

WL2851E

High Input Voltage, Low Quiescent Current LDO

Descriptions

The WL2851E series is a high accuracy, high input voltage low quiescent current, high speed, and low dropout Linear regulator with high ripple rejection. The device is manufactured with Bi-CMOS process.

The WL2851E offers over-current limit and over temperature protection to ensure the device working in well conditions.

The WL2851E regulators are available in standard SOT-23-5L packages. Standard products are Pb-free and Halogen-free.

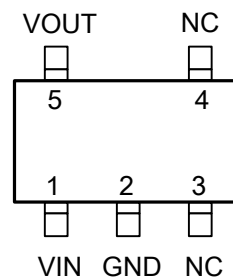
Features

- Supply Voltage : 4.75V~40V
- Output Range : 1.8V~5.7V
- Output Accuracy : <+/-2%
- Output Current : 150mA @ (V_{IN}-V_{OUT}=2V)(Typ.)
- PSRR : 60dB @ 100Hz
- Dropout Voltage : 240mV @ I_{OUT}=30mA
- Quiescent Current : 10μA@V_{IN}=7V(Typ.)
- Recommend Capacitor : 10uF

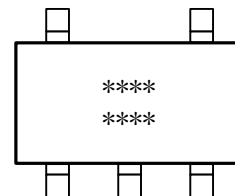
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)



SOT-23-5L



Pin Configuration (Top View)

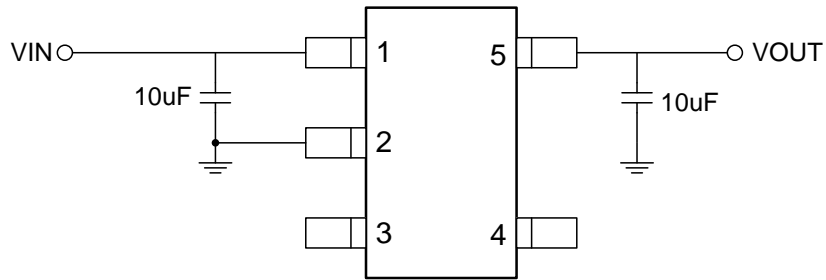


For detail marking information, please see page 8.

Marking

Order Information

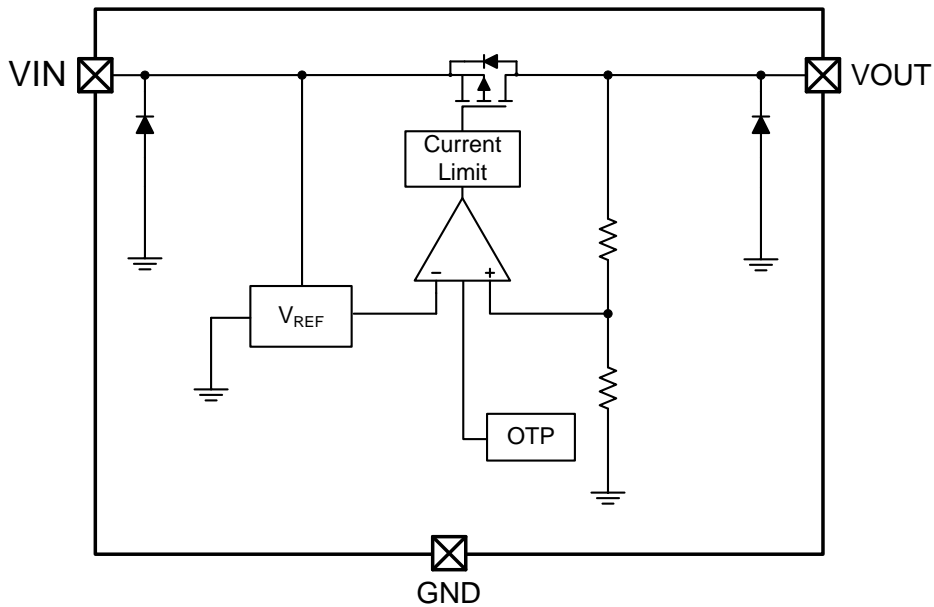
For detail order information, please see page 8.

