

# WL2855K

**Low noise, Low Power Consumption, 12V Input, 500mA, CMOS LDO**

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

## Descriptions

The WL2855K series are high accuracy, low noise, 12V Input, 500mA, CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The WL2855K has the fold-back maximum output current which depends on the output voltage. So the current limit functions both as a short circuit protection and as an output current limiter.

The WL2855K regulators are available in standard SOT-89-3L Package. Standard products are Pb-free and Halogen-free.

## Features

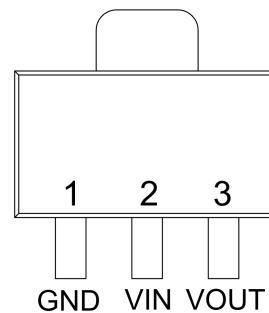
- Input Voltage Range : 2.5V~12V
- Output Voltage Range : 1.2V~5V
- Output Current : 500mA
- Fixed Voltage Accuracy :  $\pm 1\%$ ( $V_o \geq 2.5V$ )
- Quiescent current : 1uA
- Dropout voltage : 840mV@ $V_o=4V$   
I<sub>o</sub>=500mA
- Recommend capacitor :  $\geq 0.1\mu F$
- Short-Circuit Protection

## Applications

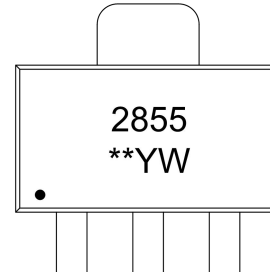
- Mobile Phone
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device



**SOT-89-3L**



**Pin Configuration (Top View)**



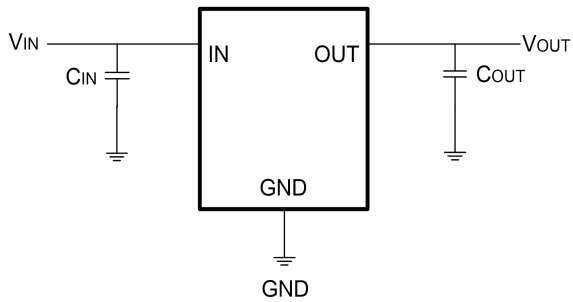
**2855 : Device code**  
**\*\* : Voltage code**  
**Y : Year Code**  
**W : Week Code**

For detail marking information, please see page 12.

### Marking

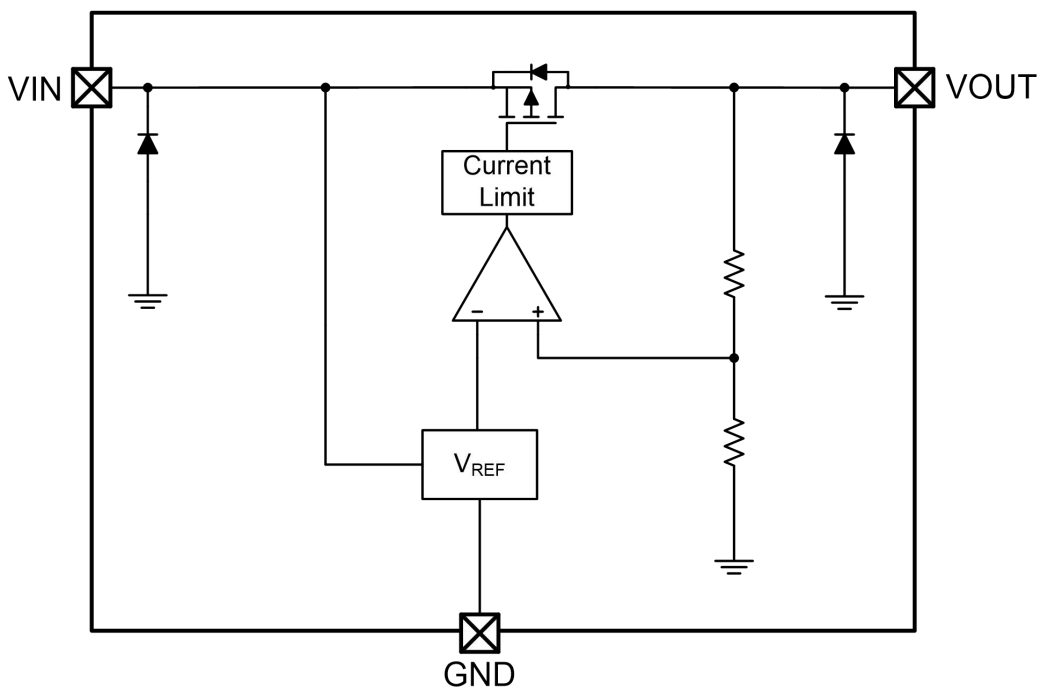
## Order Information

For detail order information, please see page 12.

