

/ Descriptions

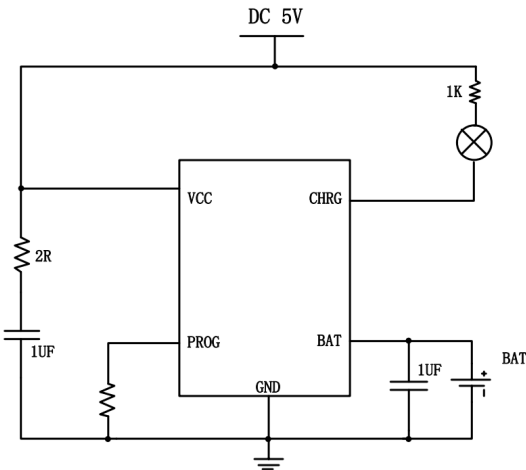
|                 |          |     |       |
|-----------------|----------|-----|-------|
| BRCL4058MME-4.2 | 30V      | OVP | 500mA |
| /               |          |     |       |
| BRCL4058MME-4.2 | P-MOSFET |     |       |
|                 | 4.2V     |     |       |
| BRCL4058MME-4.2 |          |     | 0.1uA |
| BRCL4058MME-4.2 |          |     |       |
| BRCL4058MME-4.2 | USB      |     |       |

/ Features

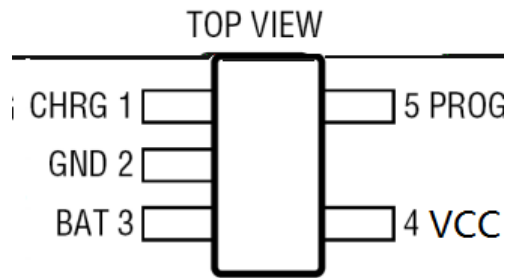
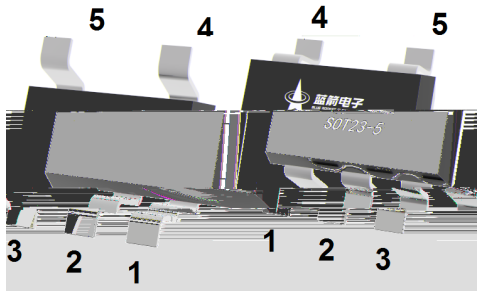
|            |     |
|------------|-----|
|            | 30V |
| 6.8V       | OVP |
| 30mA-500mA |     |
| /          |     |
| 1%         |     |
| 2.8V       |     |
| C/10       |     |
| BAT        |     |
| SOT23-5    |     |
| RoHS       |     |

/ Applications

/ Application Circuit



## / Pinning



| PIN Num. | Symbol | Function |
|----------|--------|----------|
| 1        | CHRG   |          |
| 2        | GND    |          |
| 3        | BAT    |          |
| 4        | VCC    |          |
| 5        |        |          |

## / Absolute Maximum Ratings(Ta=25℃)

| PARAMETER                           | SYMBOL                | RATINGS  | UNITS |
|-------------------------------------|-----------------------|----------|-------|
| VCC/CHRG Pin Voltage                | V <sub>VCC/CHRG</sub> | -0.3~30  | V     |
| BAT Pin Voltage                     | V <sub>BAT</sub>      | -5~13    |       |
| PROG Pin Voltage                    | V <sub>PROG</sub>     | -0.3~6   |       |
| Operating Ambient Temperature Range | T <sub>OP</sub>       | -40~+85  | ℃     |
| Storage Temperature                 | T <sub>stg</sub>      | -55~+150 | ℃     |
| Lead Temperature (Soldering, 10s)   | T <sub>solder</sub>   | 260      | ℃     |
| Junction-to-Ambient                 |                       | 240      | /W    |
| ESD                                 | HBM                   | 2000     | V     |
|                                     | MM                    | 200      | V     |

