

# WL2852K

## High Input Voltage, Low Quiescent Current LDO

### Descriptions

The WL2852K 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 WL2852K offers over-current limit and over temperature protection to ensure the device working in well conditions.

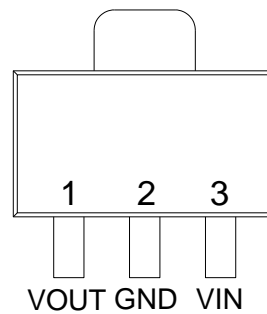
The WL2852K regulators are available in standard SOT-89-3L packages. Standard products are Pb-free and Halogen-free.

### Features

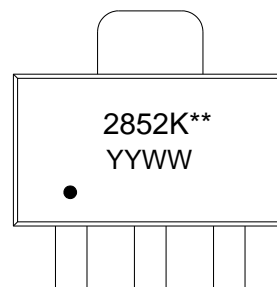
- Supply Voltage : 4.75V~40V
- Output Range : 1.8V~5.7V
- Output Accuracy : <+/-2%
- Output Current : 100mA (Up to 150mA Typ.)
- PSRR : 60dB @ 100Hz
- Dropout Voltage : 800mV @  $I_{OUT}=100mA$
- Quiescent Current :  $10\mu A @ V_{IN}=7V(Typ.)$
- Recommend Capacitor : 10uF



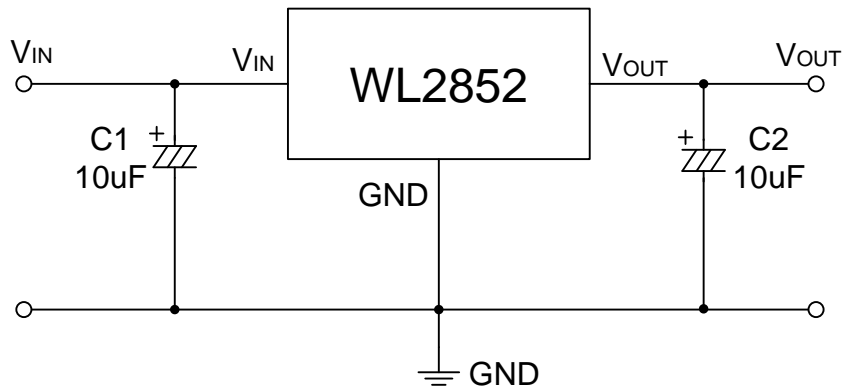
SOT-89



Pin Configuration (Top View)



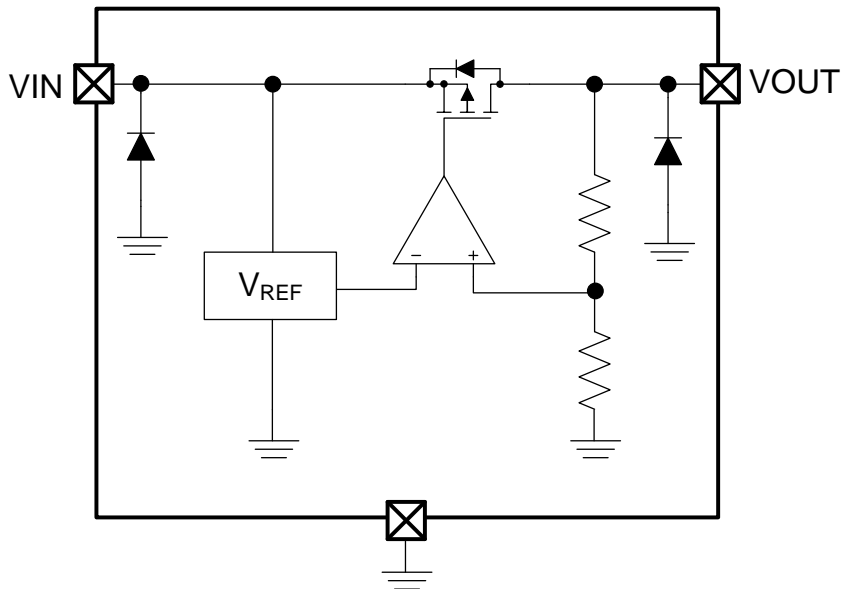
Typical Application



Pin Description

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

Block Diagram



**Absolute Maximum Ratings**

| Parameter                            | Value            | Unit |
|--------------------------------------|------------------|------|
| Power Dissipation                    | Internal limited | mW   |
| V <sub>IN</sub> Range                | -0.3~45          | V    |
| V <sub>OUT</sub> 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    |

