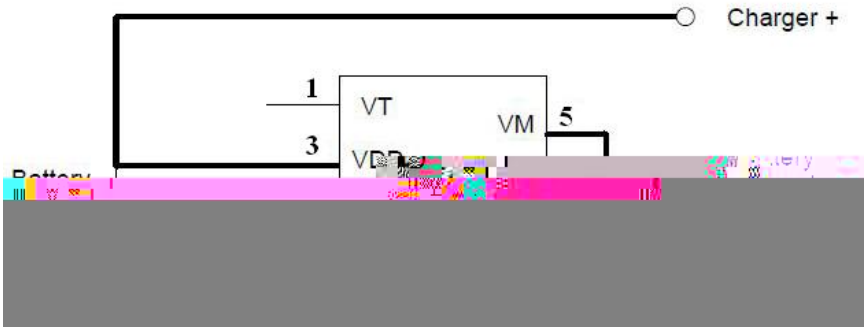
'-'' ./01.2'3.4532''

B	2018-4				
C	2019-3-6	ALL	G,		
D	2020-3-24	2			

BRCL3230ME / BRCL3230ME
MOSFET
BRCL3230ME SOT23-5
BRCL3230ME

The BRCL3230ME series product is a high in



Ù1Ú

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Đ đ /Parameter	Ē /Symbol	đ ē /Value	Ě /Unit
V_{DD} input pin voltage	V_{IN}	-0.3 to +6	V'
V_M input pin voltage	V_{VM}	-6 to +10	V
Power Dissipation	P_D	400	mW

M ´ n l

&K<0/;=.98':&*'59' .1018;94.'						
Equivalent FET on Resistance	R_{DS}	V_{dd}=3.6V，I_{VM}=1A		45		mΩ
L/.3'8.F7.3;8<3.'7358.48059'						
Over Temperature Protection	OTP		125	140	155	℃
Over Temperature Recovery Degree	OTPR		100	115	130	℃
(.=;@'80F.'						
Overcharge Current Detection Delay Time	T_{OCC}	V_{dd}=3.6V я	6.4	8	9.6	ms
	T_{CU}105	V_{DD}=3.6V~4.4V	105	135	165	ms
Overdischarge Voltage Detection Delay Time	T_{DL}	V_{DD}=3.6V~2.0V	6V28	35	45	ms

/ :<948059;-'(.143078059

BRCL3230ME ę Ě ě Ĝ ĝ Ğ ğ
Ġ ġ Ģ ģ Ĥ ĥ Ħ ħ MOSFET Ĩ ĩ
Ī ė Ę ē 45mΩ

The BRCL3230ME 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 disconnR ŧ ẽ s ضذ n

/ L/.34J;3?.' 592080 59

The BRCL3230ME detects this voltage and releases the overcharge condition. Consequently, in the case that the battery voltage is equal to or lower than the overcharge detection voltage (VCU), the BRCL3230ME returns to the normal condition immediately, but in the case the battery voltage is higher than the overcharge detection voltage (VCU),the chip does not return to the normal condition until the battery voltage drops below the overcharge detection voltage (VCU) even if the load is connected. In addition, if the VM pin voltage is equal to or lower than the overcurrent 1 detection voltage when a load is connected and discharging starts, the chip does not return to the normal condition.

Note: If the battery is charged to a voltage higher than the overcharge detection voltage (VCU) and the

/ L / .34<33.98' 592080 59

Ļ ¦ Ľ Ŀ ē ł· VM ł , Ń ń
Ņ ¦ ,BRCL3230MEÑ Ĝ FET ň ŉ Ģ ģ Ģ ģ ł·
1 2 ł Ģ ģ Ľ ,VM ſ ND ŋ RVMS Ī ƀ Ŀ Ő
ŏ Œ VM VDD Ɓ Ƃ Ī Œ
VM ſ ND ű ŏ RVMS Ī Ŀ Ĝ ĝ VM ŋ Ų ¦ Ě Ŀ ¦ VM Ě
1 Ŏ ¦ Ź

When the discharging current becomes equal to or higher than a specified value (the VM pin voltage is equal to or higher than the overcurrent detection voltage) during discharging under normal condition and the state continues for the overcurrent detection delay time or longer, the BRCL3230ME turns off the discharging control FET to stop discharging. This condition is called overcurrent condition. (The overcurrent includes overcurrent, or load shortcircuiting.) The VM and GND pins are shorted internally by the RVMS resistor under the overcurrent condition. When a load is connected, the VM pin voltage equals the VDD voltage due to the load.

Because of the connection between the VM and the GND by the RVMS resistor when the load is removed, the VM pin goes back to the GND potential since the VM pin is shorted the GND pin with the RVMS resistor. Detecting that the VM pin potential is lower than the overcurrent detection voltage (VIOV1), the IC returns to the normal condition.

