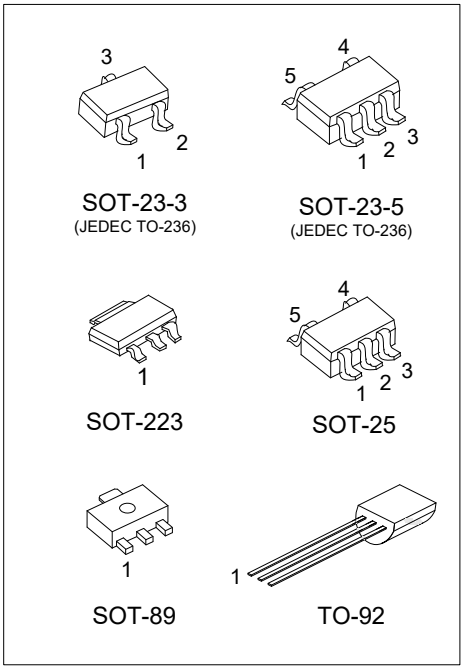
18-V INPUT VOLTAGE 500MA ULTRA LOW IQ VOLTAGE REGULATOR



■ 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: ±2%
* Ultra low quiescent current: 1.0uA (Typ.)
* Low temperature-drift coefficient of V_{OUT}: ±100ppm/°C (Typ.)
* Wide Input voltage range: 0 ~18V

■ ORDERING INFORMATION

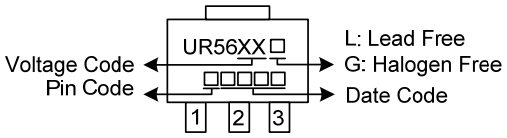
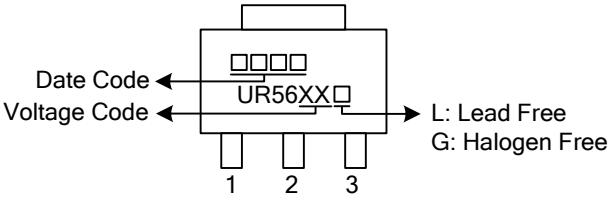
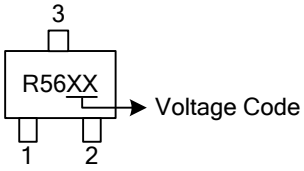
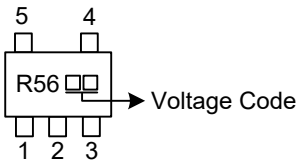
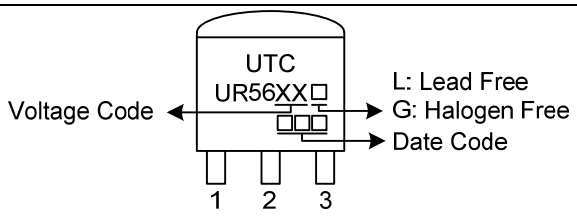
Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR56XXL-AA3-R	UR56XXG-AA3-R	SOT-223	I	G	O	-	-	Tape Reel
UR56XXL-AB3-R	UR56XXG-AB3-R	SOT-89	G	I	O	-	-	Tape Reel
UR56XXL-AE2-R	UR56XXG-AE2-R	SOT-23-3	G	O	I	-	-	Tape Reel
UR56XXL-AE5-R	UR56XXG-AE5-R	SOT-23-5	I	G	N	N	O	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}

UR56XXG-AA3-R
(1)Packing Type
(2)Package Type
(4)Green Package
(5)Output Voltage Code