**Typical Application**

**Pin Description**
**SOT-89-3L**

| PIN | Symbol | Description |
|-----|--------|-------------|
| 1   | GND    | Ground      |
| 2   | VIN    | Input       |
| 3   | VOUT   | Output      |

Recommend capacitor :  $\geq 0.1\mu\text{F}$

**Block Diagram**


**Absolute Maximum Ratings**

| Parameter                                     | Value              | Unit             |   |
|---|--------------------|------------------|---|
| Power Dissipation, $P_D@T_A=25^\circ\text{C}$ | 1.5                | W                |   |
| $V_{IN}$ Range                                | -0.3~13.5          | V                |   |
| $V_{OUT}$ Range                               | -0.3~5.5           | V                |   |
| $I_{OUT}$                                     | Internally Limited | mA               |   |
| Lead Temperature Range                        | 260                | $^\circ\text{C}$ |   |
| Storage Temperature Range                     | -55~150            | $^\circ\text{C}$ |   |
| Operating Junction Temperature Range          | 150                | $^\circ\text{C}$ |   |
| MSL   | Level-3            |                  |   |
| ESD Ratings                                   | HBM                | 4000             | V |
|   | MM                 | 200              | V |

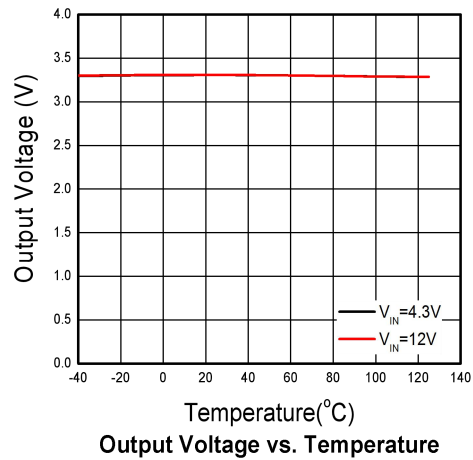
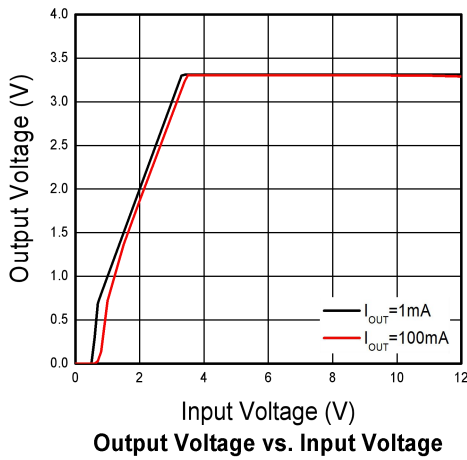
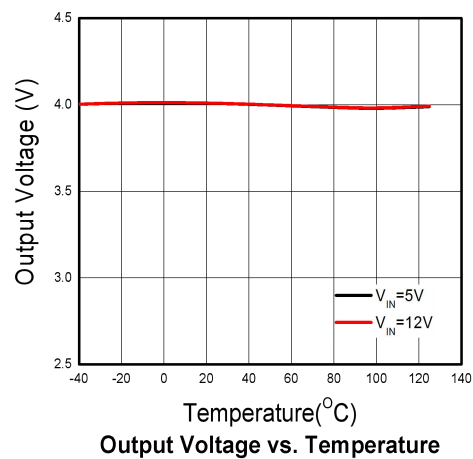
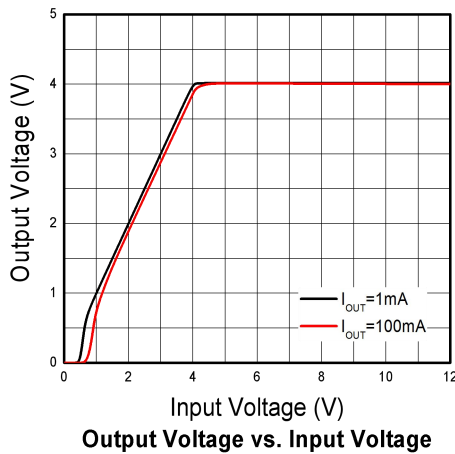
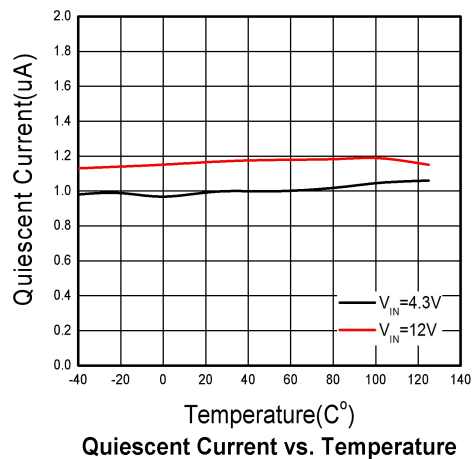
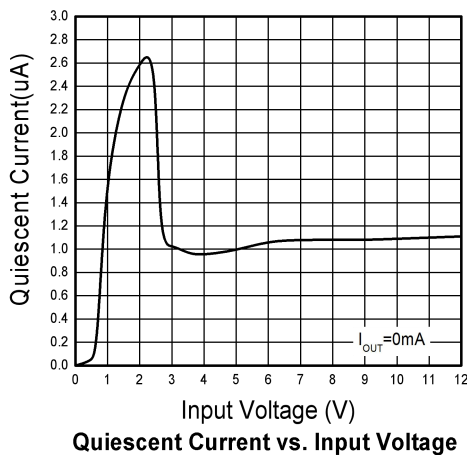
**Recommend Operating Ratings**

