

**UR56XXCE**

Preliminary

CMOS IC**18-V INPUT VOLTAGE 500MA
ULTRA LOW IQ VOLTAGE
REGULATOR****■ DESCRIPTION**

The UTC **UR56XXCE** 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 18V, thus they are very suitable for high voltage application.

■ FEATURES

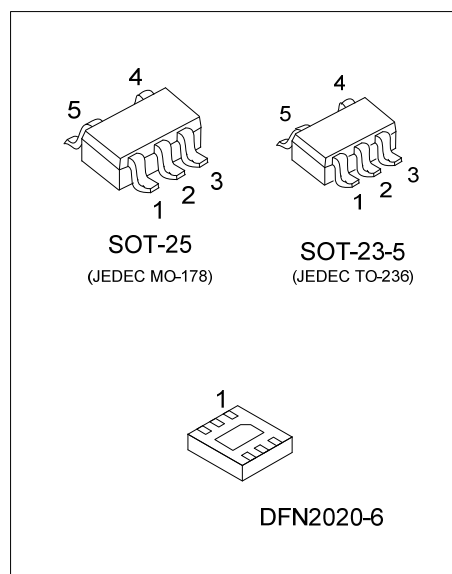
- * High output voltage accuracy: $\pm 2\%$
- * Ultra low quiescent current: $6\mu\text{A}$ / $15\mu\text{A}$ (Typ.)
- * Low temperature-drift coefficient of V_{OUT} : $\pm 100\text{ppm}/^\circ\text{C}$ (Typ.)
- * Wide Input voltage range: 2.5 ~18V

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR56XXCEL-AE5-K-R	UR56XXCEG-AE5-K-R	SOT-23-5	I	G	C	N	O	Tape Reel
UR56XXCEL-AF5-K-R	UR56XXCEG-AF5-K-R	SOT-25	I	G	C	N	O	Tape Reel
UR56XXCEL-K06-2020-R	UR56XXCEG-K06-2020-R	DFN2020-6	Refer to PIN DESCRIPTION					Tape Reel

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

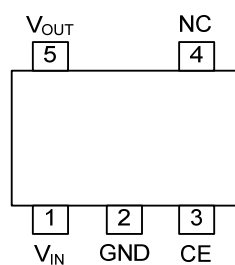
UR56XXCEG-AE5-K-R	(1)Packing Type	(1) R: Tape Reel
	(2)Pin Assignment	(2) refer to Pin Assignment
	(3)Package Type	(3) AE5: SOT-23-5, AF5: SOT-25, K06-2020: DFN2020-6
	(4)Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free
	(5)Output Voltage Code	(5) XX: Refer to Marking Information



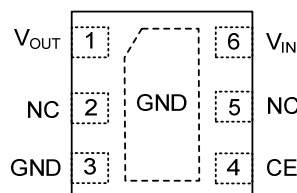
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23-5 SOT-25	33: 3.3V 36: 3.6V 50: 5.0V	
DFN2020-6		