(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

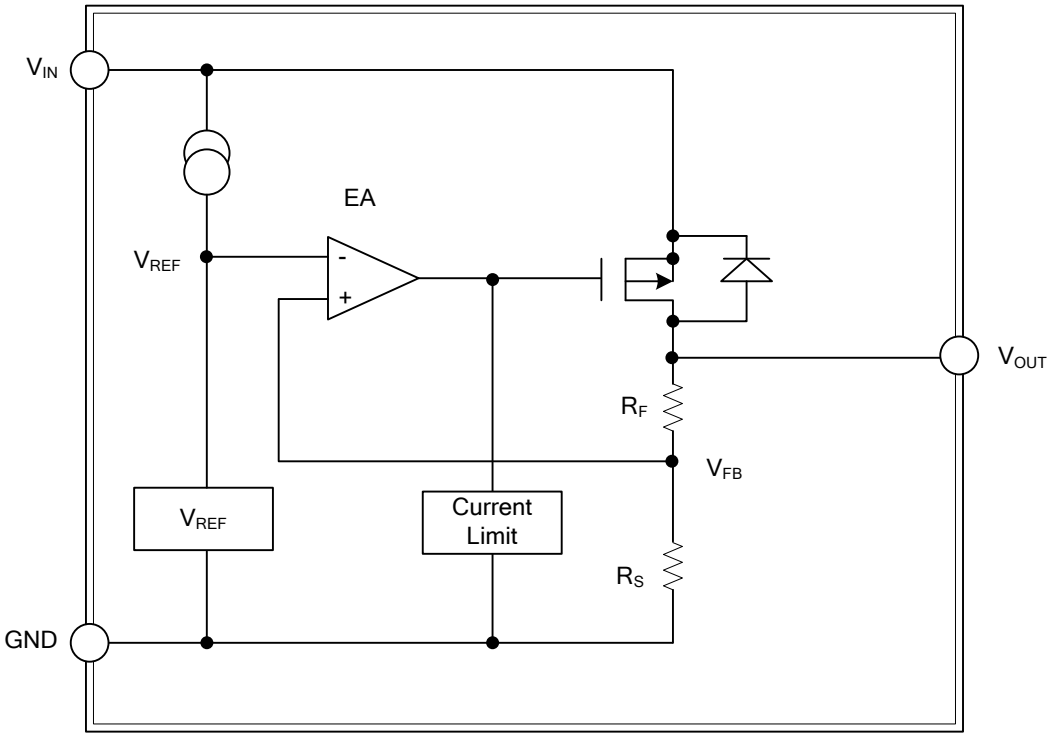
■ MARKING INFORMATION

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	
SOT-89		
SOT-23-3		
SOT-23-5 SOT-25		
TO-92		

■ 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 SOT-23-5		350	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

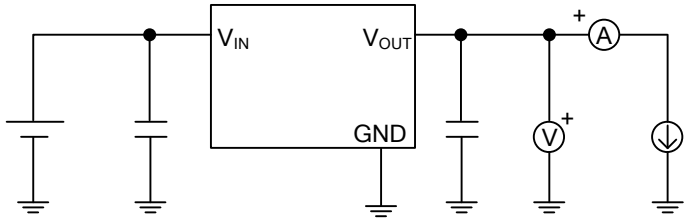
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

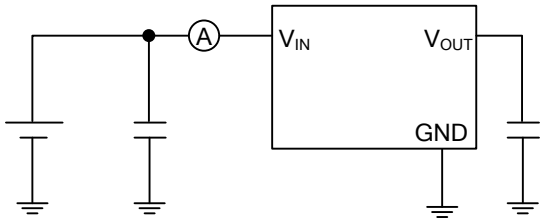
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

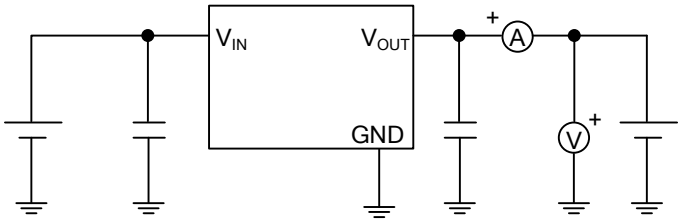
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V$, I_{OUT}=10mA		-2%	V_{OUT}	+2%	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$		500			mA
Dropout Voltage (Note 2)	V_{DROP}	I_{OUT}=60mA	1.5V≦V_{OUT}≦1.8V		100	150	mV
		I_{OUT}=80mA	2.1V≦V_{OUT} ≦3.0V		120	150	mV
		I_{OUT}=100mA	3.3V≦V_{OUT} ≦5.0V		160	200	mV
		I_{OUT}=200mA	6.0V≦V_{OUT} ≦12V		200	240	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}$	$V_{OUT}+2V \le V_{IN} \le 16V$, I_{OUT}=1mA			0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V$, 1.0mA ≤ I_{OUT}≤100mA			30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \bullet V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, I_{OUT}=10mA , -40°C ≤ T_A ≤ 85°C			±100		ppm/°C
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$, I_{OUT}=0mA, V_{OUT} < 7V			1.0	3.0	uA
		$V_{IN}=V_{OUT}+2V$, I_{OUT}=0mA, V_{OUT}≧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}=1mA

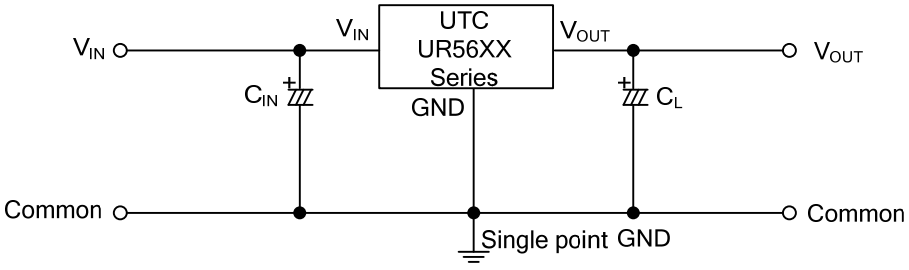
■ TEST CIRCUIT







■ TYPICAL APPLICATION CIRCUIT



C_{IN}>1.0μF
C_L>2.2μF (tantalum capacitor)