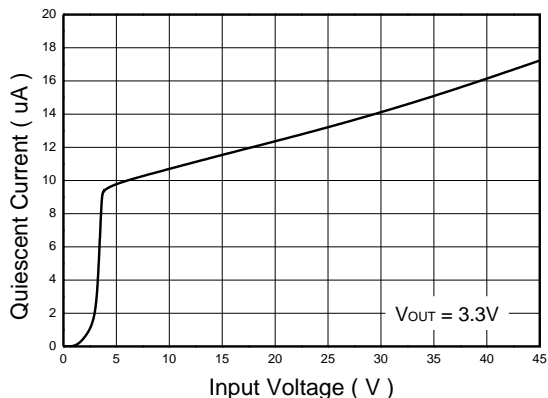
**Recommend Operating Ratings**

| Parameter                                      | Value   | Unit |
|--|---------|------|
| Operating Supply voltage                       | 4.75~40 | V    |
| Operating Temperature Range                    | -40~85  | °C   |
| Thermal Resistance (On PCB) , R <sub>θJA</sub> | 43.5    | °C/W |
| Power Dissipation                              | 1000    | mW   |

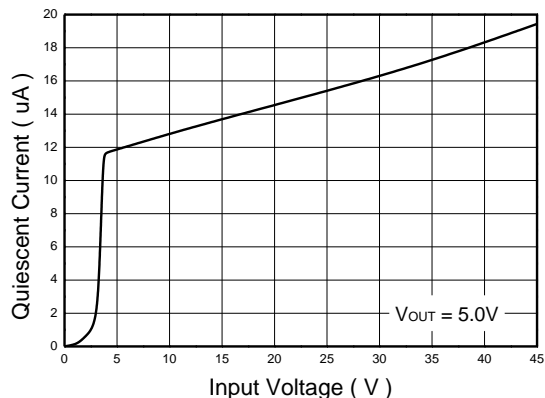
**Electronics Characteristics (Ta=25°C, V<sub>IN</sub>=12V, C<sub>IN</sub>=C<sub>OUT</sub>=10uF, unless otherwise noted)**

| Symbol              | Parameter               | Test Condition  | WL2852K SPEC           |                  |                        | Unit  |
|---------------------|-------------------------|---|------------------------|------------------|------------------------|-------|
|                     |                         |   | Min.                   | Typ.             | Max.                   |       |
| V <sub>IN</sub>     | Input Range             | I <sub>OUT</sub> =10mA  | 4.75                   |                  | 40                     | V     |
| V <sub>OUT</sub>    | Output Range            | I <sub>OUT</sub> =10mA  | V <sub>OUT</sub> *0.98 | V <sub>OUT</sub> | V <sub>OUT</sub> *1.02 | V     |
| ΔV <sub>OUT</sub>   | Output Voltage          | V <sub>IN</sub> =12V, I <sub>OUT</sub> =10mA                        | 5.586                  | 5.7              | 5.814                  | V     |
|                     |                         |   | 5.194                  | 5.3              | 5.406                  | V     |
|                     |                         |   | 4.9                    | 5.0              | 5.1                    | V     |
|                     |                         |   | 3.234                  | 3.3              | 3.366                  | V     |
| I <sub>OUT_PK</sub> | Maximum Output Current  | V <sub>IN</sub> =12V, R <sub>L</sub> =1Ω                            | 180                    | 280              | 460                    | mA    |
| I <sub>Q</sub>      | Quiescent Current       | V <sub>IN</sub> =7V, No load  |                        | 10               | 15                     | μA    |
|                     |                         | V <sub>IN</sub> =24V, No load                                       |                        | 11               | 16                     |       |
|                     |                         | V <sub>IN</sub> =40V, No load                                       |                        | 13               | 20                     |       |
| V <sub>DROP</sub>   | Dropout Voltage         | I <sub>OUT</sub> =1mA   |                        | 8                | 12                     | mV    |
|                     |                         | I <sub>OUT</sub> =100mA   |                        | 800              | 1200                   |       |
| Δ V <sub>Line</sub> | Line Regulation         | V <sub>IN</sub> =7--24V, V <sub>OUT</sub> =5V I <sub>OUT</sub> =1mA |                        | 0.02             |                        | %V    |
|                     |                         | V <sub>IN</sub> =7--45V, V <sub>OUT</sub> =5V I <sub>OUT</sub> =1mA |                        | 0.1              |                        |       |
| Δ V <sub>Load</sub> | Load Regulation         | V <sub>IN</sub> =12V, I <sub>OUT</sub> =1--100mA                    |                        | 0.6              |                        | %     |
| e <sub>NO</sub>     | Output Noise            | I <sub>OUT</sub> =10mA  | -100                   |                  | +100                   | μV    |
| PSRR                | Ripple Rejection        | V <sub>IN</sub> =10V  | f=100Hz                | 60               |                        | dB    |
|                     |                         | V <sub>PP</sub> =0.5V   | f=1KHz                 | 45               |                        |       |
|                     |                         | I <sub>OUT</sub> =1mA   | f=10KHz                | 35               |                        |       |
| T <sub>SD</sub>     | Thermal Protection      | V <sub>IN</sub> =12V, I <sub>OUT</sub> =1mA                         |                        | 165              |                        | °C    |
| T <sub>SD_HYS</sub> | Thermal Protection Hys  | V <sub>IN</sub> =12V, I <sub>OUT</sub> =1mA                         |                        | 30               |                        | °C    |
| ΔVo/ΔT              | Temperature Coefficient | V <sub>IN</sub> =12V, I <sub>OUT</sub> =1mA                         |                        | ±0.5             |                        | mv/°C |

