



800MA LDO REGULATOR

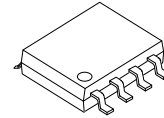
■ DESCRIPTION

The UTC **UR1170** is a typical LDO (linear regulator) with the features of high output voltage accuracy, low supply current, low ON-resistance, and high ripple rejection.

During operation of the UTC **UR1170**, the dropout voltage is very low and the response of line transient and load transient are very well.

Internally, there're many functions of UTC **UR1170** which can be seen in the block figure. There are a voltage reference unit, an error amplifier, resistor-net for voltage setting, a current limit circuit, and a chip enable circuit in each UTC **UR1170**.

The UTC **UR1170** can be used as an ideal of the power supply for hand-held communication equipment, such as: power source for portable communication equipment, power source for electrical appliances, for example, cameras, VCRs and camcorders and power source for battery-powered equipment.



SOP-8

■ FEATURES

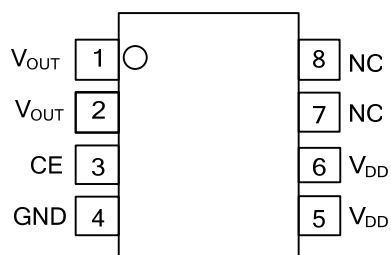
- * Low standby current
- * Ultra-Low supply current
- * Output voltage (stepwise setting with a step of 0.1V in the range of 1.2V~4.0V)
- * Output current (MIN=800mA@ $V_{IN}=V_{OUT}+1.0V$)
- * Low dropout voltage
- * Line regulation
- * High output voltage accuracy
- * Low temperature-drift coefficient of output voltage
- * Built-in thermal shunt circuit
- * Built-in current limit circuit

■ ORDERING INFORMATION

Ordering Number		Package Packing	
Lead Free	Halogen Free		
UR1170xL-S08-T	UR1170xG-S08-T	SOP-8	Tube
UR1170xL-S08-R	UR1170xG-S08-R	SOP-8	Tape Reel

UR1170xL-S08-R	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) S08: SOP-8
	(3)Lead Free	(3) L: Lead Free, G: Halogen Free
	(4)Enable Threshold Level	(4) L: Low, H: High

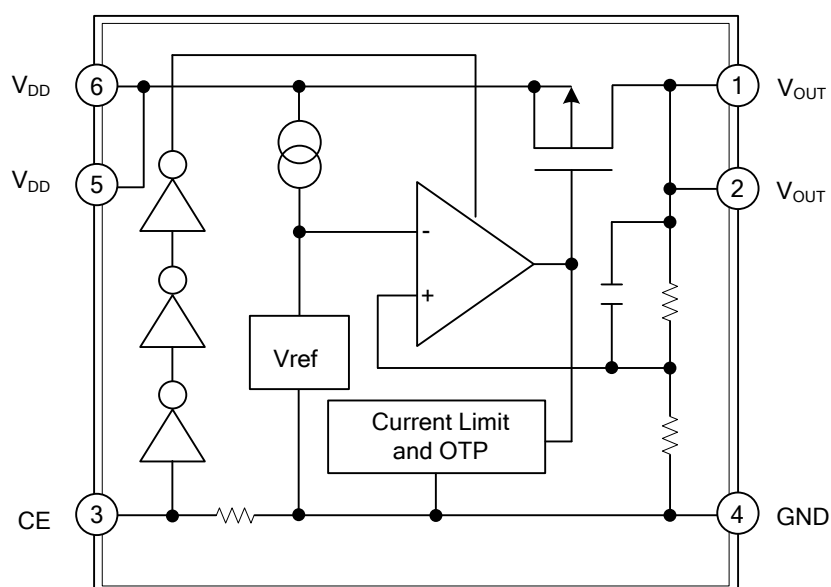
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 2	V_{OUT}	Voltage Regulator Output Pin
3	CE or $\overline{CE}$	Chip Enable Pin Voltage Regulator Output Pin
4	GND	Ground Pin
5, 6	V_{DD} Input	Pin
7, 8	NC	No Connection

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER SYMBOL		RATINGS	UNIT
Input Voltage	V_{IN} 7.0		V
Input Voltage(CE or CE Input Pin)	V_{CE} -0.3~V	$V_{IN}+0.3$ V	
Output Voltage	V_{OUT} -0.3~V	$V_{IN}+0.3$ V	
Output Current	I_{OUT} 1.2		A
Power Dissipation	P_D Internal	ly limited	
Operating Temperature	T_{OPT} -40~	85	°C
Storage Temperature	T_{STG} -55~	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)