## / Electrical Characteristics(Ta=25℃)

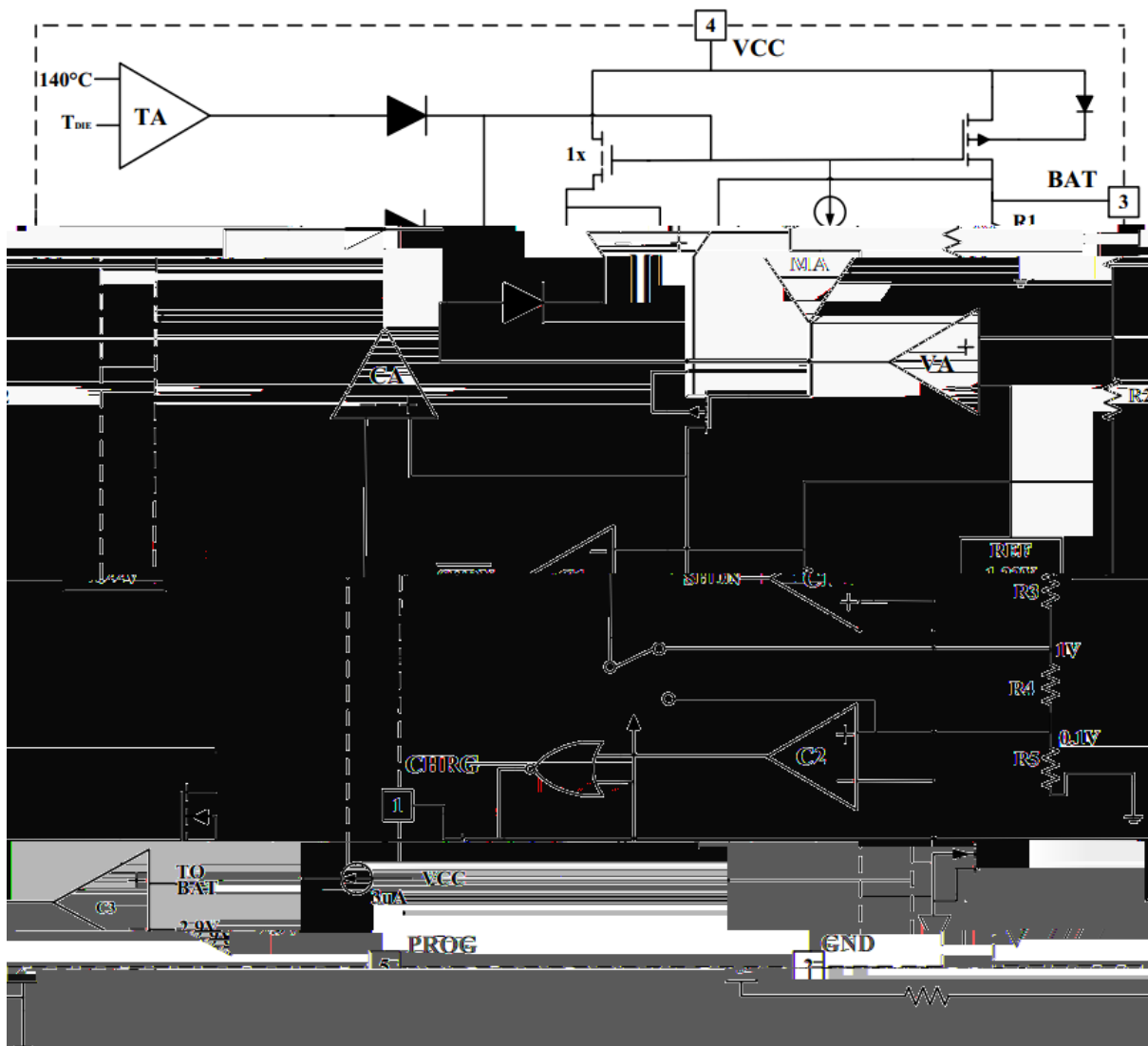
| PARAMETER                             | SYMBOL              | CONDITIONS                       | MIN | TYP | MAX | UNITS |
|---------------------------------------|---------------------|----------------------------------|-----|-----|-----|-------|
| Input Supply Voltage                  | V <sub>CC</sub>     |                                  |     | 5.0 |     | V     |
| Maximum of Input Supply Voltage       | V <sub>CC_MAX</sub> |                                  |     |     | 30  | V     |
| Input Over-Voltage Protection Voltage | V <sub>OVp</sub>    | V <sub>CC</sub> from Low to High |     | 6.8 |     | V     |