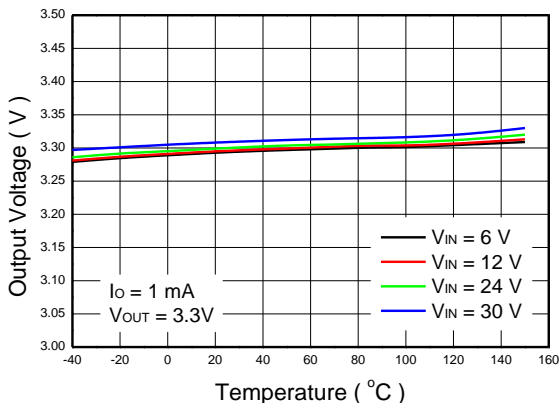
Typical characteristics (Ta=25oC, CIN=COUT=10uF, unless otherwise noted)



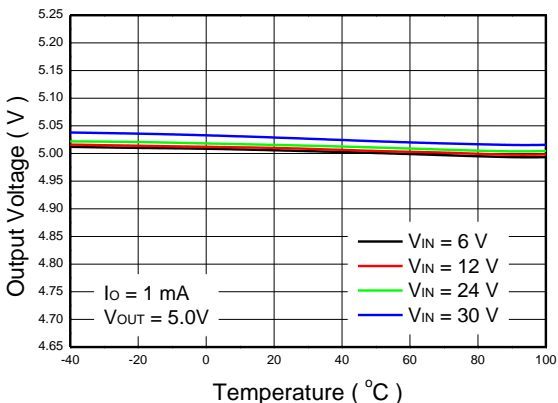
Quiescent Current vs. Input Voltage



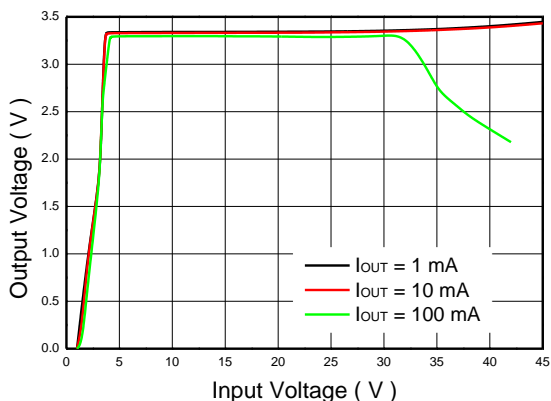
Quiescent Current vs. Input Voltage



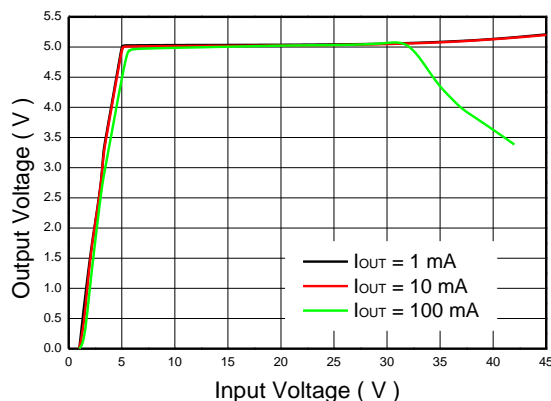
Output Voltage vs. Temperature



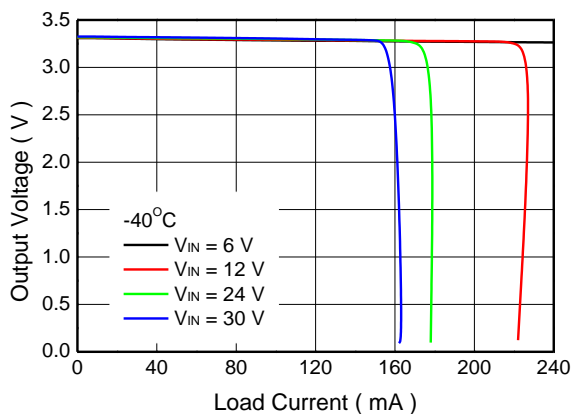
Output Voltage vs. Temperature



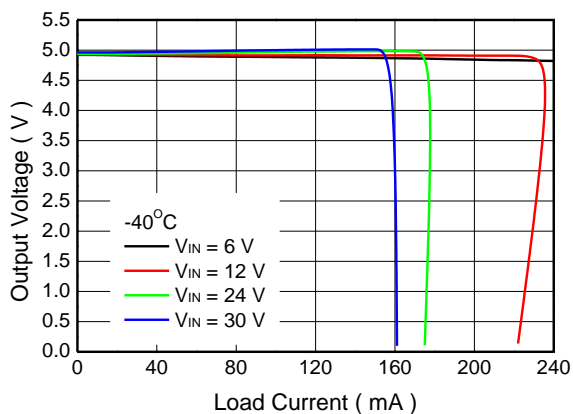
Output Voltage vs. Input Voltage



