



UR56XX

CMOS IC

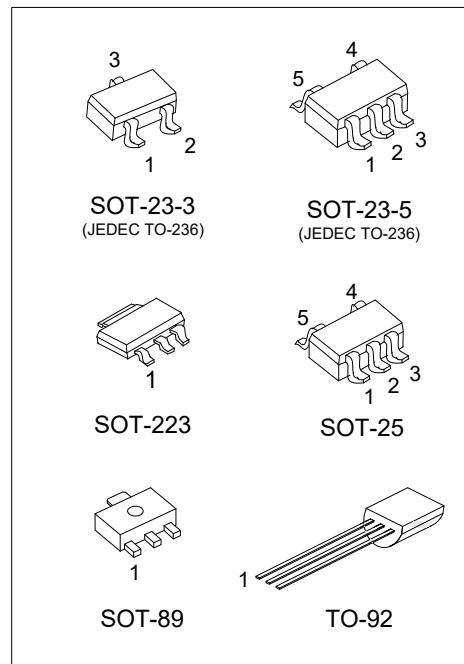
18-V INPUT VOLTAGE 500MA ULTRA LOW IQ VOLTAGE REGULATOR

DESCRIPTION

The UTC **UR56XX** 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: 1.0uA (Typ.)
- * Low temperature-drift coefficient of V_{OUT} : $\pm 100\text{ppm}/^\circ\text{C}$ (Typ.)
- * Wide Input voltage range: 0 ~18V



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR56XXL-AA3-R	UR56XXG-AA3-R	SOT-223	I	G	O	-	-	Tape Reel
UR56XXL-AB3-R	UR56XXG-AB3-R	SOT-89	G	I	O	-	-	Tape Reel
UR56XXL-AE2-R	UR56XXG-AE2-R	SOT-23-3	G	O	I	-	-	Tape Reel
UR56XXL-AE5-R	UR56XXG-AE5-R	SOT-23-5	I	G	N	N	O	Tape Reel
UR56XXL-AF5-R	UR56XXG-AF5-R	SOT-25	I	G	N	N	O	Tape Reel
UR56XXL-T92-B	UR56XXG-T92-B	TO-92	G	I	O	-	-	Tape Box
UR56XXL-T92-K	UR56XXG-T92-K	TO-92	G	I	O	-	-	Bulk

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

<p>UR56XXG-AA3-R</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AA3: SOT-223, AB3: SOT-89, AE2: SOT-23-3, AE5: SOT-23-5, AF5: SOT-25, T92: TO-92 (4) G: Halogen Free and Lead Free, L: Lead Free (5) XX: Refer to Marking Information</p>
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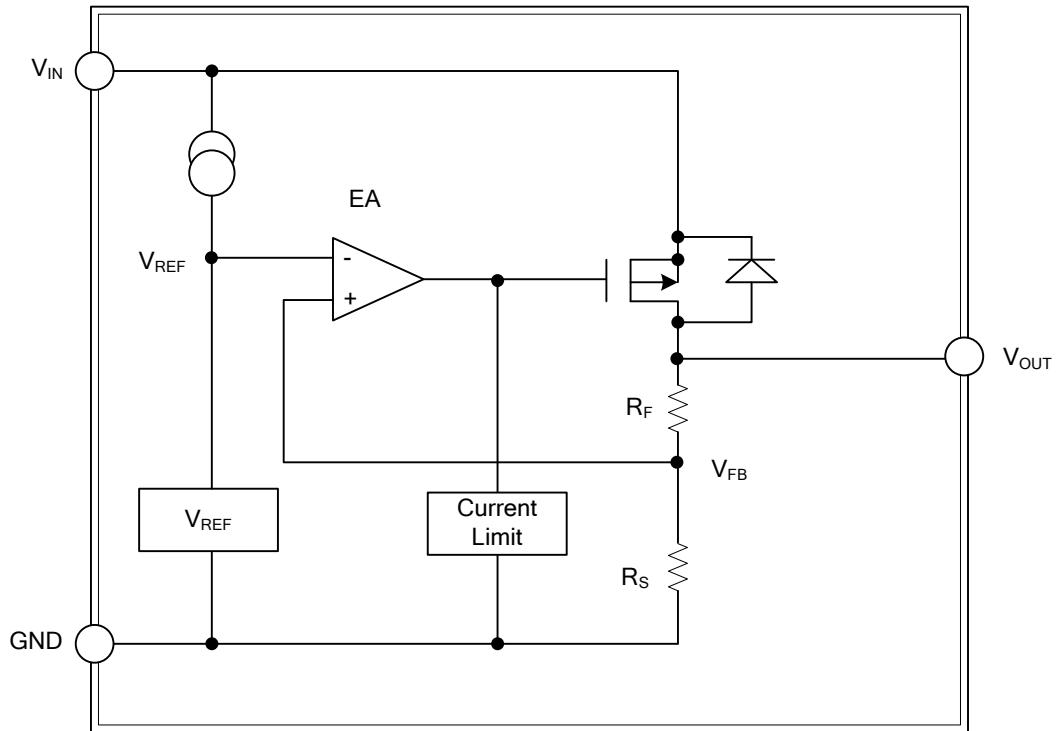
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	15: 1.5V 18: 1.8V 21: 2.1V 23: 2.3V 25: 2.5V 27: 2.7V 28: 2.8V 30: 3.0V 33: 3.3V 36: 3.6V 38: 3.8V 40: 4.0V 44: 4.4V 45: 4.5V 50: 5.0V 60: 6.0V 70: 7.0V 80: 8.0V 90: 9.0V 10: 10V 12: 12V	<p>UR56XX□ Voltage Code ← Pin Code → Date Code 1 2 3</p> <p>L: Lead Free G: Halogen Free</p>
SOT-89		<p>□□□□ Date Code ← Voltage Code → L: Lead Free G: Halogen Free 1 2 3</p>
SOT-23-3		<p>3 R56XX → Voltage Code 1 2</p>
SOT-23-5 SOT-25		<p>5 4 R56□□ → Voltage Code 1 2 3</p>
TO-92		<p>UTC UR56XX□ Voltage Code ← L: Lead Free G: Halogen Free → Date Code 1 2 3</p>

