



# UR71XX

CMOS IC

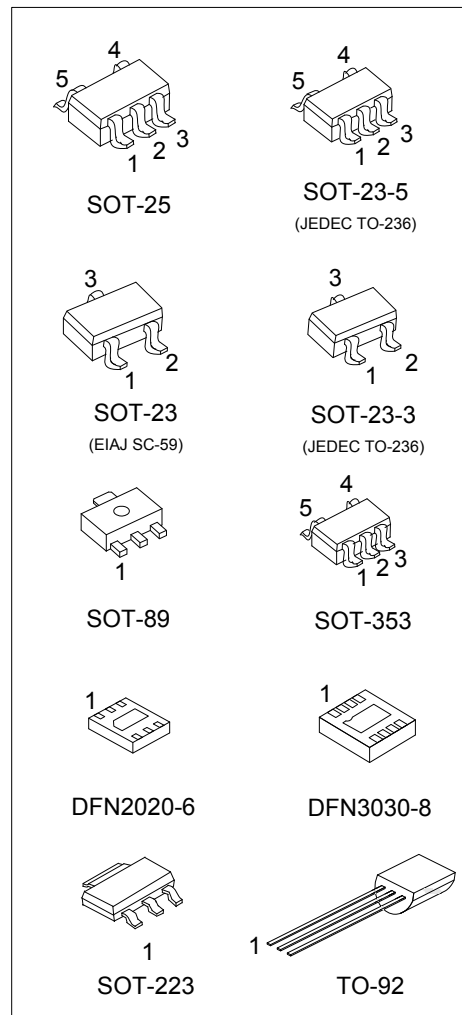
## HIGH VOLTAGE , ULTRA LOW IQ VOLTAGE REGULATOR

### DESCRIPTION

The UTC **UR71XX** 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 36V, 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 ~ 36V



## ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UR71XXL-AA3-D-R	UR71XXG-AA3-D-R	SOT-223	I	G	O	-	-	-	-	-	Tape Reel
UR71XXL-AB3-R	UR71XXG-AB3-R	SOT-89	G	I	O	-	-	-	-	-	Tape Reel
UR71XXL-AE2-1-R	UR71XXG-AE2-1-R	SOT-23-3	1: GIO 3: GOI 4: IOG								Tape Reel
UR71XXL-AE2-3-R	UR71XXG-AE2-3-R	SOT-23-3									Tape Reel
UR71XXL-AE2-4-R	UR71XXG-AE2-4-R	SOT-23-3									Tape Reel
UR71XXL-AE3-1-R	UR71XXG-AE3-1-R	SOT-23									Tape Reel
UR71XXL-AE3-3-R	UR71XXG-AE3-3-R	SOT-23									Tape Reel
UR71XXL-AE3-4-R	UR71XXG-AE3-4-R	SOT-23									Tape Reel
UR71XXL-AE5-C-R	UR71XXG-AE5-C-R	SOT-23-5	I	G	C	N	O	-	-	-	Tape Reel
UR71XXL-AE5-V-R	UR71XXG-AE5-V-R	SOT-23-5	G	I	O	N	C	-	-	-	Tape Reel
UR71XXL-AF5-C-R	UR71XXG-AF5-C-R	SOT-25	I	G	C	N	O	-	-	-	Tape Reel
UR71XXL-AF5-F-R	UR71XXG-AF5-F-R	SOT-25	G	I	O	N	N	-	-	-	Tape Reel
UR71XXL-AL5-R	UR71XXG-AL5-R	SOT-353	N	G	N	I	O	-	-	-	Tape Reel
UR71XXL-T92-B	UR71XXG-T92-B	TO-92	G	I	O	-	-	-	-	-	Tape Box
UR71XXL-T92-K	UR71XXG-T92-K	TO-92	G	I	O	-	-	-	-	-	Bulk
UR71XXL-K06-2020-R	UR71XXG-K06-2020-R	DFN2020-6	O	N	G	C	N	I	-	-	Tape Reel
UR71XXL-K08-3030-R	UR71XXG-K08-3030-R	DFN3030-8	I	N	N	G	N	N	N	O	Tape Reel