Typical Application


(Locate Cin and Cout as close to the Vin pin and Vout pin as possible.)

Pin Description

| PIN | Symbol | Description |
|-----|--------|----------------|
| 1 | VIN | Voltage Input |
| 2 | GND | Ground |
| 3 | NC | Not Connect |
| 4 | NC | Not Connect |
| 5 | VOUT | Voltage Output |

Block Diagram


Absolute Maximum Ratings

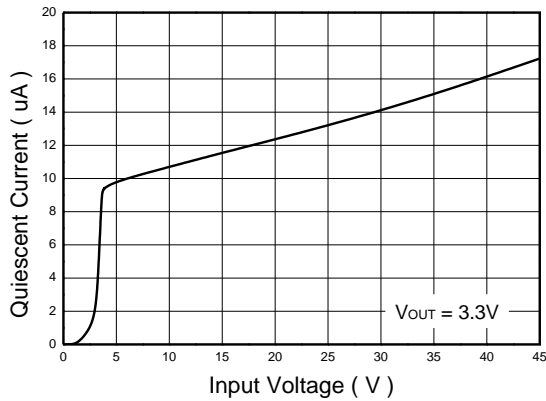
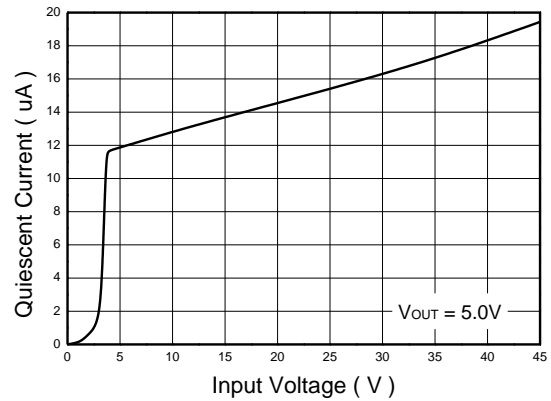
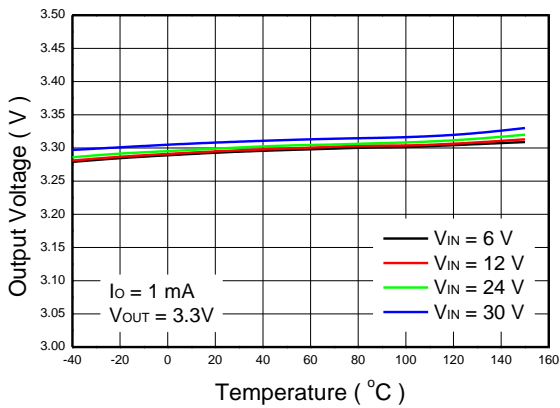
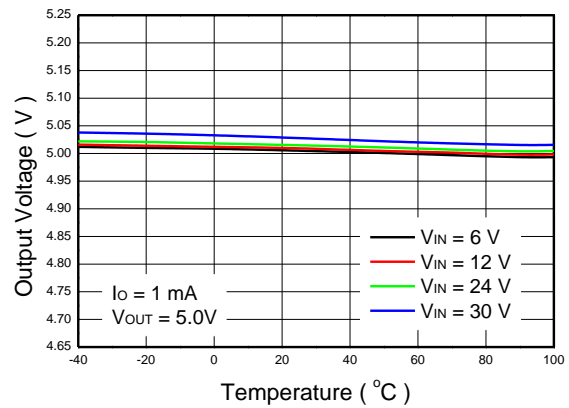
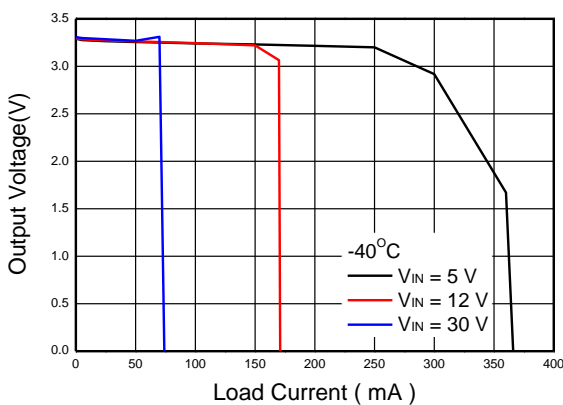
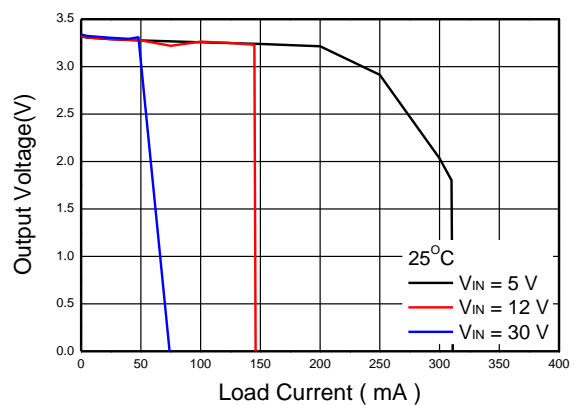
| Parameter | Value | Unit |
|--------------------------------------|------------------|------|
| Power Dissipation | Internal limited | mW |
| V _{IN} Range | -0.3~45 | V |
| V _{OUT} Range | -0.3~6.5 | V |
| Lead Temperature Range | 260 | °C |
| Storage Temperature Range | -55 ~ 150 | °C |
| Operating Junction Temperature Range | 150 | °C |
| ESD MM | 400 | V |
| ESD HBM | 4K | V |