PIN DESCRIPTION

PIN NO.				PIN NAME	DESCRIPTION
SOT-223	SOT-89 TO-92	SOT-23-3	SOT-23-5 SOT-25		
2	1	1	2	GND	Ground
1	2	3	1	V _{IN}	Input voltage.
3	3	2	5	V _{OUT}	Regulated output voltage
-	-	-	3, 4	NC	No connect

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	18	V
Output Voltage		V_{OUT}	1.5 ~ 12	V
Power Dissipation	SOT-223	P_D	600	mW
	SOT-23-3		350	mW
	SOT-23-5		500	mW
	SOT-25		500	mW
	SOT-89 TO-92		550	mW
Operating Temperature Range		T_{OPR}	-40 ~ +125	°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.

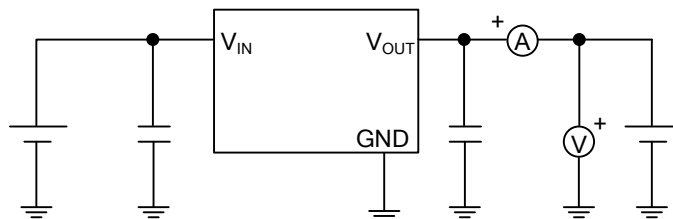
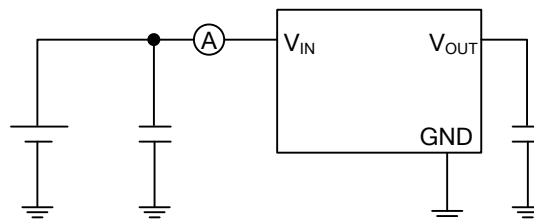
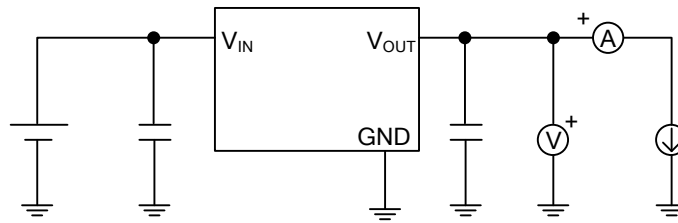
■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10\text{mA}$	-2%	V_{OUT}	+2%	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	500			mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=60\text{mA}$	$1.5V \leq V_{OUT} \leq 1.8V$	100	150	mV
		$I_{OUT}=80\text{mA}$	$2.1V \leq V_{OUT} \leq 3.0V$	120	150	mV
		$I_{OUT}=100\text{mA}$	$3.3V \leq V_{OUT} \leq 5.0V$	160	200	mV
		$I_{OUT}=200\text{mA}$	$6.0V \leq V_{OUT} \leq 12V$	200	240	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 16V$, $I_{OUT}=1\text{mA}$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V$, $1.0\text{mA} \leq I_{OUT} \leq 100\text{mA}$		30	80	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}	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=0\text{mA}$, $V_{OUT} < 7V$		1.0	3.0	uA
		$V_{IN}=V_{OUT}+2V$, $I_{OUT}=0\text{mA}$, $V_{OUT} \geq 7V$		2.0	5.0	uA

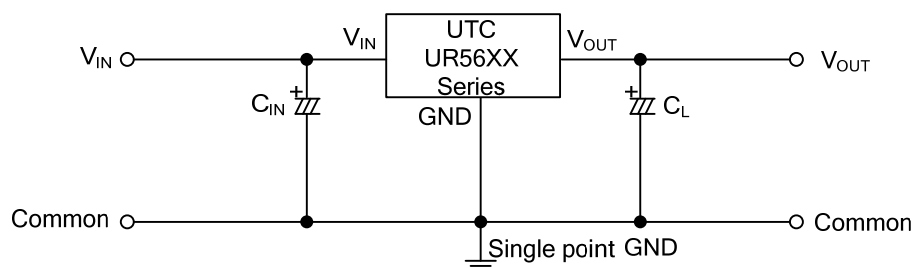
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

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



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

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