UR1170L

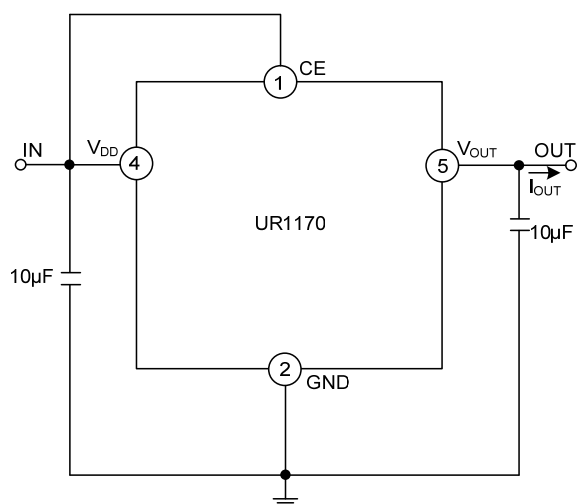
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}				6.0	V
Supply Current1	I_{SS1}	$V_{IN}-V_{OUT}=1.0\text{V}$, $V_{CE}=\text{GND}$		80	160	μA
Standby Current	I_{STB}	$V_{IN}=V_{CE}=6.0\text{V}$		0.1	1.0	μA
Output Voltage	V_{OUT}	$V_{IN}-V_{OUT}=1.0\text{V}$, $I_{OUT}=100\text{mA}$ x0.9	8		x1.02	V
Output Current	I_{OUT1}	$V_{IN}-V_{OUT}=1.0\text{V}$ 800				mA
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN}-V_{OUT}=1.0\text{V}$, $1\text{mA}\leq I_{OUT}\leq 300\text{mA}$		30	100	mV
Dropout Voltage	V_{DIF}	$I_{OUT}=300\text{mA}$				
					$V_{OUT}=1.5$	V
				0.35	0.45	V
				0.30	0.35	V
				0.25	0.30	V
				0.20	0.25	V
				0.15	0.20	V
				0.12	0.18	V
Line Regulation	$\Delta V_{OUT}/\Delta V_{IN}$	$I_{OUT}=100\text{mA}$, $V_{OUT}+0.5\text{V}\leq V_{IN}\leq 8.0\text{V}$		0.05	0.30	%/V
Ripple Rejection	RR	$f=1\text{kHz}$, Ripple 0.5V_{P-P} , $V_{IN}-V_{OUT}=1.0\text{V}$	50			dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=10\text{mA}$, $-40^{\circ}\text{C}\leq T_A\leq 85^{\circ}\text{C}$		± 100		ppm/ $^{\circ}\text{C}$
Short Current Limit	I_{LIM}	$V_{OUT}=0\text{V}$		40		mA
Pull-up resistance for $\overline{\text{CE}}$ pin	R_{PU}		1.25	2.50	5.00	M Ω
CE Input Voltage "H"	V_{CEH}		1.50			V
CE Input Voltage "L"	V_{CEL}				0.25	V
Thermal Shutdown Detector Threshold Temperature	T_{TSD}	Junction Temperature		150		°C
Thermal Shutdown Released Temperature	T_{TSR}	Junction Temperature		120		°C

■ ELECTRICAL CHARACTERISTICS(Cont.)

