



## UR51XXH

Advance

CMOS IC

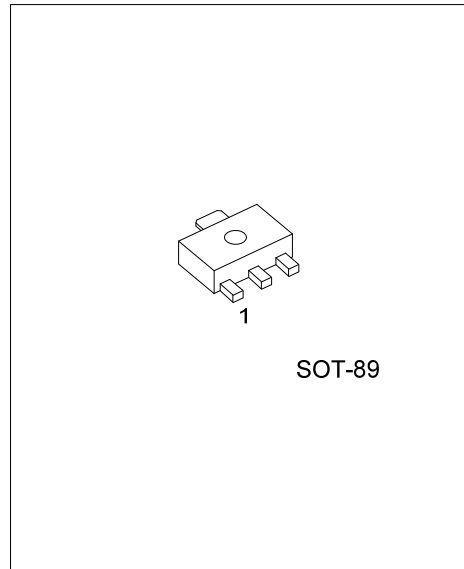
### HIGH VOLTAGE , ULTRA LOW IQ VOLTAGE REGULATOR

#### DESCRIPTION

The UTC **UR51XXH** Series are a low dropout regulator with wide input voltage range, high output voltage accuracy, ultra low quiescent current and low dropout. This regulator is based on a CMOS process, and it's input voltage could high enough more than 18V, thus they are very suitable for high voltage application.

#### FEATURES

- \* High output voltage accuracy:  $\pm 2\%$
- \* Ultra low quiescent current: 1.2uA (Typ.)
- \* Low temperature-drift coefficient of  $V_{OUT}$ :  $\pm 50\text{ppm}/^\circ\text{C}$  (Typ.)
- \* Wide Input voltage range: 0 ~ 18V



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UR51XXHL-AB3-R	UR51XXHG-AB3-R	SOT-89	G	I	O	Tape Reel

Note: Pin assignment: G: Ground I:  $V_{IN}$  O:  $V_{OUT}$

<p>UR51XXHG-AB3-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(4) Green Package</li> <li>(5) Output Voltage Code</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AB3: SOT-89</li> <li>(4) G: Halogen Free and Lead Free, L: Lead Free</li> <li>(5) XX: Refer to Marking Information</li> </ul>
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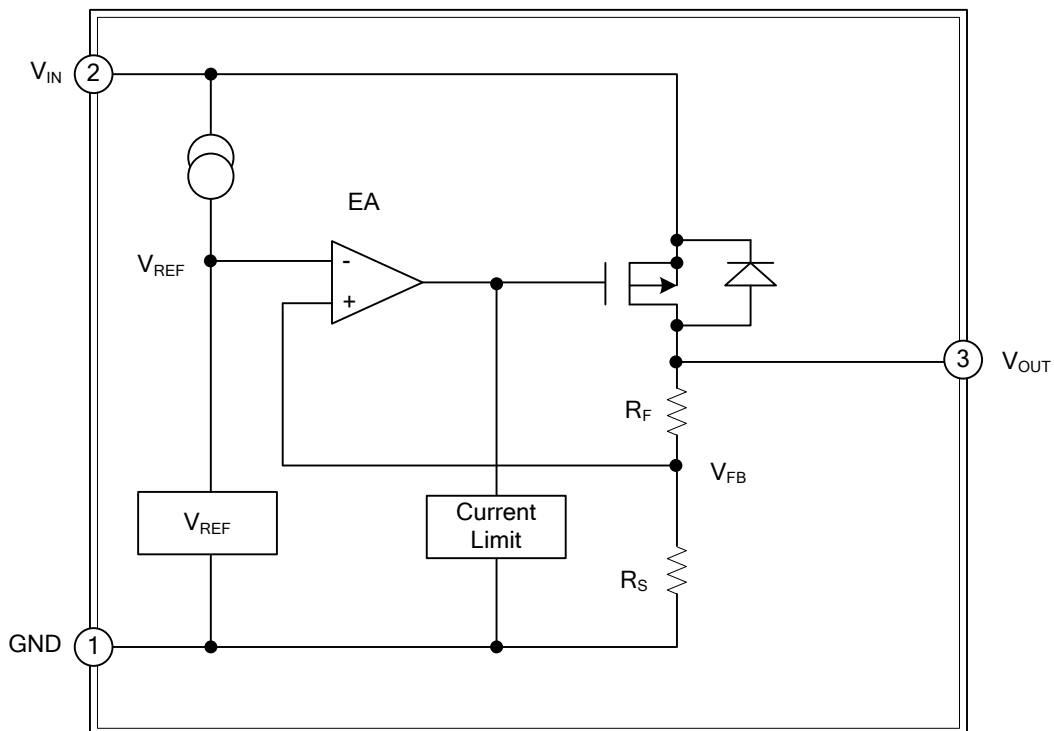
### MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	33: 3.3V 36: 3.6V 50: 5.0V	

### PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	GND	Ground
2	$V_{IN}$	Input voltage
3	$V_{OUT}$	Regulated output voltage

### BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	$V_{IN}$	18	V
Power Dissipation	$P_D$	500	mW
Operating Temperature Range	$T_{OPR}$	-40 ~ +85	°C
Storage Temperature Range	$T_{STG}$	-40 ~ +125	°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 ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

#### UTC UR5133H

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	3.234	3.3	3.366	V
Output Current (Note 1)	$I_{OUT}$	$V_{IN}=V_{OUT}+2V$	80			mA
Dropout Voltage (Note 2)	$V_{DROP}$	$I_{OUT}=1\text{mA}$		50	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V, I_{OUT}=1\text{mA}$		0.05	0.2	%/V
Load Regulation	$\Delta V_{OUT2}$	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		50	100	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±100		Ppm/°C
Supply Current	$I_{SS1}$	$V_{IN}=V_{OUT}+2V$		1.2	4.0	uA

#### UTC UR5136H

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	2.94	3.6	3.672	V
Output Current (Note 1)	$I_{OUT}$	$V_{IN}=V_{OUT}+2V$	80			mA
Dropout Voltage (Note 2)	$V_{DROP}$	$I_{OUT}=1\text{mA}$		50	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V, I_{OUT}=1\text{mA}$		0.05	0.2	%/V
Load Regulation	$\Delta V_{OUT2}$	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		50	100	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±100		Ppm/°C
Supply Current	$I_{SS1}$	$V_{IN}=V_{OUT}+2V$		1.2	4.0	uA

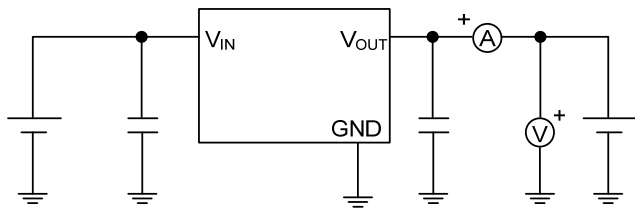
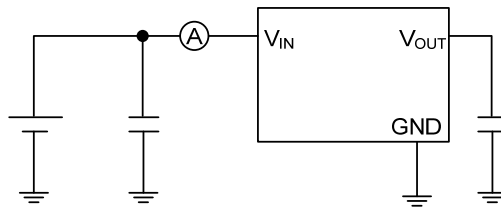
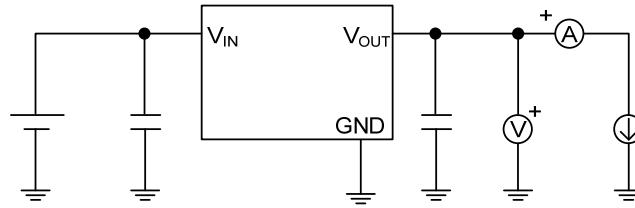
#### UTC UR5150H

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	4.9	5.0	5.1	V
Output Current (Note 1)	$I_{OUT}$	$V_{IN}=V_{OUT}+2V$	80			mA
Dropout Voltage (Note 2)	$V_{DROP}$	$I_{OUT}=1\text{mA}$		50	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V, I_{OUT}=1\text{mA}$		0.05	0.2	%/V
Load Regulation	$\Delta V_{OUT2}$	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		50	100	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±100		Ppm/°C
Supply Current	$I_{SS1}$	$V_{IN}=V_{OUT}+2V$		1.2	4.0	uA

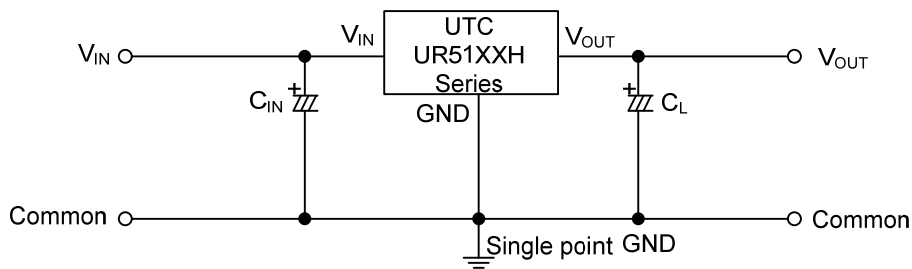
Notes: 1. Increase the output current slowly, record the current when  $V_{OUT}$  decrease 98% of  $V_{OUT}$ .

2.  $V_{drop}=V_{IN1}-(V_{OUT} \times 0.98)$ ,  $V_{OUT}: V_{IN}=V_{OUT}+2V, I_{OUT}=1\text{mA}$

■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



$C_{IN} > 1.0\mu F$   
 $C_L > 2.2\mu F$  (tantalum capacitor)

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