



## LR1101

CMOS IC

### 100mA, 4 $\mu$ A QUIESCENT CURRENT CMOS LDO REGULATOR

#### DESCRIPTION

The UTC **LR1101** series are ultra-low quiescent current CMOS LDO (Low Dropout Voltage). Designed for battery-powered system, the low 4 $\mu$ A quiescent current makes it an ideal choice. The Range of the output voltage is from 1.2V ~ 5V with 0.1V per step. And the max output current is 100mA.

Wide range of available output fits most of applications. Built-in output current-limiting provide maximal protection against any fault conditions.

#### FEATURES

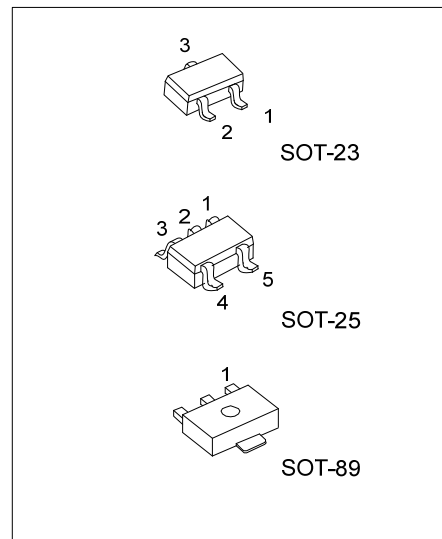
- \* 450mV typically dropout at 100mA
- \* Ultra-low quiescent current: 4 $\mu$ A
- \* Wide operating voltage ranges: 2V ~ 6V
- \* Thermal current limiting protection
- \* For stability only 1 $\mu$ F output capacitor is required
- \* High power supply rejection ratio

#### ORDERING INFORMATION

Ordering Number			Package	Pin Assignment					Packing
Normal	Lead Free Plating	Halogen Free		1	2	3	4	5	
LR1101-xx-AB3-C-R	LR1101L-xx-AB3-C-R	LR1101G-xx-AB3-C-R	SOT-89	G	I	O	-	-	Tape Reel
LR1101-xx-AE3-5-R	LR1101L-xx-AE3-5-R	LR1101G-xx-AE3-5-R	SOT-23	G	O	I	-	-	Tape Reel
LR1101-xx-AF5-R	LR1101L-xx-AF5-R	LR1101G-xx-AF5-R	SOT-25	I	G	$\overline{\text{EN}}$	NC	O	Tape Reel

Note: Pin Assignment: I:  $V_{\text{IN}}$  O:  $V_{\text{OUT}}$  G: GND NC: No Connection  $\overline{\text{EN}}$ : Enable

