



LP5951

Preliminary

LINEAR INTEGRATED CIRCUIT

HIGH INPUT VOLTAGE, LOW QUIESCENT CURRENT, 150mA LDO REGULATOR

DESCRIPTION

The **UTC LP5951** is a low ground current linear regulator which operates with input voltage from 6.5V ~ 25V and delivers output current up to 150mA. Typical dropout voltage is only 450mV at 150mA loading.

The **UTC LP5951** has many protection functions including over temperature and current limit which prevent the device from thermal over-load and current over-load.

FEATURES

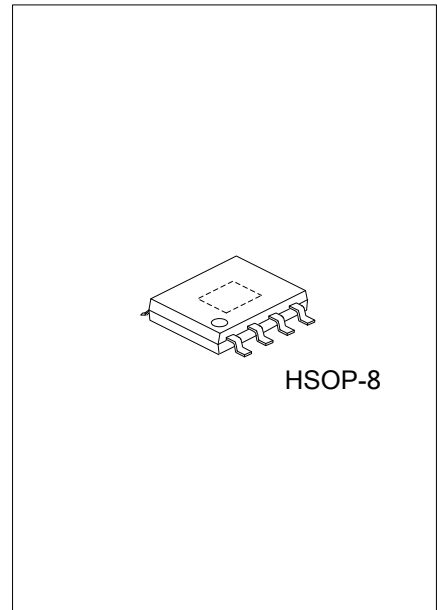
- * Wide Operating Voltage : 6.5V~25V
- * Ultra Low Ground Current :120 μ A
- * High Output Accuracy : $\pm 2\%$ over temperature
- * Excellent Load/Line Transient
- * Low Dropout Voltage : 450mv @ 150mA
- * Built-in Current Limit Protection
- * Built-in Over Temperature Protection
- * Zero Shutdown Current

ORDERING INFORMATION

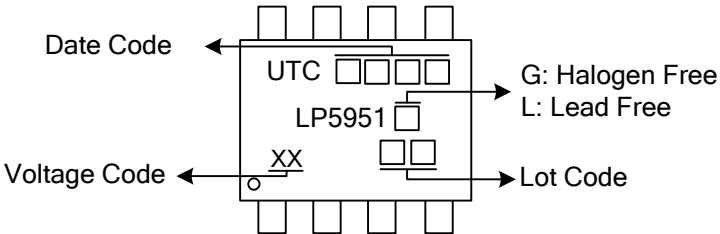
| Ordering Number | | Package | Packing |
|------------------|------------------|---------|-----------|
| Lead Free | Halogen Free | | |
| LP5951L-xx-SH2-R | LP5951G-xx-SH2-R | HSOP-8 | Tape Reel |
| LP5951L-xx-SH2-T | LP5951G-xx-SH2-T | HSOP-8 | Tube |

Note: xx: Output Voltage, refer to Marking Information.

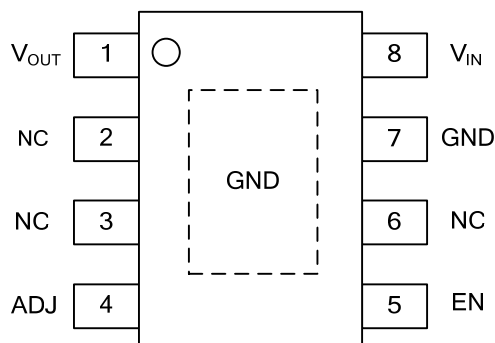
| | | |
|------------------|--|---|
| LP5951L-xx-SH2-R | (1)Packing Type (2)Package Type (3)Output Voltage Code (4)Lead Free | (1) R: Tape Reel, T: Tube (2) SH2: HSOP-8 (3) xx: Refer to Marking Information (4) G: Halogen Free, L: Lead Free |
|------------------|--|---|



MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | MARKING |
|---------|--------------|--|
| HSOP-8 | AD :ADJ |  |