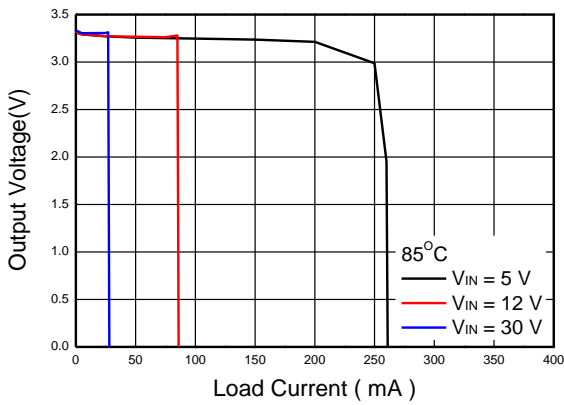
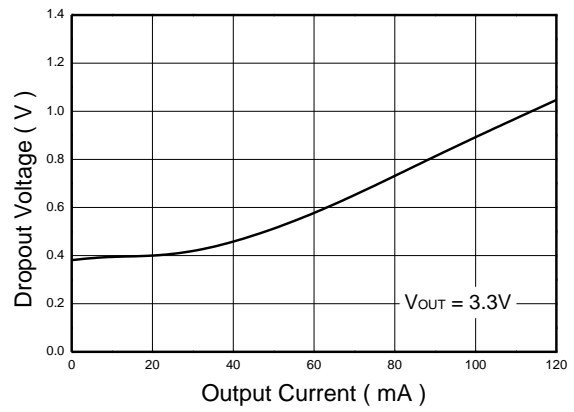
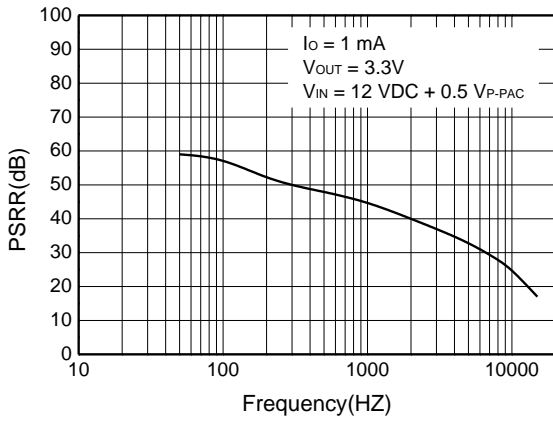
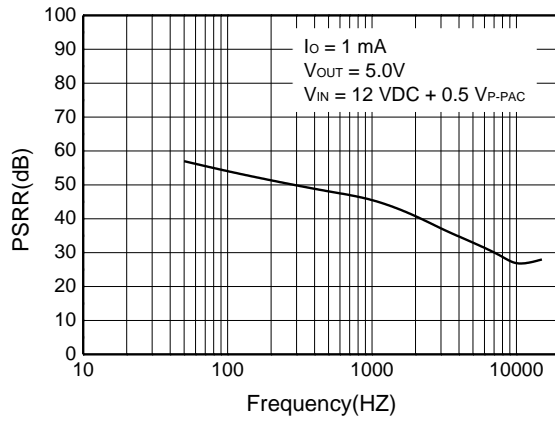
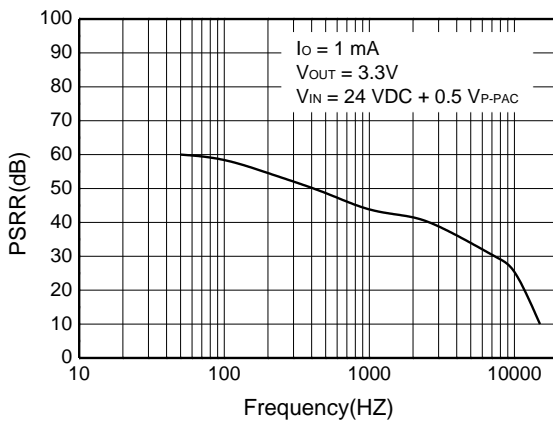
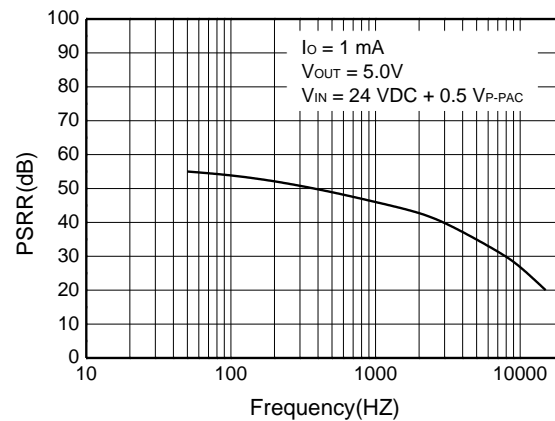
Recommend Operating Ratings