## / Electrical Characteristics(Ta=25℃)

| PARAMETER                                                                                 | SYMBOL               | CONDITIONS                                                                                                              | MIN   | TYP        | MAX   | UNITS |
|-------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------|-------|------------|-------|-------|
| Input Power Supply OVP Hysteresis Voltage                                                 | V <sub>OVP_HYS</sub> |                                                                                                                         |       | 500        |       | mV    |
| Input Power Supply Current                                                                | I <sub>CC</sub>      | Charging mode (R <sub>PROG</sub> =10K)                                                                                  |       | 300        |       | μA    |
|                                                                                           |                      | Standby mode, charging terminated                                                                                       |       | 100        |       | μA    |
|                                                                                           |                      | Shutdown mode (R <sub>PROG</sub> not connected, V <sub>CC</sub> <V <sub>BAT</sub> Or V <sub>CC</sub> <V <sub>UV</sub> ) |       | 60         |       | μA    |
| Regulated Output (Float) Voltage                                                          | V <sub>FLOAT</sub>   |                                                                                                                         | 4.158 | 4.200      | 4.242 | V     |
| BAT Pin Current (The Constant Current Mode Mode Test Condition is V <sub>BAT</sub> =4.0V) | I <sub>BAT</sub>     | R <sub>PROG</sub> =10k, Constant Current Mode                                                                           |       | 98         |       | mA    |
|                                                                                           |                      | R <sub>PROG</sub> =1.8k, Constant Current Mode                                                                          |       | 550        |       | mA    |
|                                                                                           |                      | V <sub>BAT</sub> = V <sub>FLOAT</sub> , Standby Mode                                                                    |       | -2         | -6    | μA    |
|                                                                                           |                      | Shutdown Mode (R <sub>PROG</sub> not Connected)                                                                         |       | ±1         | ±2    | μA    |
|                                                                                           |                      | Sleep Mode (V <sub>CC</sub> =0V)                                                                                        |       | ±1         | ±2    | μA    |
| Trickle Charge Current                                                                    | I <sub>TRIKL</sub>   | V <sub>BAT</sub> V <sub>TRIKL</sub> ;<br>R <sub>PROG</sub> =1.8K                                                        |       | 55         |       | mA    |
| Trickle Charge Threshold                                                                  | V <sub>TRIKL</sub>   | R <sub>PROG</sub> =10K<br>V <sub>BAT</sub> from Low to High                                                             |       | 2.85       |       | V     |
| Trickle Charge Hysteresis                                                                 | V <sub>TR_HYS</sub>  | R <sub>PROG</sub> =1.8K                                                                                                 |       | 350        |       | mV    |
| V <sub>CC</sub> undervoltage lockout threshold                                            | V <sub>UV</sub>      | V <sub>CC</sub> from Low to High                                                                                        |       | 3.8        |       | V     |
| V <sub>CC</sub> undervoltage lockout hysteresis                                           | V <sub>UVHYS</sub>   |                                                                                                                         |       | 280        |       | mV    |
| V <sub>CC</sub> -V <sub>BAT</sub> lockout threshold voltage                               | V <sub>ASD</sub>     | V <sub>CC</sub> from Low to High<br>V <sub>CC</sub> from High to Low                                                    |       | 200<br>100 |       | mV    |
| C/10 Charging Termination Current                                                         | I <sub>TERM</sub>    | R <sub>PROG</sub> =10K<br>R <sub>PROG</sub> =1.8K                                                                       |       | 10<br>55   |       | mA    |
| R <sub>PROG</sub> voltage at Constant Current Mode                                        | V <sub>PROG</sub>    | R <sub>PROG</sub> =1.8K, Constant Current Mode                                                                          | 0.9   | 1.0        | 1.1   | V     |
| CHRG pin outputs low voltage                                                              | V <sub>CHRG</sub>    | I <sub>CHRG</sub> =5mA                                                                                                  |       | 0.6        |       | V     |
| Rechargeable Battery Voltage                                                              | V <sub>RECHRG</sub>  | V <sub>FLOAT</sub> -V <sub>RECHARH</sub>                                                                                |       | 100        |       | mV    |
| Junction Temperature in Limited Temperature Mode                                          | T <sub>LIM</sub>     |                                                                                                                         |       | 140        |       |       |
| Static Drain-Source On-Resistance                                                         | R <sub>DS(on)</sub>  |                                                                                                                         |       | 1100       |       | mΩ    |
| Soft start time                                                                           | T <sub>SS</sub>      |                                                                                                                         |       | 20         |       | μS    |

