



32V, 7 μ A IQ CMOS VOLTAGE REGULATOR

DESCRIPTION

The UTC UT72XX Series are a low dropout regulator with 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 30V, thus they are very suitable for high voltage application.

FEATURES

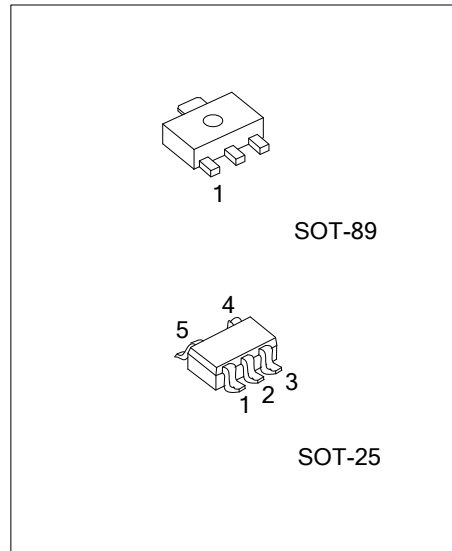
- * High output voltage accuracy: $\pm 3\%$
- * Low dropout: TYP. 40mV
- * Ultra low quiescent current: TYP. 7 μ A
- * Low temperature-drift coefficient of V_{OUT} : TYP. ± 50 ppm/ $^{\circ}$ C
- * Wide Input voltage range: 0~32V

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UT72XXL-AB3-C-R	UT72XXG-AB3-C-R	SOT-89	G	I	O	-	-	Tape Reel
UT72XXL-AF5-C-R	UT72XXG-AF5-C-R	SOT-25	I	G	N	N	O	Tape Reel

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

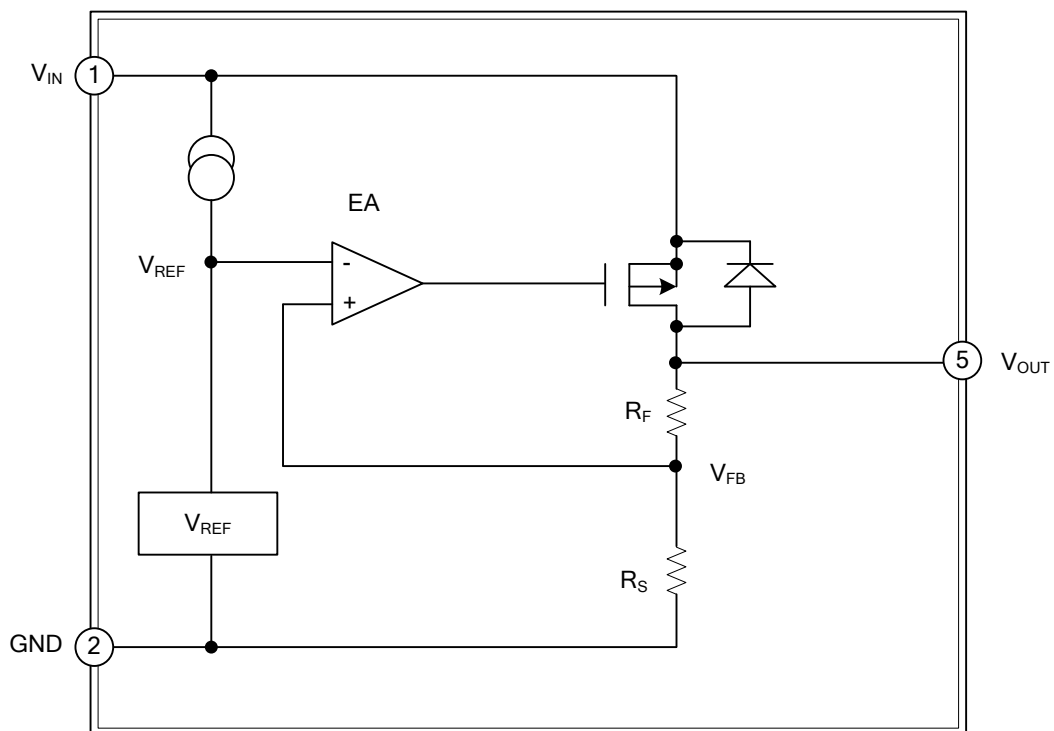
<p>UT72XXG-AB3-C-R</p>	<p>(1)Packing Type</p> <p>(2)Pin Assignment</p> <p>(3)Package Type</p> <p>(4)Green Package</p> <p>(5)Output Voltage Code</p>	<p>(1) R: Tape Reel</p> <p>(2) refer to Pin Assignment</p> <p>(3) AB3: SOT-89, AF5: SOT-25</p> <p>(4) G: Halogen Free and Lead Free, L: Lead Free</p> <p>(5) xx: refer to Marking Information</p>
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89		
SOT-25	30:3.0V 33:3.3V 36:3.6V 44:4.4V 50:5.0V	