/) D953 F ;=' J ;3?.' <33.98' (.8.480 59

ī Ĭ VM Ş ¦ Ġ Ľ ÙVCŸAÚ Ń ń
ÙTCŁÚ BRCL3230MEÑ Ĝ FET ň ŉ Ģ ģ ¡
Ĝ ĝ VM ſ ND ű ÙVCŸAÚ ¡ Ļ ¦ ō 0V
ƃ Ƅ ƀ ő 0V ¡
ķ

If the VM pin voltage drops below the charger detection voltage (VCHA) during charging under the normal condition and it continues for the overcharge detection delay time (TCU) or longer, the BRCL3230ME turns the charging control FET off and stops charging. This action is called abnormal charge current detection.

Abnormal charge current detection is released when the voltage difference between VM pin and GND pin becomes higher Ļ ch Ļ

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0V / $R' ;88.3@' J;3?09?':<948059

ơ Đ Ĩ Ɗ ĸ ļ 0V ő ə Ŀ đ Œ Ğ ě Ř ř IJ Š ƀ ő
Ŀ I· VDL ł ŷC ż Ź
Ù1Ú ǫ Ǝ ə Ɛ ĸ œ Ƒ ƒ ŋ ə Ơ ɣ ħu I ł Ƙ
ķ ł ƛ Ш Ƒ ƒ ŝ 0V Ɲ ŋ Ш Ɵ ƞ ŝ 0V Ɲ
Ù2ÚШ Ƒ ƒ ŝ 0V Ɲ Ơ Ш Ɲ ƃ Ь ọ ğ ơ, Ш Ƒ ƒ ŝ 0V Ɲ
ŷC ơ Ɋ Ğ ɋ I· VDL ł Ġ Ľ
ő Ź
Ù3Ú Ŀ Ƥ Ơ Œ Ő Ğ ż Ę ļ ơ þ ī Ĭ ŗ Ʀ Ƨ
VM IJ ſ ND I· ķ VM Ű ſ ND ǒ ł Ů Ġ ż Ę ļ

This function enables the charging of a connected battery whose voltage is 0V by self-discharge. When connectes 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.

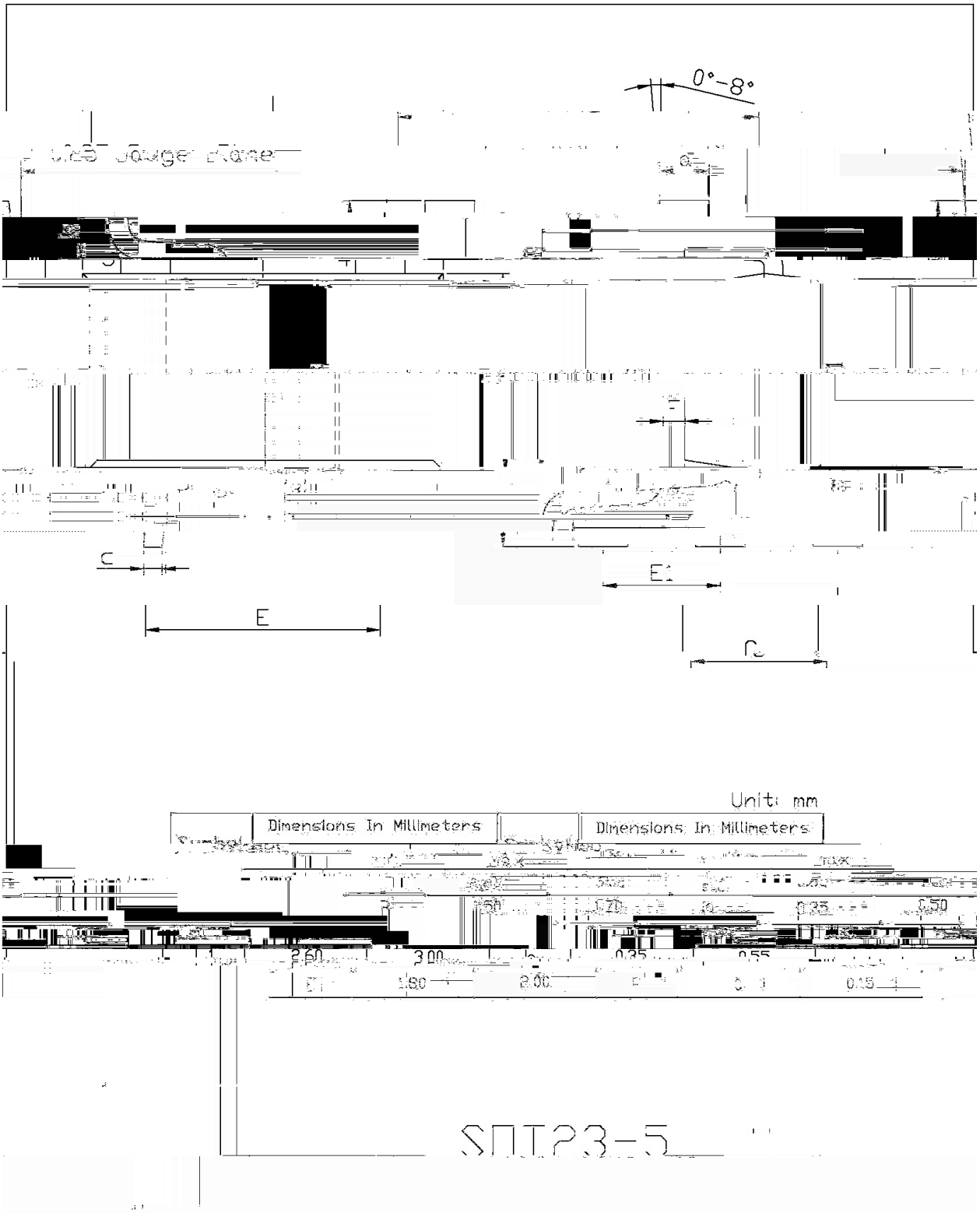
Notes

(1) Some battery providers do not recommend charging of completely discharged batteries. Please refer to battery providers before the selection of 0 V battery charging function.

