



UR73XX

CMOS IC

36-V INPUT VOLTAGE 300MA , ULTRA LOW IQ VOLTAGE REGULATOR

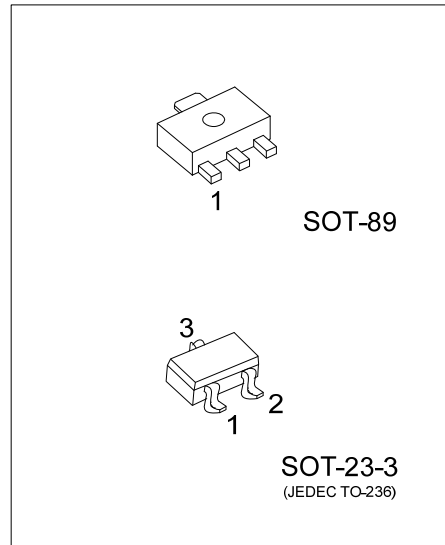
■ DESCRIPTION

The UTC **UR73XX** 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 μ A (Typ.)
- * Low temperature-drift coefficient of V_{OUT} : ± 50 ppm/ $^{\circ}$ C (Typ.)
- * Wide Input voltage range: 2.5~ 36V

■ ORDERING INFORMATION



Ordering Number		Package	Pin Assignment				Packing
Lead Free	Halogen Free		Pin Code	1	2	3	
UR73XXL-AB3-x-R	UR73XXG-AB3-x-R	SOT-89	A	G	O	I	Tape Reel
			B	O	G	I	
			C	G	I	O	
			D	I	G	O	
UR73XXG-AE2-x-R	UR73XXG-AE2-x-R	SOT-23-3	Pin Code	1	2	3	Tape Reel
			1	G	I	O	
			2	O	I	G	
			3	G	O	I	
			4	I	O	G	

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

<p>UR73XXG-AB3-x-R</p> <p>(1)Packing Type (2)Pin Assignment (2)Package Type (4)Green Package (5)Output Voltage Code</p>	<p>(1) R: Tape Reel (2) refer to Pin Assignment (3) AB3: SOT-89, AE2: SOT-23-3 (4) G: Halogen Free and Lead Free, L: Lead Free (5) XX: Refer to Marking Information</p>
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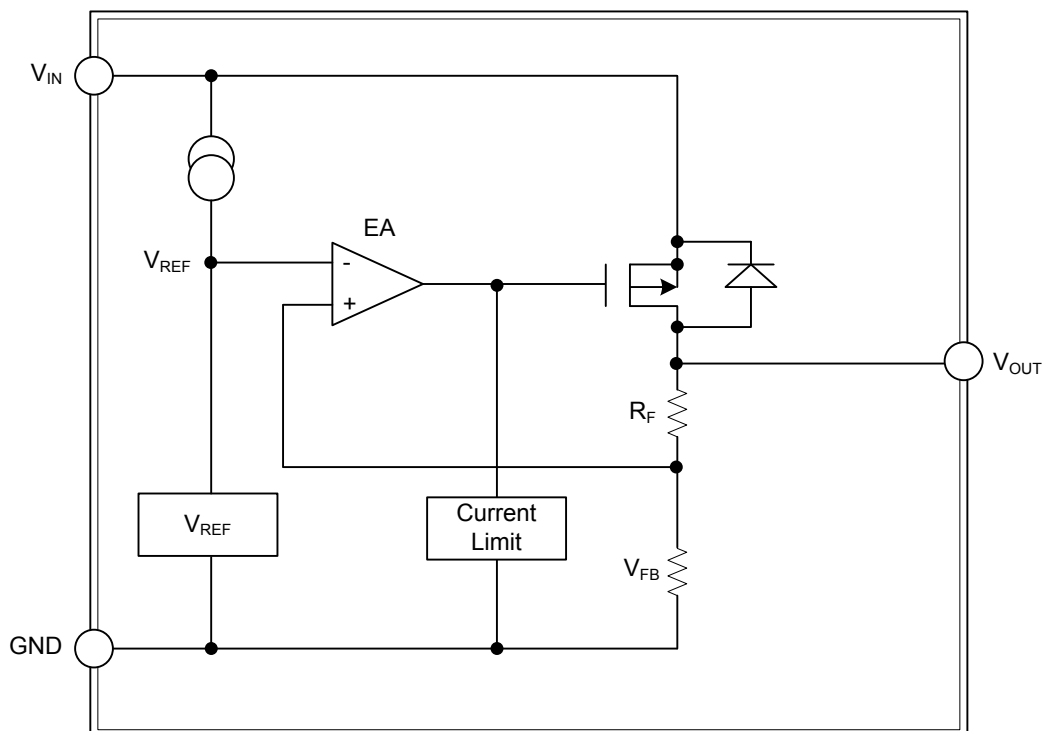
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	15: 1.5V	
	18: 1.8V	
	21: 2.1V	
	23: 2.3V	
	25: 2.5V	
	27: 2.7V	
SOT-23-3	30: 3.0V	
	33: 3.3V	
	36: 3.6V	
	40: 4.0V	
	50: 5.0V	