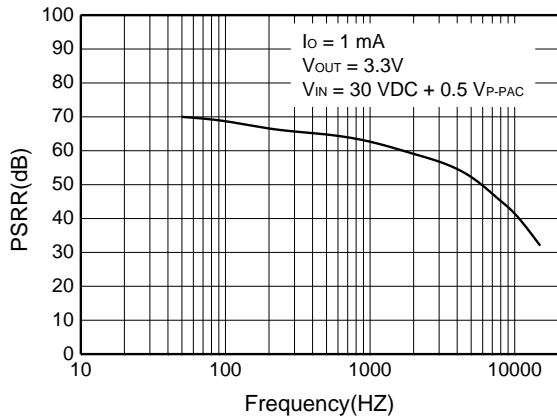
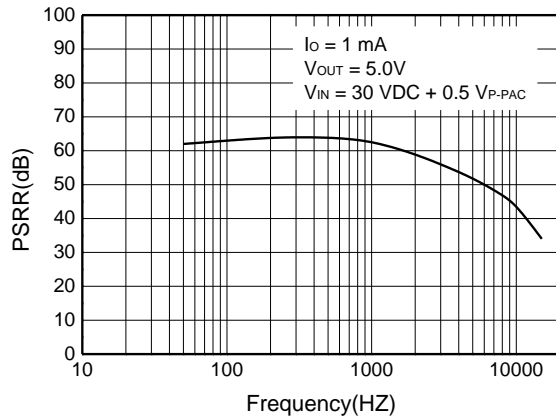
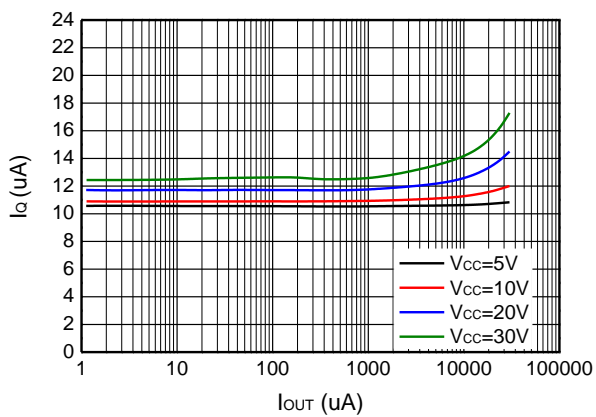
| Parameter | Value | Unit |
|--------------------------------------|---------|------|
| Operating Supply voltage | 4.75~40 | V |
| Operating Temperature Range | -40~85 | °C |
| Thermal Resistance, R _{θJA} | 150 | °C/W |