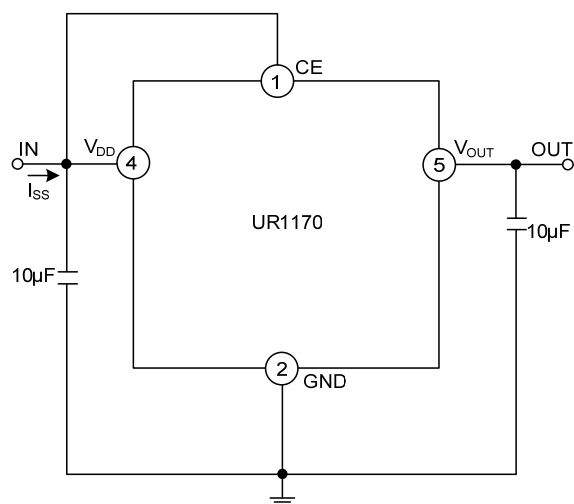
UR1170H

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}				6.0	V
Supply Current	I_{SS}	$V_{IN}-V_{OUT}=1.0V$, $V_{CE}=V_{IN}$		80	160	μA
Standby Current	I_{STB}	$V_{IN}=6.0V$, $V_{CE}=GND$		0.1	1.0	μA
Output Voltage	V_{OUT}	$V_{IN}-V_{OUT}=1.0V$, $I_{OUT}=100mA \times 0.9$	8		$\times 1.02$	V
Output Current	I_{OUT}	$V_{IN}-V_{OUT}=1.0V$ 800				mA
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN}-V_{OUT}=1.0V$, $1mA \leq I_{OUT} \leq 300mA$		30	100	mV
Dropout Voltage	V_{DIF}	$I_{OUT}=300mA$				
Line Regulation	$\Delta V_{OUT}/\Delta V_{IN}$	$I_{OUT}=100mA$, $V_{OUT}+0.5V \leq V_{IN} \leq 8.0V$		0.05	0.30	%/V
Ripple Rejection	RR	$f=1kHz$, Ripple 0.5Vp-p		50		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	$-40^{\circ}C \leq T_{OPT} \leq 85^{\circ}C$		± 100		ppm/ $^{\circ}C$
Short Current Limit	I_{LIM}	$V_{OUT}=0V$		40		mA
Pull-down resistance for CE pin	R_{PD}		1.25	2.5	5	M Ω
CE Input Voltage "H"	V_{CEH}		1.5			V
CE Input Voltage "L"	V_{CEL}				0.25	V
Thermal Shutdown Detector Threshold Temperature	T_{TSD}	Junction Temperature		150		$^{\circ}C$
Thermal Shutdown Released Temperature	T_{TSR}	Junction Temperature		120		$^{\circ}C$

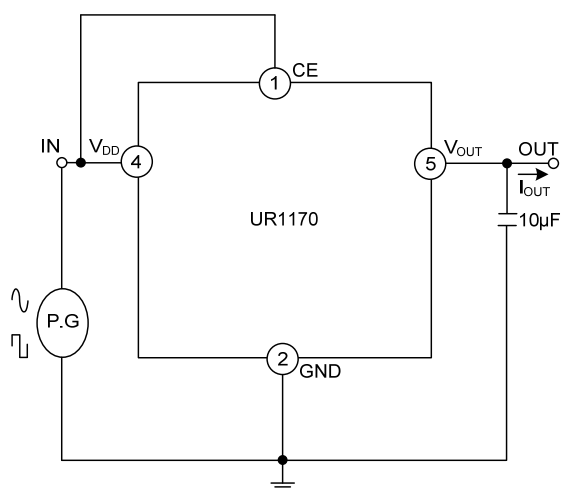
■ TEST CIRCUIT



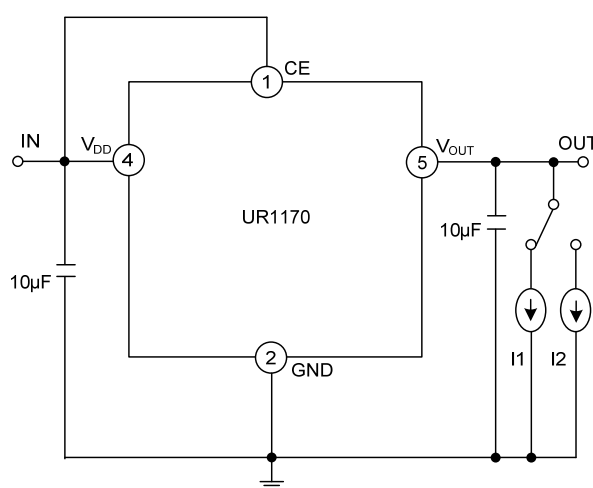
Standard Test Circuit



Supply Current Test Circuit

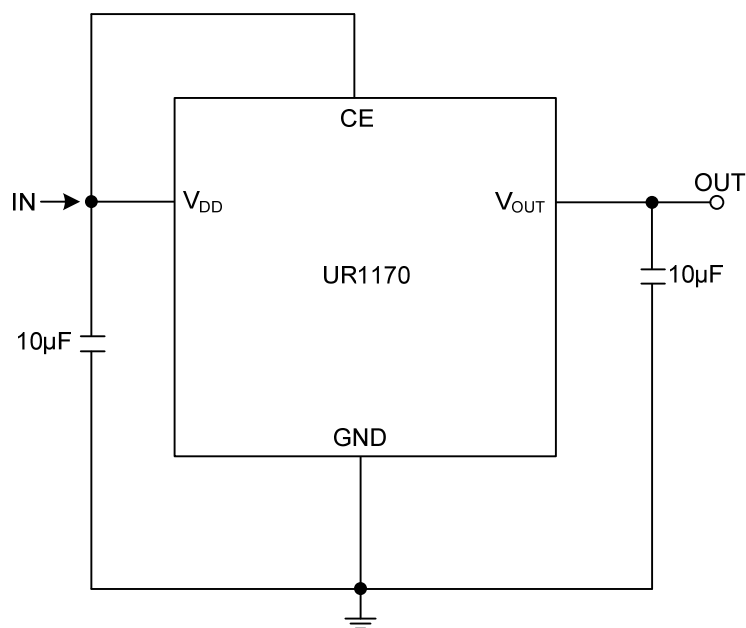


Test Circuit for Ripple Rejection, Input Transient Response



Test Circuit for Load Transient Response

■ TYPICAL APPLICATION CIRCUIT



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