<p>LR1101L-xx-AB3-C-R</p>	<p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Output Voltage Code (5)Lead Plating</p>	<p>(1) R:Tape Reel (2) refer to Pin Assignment (3) AB3:SOT-89, AE3:SOT-23, AF5:SOT-25 (4) xx:refer to Marking Information (5) G:Halogen Free, L:Lead Free Plating, Blank:Pb/Sn</p>
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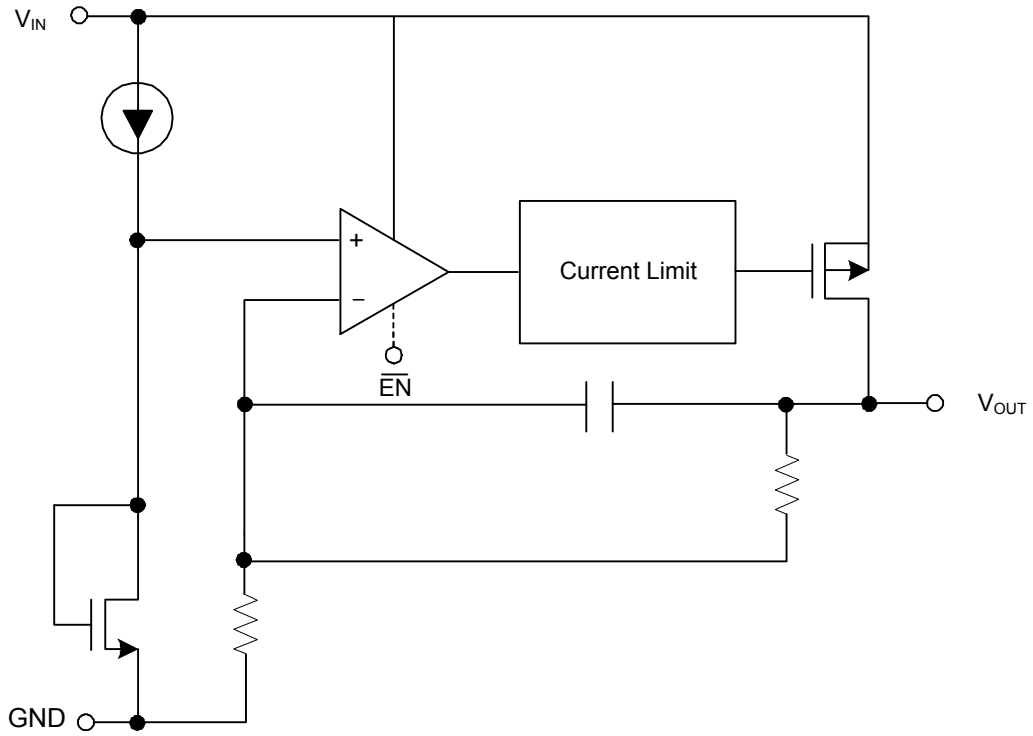
### MARKING INFORMATION

PACKAGE	VOLTAGE CODE	PIN CODE	1	2	3	4	5	MARKING
SOT-89	12:1.2V 15:1.5V 18:1.8V 25:2.5V 28:2.8V 30:3.0V 33:3.3V 35:3.5V 36:3.6V 47:4.7V 50:5.0V	C	G	I	O	-	-	
SOT-25		-	I	G	$\overline{\text{EN}}$	NC	O	
SOT-23		5	G	O	I	-	-	

### PIN DESCRIPTION

PIN NO.			PIN NAME	DESCRIPTION
SOT-89	SOT-25	SOT-23		
2	1	3	$V_{\text{IN}}$	Input voltage
3	5	2	$V_{\text{OUT}}$	Output voltage
1	2	1	GND	Ground
-	3	-	$\overline{\text{EN}}$	Chip enable input
-	4	-	NC	No connection

## ■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		$V_{IN}$	7	V
Power Dissipation ( $T_a = 25^\circ\text{C}$ )	SOT-89	$P_D$	500	mW
	SOT-23		250	mW
	SOT-25		250	mW
Junction Temperature		$T_J$	125	$^\circ\text{C}$
Operating Temperature		$T_{OPR}$	-40 ~ +125	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

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
Thermal Resistance	SOT-89	$\theta_{JA}$	180	$^\circ\text{C}/\text{W}$
	SOT-23		250	$^\circ\text{C}/\text{W}$
	SOT-25		250	$^\circ\text{C}/\text{W}$

### ■ ELECTRICAL CHARACTERISTICS

( $V_{IN} = 5.5\text{V}$ ,  $C_I = 1\mu\text{F}$ ,  $C_O = 1\mu\text{F}$ ,  $T_A = 25^\circ\text{C}$  unless otherwise specified)

