



## UR71XX

CMOS IC

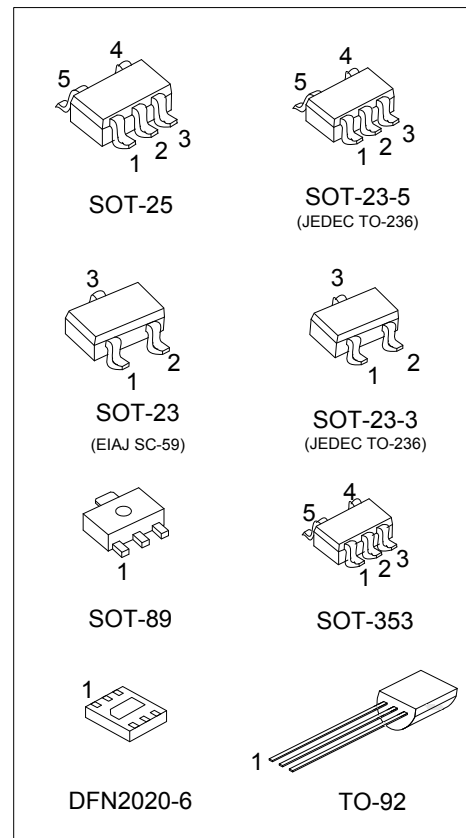
### HIGH VOLTAGE , ULTRA LOW IQ VOLTAGE REGULATOR

#### 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: 1.2 $\mu$ A (Typ.)
- \* Low temperature-drift coefficient of  $V_{OUT}$ :  $\pm 50$ ppm/ $^{\circ}$ 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	
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
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

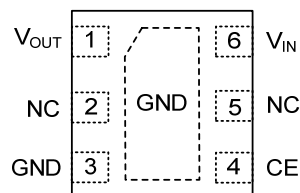
Note: Pin assignment: G: Ground I: V<sub>IN</sub> O: V<sub>OUT</sub> C: CE N: NC

<p>UR71XXG-AE2-1-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) 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 (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-89	33:3.3V 40:4.0V 50:5.0V	
SOT-23-3 SOT-23		
SOT-23-5 SOT-25		
SOT-353		
TO-92		
DFN2020-6		

