

BRCL4054DME	/		
SOT23-5		BRCL4054DME	
BRCL4054DME	USB		
PMOSFET			
4.20V		4.20V	1/10
BRCL4054DME			
	USB	BRCL4054DME	
3uA	BRCL4054DME		

BRCL4054DME 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 SOT23-5 package and low external component count make the BRCL4054DME ideally suited for portable applications. Furthermore, the BRCL4054DME 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 BRCL4054DME 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 BRCL4054DME automatically enters a low current state dropping the battery drain current to less than 3µA. Other features include charge current monitor, under-voltage lockout, automatic recharge and one status pins to indicate charge and charge termination.

- 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
- 800mA MOSFET / /
- Linear charge mode, built-in 800mA MOSFET, Trickle / Constant current / Constant voltage
- three stage charging, externally adjustable charging current
- OV
- Supports OV battery charging
- Short circuit protection, battery polarity reverse polarity protection
- USB
- Charges single cell Li-ion batteries Directly from USB port

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

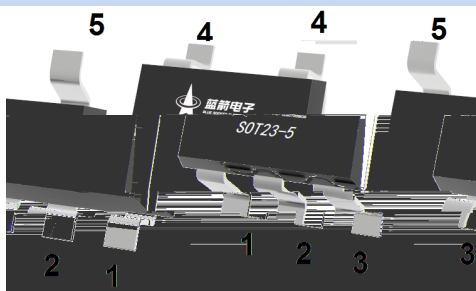
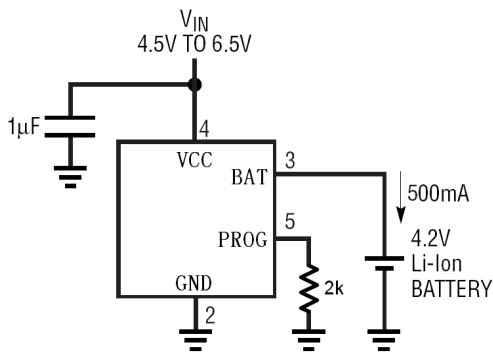
Automatic recharge

4KV ESD HBM mode

Halogen-free Product.

USB

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



1	CHRG	/Charging indicator
2	GND	/Chip ground
3	BAT	/Battery input
4	VDD	5V/External input DC 5V
5	PROG	/Charge current regulator

See Marking Instructions.

Parameter	Symbol	Rating	Unit
VDD to GND	V <sub>DD</sub>	-0.3~8	V
BAT to GND	V <sub>BAT</sub>	-0.3~7	V
CHRG to GND	V <sub>chrg</sub>	-0.3~8	V
PROG to GND	V <sub>prog</sub>	-0.3~8	V
Storage Temperature	T <sub>STG</sub>	-50~+125	
Operating Temperature Range	T <sub>opr</sub>	-40~+85	
Lead Temperature Soldering 10s	T <sub>solder</sub>	260	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
	V <sub>DD</sub>		4.5	5	6	V
V <sub>DD</sub>	V <sub>DD</sub>	V <sub>DD</sub> > BAT		100		mV
V <sub>DD</sub>		V <sub>DD</sub> > BAT		30		mV
	V <sub>BAT</sub>	V <sub>DD</sub> = 5V	4.158	4.20	4.242	V
BAT	I <sub>BAT</sub>	V <sub>CC</sub> = 3.5V V <sub>bat</sub> = 4.2V		±0.5	±5	μA
	V <sub>TRKL</sub>	V <sub>BAT</sub>		2.8		V
	V <sub>TRHYS</sub>			100		mV
V <sub>DD</sub>	V <sub>UV</sub>	V <sub>DD</sub>		3.7		V
V <sub>DD</sub>	V <sub>UVHYS</sub>			200		mV
	V <sub>msd</sub>			1.2		V
	V <sub>msdHYS</sub>			50		mV
PROG	V <sub>prog1</sub>			0.1		V
PROG	V <sub>prog2</sub>			1.0		V
	T <sub>LIM</sub>	V <sub>DD</sub> = 5V		130		

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 BRCL4054DME

800mA  
 CHRG BRCL4054DME

130

BRCL4054DME

BRCL4054DME CHRG  
 2.8V 2.8V  
 PROG GND RPROG  
 4.2V BRCL4054DME  
 CHRG 10%  
 1%

3uA

The BRCL4054DME 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 800mA of charge current .No blocking diode or external current sense resistors required. BRCL4054DME include one Open-Drain charge status Pin: Charge status indicator CHRG.

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 BRCL4054DME 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 per T Q ~~EA~~ EA r V m o

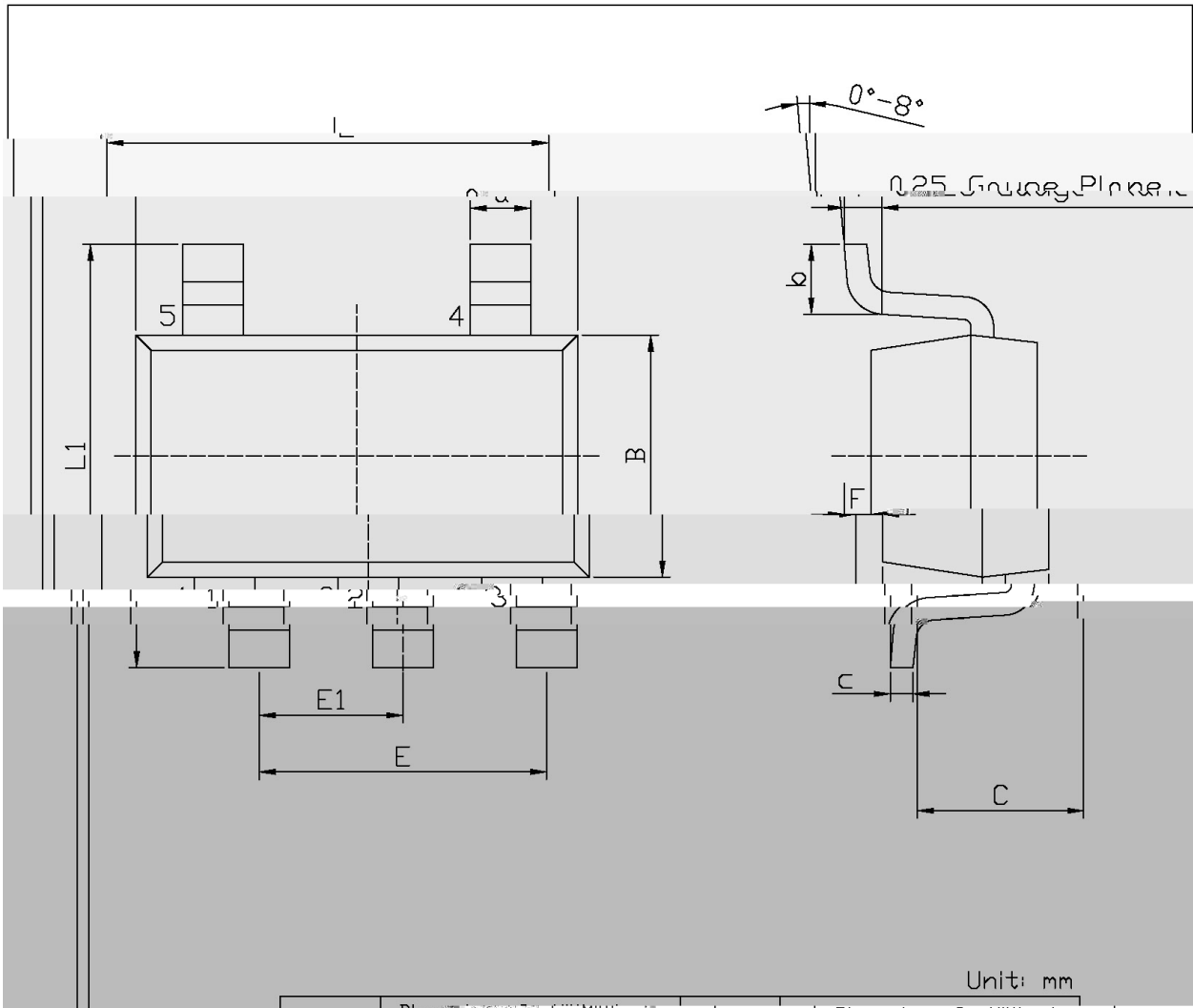
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To restart the charge cycle, remove the input voltage and reapply it. The charge cycle can also be automatically restarted if the BAT pin voltage falls below the recharge threshold. The on-chip reference voltage, error amplifier and the resistor divider provide regulation voltage with 1% accuracy which can meet the requirement of lithium-ion and lithium polymer batteries. When the input voltage is not present, or input voltage is below VBAT, the charger goes into a sleep mode, dropping battery drain current to less than 3µA. This greatly reduces the current drain on the battery and increases the standby time.

### PROG

The charge current is programmed using a single resistor from the PROG pin to ground. The program resistor and the charge current are calculated using the following equations.

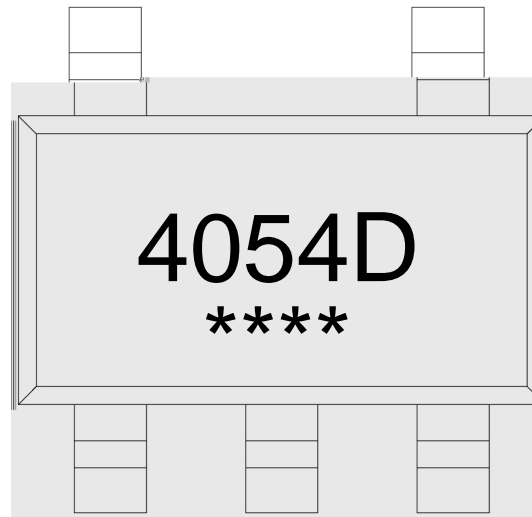
$$R_{\text{prog}}(\text{kohm}) = \frac{1000}{I_{\text{bat}}(\text{mA})} \quad (\text{误差} \pm 10\%)$$



Unit: mm

Dimensions in Millimeters			Dimensions in Millimeters		
Symbol	Min	Max	Symbol	Min	Max
L	2.82	3.02	E1	0.85	1.05
B	1.50	1.70	a	0.35	0.50
C	0.90	1.30	c	0.10	0.20
L1	2.80	3.00	b	0.35	0.55
E	1.80	2.00	F	0	0.15

SMT23-5



4054D

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Note:

4054D: Product Type Code

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


## 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.            |

260±5

10±1 sec.

Temp.:260±5

Time:10±1 sec

/ 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
SOT23-5/6	3,000	10	30,000	4	120,000	7 x8	210x205x205	445x435x230