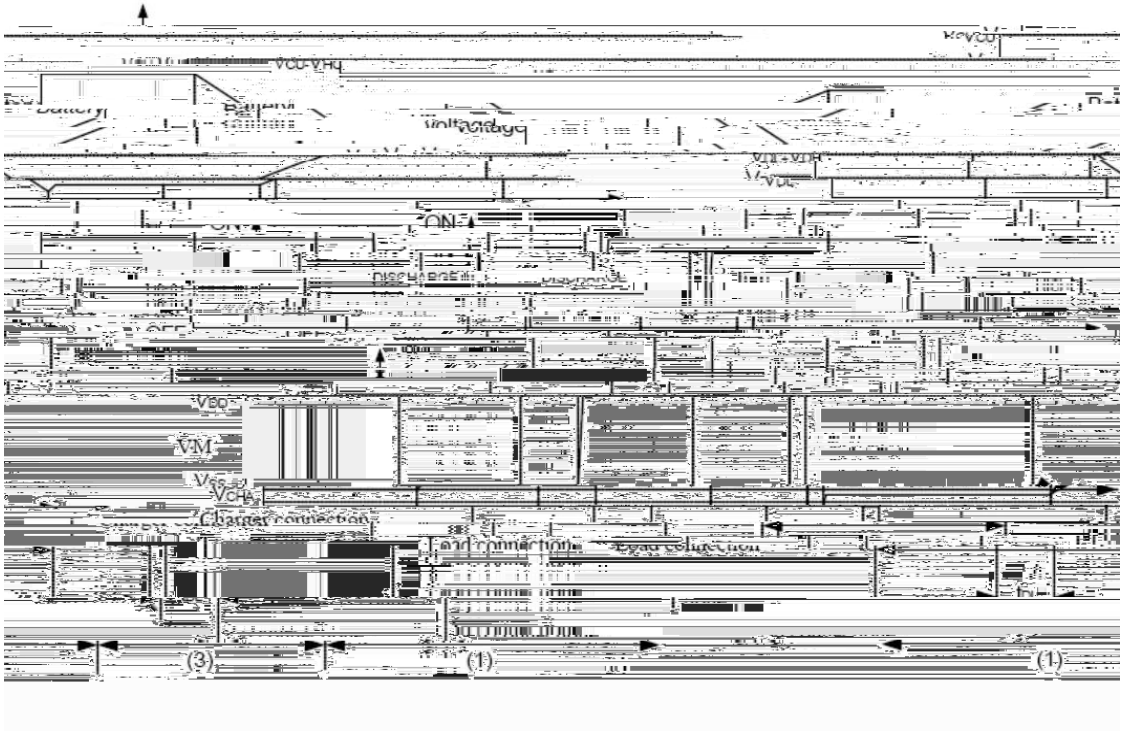
BRCL3130ZF
Rev.D

/ Timing Chart

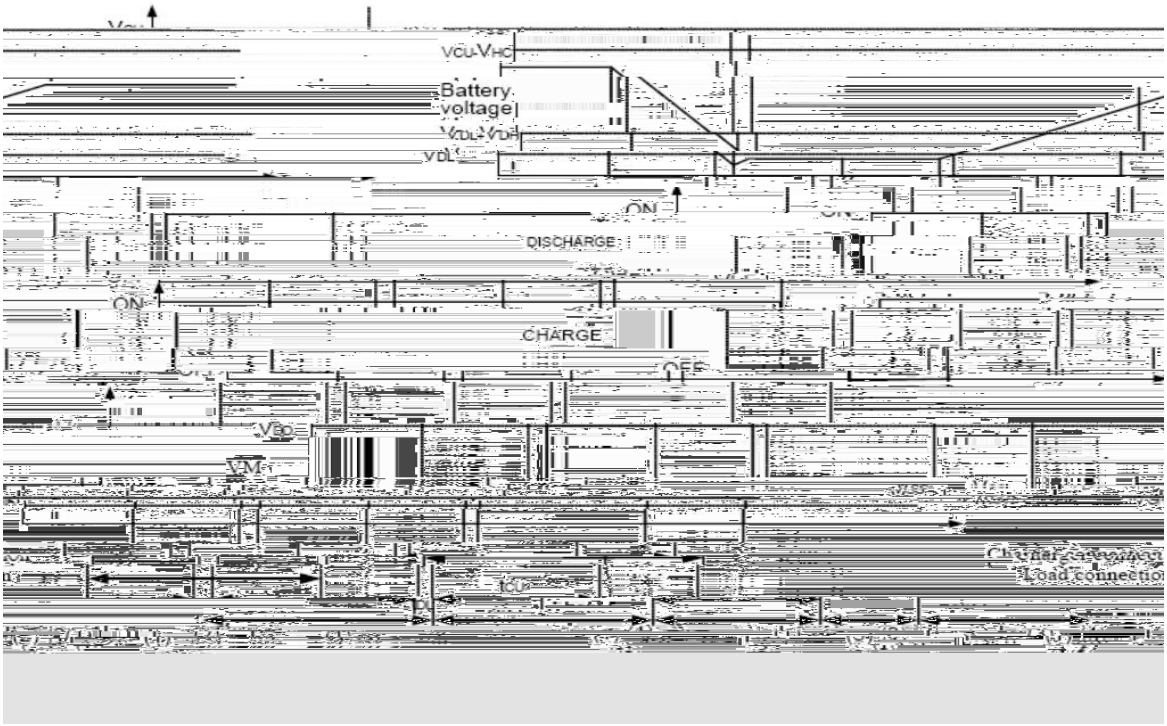
/Overcharge And Overdischarge Detection

/ Timing Chart

/Charger Detection

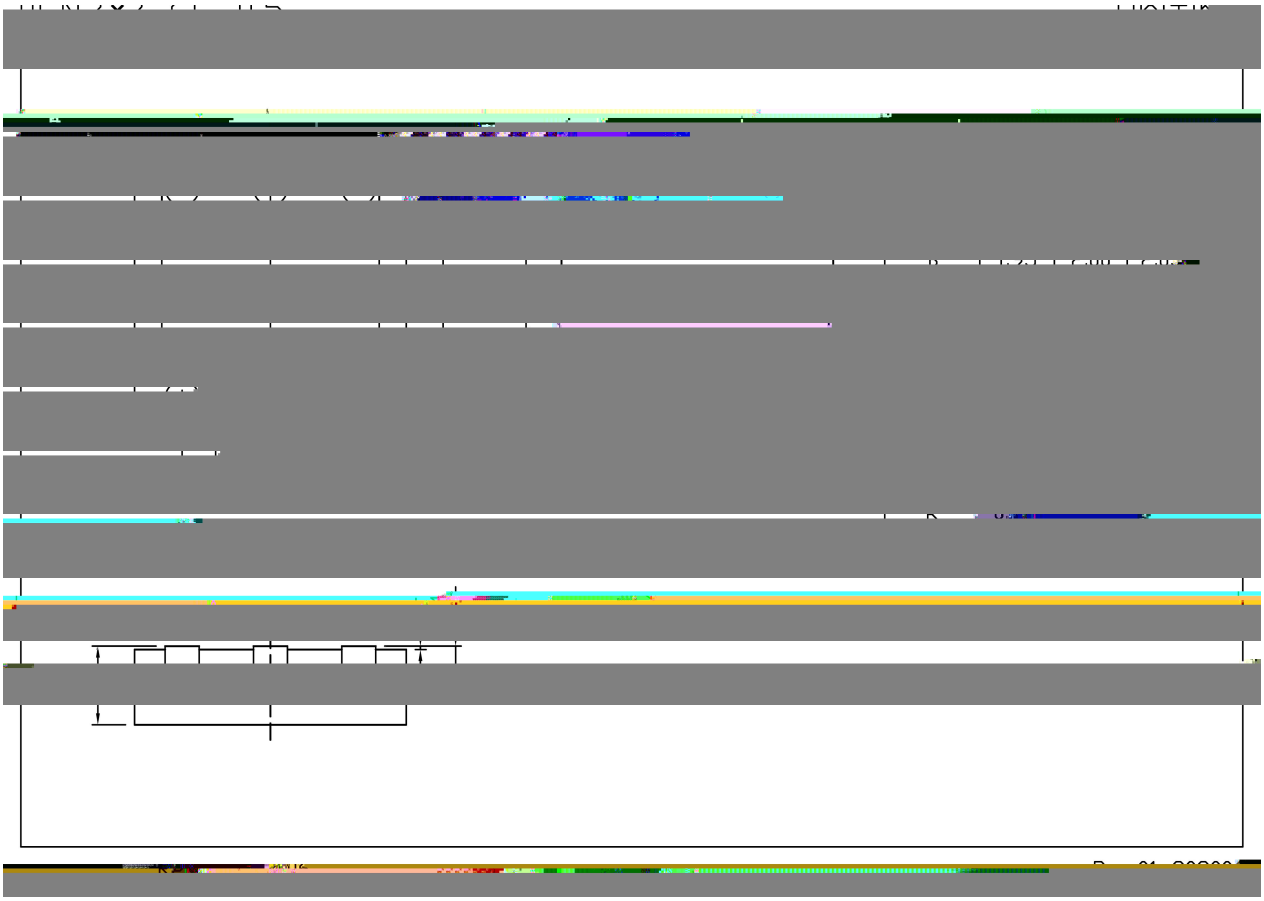


/Abnormal Charge Detection

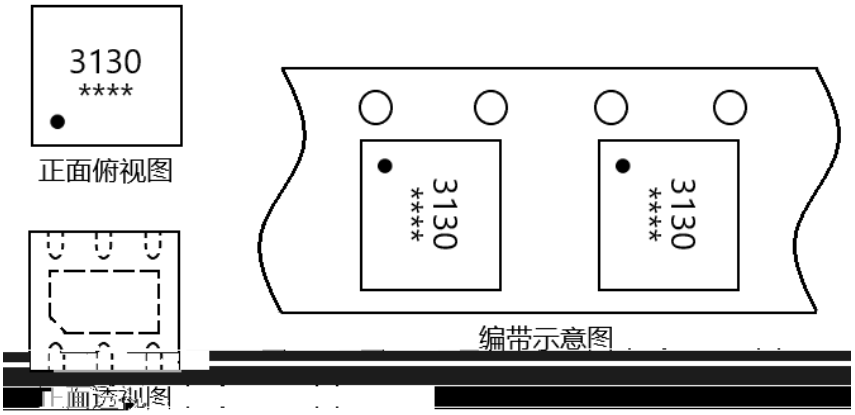


Notes: (1) Normal condition (2) Overcharge voltage condition (3) Overdischarge voltage condition (4) Overcurrent condition

/ Package Dimensions



/ Marking Instructions



3130

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Note:

3130: Product Type.

****: Lot No. Code, code change with Lot No.

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