



UR132

LINEAR INTEGRATED CIRCUIT

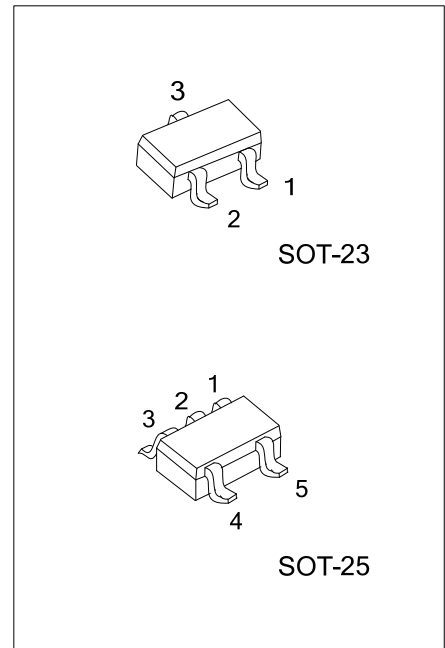
200mA LOW DROPOUT LINEAR VOLTAGE REGULATOR

DESCRIPTION

The UTC **UR132** is a 200mA fixed output voltage low dropout linear regulator. Wide range of available output voltage fits most of applications. Built-in output current-limiting most thermal-limiting provide maximal protection against any fault conditions.

FEATURES

- * Guaranteed 200mA output current
- * Input voltage range up to 12V
- * Extremely tight load regulation
- * Fast transient response
- * Current-limiting and thermal-limiting
- * Three-terminal adjustable or fixed voltage.



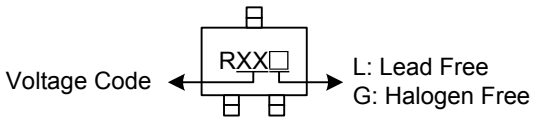
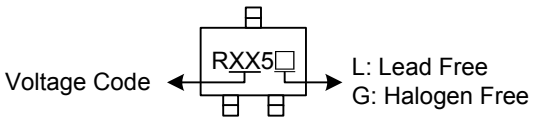
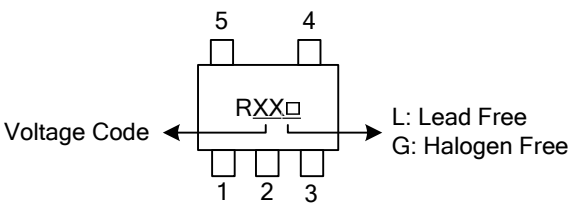
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment. | | | | | Packing |
|-------------------|-------------------|---------|-----------------|---|---|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | |
| UR132L-xx-AE3-3-R | UR132G-xx-AE3-3-R | SOT-23 | O | G | I | - | - | Tape Reel |
| UR132L-xx-AE3-5-R | UR132G-xx-AE3-5-R | SOT-23 | G | O | I | - | - | Tape Reel |
| UR132L-xx-AF5-C-R | UR132G-xx-AF5-C-R | SOT-25 | I | G | N | N | O | Tape Reel |