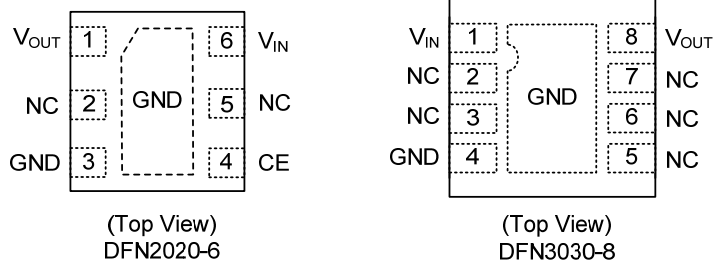
Note: Pin assignment: G: Ground I: V<sub>IN</sub> O: V<sub>OUT</sub> C: CE N: NC

<p>UR71XXG-AA3-D-R</p> <p>(1)Packing Type                  (2)Pin Assignment                  (3)Package Type                  (4)Green Package                  (5)Output Voltage Code</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk                  (2) refer to Pin Assignment                  (3) AA3: SOT-223, AB3: SOT-89, AE2: SOT-23-3                  AE3: SOT-23, AE5: SOT-23-5, AF5: SOT-25                  AL5: SOT-353, T92: TO-92, K06-2020: DFN2020-6                  K08-3030: DFN3030-8                  (4) G: Halogen Free and Lead Free, L: Lead Free                  (5) XX: Refer to Marking Information</p>
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## MARKING INFORMATION

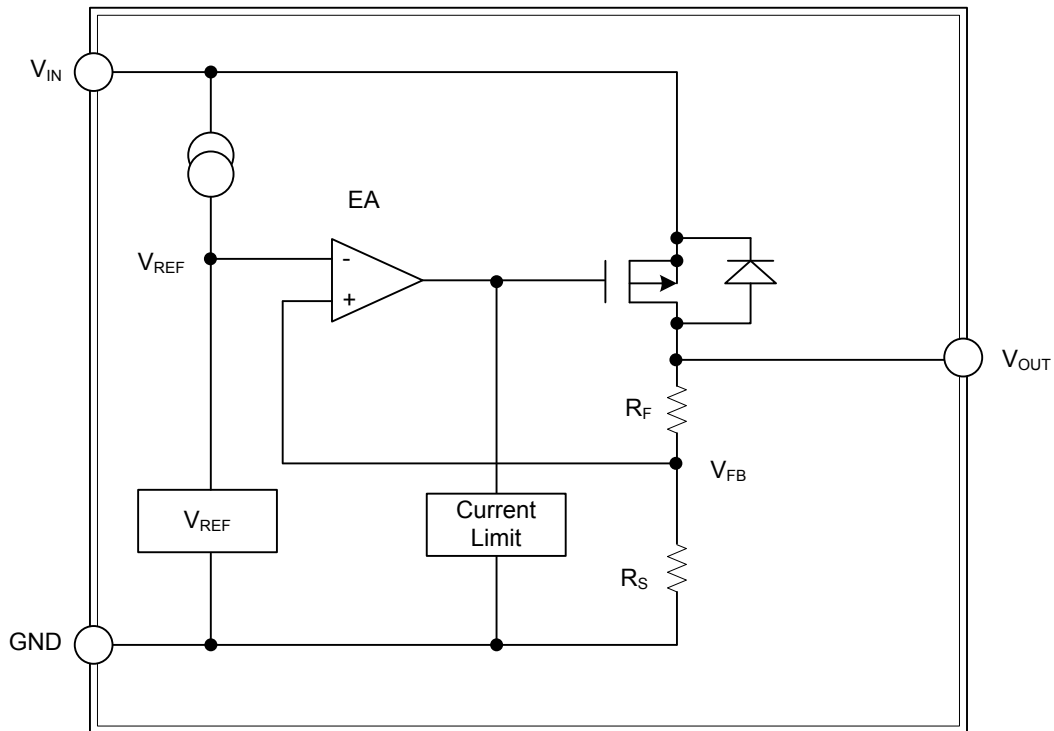
PACKAGE	VOLTAGE CODE	MARKING
SOT-223	33:3.3V 40:4.0V 50:5.0V	<p>UR71XX□ □□□□</p> <p>Voltage Code ← → Pin Code</p> <p>← → Date Code</p> <p>1</p> <p>L: Lead Free G: Halogen Free</p>
SOT-89		<p>□□□□ UR71XX□</p> <p>Date Code ← → Voltage Code</p> <p>1 2 3</p> <p>L: Lead Free G: Halogen Free</p>
SOT-23-3 SOT-23		<p>71XXX</p> <p>Voltage Code ← → Pin Code</p> <p>1 2 3</p>
SOT-23-5 SOT-25		<p>71XXX</p> <p>Voltage Code ← → Pin Code</p> <p>1 2 3 4 5</p>
SOT-353		<p>71XX</p> <p>Voltage Code ←</p> <p>1 2 3 4 5</p>
TO-92		<p>UTC UR71XX□ □□□□</p> <p>Voltage Code ← → Date Code</p> <p>← → Date Code</p> <p>1 2 3</p> <p>L: Lead Free G: Halogen Free</p>
DFN2020-6		<p>71XX □□□□</p> <p>Voltage Code ← → Date Code</p>
DFN3030-8		<p>UR 71□□ □□□□</p> <p>Voltage Code ← → Date Code</p>