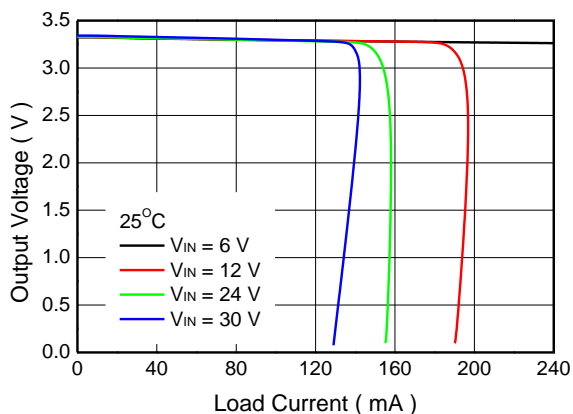
Output Voltage vs. Input Voltage



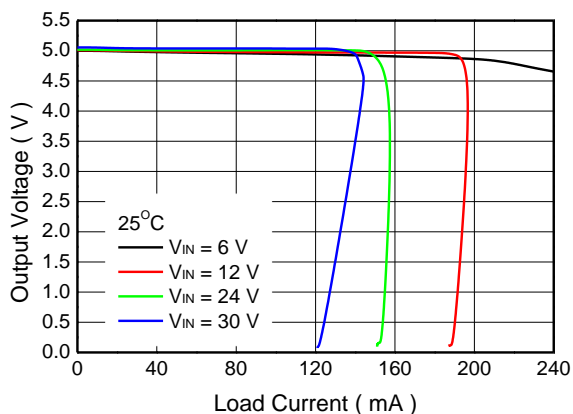
Output Voltage vs. Load Current



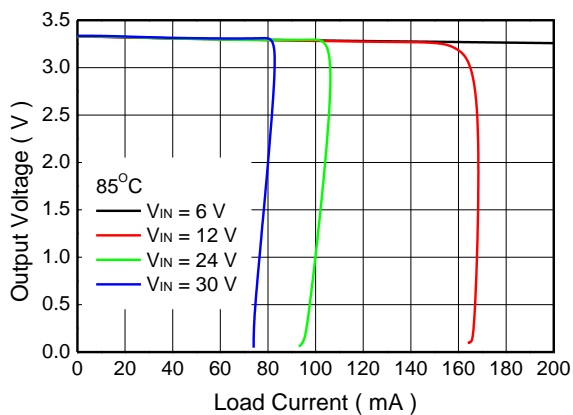
Output Voltage vs. Load Current



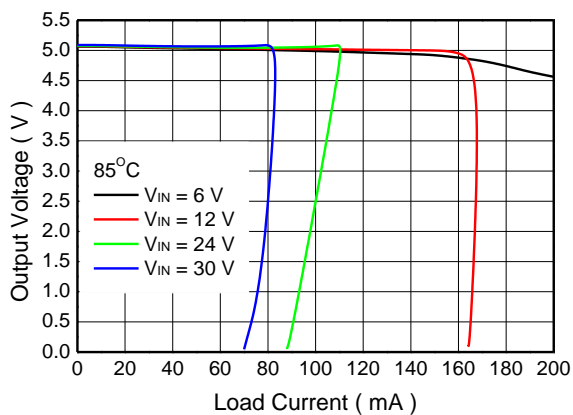
Output Voltage vs. Load Current



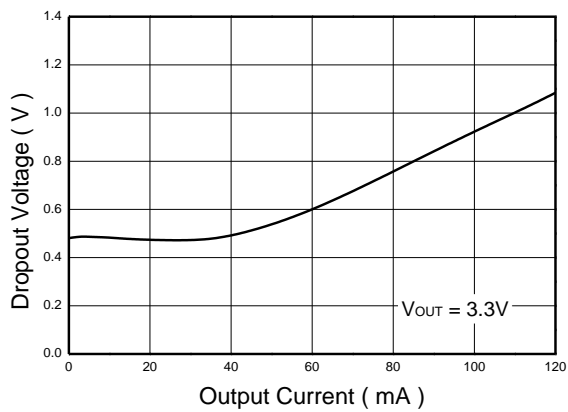
Output Voltage vs. Load Current



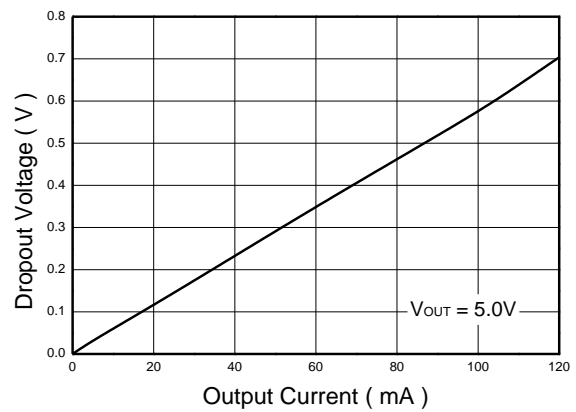
Output Voltage vs. Load Current



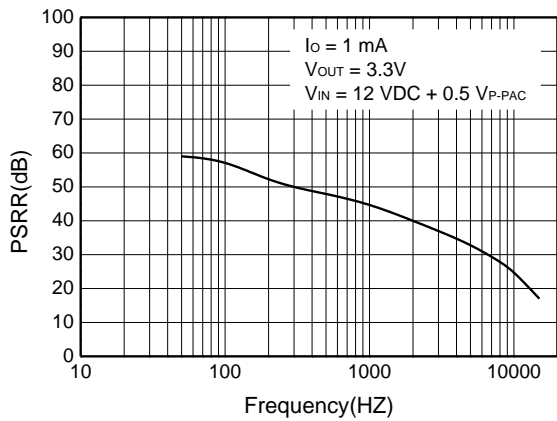