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	32	V
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Power Dissipation	SOT-89	P_D	350
	SOT-25		240
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 UT7230

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5V, I_{OUT}=10mA$	2.94	3.0	3.06	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=5V$	40	50		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	60	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$4V \leq V_{IN} \leq 32V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=5V, 1.0mA \leq I_{OUT} \leq 30mA$		60	100	mV
Supply Current	I_{SS1}	$V_{IN}=5V$		7	15	uA
Input Voltage	V_{IN}				32	V

UTC UT7233

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.3V, I_{OUT}=10mA$	3.234	3.3	3.366	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=5.3V$	40	50		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	60	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$4.3V \leq V_{IN} \leq 32V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=5.3V, 1.0mA \leq I_{OUT} \leq 30mA$		60	100	mV
Supply Current	I_{SS1}	$V_{IN}=5.3V$		7	15	uA
Input Voltage	V_{IN}				32	V

UTC UT7236

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.6V, I_{OUT}=10mA$	3.528	3.6	3.672	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=5.6V$	40	50		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	60	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$4.6V \leq V_{IN} \leq 32V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=5.6V, 1.0mA \leq I_{OUT} \leq 30mA$		60	100	mV
Supply Current	I_{SS1}	$V_{IN}=5.6V$		7	15	uA
Input Voltage	V_{IN}				32	V

■ ELECTRICAL CHARACTERISTICS (Cont.)

UTC UT7244

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=6.4V, I_{OUT}=10mA$	4.312	4.4	4.488	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=6.4V$	40	50		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	60	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$5.4V \leq V_{IN} \leq 32V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=6.4V, 1.0mA \leq I_{OUT} \leq 30mA$		60	100	mV
Supply Current	I_{SS1}	$V_{IN}=6.4V$		7	15	uA
Input Voltage	V_{IN}				32	V

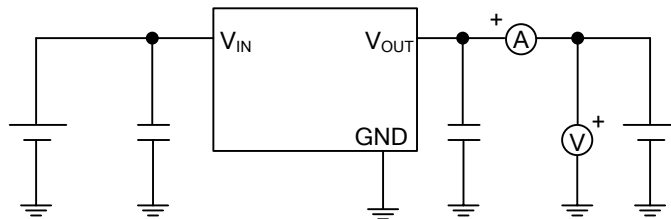
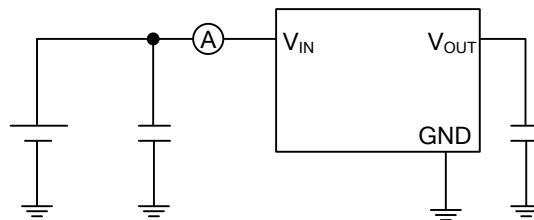
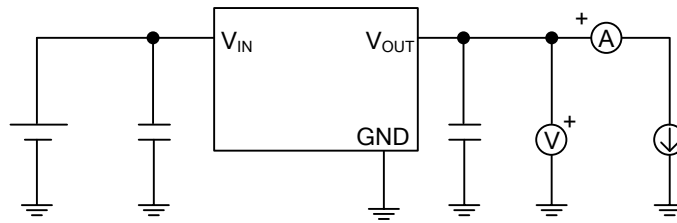
UTC UT7250

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=7V, I_{OUT}=10mA$	4.90	5.0	5.10	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=7V$	40	50		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	60	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$6V \leq V_{IN} \leq 32V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=7V, 1.0mA \leq I_{OUT} \leq 30mA$		60	100	mV
Supply Current	I_{SS1}	$V_{IN}=7V$		7	15	uA
Input Voltage	V_{IN}				32	V

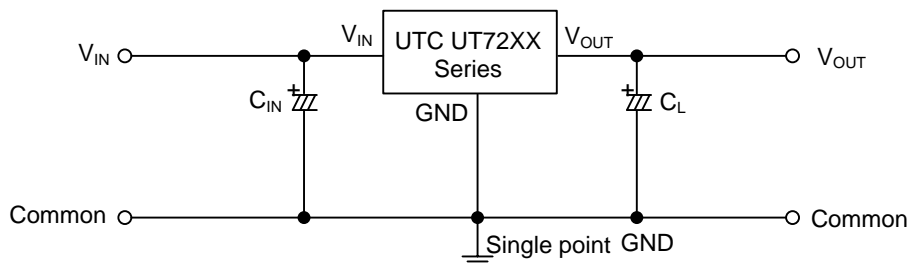
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

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



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

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