■ PIN CONFIGURATION



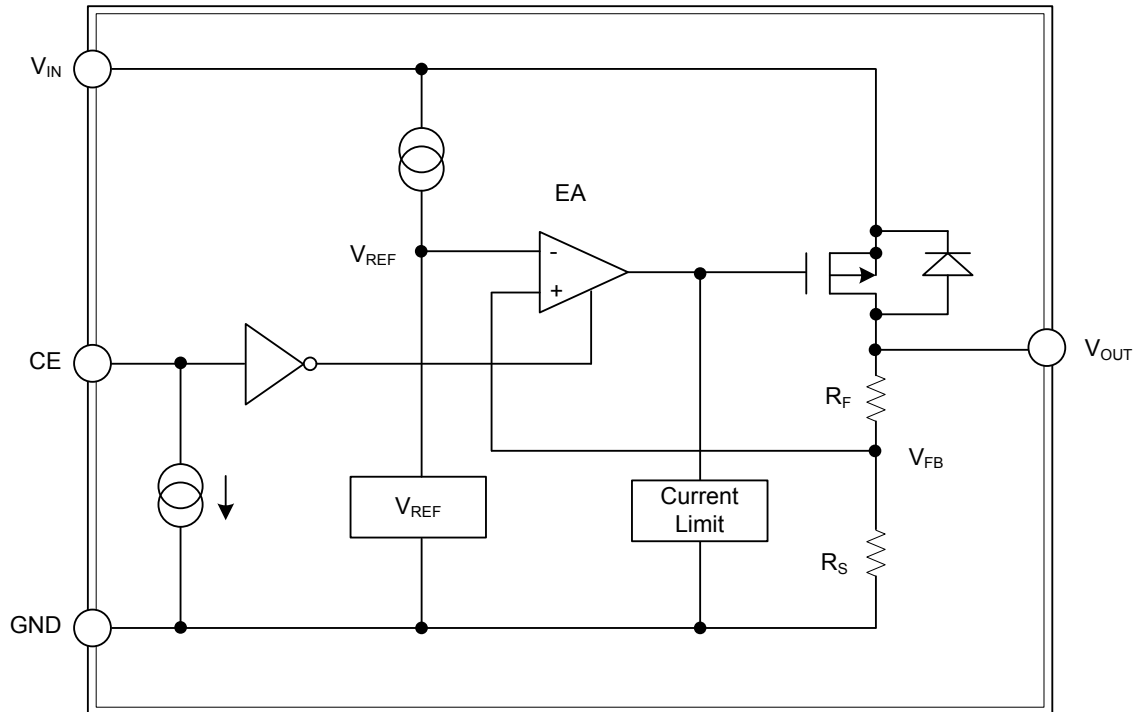
■ BLOCK DIAGRAM

For 3 Pin & 8 Pin



## ■ BLOCK DIAGRAM (Cont.)

For 5 Pin & 6 Pin



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		$V_{IN}$	36	V
Power Dissipation	SOT-223	$P_D$	600	mW
	SOT-23-3/SOT-23		250	mW
	SOT-23-5/SOT-25		300	mW
	SOT-353		500	mW
	SOT-89/TO-92		1000 (Note 2)	mW
	DFN2020-6		1535 (Note 2)	mW
	DFN3030-8			
Operating Temperature Range		$T_{OPR}$	-40 ~ +125	°C
Storage Temperature Range		$T_{STG}$	-40 ~ +125	°C

Notes: 1. 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.