Output Voltage vs. Load Current



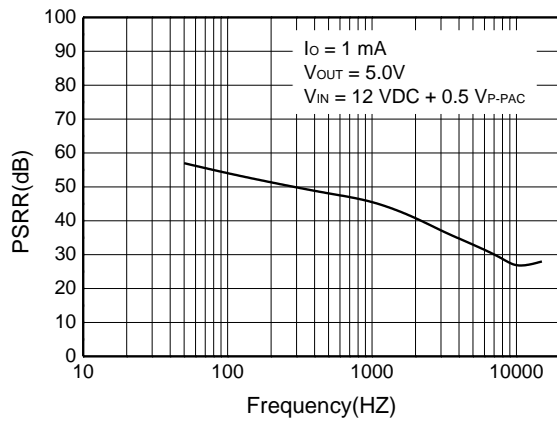
Dropout Voltage vs. Output Current



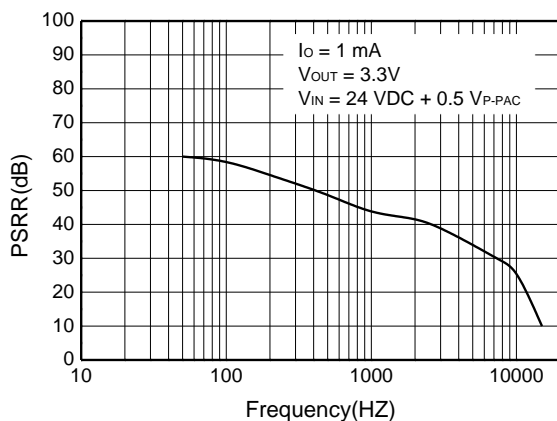
Dropout Voltage vs. Output Current



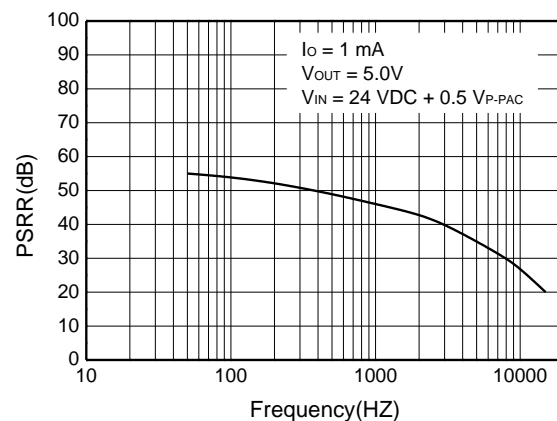
PSRR vs. Frequency



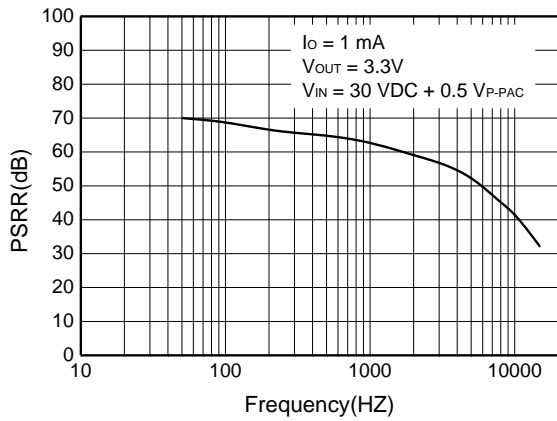
PSRR vs. Frequency



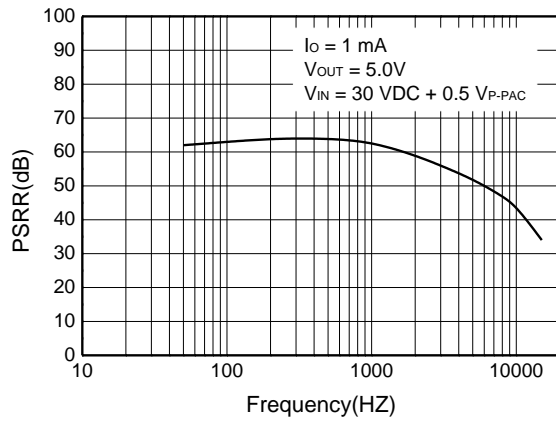
PSRR vs. Frequency



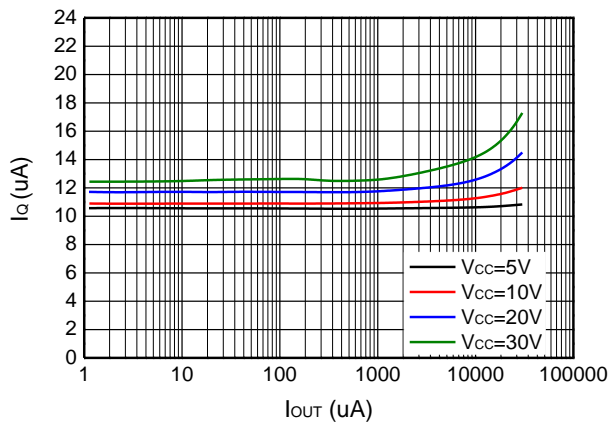
PSRR vs. Frequency



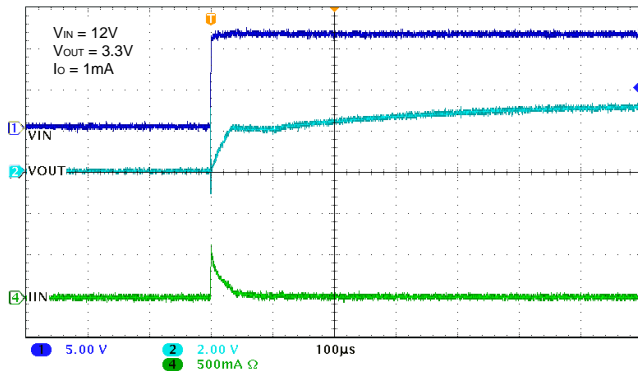