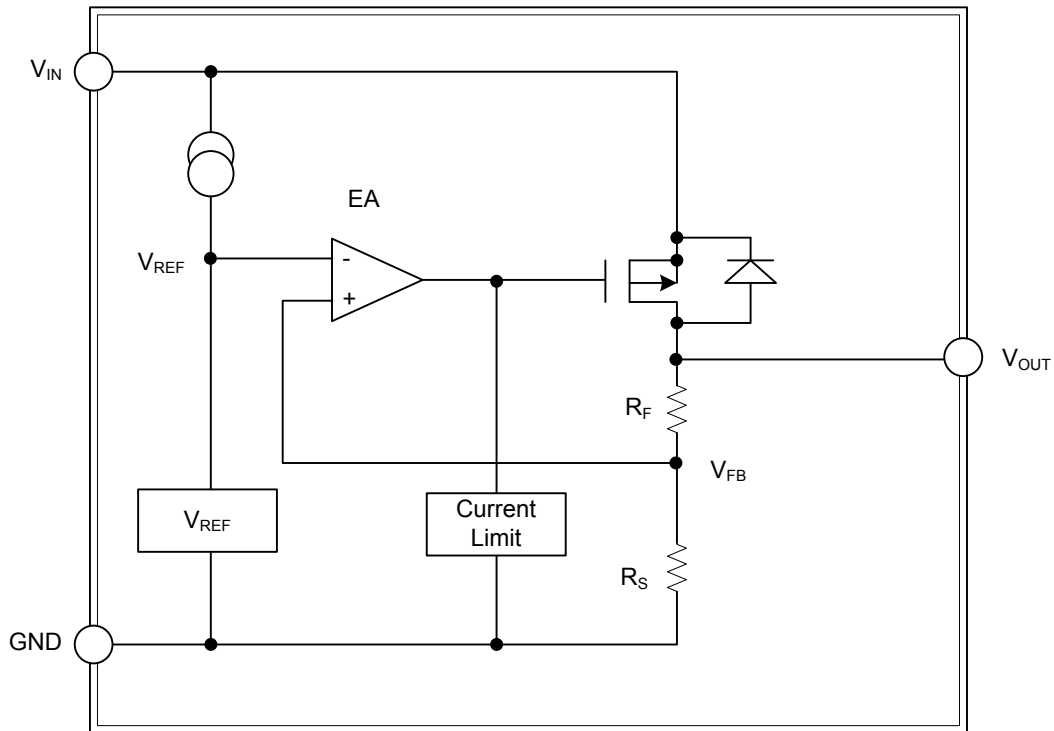
## PIN CONFIGURATION



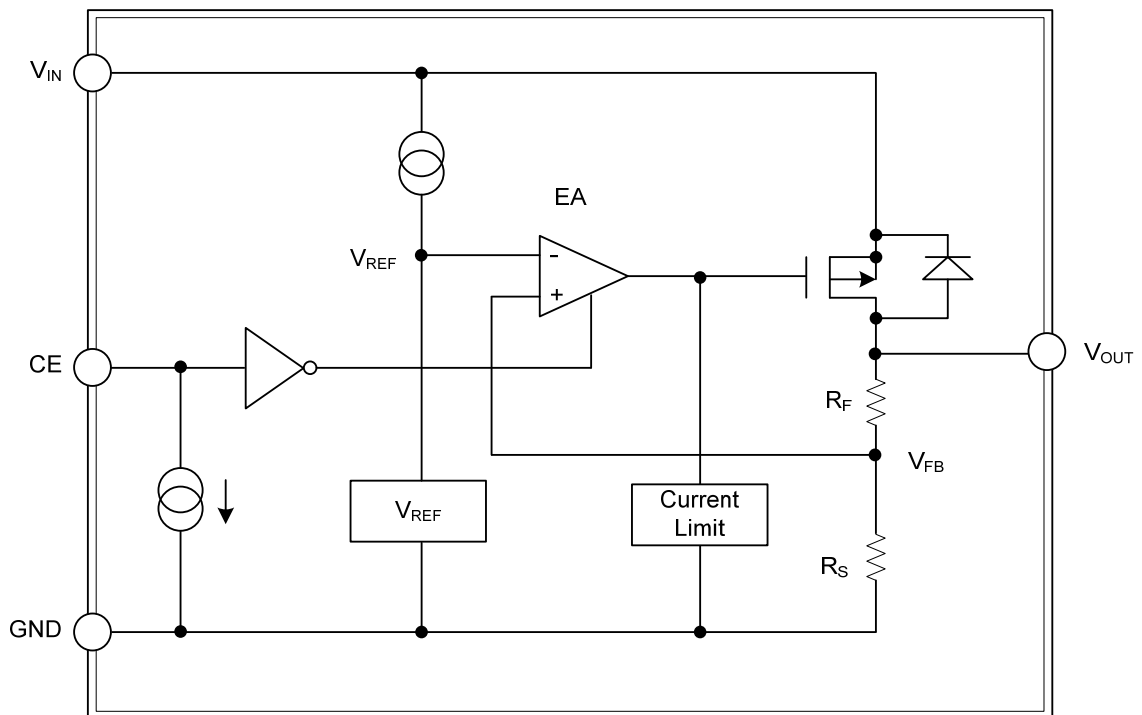
(Top View)  
DFN2020-6

■ BLOCK DIAGRAM

For 3 Pin



For 5 Pin & 6 Pin



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		$V_{IN}$	36	V
Power Dissipation	SOT-23-3/SOT-23	$P_D$	250	mW
	SOT-23-5/SOT-25		300	mW
	SOT-353		500	mW
	SOT-89/TO-92		1000 (Note 2)	mW
	DFN2020-6			
Operating Temperature Range		$T_{OPR}$	-40 ~ +85	°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)

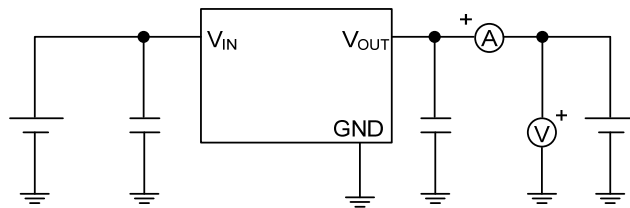
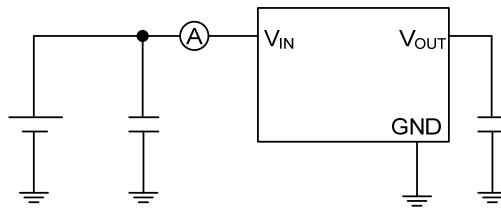
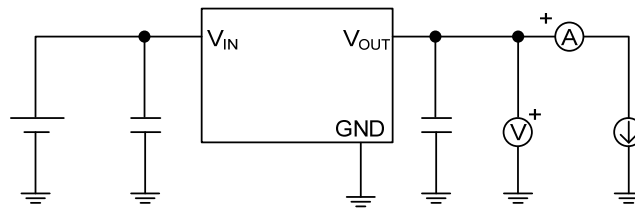
UTC UR7150

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

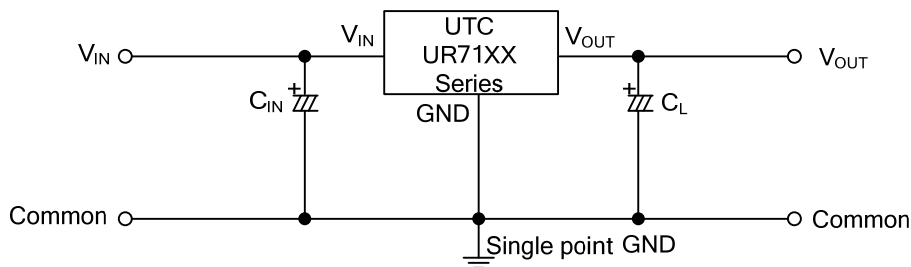
Notes: 1. Increase the output current slowly, record the current when V<sub>OUT</sub> decrease 98% of V<sub>OUT</sub>.

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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