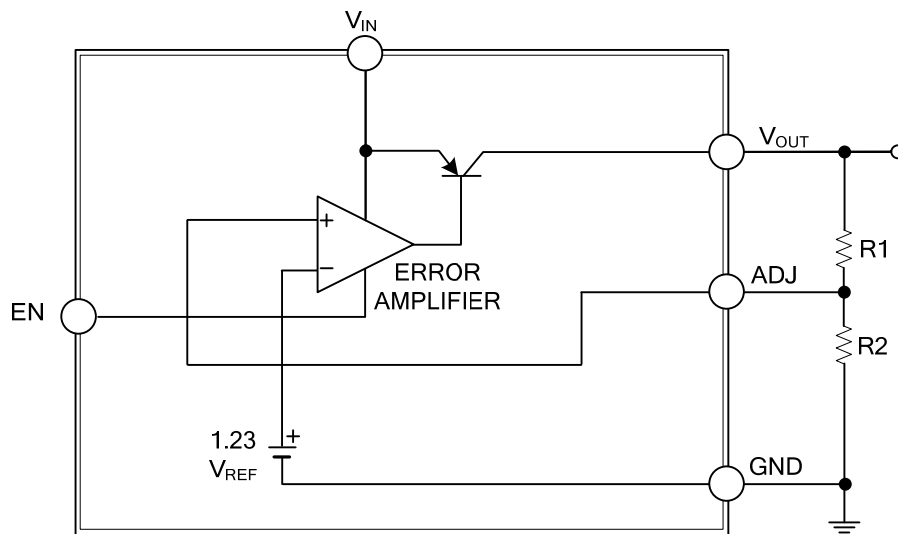
PIN CONFIGURATION



PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---------|-----------|--|
| 1 | V_{OUT} | output pin |
| 2, 3, 6 | NC | No Connection |
| 4 | ADJ | ADJ: output feedback pin |
| 5 | EN | ON/OFF pin, low=output ON; high=output OFF |
| 7 | GND | Ground |
| 8 | V_{IN} | Input pin |

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------------|------------|--------------------|------|
| Supply Voltage | V_{CC} | -0.3~+27 | V |
| Feedback Voltage | V_{FB} | -1.5~+27 | V |
| Shutdown Voltage | V_{SHDN} | -0.3~+27 | V |
| Power Dissipation | P_D | Internally Limited | W |
| Junction Temperature | T_J | +125 | °C |
| Storage Temperature | T_{STG} | -65~+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.

■ THERMAL DATA

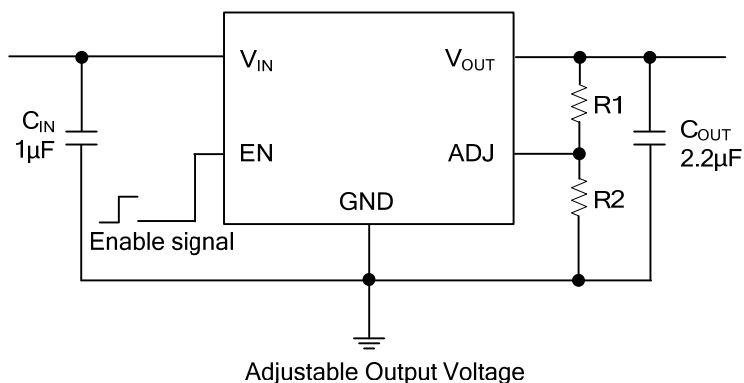
| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|------|
| Junction to Ambient | θ_{JA} | 50 | °C/W |
| Junction to Case | θ_{JC} | 20 | °C/W |

■ ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, these specifications apply over $V_{IN}=V_{OUT}+2.5V$, $C_{IN}=1\mu F$, $C_{OUT}=2.2mF$, $T_A=-40^{\circ}C \sim 85^{\circ}C$. Typical values refer to $T_A=25^{\circ}C$.)

| Typical values refer to $V_A=25\text{ V}$, $T_A=25\text{ }^{\circ}\text{C}$. | | | | | | |
|--|------------------|--|-----|-------|-----|--------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
| Input Voltage | V_{IN} | | 6.5 | | 25 | V |
| Output Voltage Accuracy | V_{OUT} | | -2 | | 2 | % |
| Output Voltage Range | | | 3 | | 20 | V |
| Quiescent Current | I_Q | $I_{OUT}=0.1\text{mA}$ | 75 | 120 | 140 | μA |
| | | $I_{OUT}=150\text{mA}$ | 8 | 12 | 22 | mA |
| Load Current Range | I_{OUT} | | 0 | | 150 | mA |
| Reference Voltage | V_{REF} | | -2% | 1.235 | +2% | V |
| Line Regulation | ΔV_{OUT} | $V_{OUT}+2.5\text{V}<V_{IN}<25\text{V}$, $I_{OUT}=1\text{mA}$ | | 0.1 | 0.2 | % |
| Load Regulation | ΔV_{OUT} | $0.1\text{mA}<I_{OUT}<150\text{mA}$ | | 0.2 | 0.5 | % |
| Dropout Voltage | V_D | $I_{OUT}=0.1\text{mA}$ | 50 | 80 | 150 | mV |
| | | $I_{OUT}=150\text{mA}$ | 380 | 450 | 600 | |
| PROTECTION | | | | | | |
| Over Temperature Shutdown | OTS | | | 150 | | $^{\circ}\text{C}$ |
| Circuit Current Limit | I_{LIMIT} | $V_{IN}=V_{OUT}+2.5\text{V}$ | 250 | 350 | 500 | mA |
| Short Current | I_{SHORT} | $V_{OUT}=0\text{V}$ | | 50 | | mA |
| SHUTDOWN | | | | | | |
| Input High Voltage | V_{EN} | | 2 | | | V |
| Input Low Voltage | | | | | 0.7 | |
| EN pin Input Bias Current | I_{EN} | $V_{EN}=25\text{V}$ | | 450 | 600 | μA |
| Shutdown Supply Current | I_{QSHDN} | $EN=\text{High}$, $V_{IN}=19\text{V}$ | | 0.1 | 1 | mA |

■ TYPICAL APPLICATION CIRCUIT



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