

Single Cell Li-Ion battery indicator chip

General Description

The HM1160 is a single lithium battery charge indicator chip, using CMOS process to achieve, small size and ease of installation of portable products.

The HM1160 with built-in comparator and feedback loop, to materialize the detection of the four voltage point. By the internal trimming technology, you can ensure that the voltage detection accuracy of $\pm 1\%$. The output using OPENDRAIN structure, ease of customer use IO ports or LED indication.

Features

- Ultra-low current consumption:<10uA
- Built - in 4-way comparator, the detection of the four voltage point
- The internal comparator with reasonable hysteresis, is easy to charge and discharge instructions.
- High-precision detection voltage $\pm 1\%$

Applications

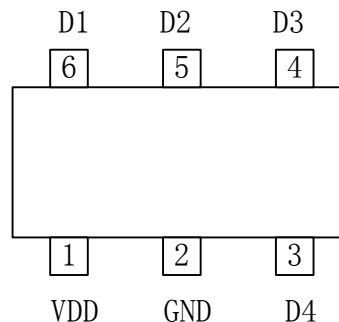
- Mobile Power
- LED flashlight

Marking Rule

- portable electronic devices

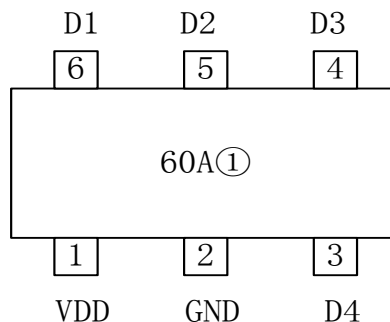
Package

- SOT23-6L



Pin Function

- **VDD(Pin 1):** electric power source
- **GND(Pin 2):** ground terminal
- **D1-D4(Pin 3-6):**LED1-LED4 output indicates



① Process ID

| 打印符号 | 描述 |
|------|-----|
| A | 01A |

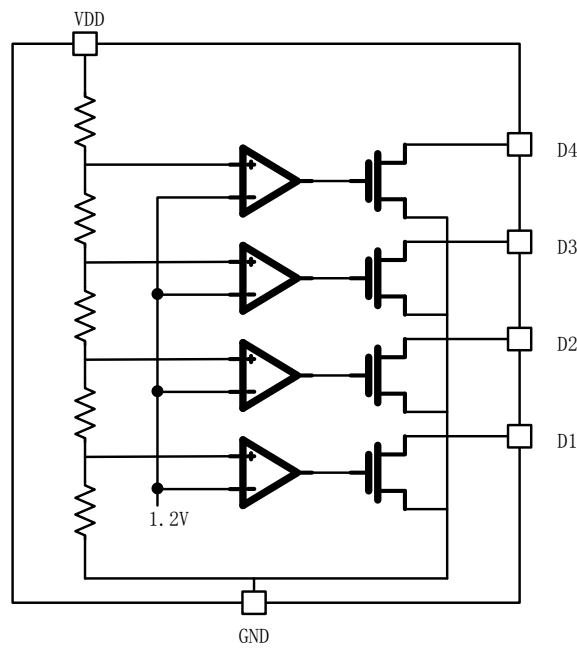
Note :The product lot according to the internally fixed of the company.

■ Ordering Information

HM1160 ①②

| Designator | Description | Symbol | Description |
|------------|--------------------|--------|-------------|
| ① | Packaging Types | M | SOT23-6L |
| | | | |
| ② | Device Orientation | R | positive |
| | | L | negative |

■ Block Diagram



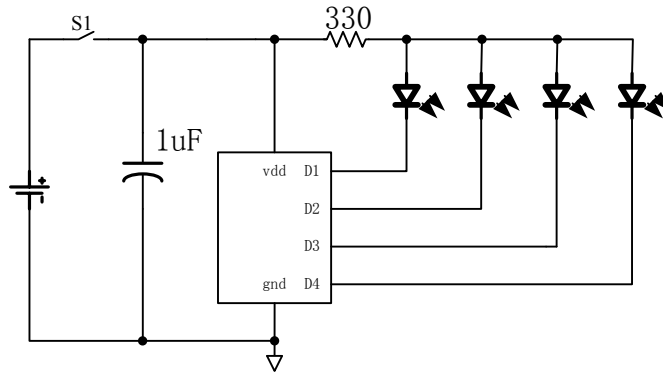
Block Diagram

■ Absolute Maximum Ratings

| Parameter | Symbol | Maximum Rating | Unit |
|----------------------|----------|------------------------------|------|
| Power supply voltage | V_{cc} | $V_{SS}-0.3 \sim V_{SS}+7$ | V |
| D1-D4 pressure-proof | VD1-VD4 | $V_{SS}-0.3 \sim V_{cc}+0.3$ | V |
| D1-D4 output current | ID1-ID4 | 30 | mA |