2. The data tested by surface mounted on a 2 inch<sup>2</sup> FR-4 board with 2OZ copper.

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

UTC UR7133

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	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1\text{mA}$		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
CE Pull-down Current	$I_{PD}$	Only with CE pin		0.3		uA
CE Input Voltage "H"	$V_{CEH}$	Only with CE pin	$V_{IN}-1$		$V_{IN}$	V
CE Input Voltage "L"	$V_{CEL}$	Only with CE pin	0		1	V

UTC UR7140

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	3.92	4.0	4.08	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	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1\text{mA}$		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
CE Pull-down Current	$I_{PD}$	Only with CE pin		0.3		uA
CE Input Voltage "H"	$V_{CEH}$	Only with CE pin	$V_{IN}-1$		$V_{IN}$	V
CE Input Voltage "L"	$V_{CEL}$	Only with CE pin	0		1	V

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

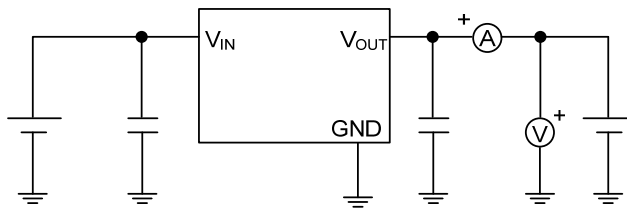
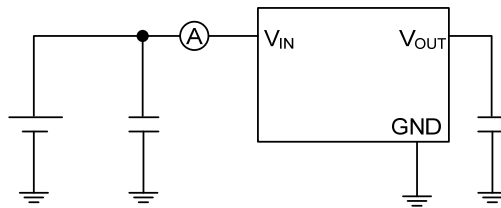
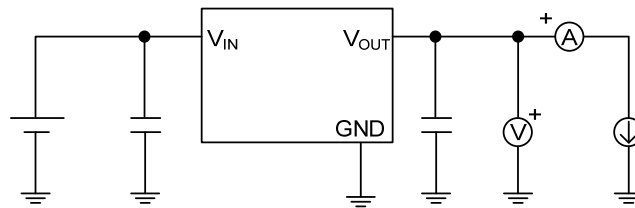
UTC UR7150

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>OUT</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +2V, I <sub>OUT</sub> =10mA	4.9	5.0	5.1	V
Output Current (Note 1)	I <sub>OUT</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +2V	80			mA
Dropout Voltage (Note 2)	V <sub>DROP</sub>	I <sub>OUT</sub> =1mA		50	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	V <sub>OUT</sub> +2V≤V <sub>IN</sub> ≤36V, I <sub>OUT</sub> =1mA		0.05	0.2	%/V
Load Regulation	$\Delta V_{OUT2}$	V <sub>IN</sub> =V <sub>OUT</sub> +2V, 1.0mA≤I <sub>OUT</sub> ≤50mA		50	100	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	V <sub>IN</sub> =V <sub>OUT</sub> +2V, I <sub>OUT</sub> =10mA, -40°C≤T <sub>A</sub> ≤85°C		±100		Ppm/°C
Supply Current	I <sub>SS1</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +2V		1.2	4.0	uA
CE Pull-down Current	I <sub>PD</sub>	Only with CE pin		0.3		uA
CE Input Voltage "H"	V <sub>CEH</sub>	Only with CE pin	V <sub>IN</sub> -1		V <sub>IN</sub>	V
CE Input Voltage "L"	V <sub>CEL</sub>	Only with CE pin	0		1	V

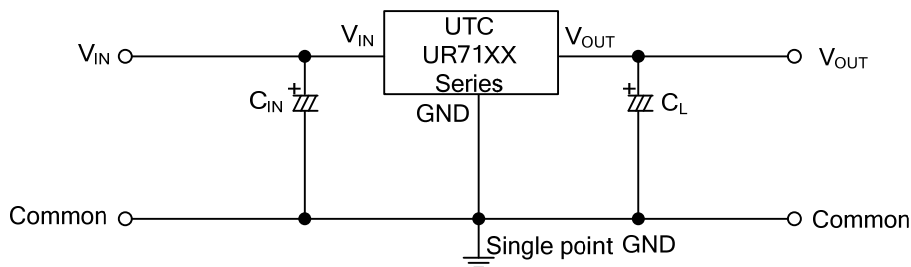
Notes: 1. Increase the output current slowly, record the current when V<sub>OUT</sub> decrease 98% of V<sub>OUT</sub>.

2. V<sub>drop</sub>=V<sub>IN</sub>-(V<sub>OUT</sub>×0.98), V<sub>OUT</sub>: V<sub>IN</sub>=V<sub>OUT</sub>+2V, I<sub>OUT</sub>=1mA

■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



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

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