

**/ Descriptions**

BRCL4056BSE / BRCL4056BSE  
 ESOP-8  
 BRCL4056BSE USB  
 PMOSFET  
 4.20V 4.20V  
 1/10 BRCL4056BSE  
 USB BRCL4056BSE  
 3uA BRCL4056BSE

BRCL4056BSE 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 ESOP-8 package and low external component count make the BRCL4056BSE ideally suited for portable applications. Furthermore, the BRCL4056BSE 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 BRCL4056BSE 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 BRCL4056BSE automatically enters a low current state dropping the battery drain current to less than 3uA. Other features include charge

current monitor, under-voltage lockout, automatic recharge and two status pins to indicate charge and charge termination.

**/ Features**

- 4.20V ± 1%
- Preset 4.20V charge voltage with ±1% accuracy
- 8V
- Maximum allowable input voltage is 8V
- BAT-VIN
- With BAT-VIN anti-backflow function
- 1A MOSFET / /
- Linear charge mode,built-in 1A MOSFET,Trickle /Constant current/Constant voltage three stage charging ,externally adjustable charging current
- 0V
- Supports 0V battery charging
- Short circuit protection,battery polarity reverse polarity protection
- USB
- Charges single cell Li-ion batteries Directly from USB port

**/ Features**

130

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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

Automatic recharge

4KV ESD HBM mode

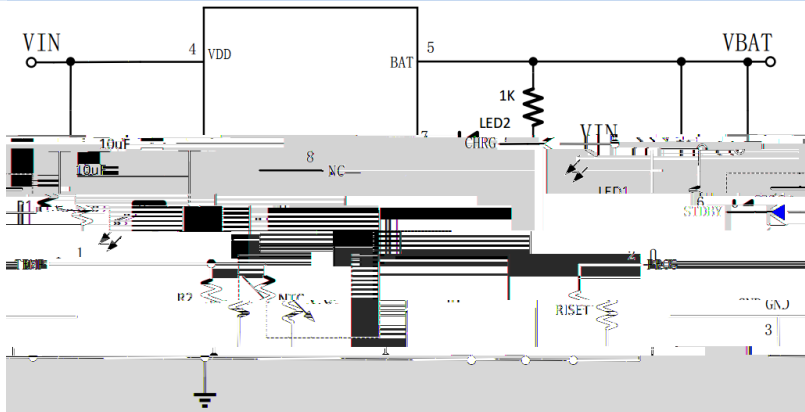
Halogen-free Product.

**/ Applications**

USB

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

**/ Typical Application**

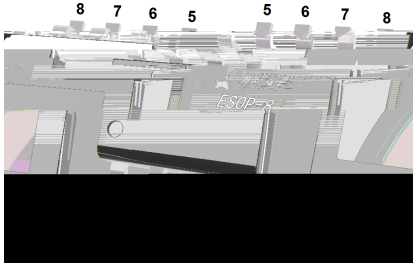


**/ Indicator light working state**

	L1 CHRG	L2 STDBY
/Charging	/Light	/Lights off
/Battery full	/ Lights off	/ Light
TEMP Undervoltage,battery temperature is too high,too low or other fault conditions,or no battery access(use TEMP)	/ Lights off	/ Lights off

BAT 10µF                      TEMP=GND

BAT termin



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

### / Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
VDD to GND	$V_{DD}$	-0.3~8	V
BAT to GND	$V_{BAT}$	-0.3~7	V
CHRG/STDBY to GND	$V_{chrg}/V_{stdby}$	-0.3~8	V
PROG to GND	$V_{prog}$	-0.3~8	V
TEMP to GND	$V_{teD}$		

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	$I_{BAT}$	$V_{CC} = 3.5V$ $V_{bat} = 4.2V$		$\pm 0.5$	$\pm 5$	$\mu A$
	$V_{TRKL}$	$V_{BAT}$		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		

