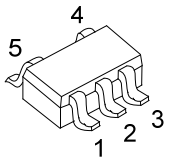
18-V INPUT VOLTAGE 0.5A LOW IQ VOLTAGE REGULATOR



SOT-25
(JEDEC MO-178)

■ DESCRIPTION

The UTC **UR66XX** Series are a low dropout regulator with wide input voltage range, high output voltage accuracy, low quiescent current and low dropout. This regulator is based on a CMOS process, and it's input voltage could high enough more than 18V, thus they are very suitable for high voltage application.

■ FEATURES

* High output voltage accuracy: ±2%
* Low quiescent current: 15μA (Typ.)
* Low temperature-drift coefficient of V_{OUT}: ±100ppm/°C (Typ.)
* Wide Input voltage range: 2.5~18V

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR66XXL-AF5-K-R	UR66XXG-AF5-K-R	SOT-25	I	G	C	N	O	Tape Reel

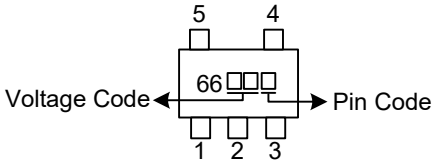
Note: Pin Assignment: I: V_{IN} G: GND C: CE N: NC O: V_{OUT}

UR66XXG-AF5-K-R

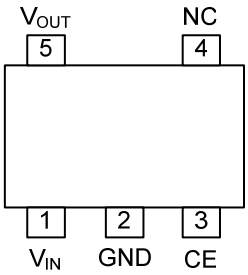
(1)Packing Type
(2)Pin Assignment
(3)Package Type
(4)Green Package
(5)Output Voltage Code

(1) R: Tape Reel
(2) refer to Pin Assignment
(3) AF5: SOT-25
(4) G: Halogen Free and Lead Free, L: Lead Free
(5) XX: Refer to Marking Information

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-25	33: 3.3V 36: 3.6V 50: 5.0V	

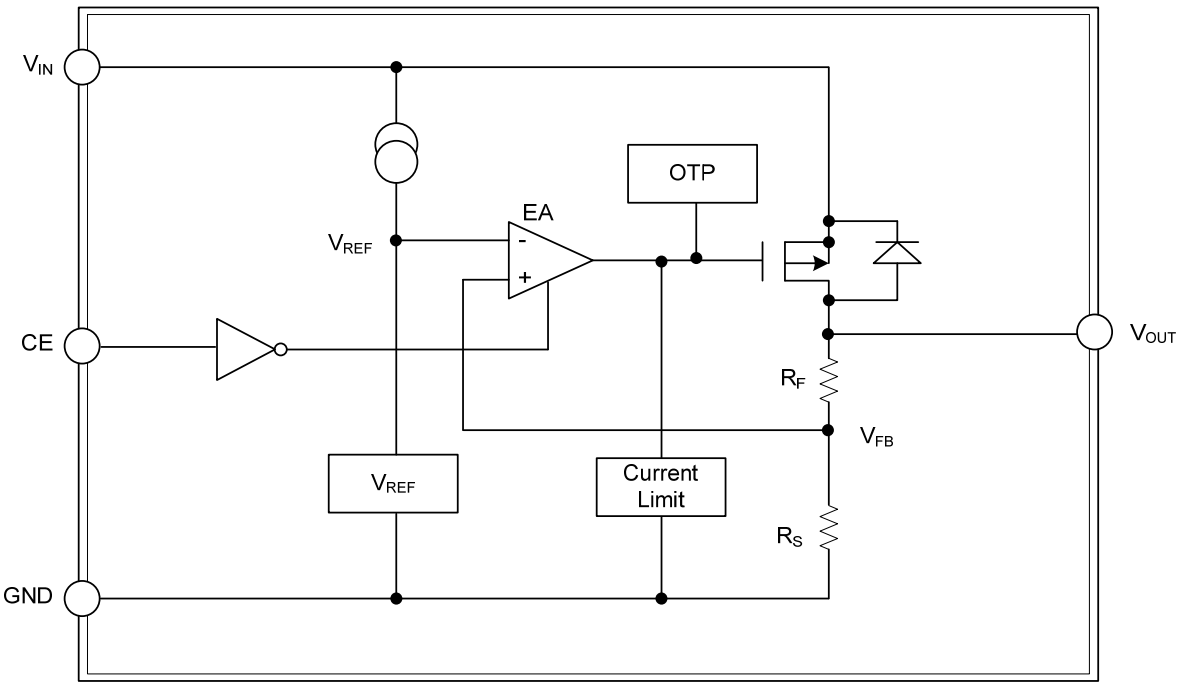
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{IN}	Input voltage.
2	GND	Ground.
3	CE	Enable.
4	NC	No connect.
5	V_{OUT}	Regulated output voltage.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	18	V
Input Voltage (CE Pin)	V_{CE}	18	V
Output Voltage	V_{OUT}	12	V
Power Dissipation	P_D	300	mW
Operating Temperature Range	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STG}	-40 ~ +125	°C