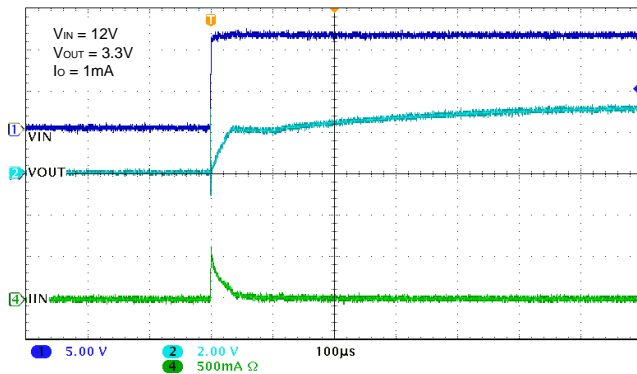
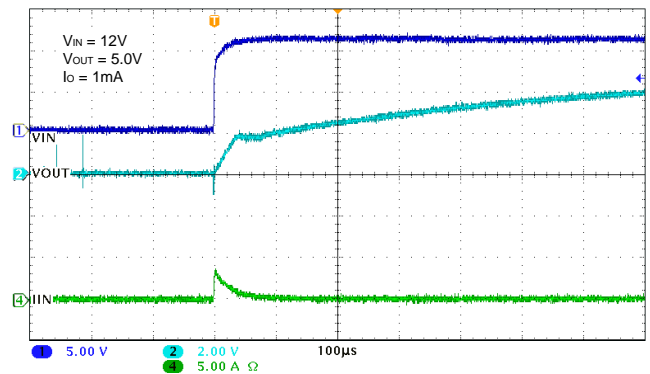
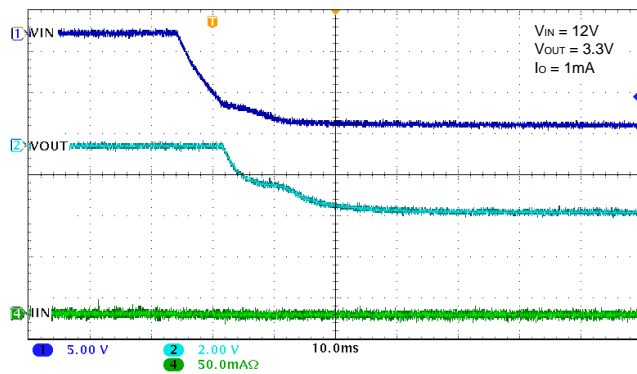
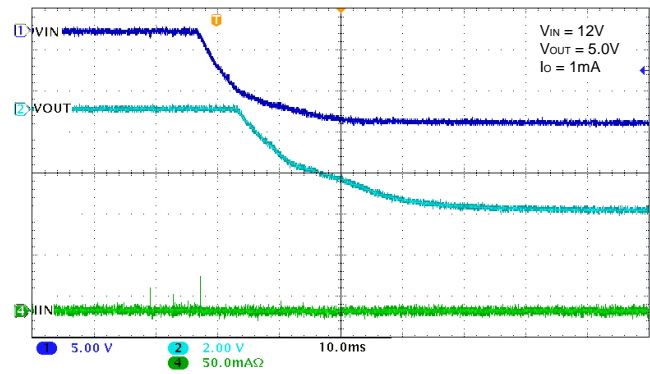
Electronics Characteristics (Ta=25°C, V_{IN}=12V, C_{IN}=C_{OUT}=10uF, unless otherwise noted)