**A**

| PARAMETER                               | SYMBOL               | CONDITIONS                                             | MIN | TYP | MAX | UNITS |
|-----------------------------------------|----------------------|--------------------------------------------------------|-----|-----|-----|-------|
| Recharge Comparator Filtering Time      | T <sub>RECHARG</sub> | V <sub>BAT</sub> from High to Low                      |     | 1   |     |       |
| Terminate the comparator filtering time | T <sub>TERM</sub>    | I <sub>BAT</sub> drop to below I <sub>CHARGE</sub> /10 |     | 2.5 |     |       |
| PROG pin pull-up current                | I <sub>PROG</sub>    |                                                        |     | 0.3 |     | μA    |



/ Function description

BRCL4058MME-4.2 /  
500mA BRCL4058MME-4.2 USB

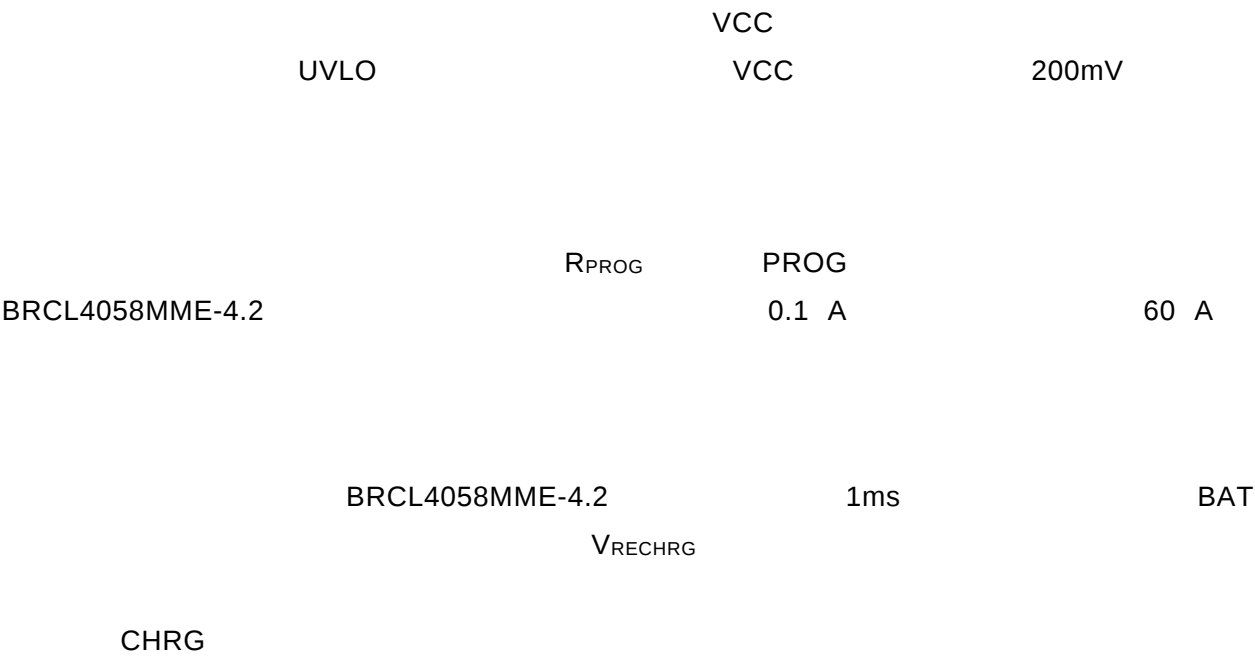
OVP  
BRCL4058MME-4.2 OVP VCC 6.8V OVP  
6.8V 6.3V