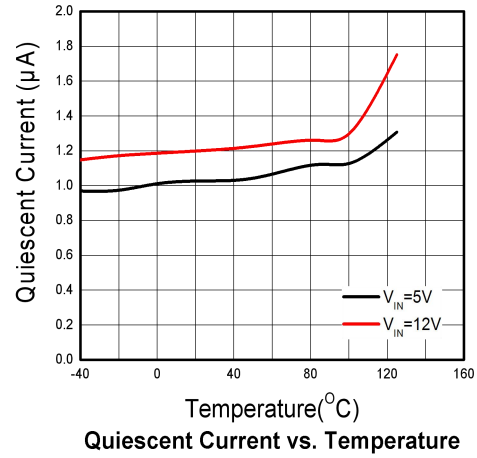
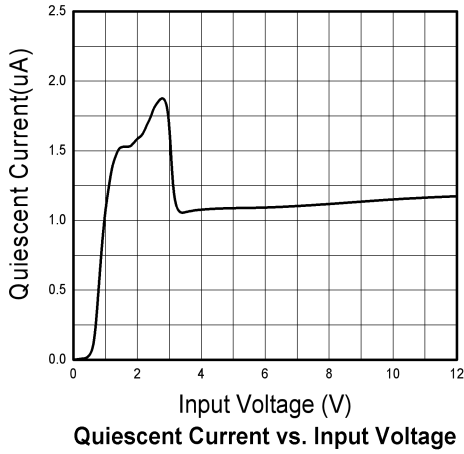
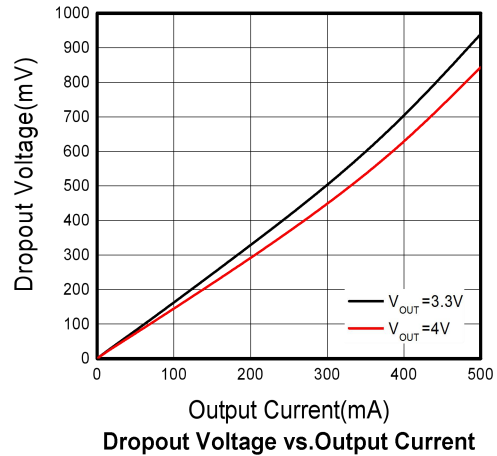
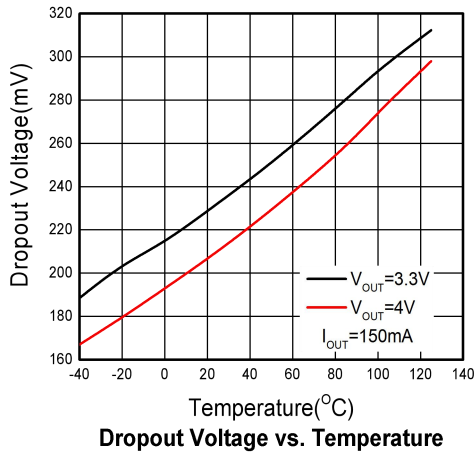
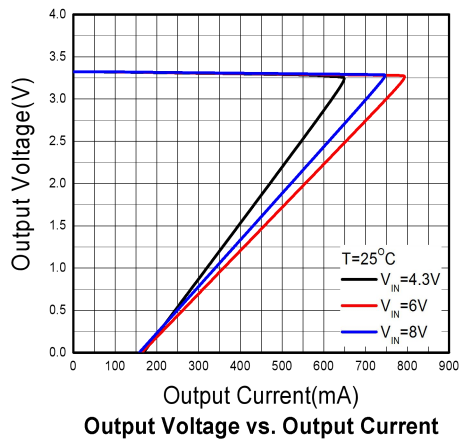
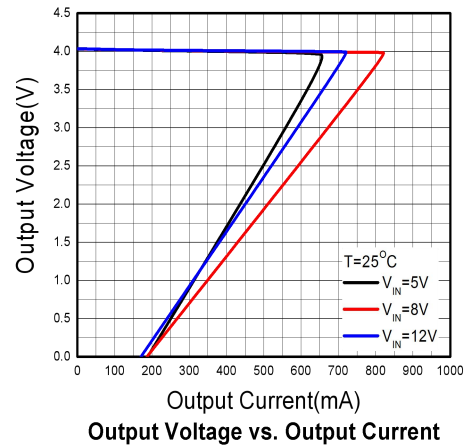
| Parameter                                       | Value  | Unit               |
|---|--------|--------------------|
| Operating Supply voltage                        | 2.5~12 | V                  |
| Operating Temperature Range                     | -40~85 | $^\circ\text{C}$   |
| Thermal Resistance, $R_{\theta JA}$ (SOT-89-3L) | 77     | $^\circ\text{C/W}$ |