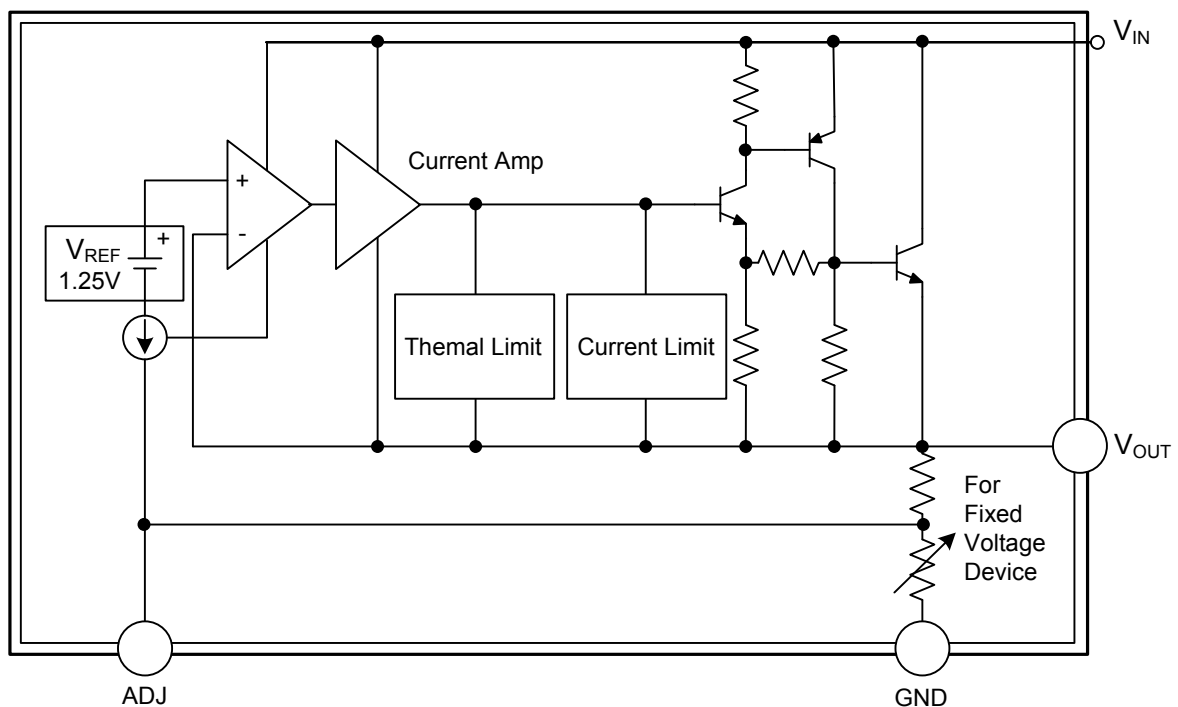
Note: Pin assignment: I:V_{IN} O:V_{OUT} G:GND N: No Connection
xx: output voltage, refer to Marking Information

| | | |
|-------------------|------------------------|--------------------------------------|
| UR132L-xx-AE3-3-R | (1)Packing Type | (1) R: Tape Reel |
| | (2)Pin Assignment | (2) refer to Pin Assignment |
| | (3)Package Type | (3) AE3: SOT-23, AF5: SOT-25 |
| | (4)Output Voltage Code | (4) xx: refer to Marking Information |
| | (5)Lead Free | (5) G: Halogen Free, L: Lead Free |

MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | Pin Assignment | MARKING |
|---------|--|----------------|--|
| SOT-23 | 12: 1.2V 15: 1.5V 18: 1.8V 22: 2.2V 2E: 2.5V 26: 2.6V 27: 2.7V | OGI |  |
| | | GOI |  |
| SOT-25 | 28: 2.8V 30: 3.0V 33: 3.3V 50: 5.0V AD: ADJ | IGNNO |  |

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATING | UNIT |
|-----------------------|-----------|----------|------|
| Input Voltage | V_{IN} | -0.3~12 | V |
| Power Dissipation | P_D | 300 | mW |
| Junction Temperature | T_J | +125 | °C |
| Operation Temperature | T_{OPR} | -40~+85 | °C |
| Storage Temperature | T_{STG} | -40~+150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$, $C_{IN}=1\mu\text{F}$, $C_{OUT}=10\mu\text{F}$, unless otherwise specified)

FOR $V_{OUT}<3.3\text{V}$ ($V_{OUT}\pm 2\%$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|------------------|---|----------------------|-----------|----------------------|-------------|
| Output Voltage | V_{OUT} | $I_L=2\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}$ | $V_{OUT}\times 0.98$ | V_{OUT} | $V_{OUT}\times 1.02$ | V |
| Output Voltage Temperature Coefficient | $T_C V_O$ | | | 50 | 150 | ppm/°C |
| Line Regulation | ΔV_{OUT} | $I_L=2\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}\sim V_{IN}=9\text{V}$ | | | 0.5 | % V_{OUT} |
| Load Regulation (Note 2) | ΔV_{OUT} | $I_L=2\text{mA}\sim 200\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}$ | | 10 | 30 | mV |
| Current Limit (Note 3) | I_L | $V_{IN}-V_{OUT}=2\text{V}$, $V_{OUT}=0\text{V}$ | 300 | | | mA |
| Dropout Voltage (Note 4,5) | V_D | | | | 1.5 | V |
| Standby current | I_{STN-BY} | $I_L=0$, $V_{IN}=9\text{V}$ | | | 3.0 | mA |