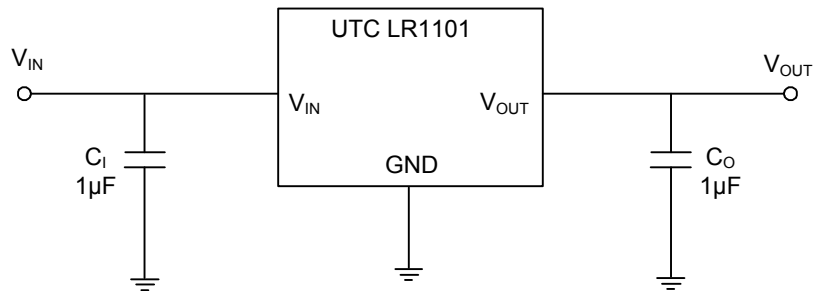
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Voltage Range	$V_{IN}$		2		6	V
Output Voltage Accuracy	$\Delta V_{OUT}$	$I_L = 1\text{mA}$	-2		+2	%
Line Regulation	$\Delta V_{LINE}$	$V_{IN} = (V_{OUT} + 0.3\text{V})$ to 6V, $V_{IN} \geq 3.6\text{V}$ , $I_{OUT} = 1\text{mA}$	-0.2		0.2	%/V
Load Regulation	$\Delta V_{LOAD}$	$I_{LOAD} = 0\text{mA}$ to 100mA		0.01	0.04	%/mA
Maximum Output Current	$I_{MAX}$	$V_{IN} = V_{OUT} + 0.6\text{V}$ , $V_{IN} \geq 3.6\text{V}$	100			mA
Current Limit	$I_{LIMIT}$	$I_L = 100\text{mA}$	150	250		mA
GND Pin Current	$I_G$	No Load		4	7	$\mu\text{A}$
		$I_{OUT} = 100\text{mA}$		4	10	
Dropout Voltage	$V_D$	$I_{OUT} = 1\text{mA}$ , $V_{IN} \geq 3.6\text{V}$		4	10	mV
		$I_{OUT} = 50\text{mA}$ , $V_{IN} \geq 3.6\text{V}$		200	300	
		$I_{OUT} = 100\text{mA}$ , $V_{IN} \geq 3.6\text{V}$		450	600	
Stand By Current	$I_{STN-BY}$	$\overline{EN} = V_{IN}$		0.1	1	$\mu\text{A}$
$\overline{EN}$ Threshold	$\overline{EN}$	$V_{OUT} = \text{High}$	0		0.6	V
		$V_{OUT} = \text{Low}$	2		$V_{IN}$	
Short Current	$I_{SC}$	$V_{OUT} = 0$			500	mA
Thermal Shutdown		Exterior Calefaction	125			$^\circ\text{C}$