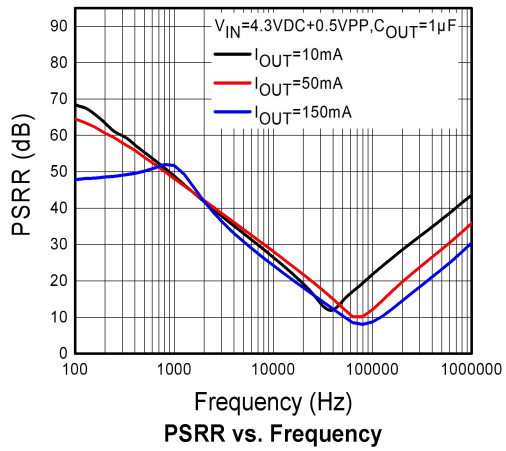
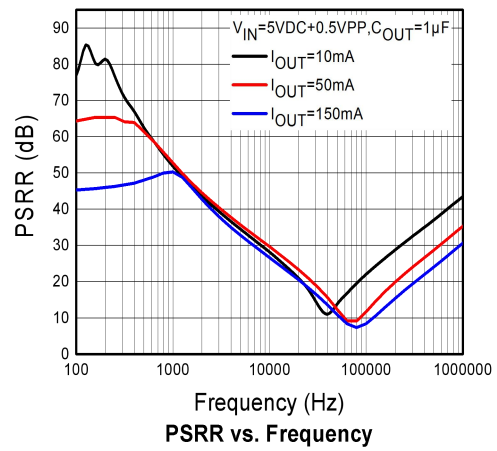
**Electronics Characteristics**
**( $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{V}$ ,  $C_{IN}=C_{OUT}=1\mu\text{F}$ ,  $I_{OUT}=1\text{mA}$ , unless otherwise noted)**

| Parameter                   | Symbol            | Condition                                      | Min.               | Typ.      | Max.               | Unit             |    |
|-----------------------------|-------------------|--|--------------------|-----------|--------------------|------------------|----|
| Output Voltage              | $V_{OUT}$         | $V_{OUT}\leq 2.5\text{V}$                      | -25                | $V_{OUT}$ | +25                | mV               |    |
|                             |                   | $V_{OUT}>2.5\text{V}$                          | 0.99*<br>$V_{out}$ | $V_{OUT}$ | 1.01*<br>$V_{out}$ | V                |    |
| Input Voltage               | $V_{IN}$          |  | 2.5                |           | 12                 | V                |    |
| Current Limit               | $I_{LIM}$         | $V_{IN}\geq 3.3\text{V}$                       | 500                |           |                    | mA               |    |
| Dropout Voltage             | $V_{DROPO}$       | $V_{OUT}=3.3\text{V}$ , $I_{OUT}=500\text{mA}$ |                    | 940       | 1200               | mV               |    |
|                             |                   | $V_{OUT}=4\text{V}$ , $I_{OUT}=500\text{mA}$   |                    | 840       | 1100               | mV               |    |
| Line Regulation             | $\Delta V_{LINE}$ | $V_{IN}=V_{OUT}+1\sim 12\text{V}$              |                    | 1         | 5                  | mV               |    |
| Load Regulation             | $\Delta V_{Load}$ | $I_{OUT}=1\sim 500\text{mA}$                   |                    | 30        | 50                 | mV               |    |
| Quiescent Current           | $I_Q$             | $V_{IN}=4\text{V}$ , $I_{OUT}=0$               |                    | 1         | 2.2                | $\mu\text{A}$    |    |
| Short Current               | $I_{SHORT}$       | $V_{OUT}$ short to GND                         |                    | 180       |                    | mA               |    |
| Power Supply Rejection Rate | PSRR              | $V_o=3.3\text{V}$ , $I_o=10\text{mA}$          | $f=100\text{Hz}$   |           | 70                 |                  | dB |
|                             |                   |  | $f=1\text{kHz}$    |           | 50                 |                  | dB |
|                             |                   |  | $f=10\text{kHz}$   |           | 25                 |                  | dB |
| Output Noise Voltage        | $e_{NO}$          | $V_o=3.3\text{V}$ , $I_o=30\text{mA}$          |                    | 54        |                    | $\mu\text{VRMS}$ |    |

Typical characteristics ( $T_a=25^\circ\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{V}$ ,  $I_{OUT}=1\text{mA}$ ,  $C_{IN}=C_{OUT}=1\ \mu\text{F}$ , unless otherwise noted)

 **$V_{OUT}=3.3\text{V}$** 

 **$V_{OUT}=4.0\text{V}$** 

 **$V_{OUT}=3.3\text{V}$** 


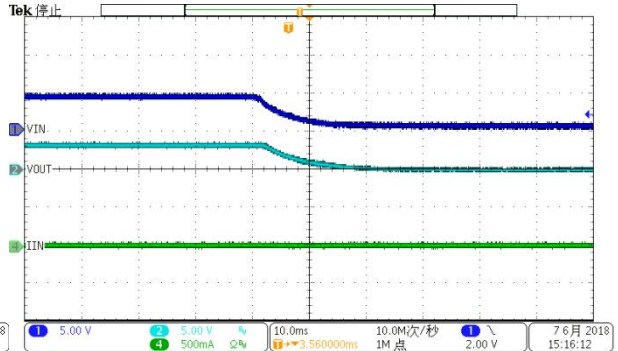
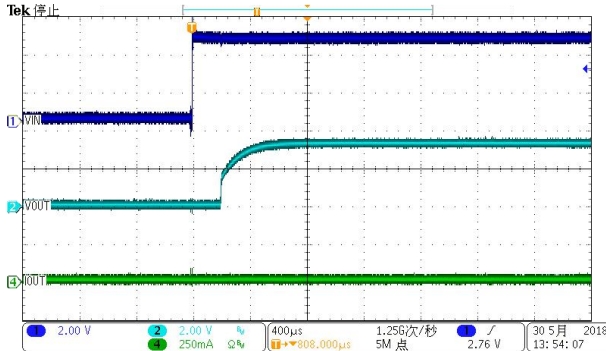
**$V_{OUT}=4.0V$** 

**Vdropout**

 **$V_{OUT}=3.3V$** 

 **$V_{OUT}=4.0V$** 


**$V_{OUT}=3.3V$** 

 **$V_{OUT}=4.0V$** 


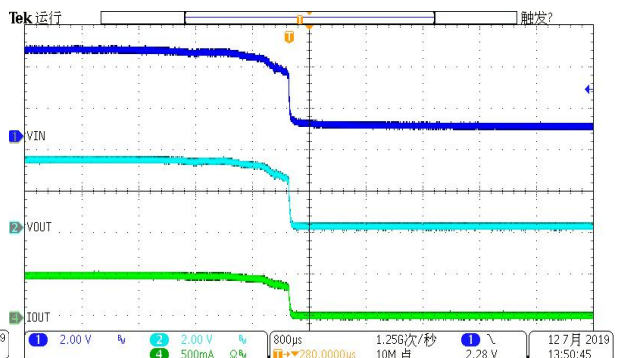
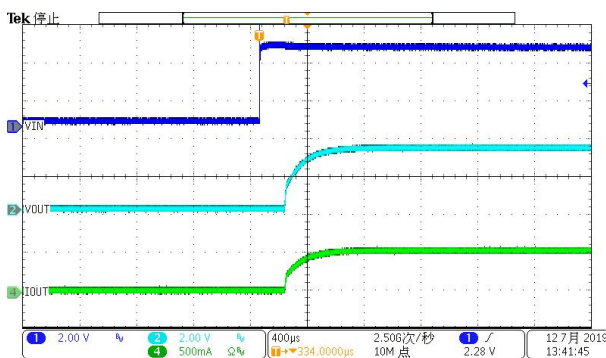
# 1.Start up & Shut down

$V_{OUT}=3.3V$

$V_{IN}=4.3V, C_{OUT}=1\mu F, I_{OUT}=1mA$

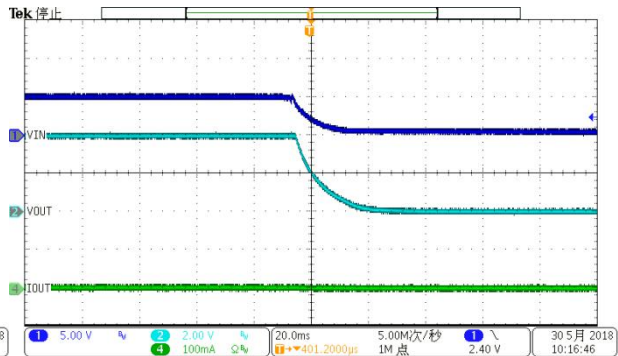
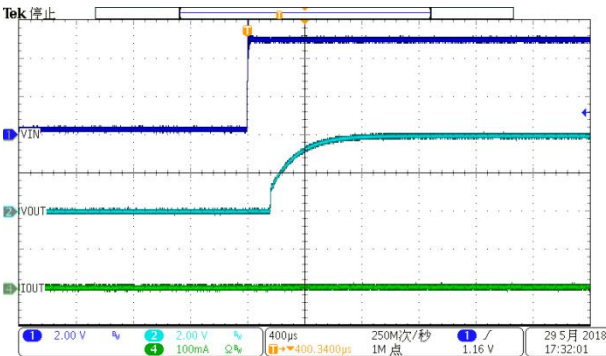