BRCL4056BSE

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# BRCL4056BSE

Rev.G Dec.-2024

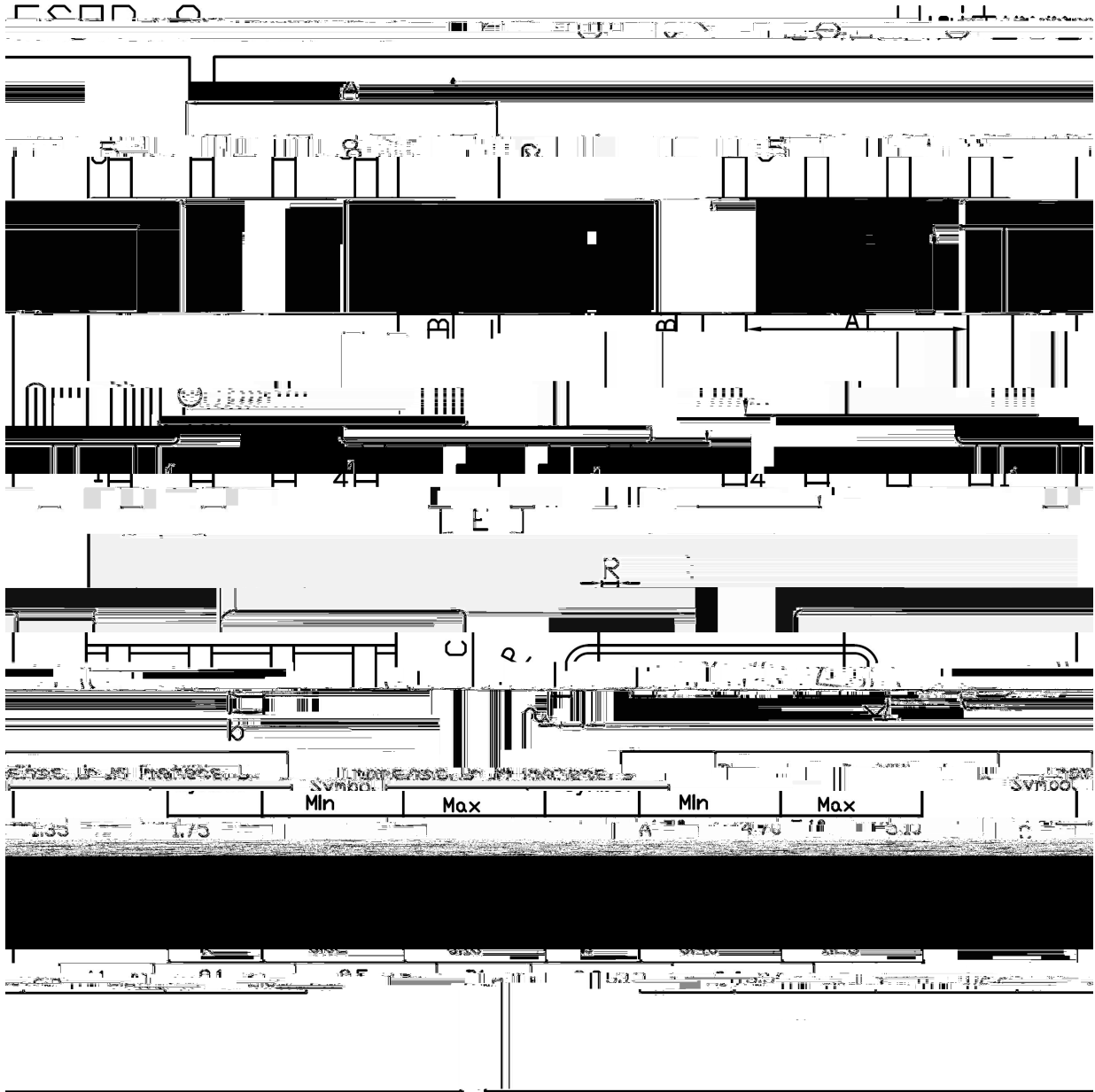


DATA SHEET

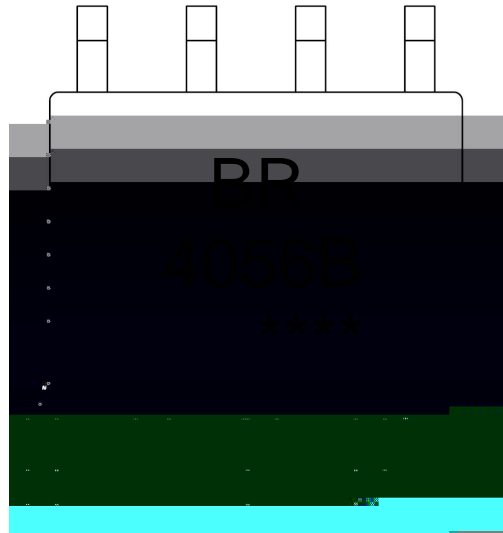
The BRCL4056BSE is a complete CC/CV linear charger for single cell lithium-ion batteries. CC/CV to charger batter by internal MOSFET. It can deliver up to 1A of charge current .No blocking diode or external current sense resistors required. BRCL4056BSE include two

o> qO R r<sup>a</sup> E. j uCE jQo1

/ Package Dimensions



**/ Marking Instructions**



BR:

4056B

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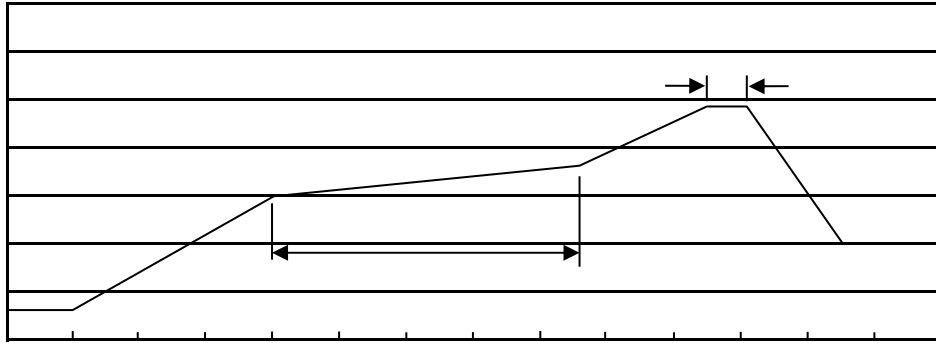
Note:

BR: Company Code

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 <sup>3</sup> )		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOP/ESOP-8	4,000	2	8,000	6	48,000	13 x12	360x360x50	380x335x366

**/ Notices**