| Symbol | Parameter | Test Condition | WL2851E SPEC | | | Unit |
|---------------------|-------------------------|--|------------------------|------------------|------------------------|-------|
| | | | Min. | Typ. | Max. | |
| V _{IN} | Input Range | I _{OUT} =10mA | 4.75 | | 40 | V |
| V _{OUT} | Output Range | I _{OUT} =10mA | V _{OUT} *0.98 | V _{OUT} | V _{OUT} *1.02 | V |
| ΔV _{OUT} | Output Voltage | V _{IN} =12V, I _{OUT} =10mA | 3.234 | 3.3 | 3.366 | V |
| | | | 4.9 | 5.0 | 5.1 | V |
| I _{OUT_PK} | Maximum Output Current | V _{IN} =12V, R _L =1Ω | 180 | 280 | 460 | mA |
| I _Q | Quiescent Current | V _{IN} =7V, No load | | 10 | 15 | μA |
| | | V _{IN} =24V, No load | | 11 | 16 | |
| | | V _{IN} =40V, No load | | 13 | 20 | |
| V _{DROP} | Dropout Voltage | I _{OUT} =1mA | | 8 | 12 | mV |
| | | I _{OUT} =30mA | | 240 | 400 | |
| ΔV _{Line} | Line Regulation | V _{IN} =7--24V, V _{OUT} =5V I _{OUT} =1mA | | 0.02 | | %V |
| | | V _{IN} =7--45V, V _{OUT} =5V I _{OUT} =1mA | | 0.1 | | |
| ΔV _{Load} | Load Regulation | V _{IN} =12V, I _{OUT} =1--100mA | | 0.6 | | % |
| e _{NO} | Output Noise | I _{OUT} =10mA | -100 | | +100 | μV |
| PSRR | Ripple Rejection | V _{IN} =10V V _{PP} =0.5V I _{OUT} =1mA | f=100Hz | 60 | | dB |
| | | | f=1KHz | 45 | | |
| | | | f=10KHz | 35 | | |
| T _{SD} | Thermal Protection | V _{IN} =12V, I _{OUT} =1mA | | 165 | | °C |
| T _{SD_HYS} | Thermal Protection Hys | V _{IN} =12V, I _{OUT} =1mA | | 30 | | °C |
| ΔVo/ΔT | Temperature Coefficient | V _{IN} =12V, I _{OUT} =1mA | | ±0.5 | | mv/°C |

Typical characteristics (Ta=25°C CIN=COUT=10uF, unless otherwise noted)