PIN CONFIGURATION



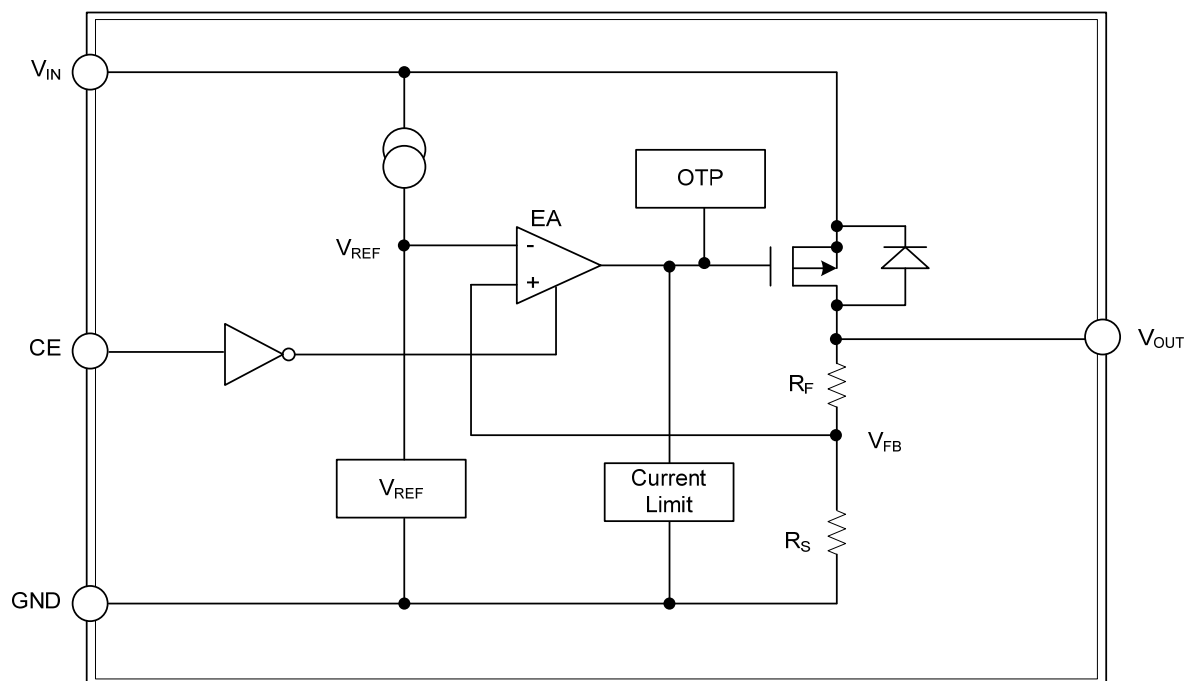
SOT-23-5 / SOT-25

DFN2020-6
(Top View)

PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-23-5 SOT-25	DFN2020-6		
1	6	V _{IN}	Input voltage.
2	3	GND	Ground.
3	4	CE	Enable.
4	2, 5	NC	No connect.
5	1	V _{OUT}	Regulated output voltage.
-	Exposed Pad	GND	Connect exposed pad to GND.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	18	V
Input Voltage (CE Pin)		V_{CE}	18	V
Power Dissipation	SOT-23-5	P_D	350	mW
	SOT-25			
	DFN2020-6		1100 (Note 2)	mW
Operating Temperature Range		T_{OPR}	-40 ~ +125	°C
Storage Temperature Range		T_{STG}	-40 ~ +150	°C

Notes: 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.

2. The data tested by surface mounted on a 2 inch² FR-4 board with 2OZ copper.

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

UTC UR5633CE

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	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V$, $I_{OUT}=1\text{mA}$		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
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$		6	10	μA
		UR5633CE-A		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 UR5636CE

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	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V$, $I_{OUT}=1\text{mA}$		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
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$		6	10	μA
		UR5636CE-A		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.)

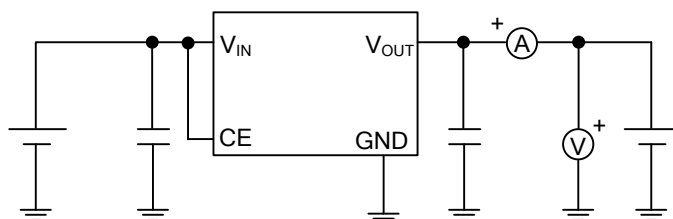
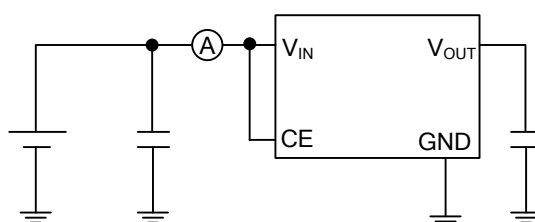
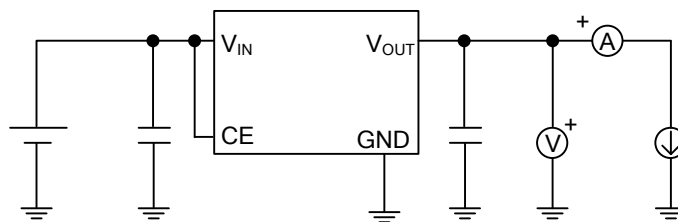
UTC UR5650CE

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	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \cdot V_{OUT}}$	$V_{OUT}+2V \leq V_{IN} \leq 18V$, $I_{OUT}=1mA$		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/ $^{\circ}C$
Supply Current	I_{SS}	$V_{IN}=V_{OUT}+2V$ UR5650CE-A		6	10	μA
		UR5650CE-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

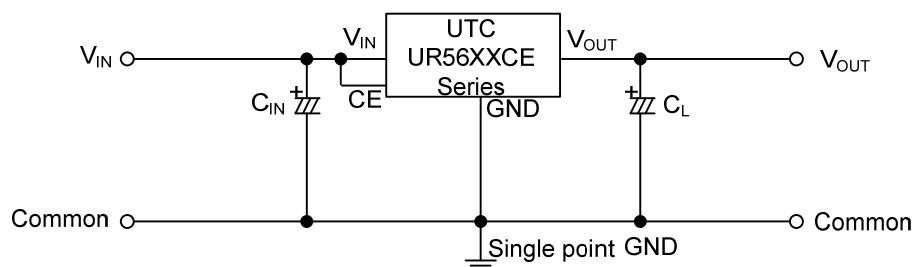
Notes: 1. Increase the output current slowly, record the current when V_{OUT} decrease 98% of V_{OUT} .

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



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

$C_L > 2.2 \mu F$ (tantalum capacitor)

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