



UR76XXCE

CMOS IC

36-V INPUT VOLTAGE 500MA ULTRA LOW IQ VOLTAGE REGULATOR

DESCRIPTION

The UTC **UR76XXCE** 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.

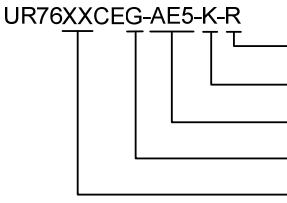
FEATURES

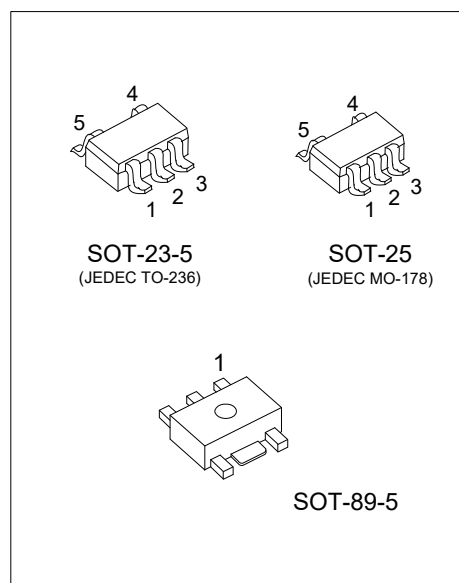
- * High output voltage accuracy: $\pm 2\%$
- * Ultra low quiescent current: 6uA/15uA(Typ.)
- * Low temperature-drift coefficient of V_{OUT} : $\pm 100\text{ppm}/^{\circ}\text{C}$ (Typ.)
- * Wide Input voltage range: 2.5~36V

ORDERING INFORMATION

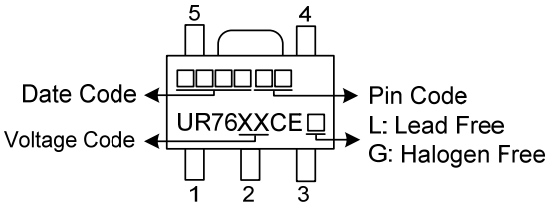
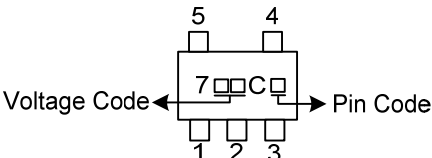
Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR76XXCEL-AB5-R	UR76XXCEG-AB5-R	SOT-89-5	O	G	C	G	I	Tape Reel
UR76XXCEL-AE5-R	UR76XXCEG-AE5-R	SOT-23-5	O	G	C	G	I	Tape Reel
UR76XXCEL-AE5-K-R	UR76XXCEG-AE5-K-R	SOT-23-5	I	G	C	N	O	Tape Reel
UR76XXCEL-AE5-U-R	UR76XXCEG-AE5-U-R	SOT-23-5	O	G	I	N	C	Tape Reel
UR76XXCEL-AF5-K-R	UR76XXCEG-AF5-K-R	SOT-25	I	G	C	N	O	Tape Reel
UR76XXCEL-AF5-U-R	UR76XXCEG-AF5-U-R	SOT-25	O	G	I	N	C	Tape Reel

Note: Pin Assignment: I: V_{IN} G: GND C: CE N: NC O: V_{OUT}

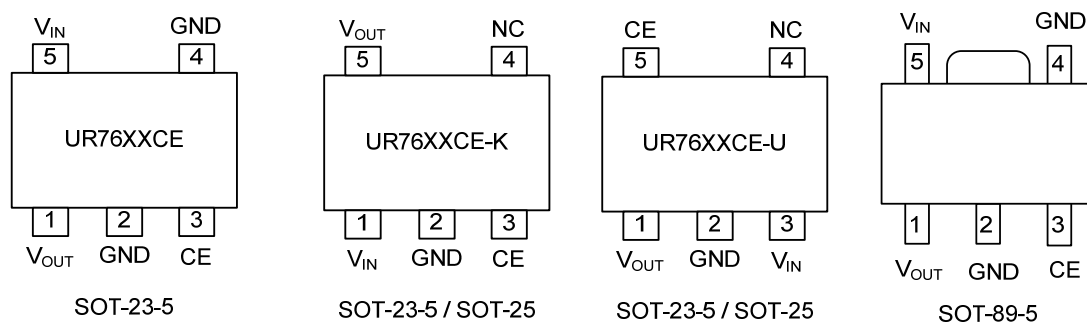
	(1)Packing Type	(1) R: Tape Reel
	(2)Pin Assignment	(2) refer to Pin Assignment
	(3)Package Type	(3) AB5: SOT-89-5, AE5: SOT-23-5, AF5: SOT-25
	(4)Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free
	(5)Output Voltage Code	(5) XX: Refer to Marking Information



MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89-5	33: 3.3V 36: 3.6V 50: 5.0V	 Date Code Voltage Code Pin Code L: Lead Free G: Halogen Free
SOT-23-5 SOT-25		 Voltage Code Pin Code

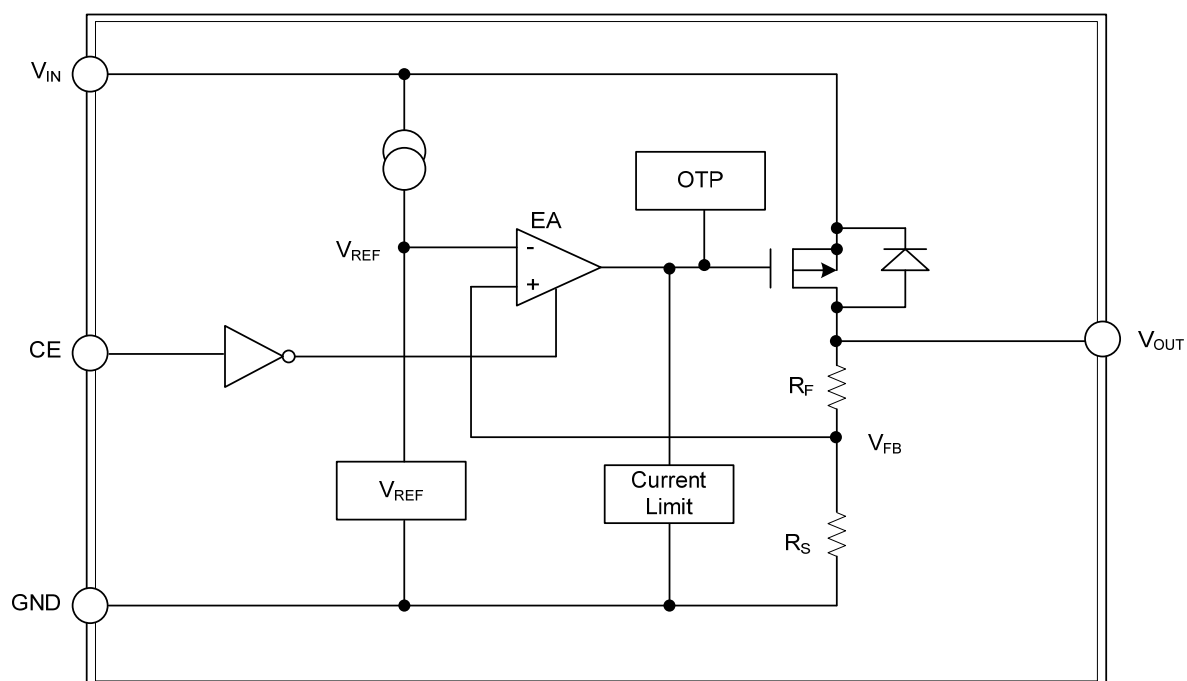
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.			PIN NAME	DESCRIPTION
UR76XXCE SOT-89-5 SOT-23-5	UR76XXCE-K SOT-23-5 SOT-25	UR76XXCE-U SOT-23-5 SOT-25		
1	5	1	V_{OUT}	Regulated output voltage
2, 4	2	2	GND	Ground
3	3	5	CE	Enable
5	1	3	V_{IN}	Input voltage
-	4	4	NC	No connect

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	36	V
Input Voltage (CE Pin)		V_{CE}	36	V
Output Voltage		V_{OUT}	12	V
Power Dissipation	SOT-89-5	P_D	500	mW
	SOT-23-5		350	mW
	SOT-25			
Operating Temperature Range		T_{OPR}	-40 ~ +125	°C
Storage Temperature Range		T_{STG}	-40 ~ +150	°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 UR7633CE

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}	$V_{IN}=V_{OUT}+2V$	500			mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=100\text{mA}$		160	200	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}	$V_{IN}=V_{OUT}+2V$, $1.0\text{mA} \leq I_{OUT} \leq 100\text{mA}$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10\text{mA}$, $-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$		± 100		ppm/°C
Power Supply Rejection Ratio	PSRR	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=30\text{mA}$, $f=1\text{KHz}$		45		dB
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$		6	10	μA
		UR7633CE-A UR7633CE-B		15	20	μA
Thermal Shutdown	TSD			160		°C
CE Input Voltage "H"	V_{CEH}	Only with CE pin; ON for "H"		$V_{IN}-0.5$	V_{IN}	V
CE Input Voltage "L"	V_{CEL}	Only with CE pin; OFF for "L"	0	0.5		V

UTC UR7636CE

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10\text{mA}$	3.528	3.6	3.672	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	500			mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=100\text{mA}$		160	200	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}	$V_{IN}=V_{OUT}+2V$, $1.0\text{mA} \leq I_{OUT} \leq 100\text{mA}$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10\text{mA}$, $-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$		± 100		ppm/°C
Power Supply Rejection Ratio	PSRR	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=30\text{mA}$, $f=1\text{KHz}$		45		dB
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$		6	10	μA
		UR7636CE-A UR7636CE-B		15	20	μA
Thermal Shutdown	TSD			160		°C
CE Input Voltage "H"	V_{CEH}	Only with CE pin; ON for "H"		$V_{IN}-0.5$	V_{IN}	V
CE Input Voltage "L"	V_{CEL}	Only with CE pin; OFF for "L"	0	0.5		V

■ ELECTRICAL CHARACTERISTICS (Cont.)