$I_{CH} = 1000/R_{PROG}$   $I_{CH}$   $R_{PROG}$   
 $R_{PROG}$  200mA  
 $R_{PROG} = 1000/0.2 = 5K$   
 $R_{PROG}$  1%

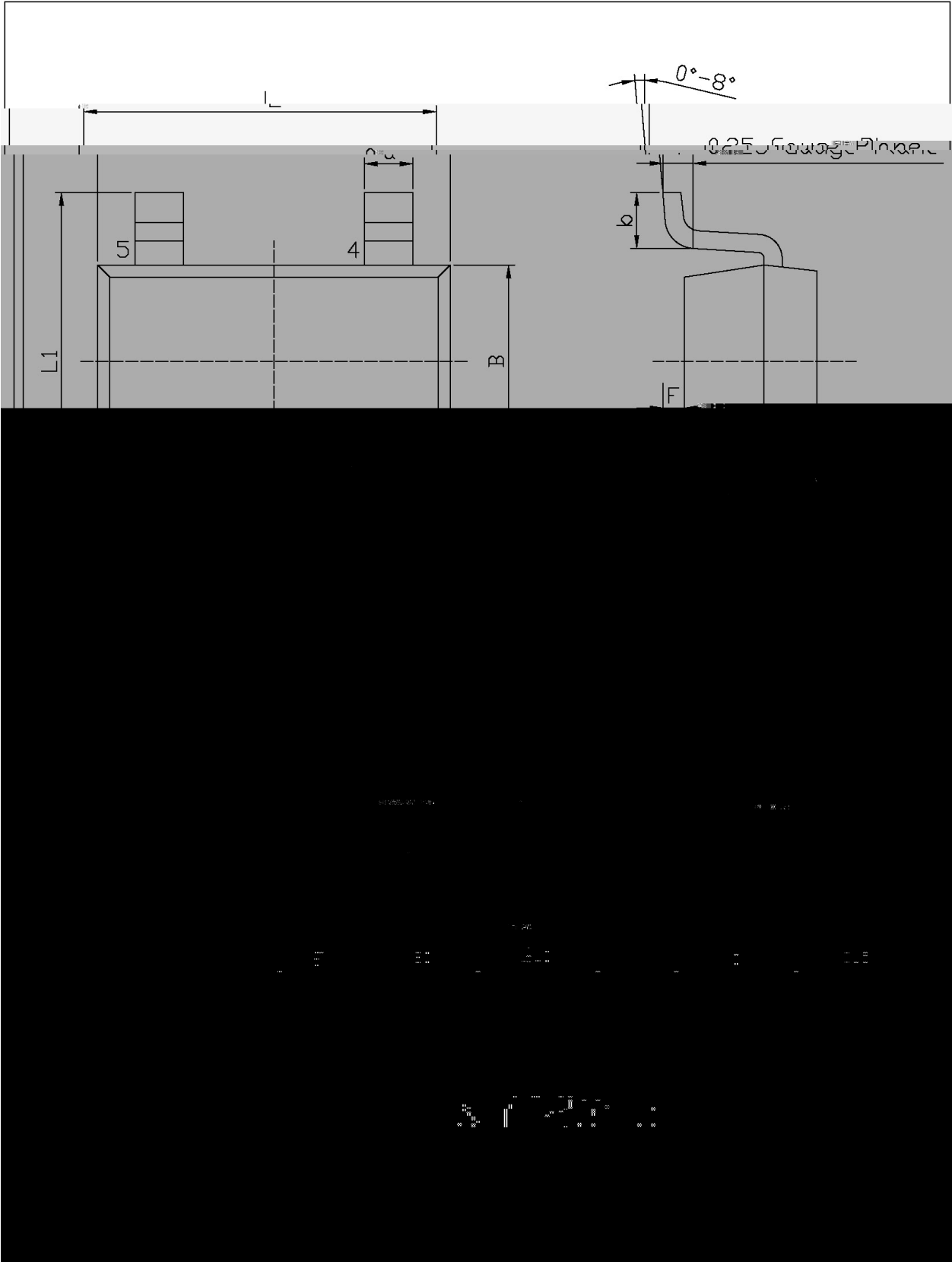
| $R_{PROG}$          |              |
|---------------------|--------------|
| $R_{PROG}(K\Omega)$ | $I_{CH}(mA)$ |
| 10                  | 100          |
| 5                   | 200          |
| 3.3                 | 300          |
| 2                   | 500          |