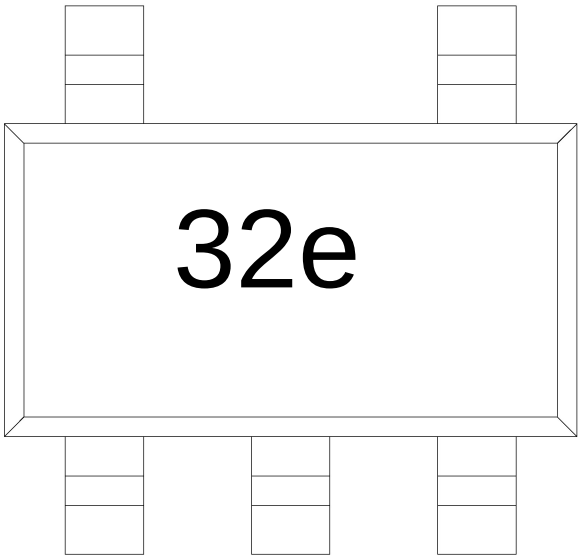
(2) The 0V battery charging function has higher priority than the abnormal charge current detection function. Consequently, a product with the 0 V battery charging function charges a battery and abnormal charge current cannot be detected during the battery voltage is low.

(3) When a battery is connected to the IC for the first time, the IC may not enter the normal condition in which discharging is possible. In this case, set the VM pin voltage equal to the GND voltage (short the VM and GND pins or connect a charger) to enter the normal condition.

''-''A;4>;?.'(0F.910591'


0°-8°
Gauge Plane
E
E1
e
Unit: mm
Dimensions In Millimeters
Dimensions In Millimeters
SOT23-5

''-''%;3>09?'T9183<480591'



3230	Ę
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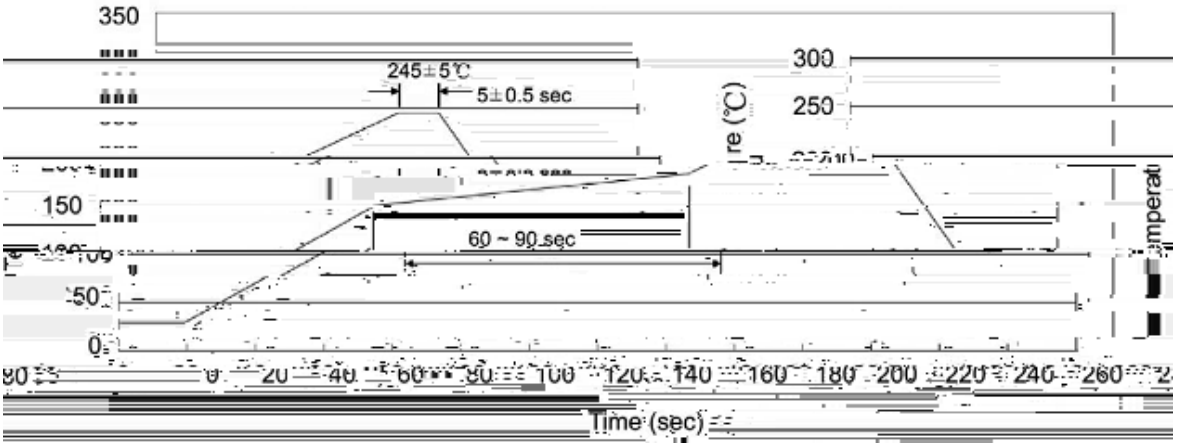
Note:

3230: Product Type.

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

G I' ' -' ' Temperature Profile for IR Reflow Soldering(Pb-Free)



			Note:
1Č Ư ư	150ʊ180 Ս	60ʊ90sec;	1.Preheating:150~180 Ս, Time:60~90sec.
2Č Y ē	245y5 Ս	Ń ń 5y0.5sec;	2.Peak Temp.:245y5 Ս, Time:5y0.5sec.
3Č	ĵ Ƶ ƶ Ʒ	2ʊ10 Ս/sec.	3. Cooling Speed: 2~10 Ս/sec.

' '-' ' ' .1018;94.'85'+5=2.309?', .;8'*.18' 592080591'

260y5 Ս	10y1 sec.	Temp.:260y5 Ս	Time:10y1 sec

' '-' ' A;4>;?09?'+A& Ս'

Ɛ ɛ / REEL

Package Type	Units	Dimension (unit mm³)
[redacted]		