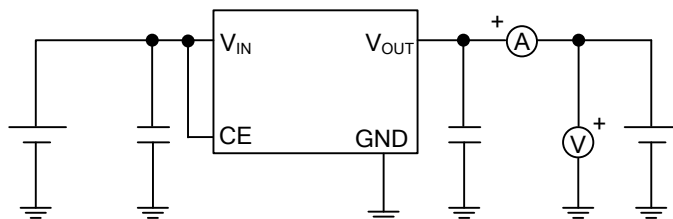
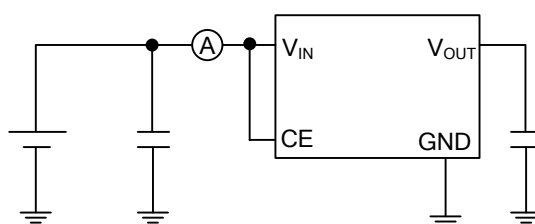
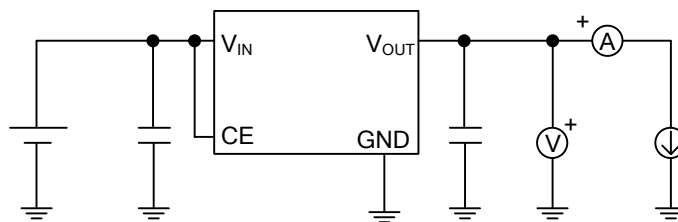
UTC UR7650CE

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}	$V_{IN}=V_{OUT}+2V$	500			mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=100mA$		160	200	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}	$V_{IN}=V_{OUT}+2V$, $1.0mA \leq I_{OUT} \leq 100mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \cdot V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10mA$, $-40^{\circ}C \leq T_A \leq 85^{\circ}C$		± 100		ppm/ $^{\circ}C$
Power Supply Rejection Ratio	PSRR	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=30mA$, $f=1KHz$		45		dB
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$ UR7650CE-A		6	10	μA
		UR7650CE-B		15	20	μA
Thermal Shutdown	TSD			160		$^{\circ}C$
CE Input Voltage "H"	V_{CEH}	Only with CE pin; ON for "H"		$V_{IN}-0.5$	V_{IN}	V
CE Input Voltage "L"	V_{CEL}	Only with CE pin; OFF for "L"	0	0.5		V

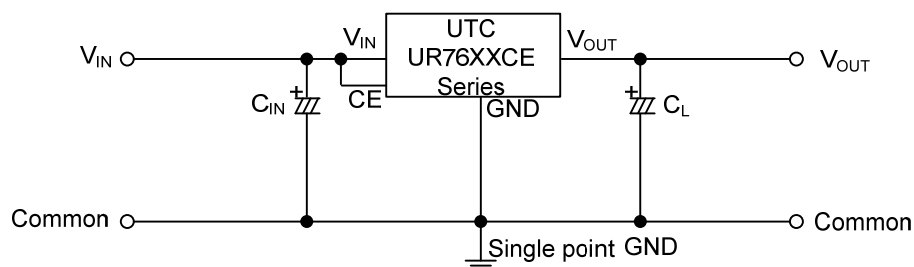
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

2. $V_{drop}=V_{IN1}-(V_{OUT} \times 0.98)$, $V_{OUT}: V_{IN}=V_{OUT}+2V$, $I_{OUT}=1mA$