1/10  
PROG 100mV  
 $T_{TERM}$  2.5ms C/10  
BAT PROG DC 1/10  
100mV 1/10 BRCL4058MME-4.2  
BAT BAT  
BRCL4058MME-4.2 BAT

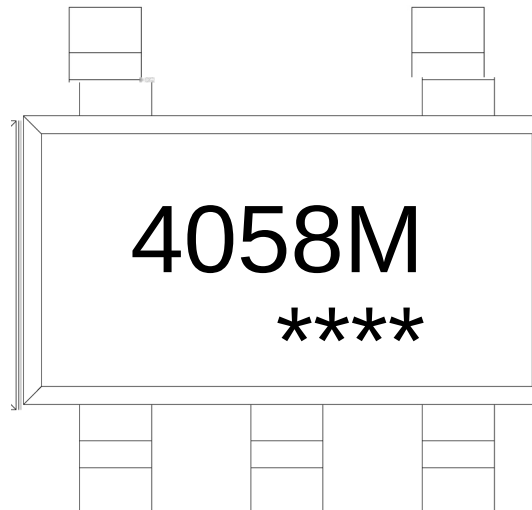
/ Function description



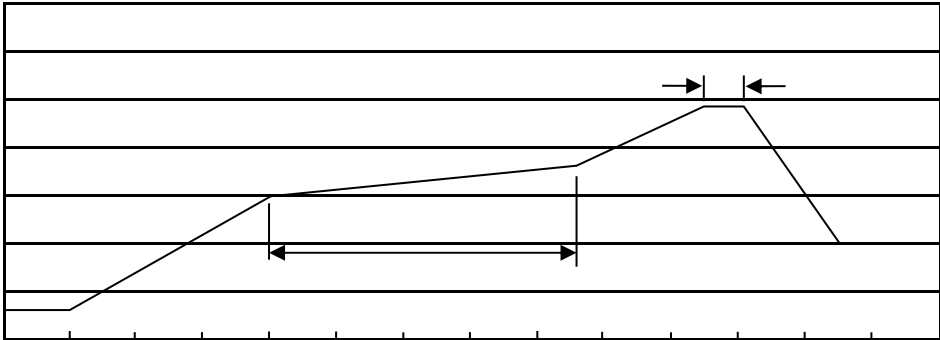
/ Package Dimensions



**/ Marking Instructions**



( ) /



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   |
| SOT23-5/6    | 3,000      | 10              | 30,000          | 4                     | 120,000         | 7" ×8                             | 210×205×205 | 445×435×230 |

/ Notices