Note: 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.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

UTC UR6633

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	500			mA
Dropout Voltage (Note 2)	V_{DROP}	I_{OUT}=100mA		160	200	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}$	V_{OUT}+2V≤V_{IN}≤18V, I_{OUT}=1mA		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	V_{IN}=V_{OUT}+2V, 1.0mA≤I_{OUT}≤100mA		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \bullet V_{OUT}}$	V_{IN}=V_{OUT}+2V, I_{OUT}=10mA , -40°C≤T_A≤85°C		±100		ppm/°C
Supply Current	I_{SS}	V_{IN}=V_{OUT}+2V		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 UR6636

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	500			mA
Dropout Voltage (Note 2)	V_{DROP}	I_{OUT}=100mA		160	200	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}$	V_{OUT}+2V≤V_{IN}≤18V, I_{OUT}=1mA		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	V_{IN}=V_{OUT}+2V, 1.0mA≤I_{OUT}≤100mA		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \bullet V_{OUT}}$	V_{IN}=V_{OUT}+2V, I_{OUT}=10mA , -40°C≤T_A≤85°C		±100		ppm/°C
Supply Current	I_{SS}	V_{IN}=V_{OUT}+2V		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.)

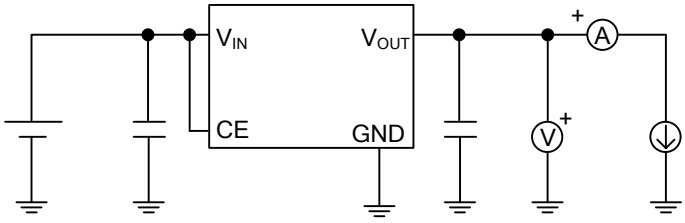
UTC UR6650

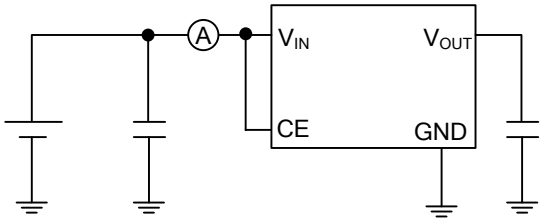
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10mA$	4.9	5.0	5.1	V
Output Current (Note 1)	I_{OUT}	$V_{IN}=V_{OUT}+2V$	500			mA
Dropout Voltage (Note 2)	V_{DROP}	$I_{OUT}=100mA$		160	200	mV
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \bullet V_{OUT}}$	$V_{OUT}+2V \le V_{IN} \le 18V$, $I_{OUT}=1mA$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN}=V_{OUT}+2V$, $1.0mA \le I_{OUT} \le 100mA$		30	80	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT1}}{T_A \bullet V_{OUT}}$	$V_{IN}=V_{OUT}+2V$, $I_{OUT}=10mA$, $-40°C \le T_A \le 85°C$		±100		ppm/°C
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$		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

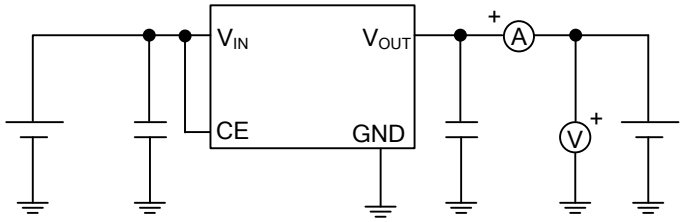
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT}.

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

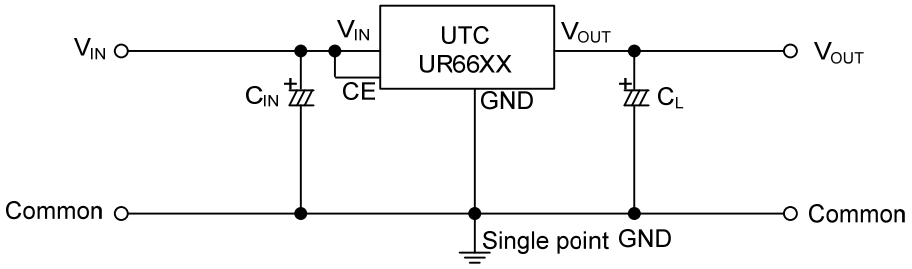
■ TEST CIRCUIT







■ TYPICAL APPLICATION CIRCUIT



C_{IN}>1.0μF
C_L>2.2μF