■ TEST CIRCUIT



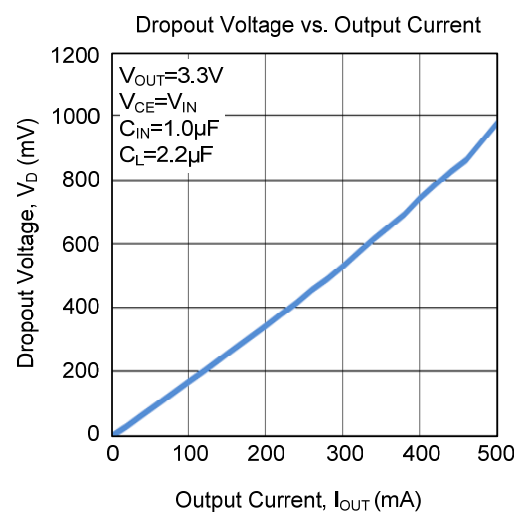
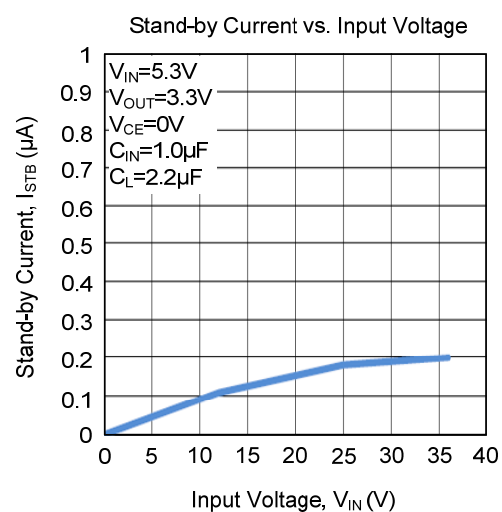
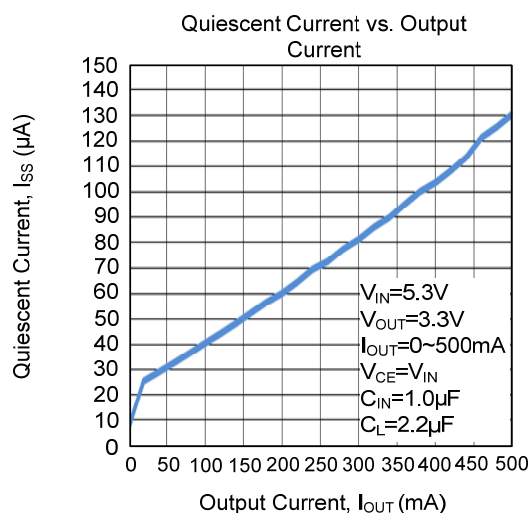
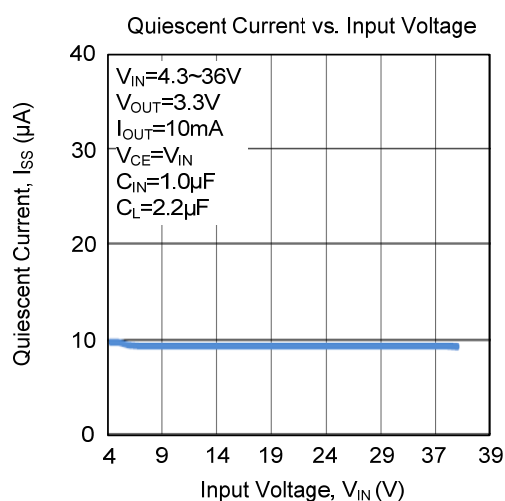
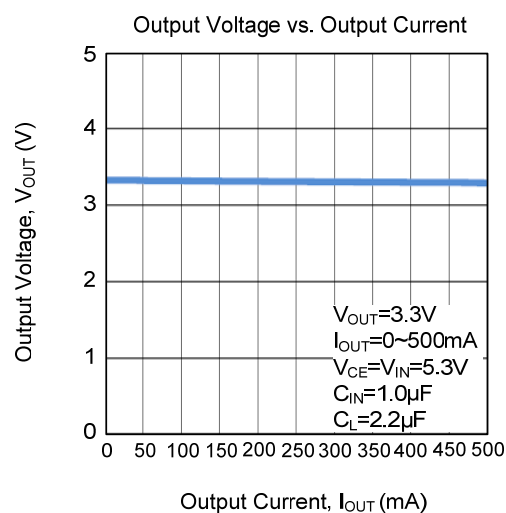
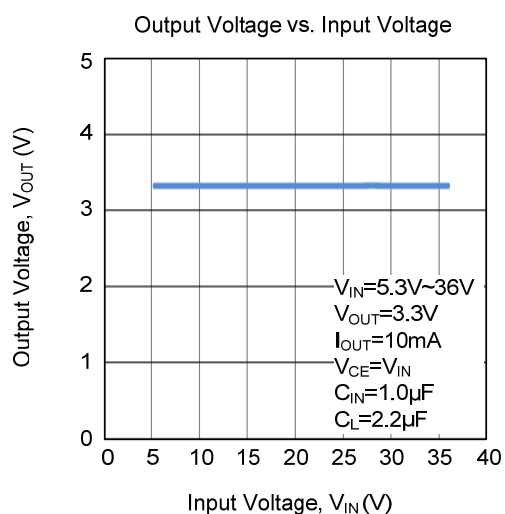
■ TYPICAL APPLICATION CIRCUIT



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

$$C_L > 2.2\mu F$$

TYPICAL CHARACTERISTICS



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