**PSRR vs. Frequency**



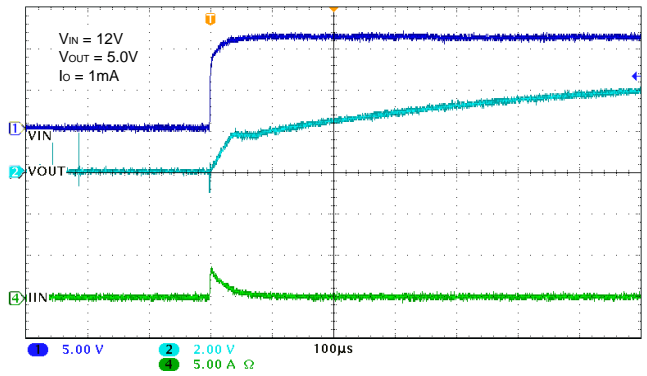
**PSRR vs. Frequency**



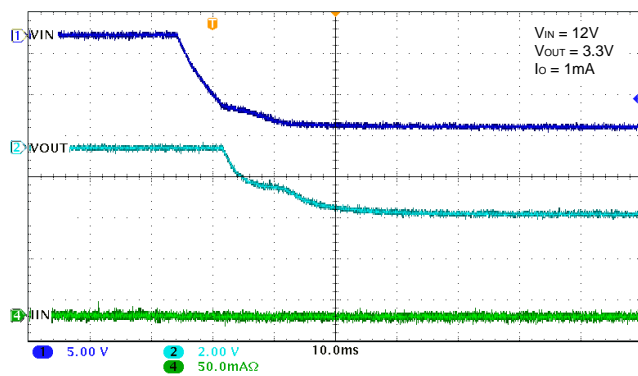
**Quiescent Current vs. Output Current**



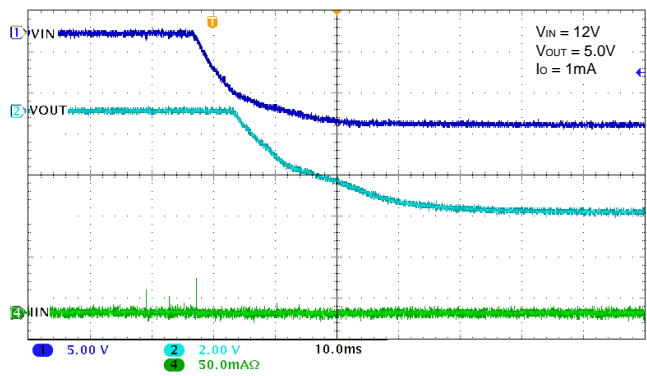
Startup from Power ON



Startup from Power ON



Shutdown from Power OFF



Shutdown from Power OFF



**ORDER INFORMATION**

| Ordering No.   | Vout (V) | Package | Operating Temperature | Marking         | Shipping               |
|----------------|----------|---------|-----------------------|-----------------|------------------------|
| WL2852K33-3/TR | 3.3      | SOT-89  | -40~+85°C             | 2852KDD<br>YYWW | Tape and Reel,<br>1000 |
| WL2852K50-3/TR | 5.0      | SOT-89  | -40~+85°C             | 2852KFA<br>YYWW | Tape and Reel,<br>1000 |
| WL2852K53-3/TR | 5.3      | SOT-89  | -40~+85°C             | 2852KFD<br>YYWW | Tape and Reel,<br>1000 |
| WL2852K57-3/TR | 5.7      | SOT-89  | -40~+85°C             | 2852KFH<br>YYWW | Tape and Reel,<br>1000 |