Caution: The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

■ **Typical Application Circuit**



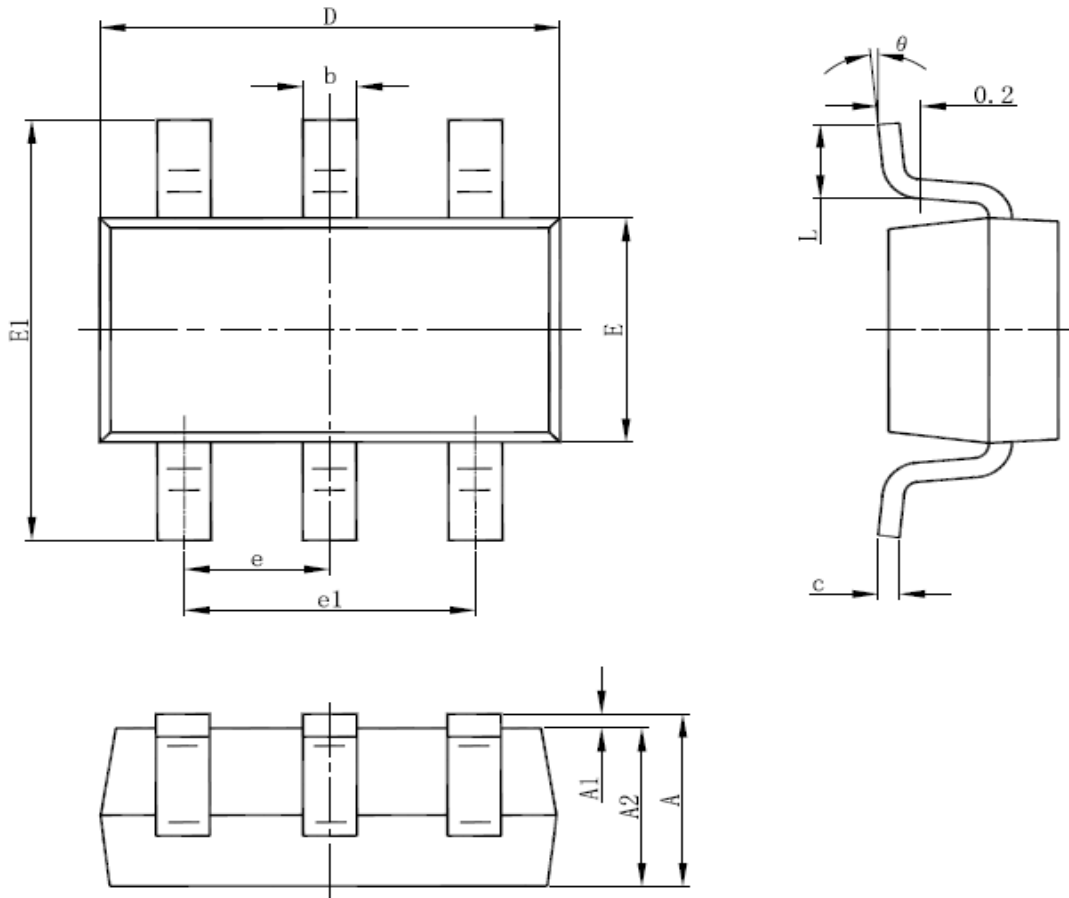
■ **Electrical Characteristics**

(Ta=25°C, Unless specifically designated)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|-----------|------|------|------|------|
| Input supply voltage | Vcc | | 2 | | 6.5 | V |
| Output current | IDx | VCC=3.5V | 2 | 5 | 10 | mA |
| Quiescent operating current | ISS | VCC=4.5V | 5 | 8 | 10 | uA |

■ Package

- SOT23-6L



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |