

## DESCRIPTION

JW3313 is a low-power battery protection IC for the 3 series rechargeable lithium-ion battery pack.

JW3313 integrates high-accuracy voltage detection and temperature detection circuits, which realizes multiple protect functions including over-charge, over-discharge, over-current, over-temperature, under-temperature and open wire detection.

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## FEATURES

- Input Voltage up to 30V
- High-accuracy Voltage Detection for Each Cell
  - Over-charge Detection Voltage  $V_{OC}$ : 3.65V, 3.85V, 4.2~4.375V (25mV step)  $\pm 25\text{mV}$  (25°C)
  - Over-charge Release Hysteresis  $V_{OCRH}$ : 0.1~0.4V (100mV step)
  - Over-discharge Detection Voltage  $V_{OD}$ : 2.0V, 2.3V, 2.5V, 2.7V  $\pm 80\text{mV}$  (25°C)
  - Over-discharge Release Hysteresis  $V_{ODRH}$ : 0.3~0.7V (200mV step)
- Discharge Over-current Detection in 3-step:
  - 1<sup>st</sup>Detection Voltage  $V_{DOI1}$ : 50~150mV (25mV step)  $\pm 10\text{mV}$
  - 2<sup>nd</sup>Detection Voltage  $V_{DOI2}$ :  $2V_{DOI1} \pm 20\text{mV}$
  - Short Circuit Detection Voltage  $V_{SHT}$ : 0.4V  $\pm 50\text{mV}$

- Charge Over-current Detection Voltage  $V_{COI}$ :
  - -20mV  $\pm 5\text{mV}$ ,
  - -30mV  $\pm 10\text{mV}$ , -50mV  $\pm 10\text{mV}$ ,
  - Disable
- High-accuracy Battery Temperature Detection
  - Charging Over-temperature Protection Threshold  $V_{COT}$ : 0.206V (50  $\pm 5^\circ\text{C}$ ) or 0.18V (55  $\pm 5^\circ\text{C}$ )
  - Charging Under-temperature Protection Threshold  $V_{CUT}$ : 0.815V (-10  $\pm 5^\circ\text{C}$ ) or 0.692V (0  $\pm 5^\circ\text{C}$ )
  - Discharging Over-temperature Protection Threshold  $V_{DOT}$ : 0.12V (70  $\pm 5^\circ\text{C}$ )
  - Discharging Under-temperature Protection Threshold  $V_{DUT}$ : 0.926V (-20  $\pm 5^\circ\text{C}$ )
- 3-step Discharge Over-current Protection
  - For 1<sup>st</sup>,  $t_{DOI1}$ : 0.2s, 0.5s, 1s, 2s
  - For 2<sup>nd</sup>,  $t_{DOI2}$ :  $t_{DOI1} \times 10\%$
  - For 3<sup>rd</sup>,  $t_{SHT}$ : 300 $\mu\text{s}$
- Open Wire Detection
- Wide Range of Operation Temperature -40°C to +85°C
- Low Current Consumption (T=25°C)

|                 |                        |
|-----------------|------------------------|
| Full Power Mode | 10 $\mu\text{A}$ typ.  |
| Sleep Mode      | 1.5 $\mu\text{A}$ typ. |
| Shutdown Mode   | 350nA typ.             |
- Package: MSOP10

## APPLICATIONS

- Rechargeable Lithium-ion Battery Pack
- Power Tools, Garden Tools