Quiescent Current vs. Input Voltage

Quiescent Current vs. Input Voltage

Output Voltage vs. Temperature

Output Voltage vs. Temperature

Output Voltage vs. Load Current

Output Voltage vs. Load Current


Output Voltage vs. Load Current

Dropout Voltage vs. Output Current

PSRR vs. Frequency

PSRR vs. Frequency

PSRR vs. Frequency

PSRR vs. Frequency


PSRR vs. Frequency

PSRR vs. Frequency

Quiescent Current vs. Output Current

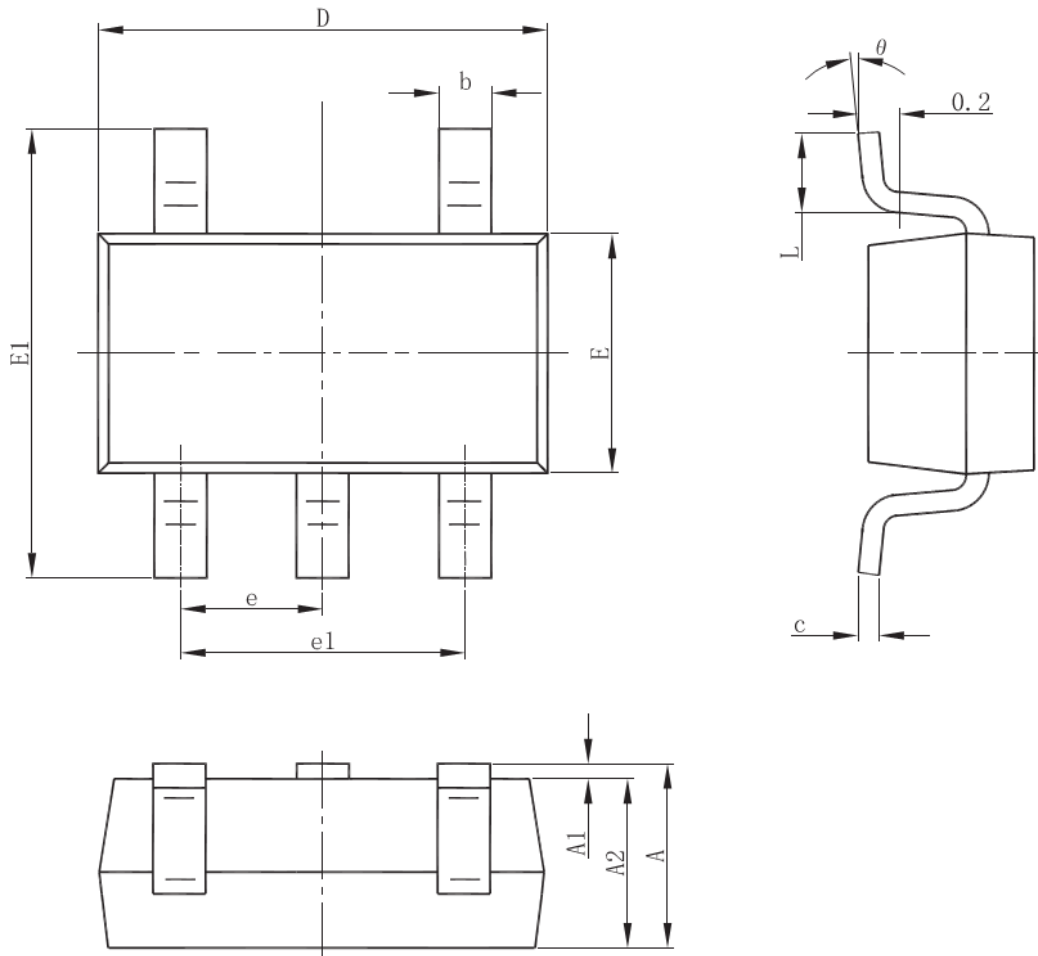

Startup from Power ON

Startup from Power ON

Shutdown from Power OFF

Shutdown from Power OFF

ORDER INFORMATION

| Ordering No. | Vout (V) | Package | Operating Temperature | Marking | Shipping |
|----------------|----------|-----------|-----------------------|--------------|------------------------|
| WL2851E33-5/TR | 3.3 | SOT-23-5L | -40~+85°C | WB33 EAYW | Tape and Reel, 3000 |
| WL2851E50-5/TR | 5.0 | SOT-23-5L | -40~+85°C | WB50 EAYW | Tape and Reel, 3000 |

Marking:

WB* = Device Code
EA = Package Code
Y = Year
W = Week

Package outline dimensions
SOT-23-5L


| Symbol | Dimensions In Millimeters | | |
|----------|---------------------------|-------|-------|
| | Min. | Typ. | Max. |
| A | - | - | 1.250 |
| A1 | 0.000 | - | 0.150 |
| A2 | 1.000 | 1.100 | 1.200 |
| b | 0.360 | - | 0.500 |
| c | 0.140 | - | 0.200 |
| D | 2.826 | 2.926 | 3.026 |
| E | 1.526 | 1.626 | 1.726 |
| E1 | 2.600 | 2.800 | 3.000 |
| e | 0.900 | 0.950 | 1.000 |
| e1 | 1.800 | 1.900 | 2.000 |
| L | 0.350 | 0.450 | 0.600 |
| θ | 0° | - | 8° |