FOR ADJ and $V_{OUT}\geq 3.3\text{V}$ ($V_{OUT}\pm 2\%$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|------------------|--|----------------------|-----------|----------------------|-------------|
| Output Voltage | V_{OUT} | $I_L=2\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}$ | $V_{OUT}\times 0.98$ | V_{OUT} | $V_{OUT}\times 1.02$ | V |
| ADJUSTABLE ($R_1=120\Omega$, $R_2=200\Omega$, $V_{OUT}=3.3\text{V}$) | | | | | | |
| Reference Voltage | V_{REF} | $V_{IN}-V_{OUT}=2\text{V}$, $I_L=2\text{mA}$ | 1.238 | 1.250 | 1.262 | V |
| Output Voltage Temperature Coefficient | $T_C V_O$ | | | 50 | 150 | ppm/°C |
| Line Regulation | ΔV_{OUT} | $I_L=2\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}\sim V_{IN}=12\text{V}$ | | | 0.5 | % V_{OUT} |
| Load Regulation (Note 2) | ΔV_{OUT} | $I_L=2\text{mA}\sim 200\text{mA}$, $V_{IN}-V_{OUT}=2\text{V}$ | | 10 | 30 | mV |
| Current Limit (Note 3) | I_L | $V_{IN}-V_{OUT}=2\text{V}$, $V_{OUT}=0\text{V}$ | 300 | | | mA |
| Dropout Voltage (Note 4,5) | V_D | | | | 1.3 | V |
| Standby current | I_{STN-BY} | $I_L=0$, $V_{IN}=12\text{V}$ | | | 5.0 | mA |

Note: 1. Guaranteed by design.

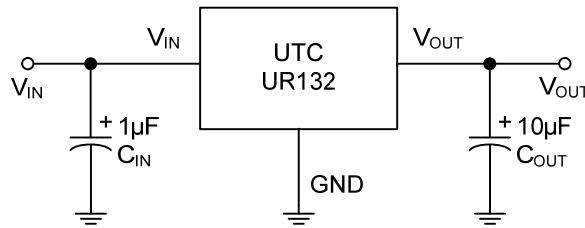
2. Regulation is measured at constant junction temperature, using pulsed on time.

3. Current limit is measured at constant junction temperature, using pulsed on time.

4. Dropout is measured at constant junction temperature, using pulsed on time, and the criterion is V_{OUT} inside target value $\pm 2\%$.

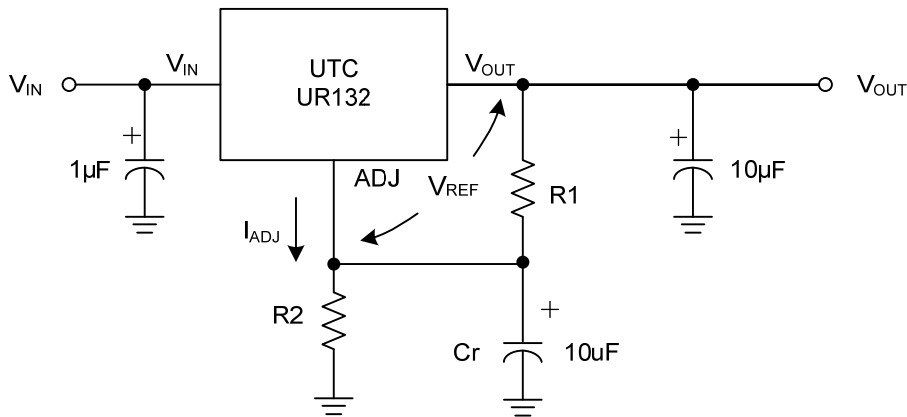
5. Dropout test is skipped at the condition of $V_{IN}<3\text{V}$.

■ TYPICAL APPLICATION CIRCUIT



The part may oscillate without the capacitor, a 10µF (or larger) capacitor is recommended between V_{OUT} and GND for stability. Any type of capacitor can be used, but not Aluminum electrolytic when operating below -20°C. The capacitance may be increased without limit. Besides, another 1µF capacitor (or larger) should be placed between V_{IN} to GND.

■ UR132 ADJUSTABLE



Cr:10µF to improve ripple rejection

$$V_{OUT} = V_{REF}(1 + R2/R1) + I_{ADJ} \times R2$$

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