



UR75XXS

Preliminary

CMOS IC

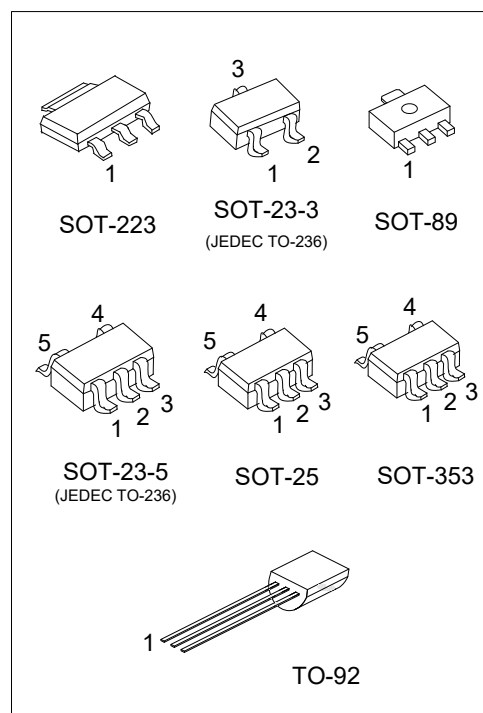
HIGH VOLTAGE , ULTRA LOW
IQ VOLTAGE REGULATOR

■ DESCRIPTION

The UTC **UR75XXS** 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 40V, thus they are very suitable for high voltage application.

■ FEATURES

- * High output voltage accuracy: $\pm 2\%$
- * Ultra low quiescent current: $2.8\mu A$ (Typ.)
- * Wide Input voltage range: $0 \sim 40V$



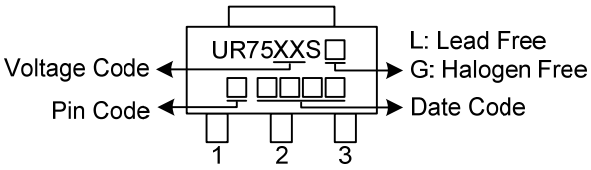
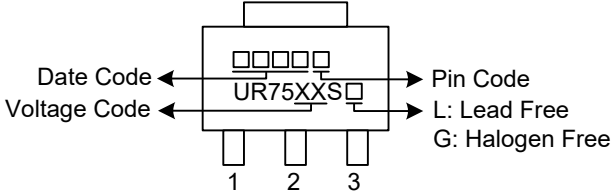
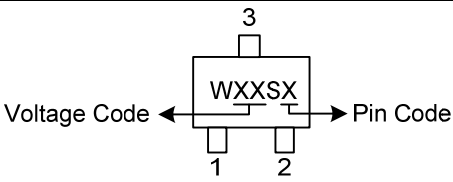
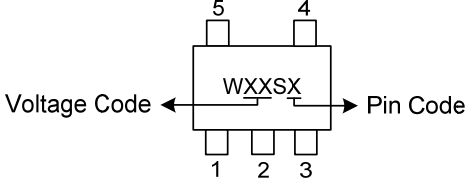
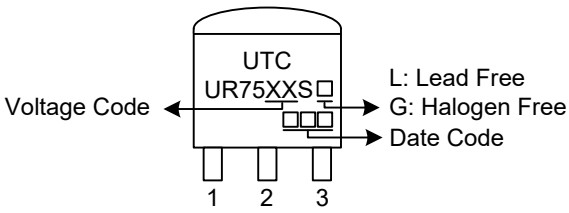
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR75XXSL-AA3-C-R	UR75XXSG-AA3-C-R	SOT-223	G	I	O	-	-	Tape Reel
UR75XXSL-AA3-D-R	UR75XXSG-AA3-D-R	SOT-223	I	G	O	-	-	Tape Reel
UR75XXSL-AB3-R	UR75XXSG-AB3-R	SOT-89	G	I	O	-	-	Tape Reel
UR75XXSL-AB3-A-R	UR75XXSG-AB3-A-R	SOT-89	G	O	I	-	-	Tape Reel
UR75XXSL-AE2-1-R	UR75XXSG-AE2-1-R	SOT-23-3	G	I	O	-	-	Tape Reel
UR75XXSL-AE2-2-R	UR75XXSG-AE2-2-R	SOT-23-3	O	I	G	-	-	Tape Reel
UR75XXSL-AE2-3-R	UR75XXSG-AE2-3-R	SOT-23-3	G	O	I	-	-	Tape Reel
UR75XXSL-AE2-4-R	UR75XXSG-AE2-4-R	SOT-23-3	I	O	G	-	-	Tape Reel
UR75XXSL-AE5-C-R	UR75XXSG-AE5-C-R	SOT-23-5	I	G	N	N	O	Tape Reel
UR75XXSL-AE5-F-R	UR75XXSG-AE5-F-R	SOT-23-5	G	I	O	N	N	Tape Reel
UR75XXSL-AF5-C-R	UR75XXSG-AF5-C-R	SOT-25	I	G	N	N	O	Tape Reel
UR75XXSL-AF5-E-R	UR75XXSG-AF5-E-R	SOT-25	O	G	I	N	N	Tape Reel
UR75XXSL-AF5-F-R	UR75XXSG-AF5-F-R	SOT-25	G	I	O	N	N	Tape Reel
UR75XXSL-AL5-C-R	UR75XXSG-AL5-C-R	SOT-353	I	G	N	N	O	Tape Reel
UR75XXSL-T92-B	UR75XXSG-T92-B	TO-92	G	I	O	-	-	Tape Box
UR75XXSL-T92-K	UR75XXSG-T92-K	TO-92	G	I	O	-	-	Bulk

