

## 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

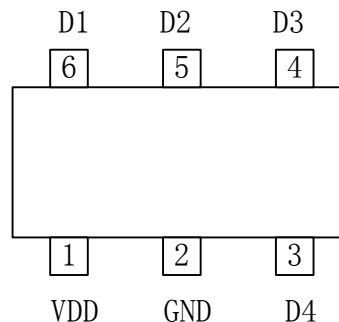
- Mobile Power
- LED flashlight

### ■ Marking Rule

- portable electronic devices

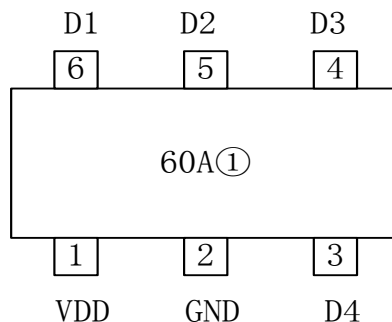
### ■ Package

- 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

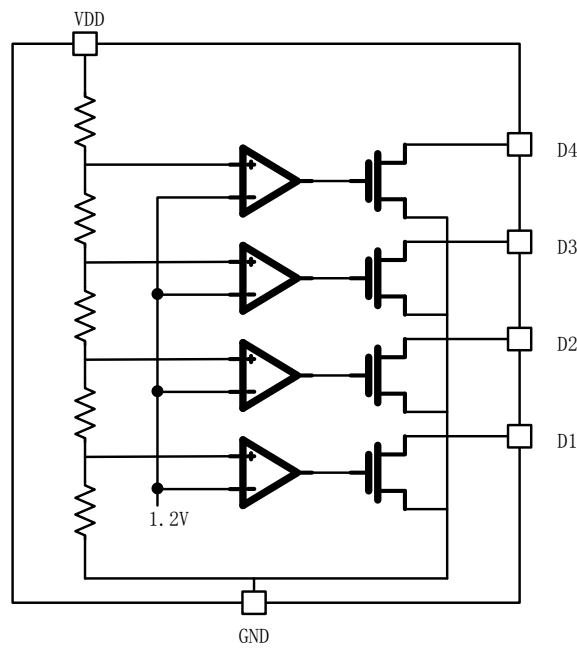
Note :The product lot according to the internally fixed of the company.

■ Ordering Information

HM1160 ①②

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

■ Block Diagram



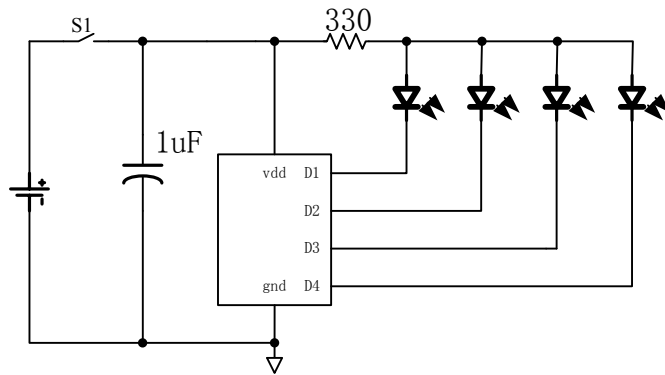
Block Diagram

■ 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**



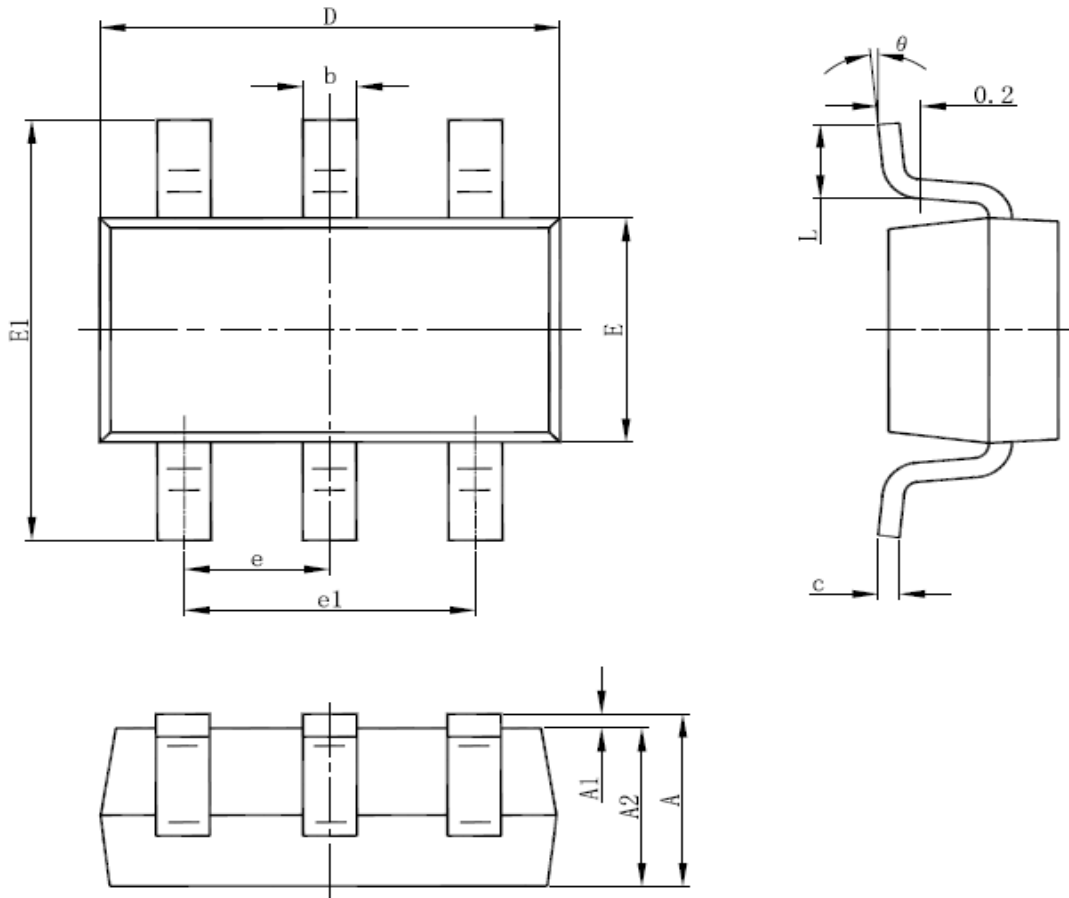
■ **Electrical Characteristics**

(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°