

BRCL4056BZZ

Rev.C Dec.-2024



DATA SHEET

BRCL4056BZZ	/		
DFN2×2-8L		BRCL4056BZZ	
BRCL4056BZZ	USB		
PMOSFET			
4.20V		4.20V	1/10
BRCL4056BZZ			
	USB	BRCL4056BZZ	
3uA	BRCL4056BZZ		

BRCL4056BZZ is a complete CC/CV linear charger for single cell lithium-ion batteries,It has the function of positive and negative electrode protection for battery.Its DFN2×2-8L package and low external component count make the BRCL4056BZZ ideally suited for portable applications. Furthermore, the BRCL4056BZZ is specifically designed to work within USB power specifications.

No external sense resistor is needed and no blocking diode is required due to the internal P-MOSFET architecture. Thermal feedback regulates the charge current to limit the die temperature during high power operation or high ambient temperature .The charge voltage is fixed at 4.2V,and the charge current can be programmed externally with a single resistor. The BRCL4056BZZ automatically terminates the charge cycle when the charge current drops to 1/10th the programmed value after the final float voltage is reached.

When the input supply (wall adapter or USB supply) is removed the BRCL4056BZZ automatically enters a low current state dropping the battery drain current to less than 3μ

/ Features

Short circuit protection, battery polarity reverse polarity protection

130

0

Intelligent temperature control technology, charging current will decrease with increasing temperature, 130 began to decline, the lowest can be reduced to 0

Soft-Start limits inrush current

USB

Charges single cell Li-ion batteries Directly from USB port

Automatic recharge

4KV ESD

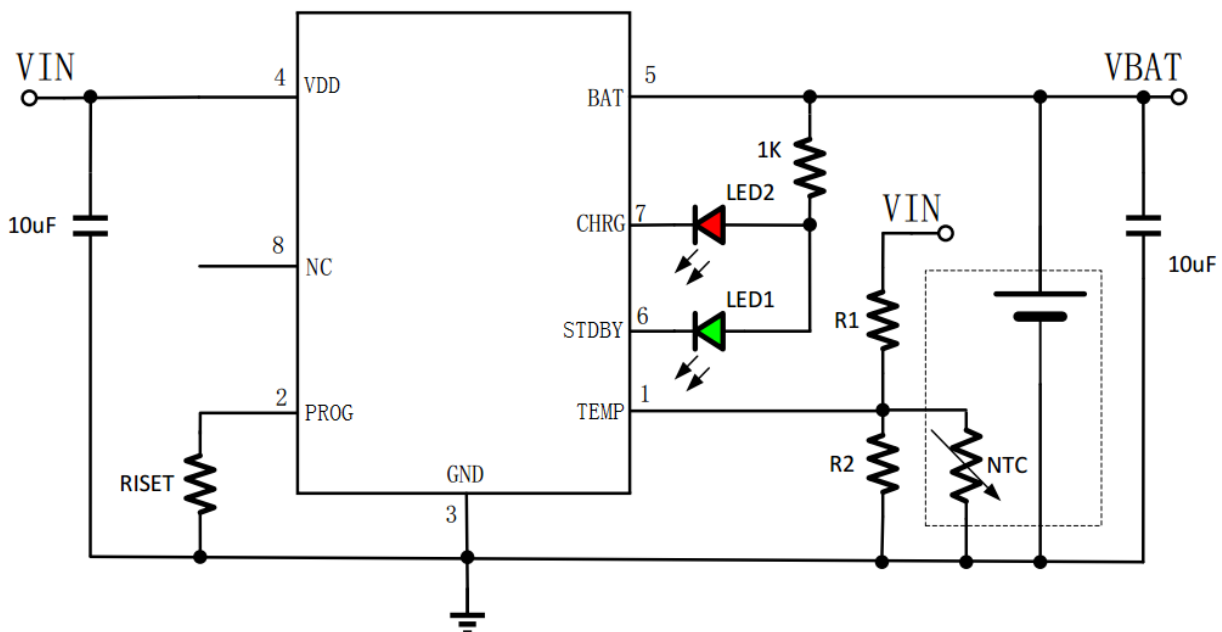
HF Product.

/ Applications

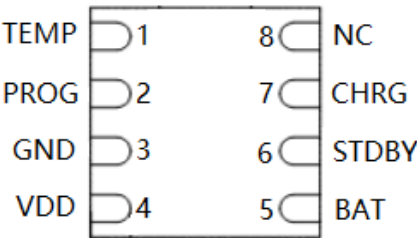
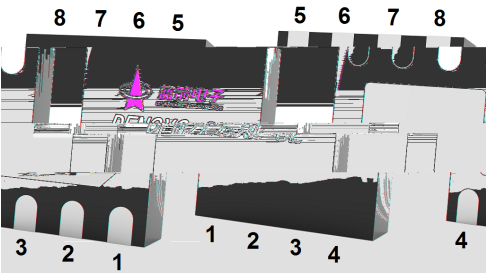
USB

Suitable for USB power and adapter power, Bluetooth applications and other portable devices.

/ Typical Application



/ Indicator light working state



1	TEMP	/External temperature sensing pin
2	PROG	/Charge current regulator
3	GND	/Chip ground
4	VDD	5V/External input DC 5V
5	BAT	/Battery input
6	STDBY	/Battery charge completion indicator
7	CHRG	/Charging indicator
8	NC	/Vacant

See Marking Instructions.

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
	V_{DD}		4	5	6	V
V_{DD}	V_{DD}	$V_{DD} > BAT$		100		mV
V_{DD}		$V_{DD} > BAT$		30		mV
	V_{BAT}	$V_{DD} = 5V$	4.158	4.20	4.242	V
BAT	I_{BAT}	$V_{CC} = 3.5V$ $V_{bat} = 4.2V$		± 0.5	± 5	μA
	V_{TRKL}	V_{BAT}		2.8		V
	V_{TRHYS}			100		mV
V_{DD}	V_{UV}	V_{DD}		3.7		V
V_{DD}	V_{UVHYS}			200		mV
	V_{msd}			1.2		V
	V_{msdHYS}			50		mV
PROG	V_{prog1}			0.1		V
PROG	V_{prog2}			1.0		V
	OTR	$V_{DD} = 5V$		130		

/ Description of the Principle

BRCL4056BZZ

500mA

CHRG

BRCL4056BZZ
STDBY

130

BRCL4056BZZ

2.8V

BRCL4056BZZ

CHRG

2.8V

4.2V

PROG GND

RPROG

CHRG

BRCL4056BZZ
STDBY

10%

1%

3uA

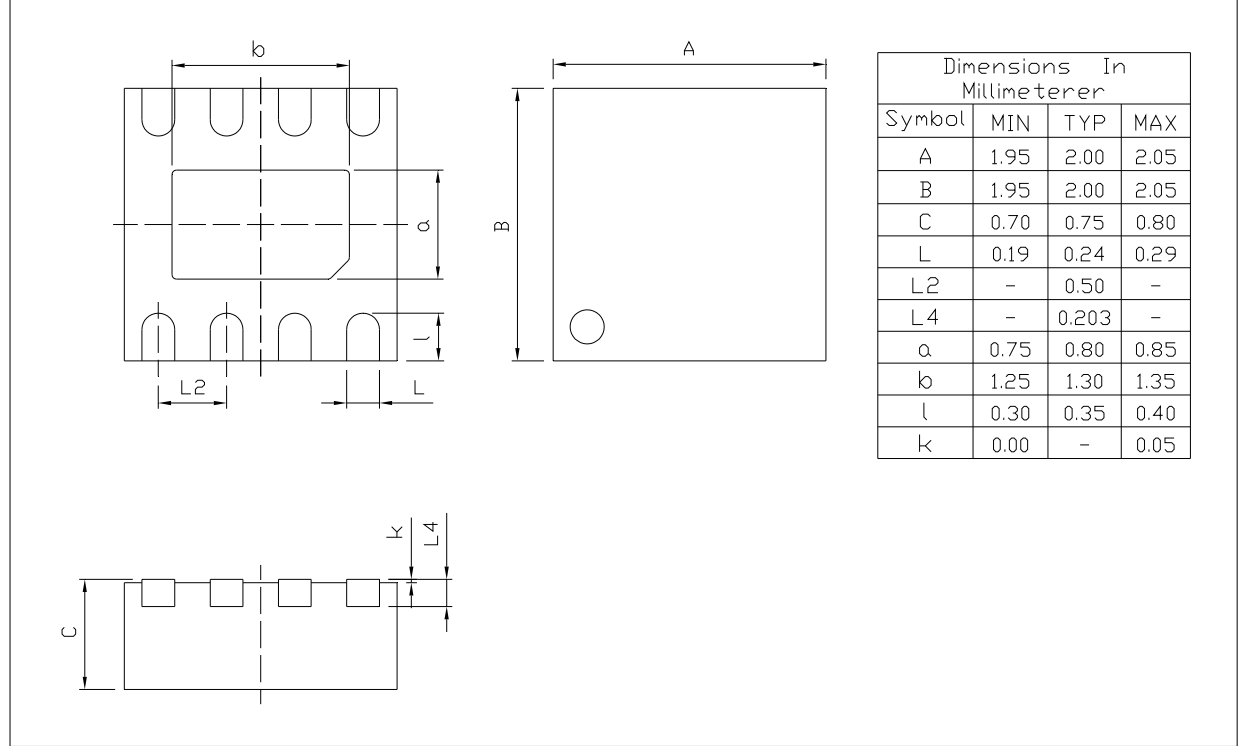
The BRCL4056BZZ is a complete CC/CV linear charger for single cell lithium-ion batteries. CC/CV to charger batter by internal MOSFET. It can deliver up to 500mA of charge current .No blocking diode or external current sense resistors required. BRCL4056BZZ include two Open-Drain charge status Pins: Charge status indicator CHRG and battery charge completion status output STDBY.

The internal thermal regulation circuit reduces the programmed charge current if the die temperature attempts to rise above a preset value of approximately 130 .This feature protects the BRCL4056BZZ from excessive temperature, and allows the user to push the limits of the power handling capability of a given circuit the external components. Another benefit of adopting thermal regulation is that charge current can be set according to typical, not worst-case, ambient temperatures for a given application with the assurance that the charger will automatically reduce the current in worst-case conditions.

The charge cycle begins when the voltage at the VCC pin rises above the UVLO level, a current set resistor is connected from the PROG pin to ground. The CHRG pin outputs a logic low to indicate that the charge cycle is on going. At the beginning of the charge cycle, if the battery voltage is below 2.8V, the charge is in pre charge mode to bring the cell voltage up to a safe

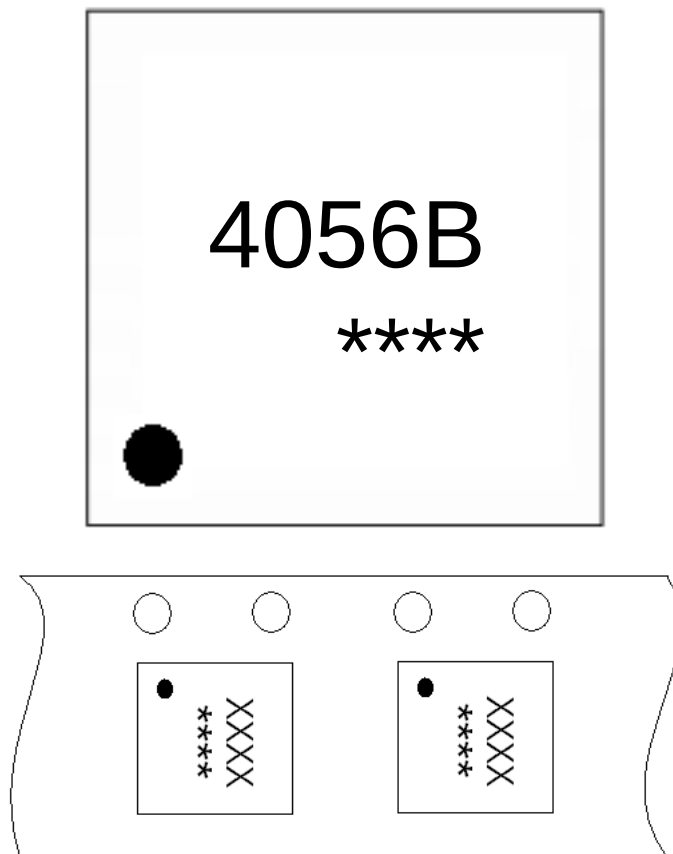
/ Package Dimensions

DFN2×2-8L-0.75Unit:mm



Rev.00 202012

/ Marking Instructions



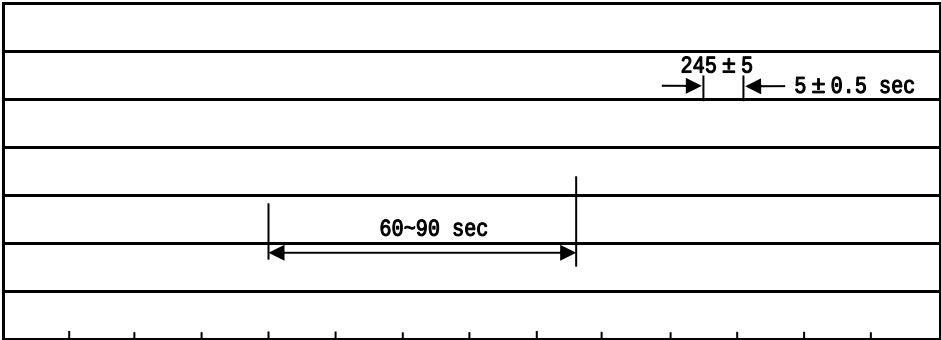
4056B

Note:

4056B: Product Type Code

****: 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 , Time:60~90sec. |
| 2 | 245±5 | | 5±0.5sec; | 2.Peak Temp.:245±5 , Duration:5±0.5sec. | |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
DFN2×2-8L	4,000	10	40,000	4	160,000	7 ×8	210×205×205	445×435×230

/ Notices