**Marking:**

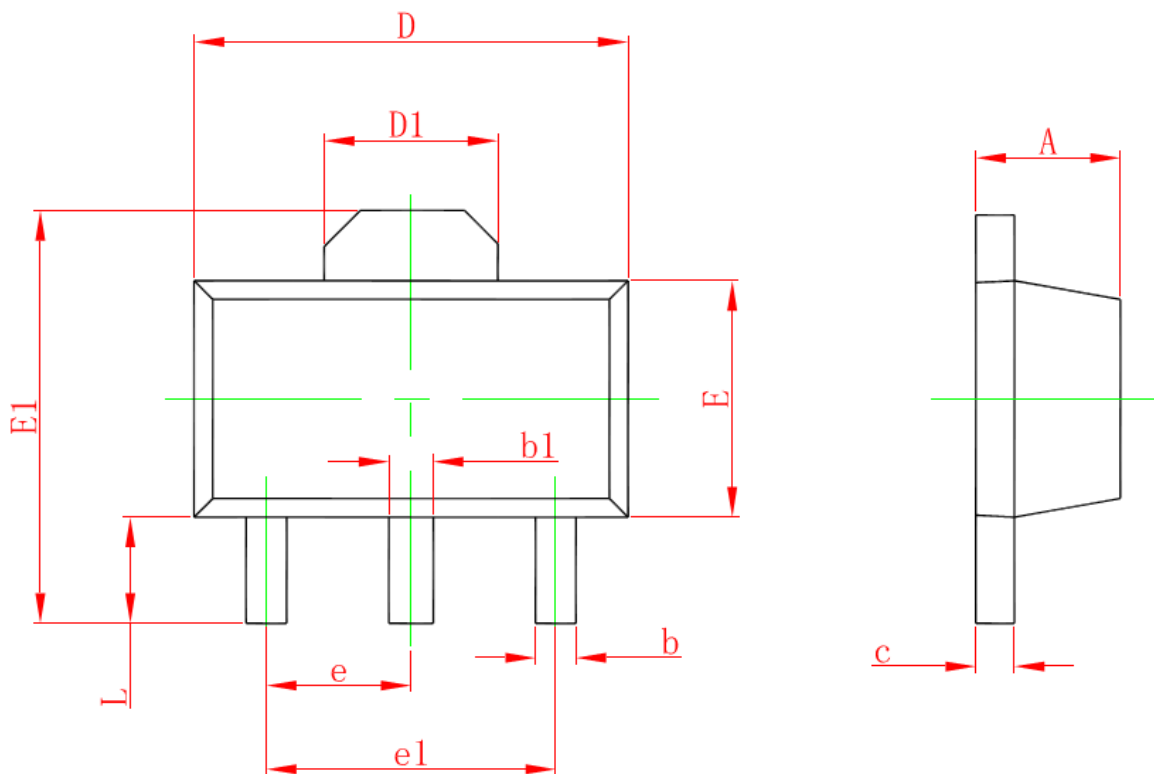
2852K\*\* = Device Code

YY = Year

WW = Week

Package outline dimensions

SOT-89-3L



| Symbol | Dimensions in millimeter |       |       |
|--------|--------------------------|-------|-------|
|        | Min.                     | Typ.  | Max.  |
| A      | 1.400                    | 1.500 | 1.600 |
| b      | 0.320                    | 0.420 | 0.520 |
| b1     | 0.400                    | 0.490 | 0.580 |
| c      | 0.350                    | -     | 0.440 |
| D      | 4.400                    | 4.500 | 4.600 |
| D1     | 1.550 Ref.               |       |       |
| E      | 2.300                    | 2.450 | 2.600 |
| E1     | 3.940                    | 4.100 | 4.250 |
| e      | 1.500 Typ.               |       |       |
| e1     | 3.000 Typ.               |       |       |
| L      | 0.900                    | -     | 1.200 |