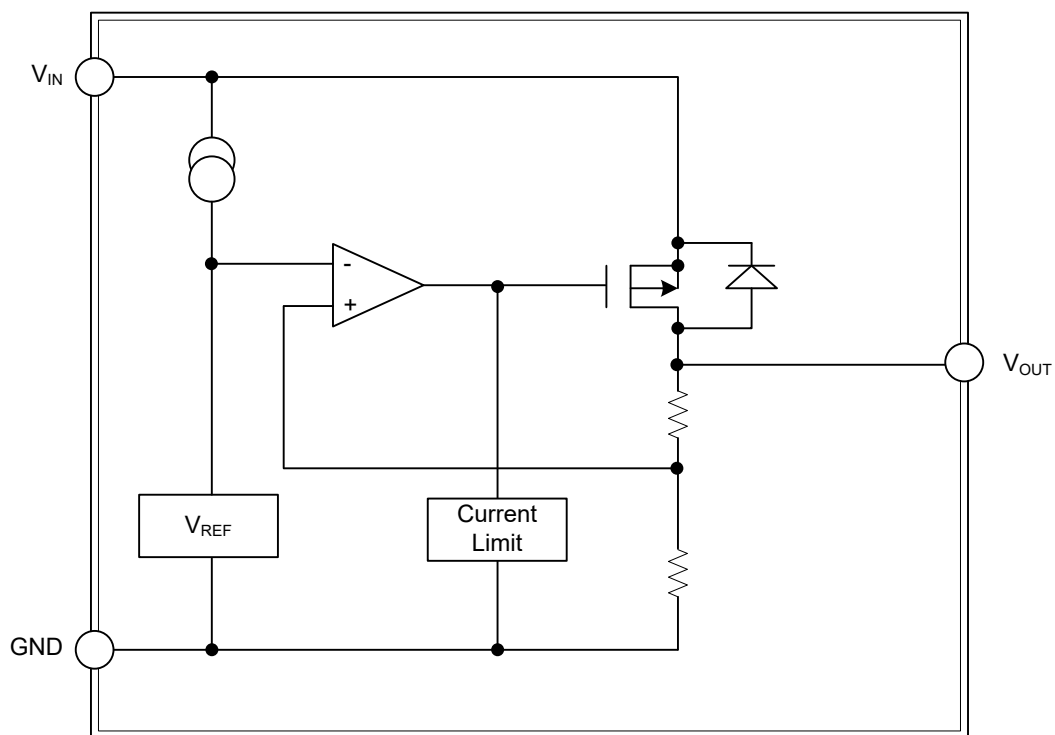
Note: Pin assignment: G: Ground I: V_{IN} O: V_{OUT} N: NC

	(1)Packing Type	(1) R: Tape Reel, B: Tape Box, K: Bulk
	(2)Pin Assignment	(2) refer to Pin Assignment
	(3)Package Type	(3) AA3: SOT-223, AB3: SOT-89, AE2: SOT-23-3 AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 T92: TO-92
	(4)Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free
	(5)Output Voltage Code	(5) XX: 33:3.3V, 50:5.0V

MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	33:3.3V 50:5.0V	 UR75XXS Voltage Code ← (left of UR75XXS) Pin Code ← (below UR75XXS) → (right of UR75XXS) L: Lead Free G: Halogen Free Date Code 1 2 3
SOT-89		 UR75XXS Date Code ← (left of UR75XXS) Voltage Code ← (below UR75XXS) → (right of UR75XXS) Pin Code L: Lead Free G: Halogen Free 1 2 3
SOT-23-3		 WXXSX Voltage Code ← (left of WXXSX) Pin Code → (right of WXXSX) 1 2
SOT-23-5 SOT-25 SOT-353		 WXXSX Voltage Code ← (left of WXXSX) Pin Code → (right of WXXSX) 1 2 3
TO-92		 UTC UR75XXS Voltage Code ← (left of UR75XXS) → (right of UR75XXS) L: Lead Free G: Halogen Free Date Code 1 2 3

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	40	V
Power Dissipation	SOT-223	P_D	600	mW
	SOT-23-3		330	mW
	SOT-23-5/SOT-25		350	mW
	SOT-353		250	mW
	SOT-89		550	mW
	TO-92		625	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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	θ_{JA}	165	°C/W
	SOT-23-3		300	°C/W
	SOT-23-5/SOT-25		280	°C/W
	SOT-353		400	°C/W
	SOT-89		180	°C/W
	TO-92		160	°C/W
Junction to Case	SOT-223	θ_{JC}	15	°C/W
	SOT-23-3/SOT-23		120	°C/W
	SOT-23-5/SOT-25		90	°C/W
	SOT-353		130	°C/W
	SOT-89		50	°C/W
	TO-92		83	°C/W

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

UTC UR7533S

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}	$V_{IN}=V_{OUT}+2V$	100	150		mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=1\text{mA}$		30	80	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 36V$, $I_{OUT}=1\text{mA}$		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	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10\text{mA}$, $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$			±200	ppm/°C
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		2.8	4.0	μA

■ ELECTRICAL CHARACTERISTICS (Cont.)

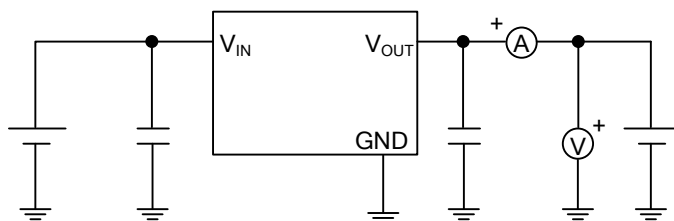
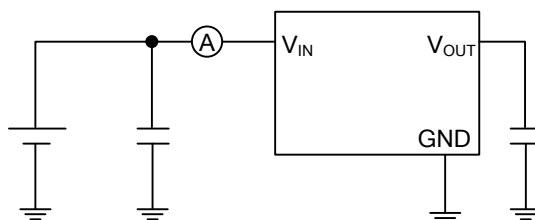
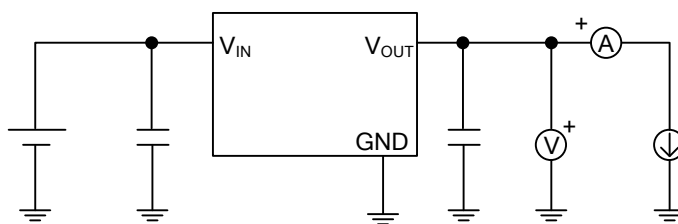
UTC UR7550S

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}	$V_{IN}=V_{OUT}+2V$	100	150		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	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10mA$, $-40^{\circ}C \leq T_A \leq 85^{\circ}C$			± 200	ppm/ $^{\circ}C$
Supply Current	I_{SS1}	$V_{IN}=V_{OUT}+2V$		2.8	4.0	μA

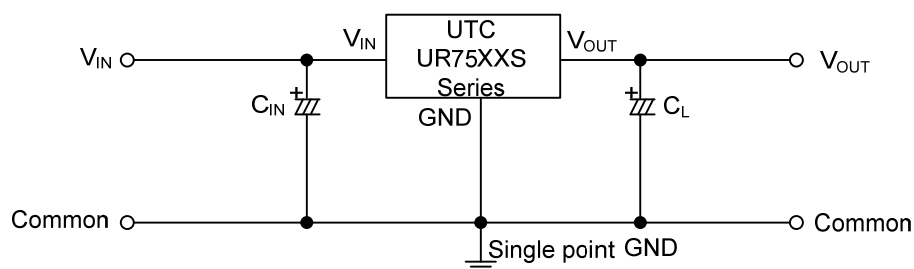
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

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



$$C_{IN} > 1.0 \mu F$$

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

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