PIN DESCRIPTION

PIN NAME	DESCRIPTION
V_{OUT}	Regulated output voltage
GND	Ground
V_{IN}	Input voltage

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	36	V
Power Dissipation	SOT-89	500	mW
	SOT-23-3	300	mW
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 UR7315

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	1.47	1.5	1.53	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1\text{mA}$		45	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	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±50	±100	Ppm/°C
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	uA

UTC UR7318

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	1.764	1.8	1.836	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1\text{mA}$		45	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	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±50	±100	Ppm/°C
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	uA

UTC UR7321

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}$	2.058	2.1	2.142	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1\text{mA}$		40	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	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0\text{mA} \leq I_{OUT} \leq 50\text{mA}$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10\text{mA}, -40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		±50	±100	Ppm/°C
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	uA

■ ELECTRICAL CHARACTERISTICS (Cont.)

UTC UR7323

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	2.254	2.3	2.346	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7325

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	2.45	2.5	2.55	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7327

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	2.646	2.7	2.754	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7330

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	2.94	3.0	3.06	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	100	200		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		40	100	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

■ ELECTRICAL CHARACTERISTICS (Cont.)

UTC UR7333

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	3.234	3.3	3.366	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	200	300		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		30	80	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7336

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	3.528	3.6	3.672	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	200	300		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		30	65	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7340

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	3.92	4.0	4.08	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	200	300		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		30	65	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

UTC UR7344

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	4.312	4.4	4.488	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	200	300		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		30	65	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

■ ELECTRICAL CHARACTERISTICS (Cont.)

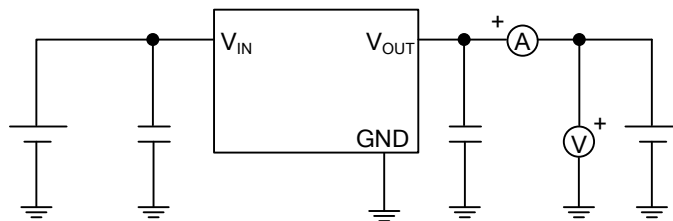
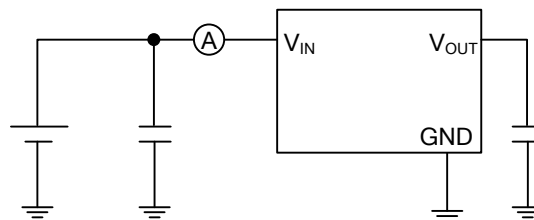
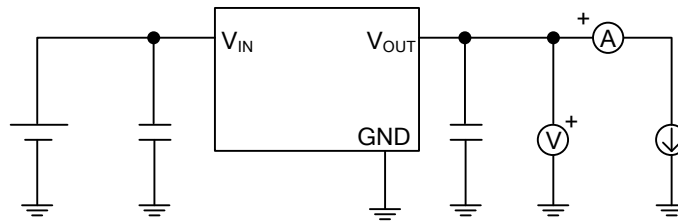
UTC UR7350

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA$	4.9	5.0	5.1	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	200	300		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1mA$		30	65	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V, I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V, 1.0mA \leq I_{OUT} \leq 50mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V, I_{OUT}=10mA, -40^\circ C \leq T_A \leq 85^\circ C$		± 50	± 100	Ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		1.2	3.0	μA

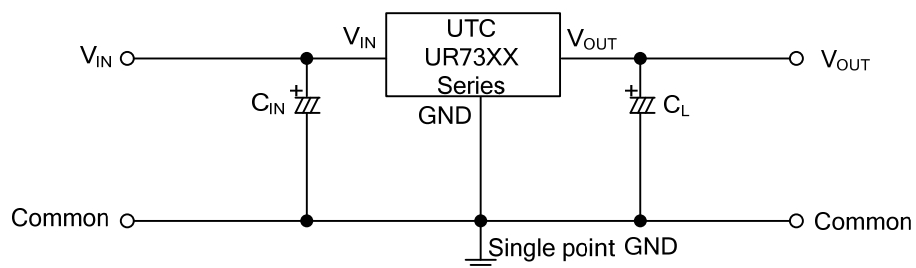
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

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



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

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