$V_{IN}=4.3V, C_{OUT}=1\mu F, I_{OUT}=500mA$

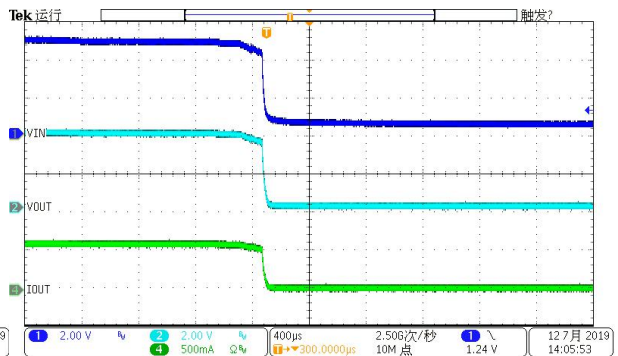
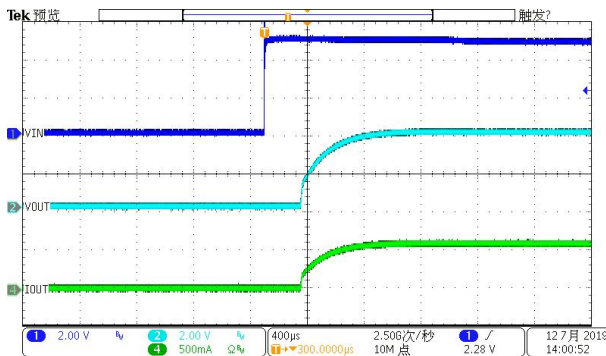


$V_{OUT}=4V$

$V_{IN}=5V, C_{OUT}=1\mu F, I_{OUT}=1mA$



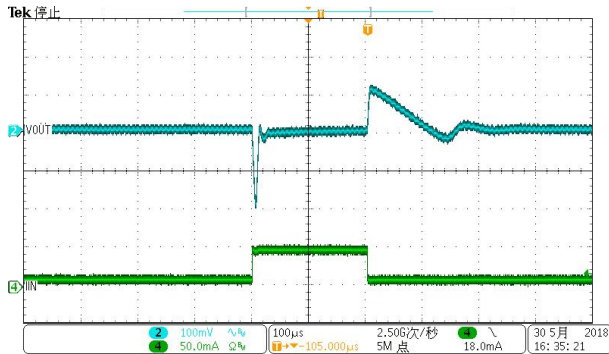
$V_{IN}=5V, C_{OUT}=1\mu F, I_{OUT}=500mA$



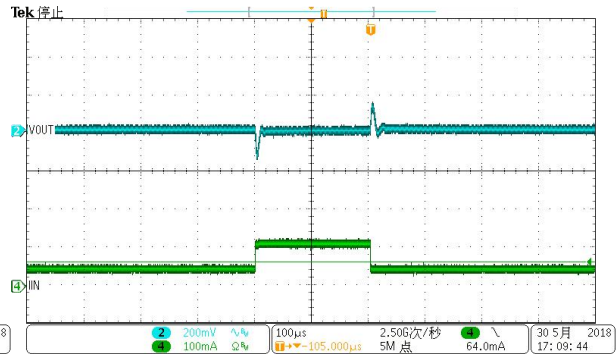


## 2. Load & Line Transient

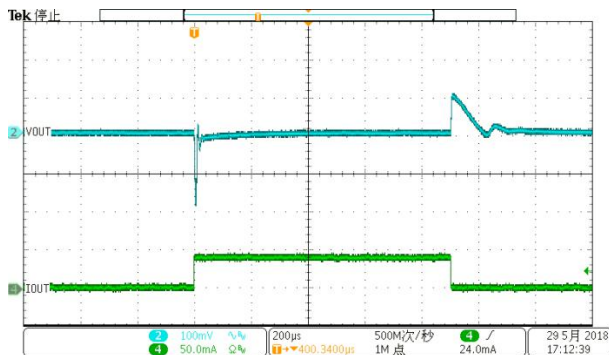
$V_{IN}=4.3V, V_{OUT}=3.3V, C_{OUT}=1\mu F, I_{OUT}=1mA-40mA$



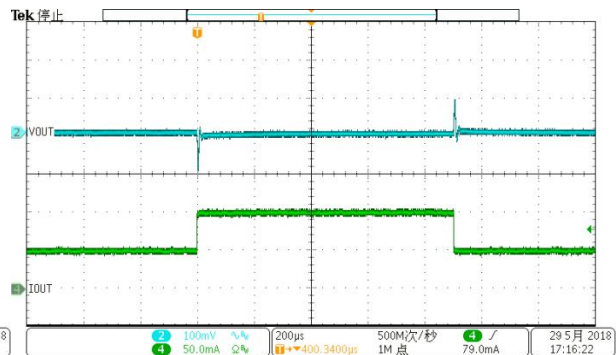
$V_{IN}=4.3V, V_{OUT}=3.3V, C_{OUT}=1\mu F, I_{OUT}=50mA-100mA$



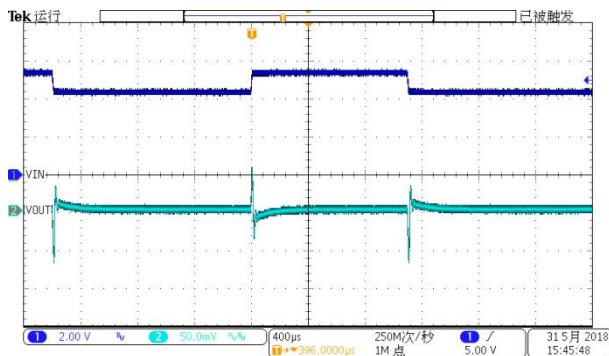
$V_{IN}=5V, V_{OUT}=4V, C_{OUT}=1\mu F, I_{OUT}=1mA-40mA$



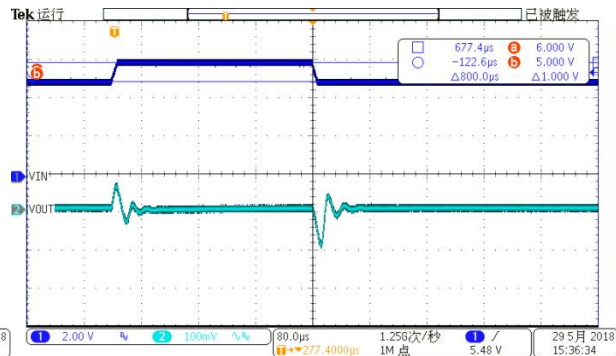
$V_{IN}=5V, V_{OUT}=4V, C_{OUT}=1\mu F, I_{OUT}=50mA-100mA$

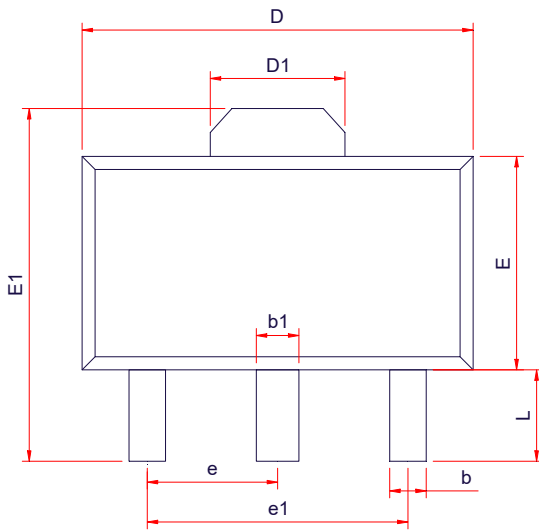
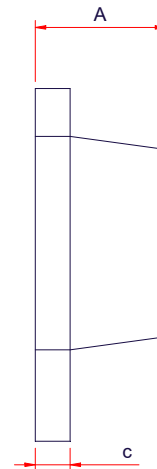
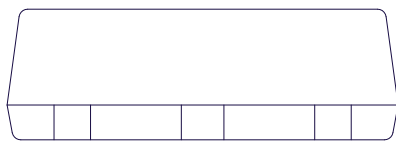


$V_{IN}=4.3-5.3V, V_{OUT}=3.3V, I_{OUT}=10mA$

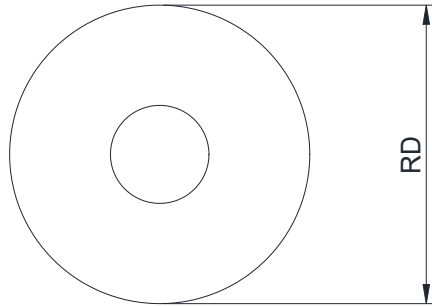
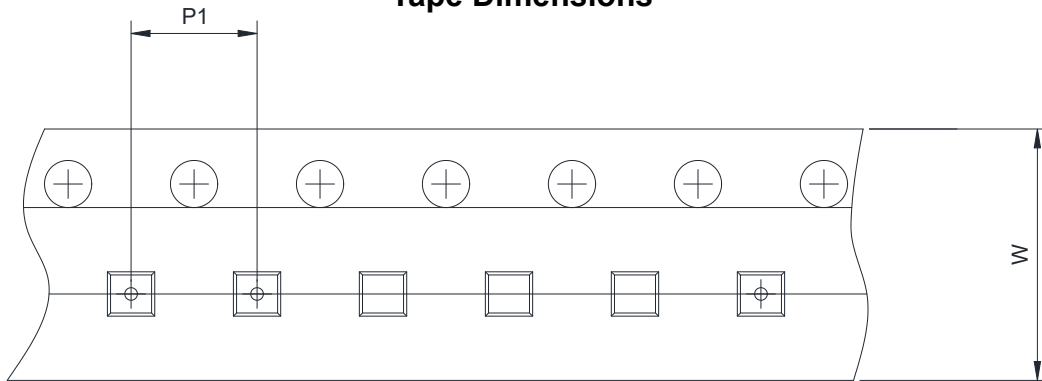
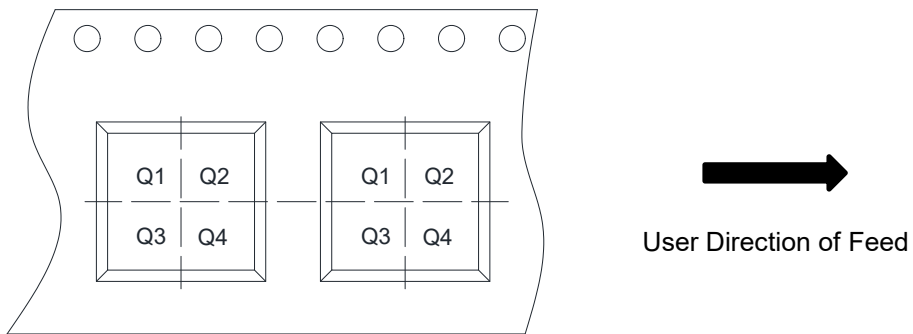


$V_{IN}=5-6V, V_{OUT}=4V, I_{OUT}=10mA$



**PACKAGE OUTLINE DIMENSIONS**
**SOT-89-3L**

**TOP VIEW**

**SIDE VIEW**

**SIDE VIEW**

| Symbol | Dimensions in Millimeters |      |      |
|--------|---------------------------|------|------|
|        | Min.                      | Typ. | Max. |
| A      | 1.40                      | 1.50 | 1.60 |
| b      | 0.32                      | 0.42 | 0.52 |
| b1     | 0.40                      | 0.49 | 0.58 |
| c      | 0.30                      | 0.40 | 0.50 |
| D      | 4.40                      | 4.50 | 4.60 |
| D1     | 1.60 Ref                  |      |      |
| E      | 2.30                      | 2.45 | 2.60 |
| E1     | 3.75                      | 4.00 | 4.25 |
| e      | 1.50 BSC                  |      |      |
| e1     | 3.00 BSC                  |      |      |
| L      | 1.05 Ref                  |      |      |

**TAPE AND REEL INFORMATION**
**Reel Dimensions**

**Tape Dimensions**

**Quadrant Assignments For PIN1 Orientation In Tape**


|      |   |   |  |
|------|---|---|--|
| RD   | Reel Dimension                          | <input checked="" type="checkbox"/> 7inch | <input type="checkbox"/> 13inch  |
| W    | Overall width of the carrier tape       | <input type="checkbox"/> 8mm              | <input checked="" type="checkbox"/> 12mm <input type="checkbox"/> 16mm                         |
| P1   | Pitch between successive cavity centers | <input type="checkbox"/> 2mm              | <input type="checkbox"/> 4mm <input checked="" type="checkbox"/> 8mm                           |
| Pin1 | Pin1 Quadrant                           | <input type="checkbox"/> Q1               | <input type="checkbox"/> Q2 <input checked="" type="checkbox"/> Q3 <input type="checkbox"/> Q4 |

## ORDER INFORMATION

| Ordering No.   | Vout (V) | Package   | Operating Temperature | Marking | Shipping            |
|----------------|----------|-----------|-----------------------|---------|---------------------|
| WL2855K18-3/TR | 1.8      | SOT-89-3L | -40~85℃               | BJYW    | Tape and Reel, 1000 |
| WL2855K28-3/TR | 2.8      | SOT-89-3L | -40~85℃               | CJYW    | Tape and Reel, 1000 |
| WL2855K30-3/TR | 3.0      | SOT-89-3L | -40~85℃               | DAYW    | Tape and Reel, 1000 |
| WL2855K33-3/TR | 3.3      | SOT-89-3L | -40~85℃               | DDYW    | Tape and Reel, 1000 |
| WL2855K37-3/TR | 3.7      | SOT-89-3L | -40~85℃               | DHYW    | Tape and Reel, 1000 |
| WL2855K38-3/TR | 3.8      | SOT-89-3L | -40~85℃               | DJYW    | Tape and Reel, 1000 |
| WL2855K40-3/TR | 4.0      | SOT-89-3L | -40~85℃               | EAYW    | Tape and Reel, 1000 |
| WL2855K50-3/TR | 5.0      | SOT-89-3L | -40~85℃               | FAYW    | Tape and Reel, 1000 |