## ■ APPLICATION INFORMATION

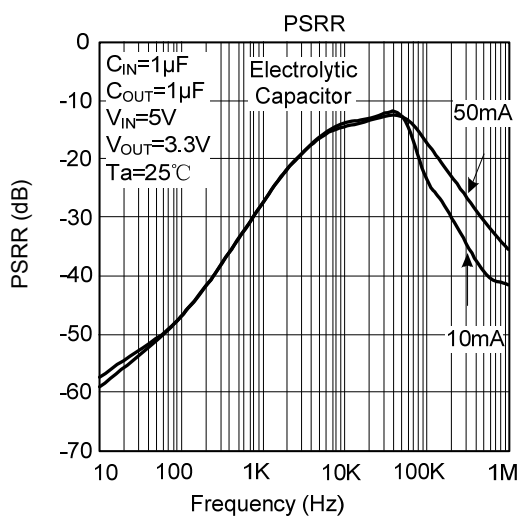
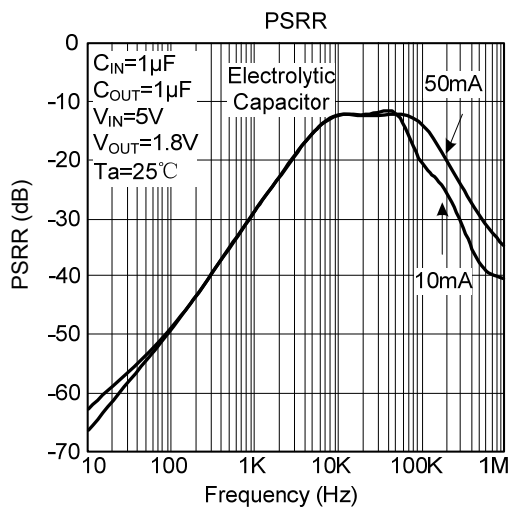
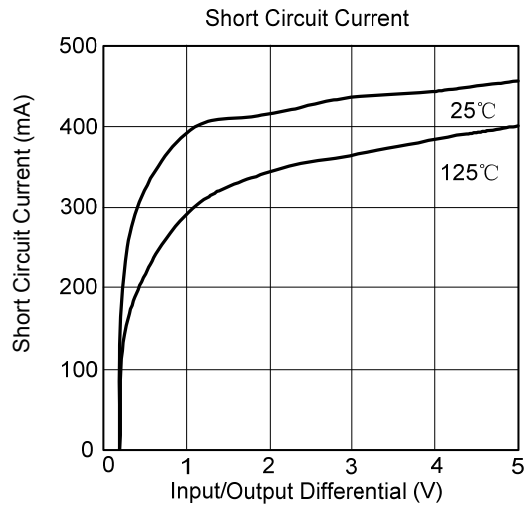
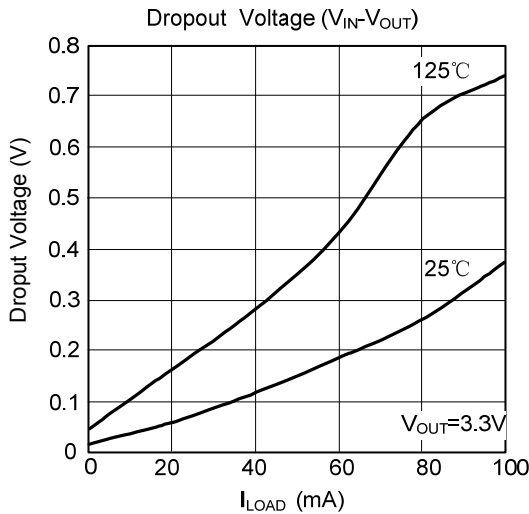
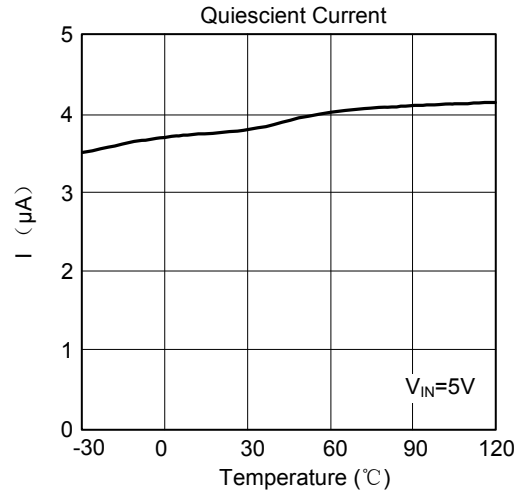
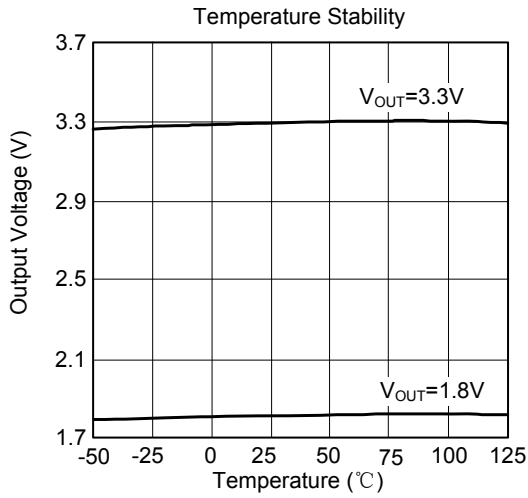
Between  $V_{OUT}$  and GND a  $1\mu\text{F}$  (or larger) capacitor is recommended for stability. Without the capacitor the part may oscillate. When operating below  $-25^{\circ}\text{C}$  any type of capacitor can be used, but not Aluminum electrolytes. If there's no limit the capacitance may be increased.

Between  $V_{IN}$  to GND a  $1\mu\text{F}$  capacitor (or larger) should be placed.

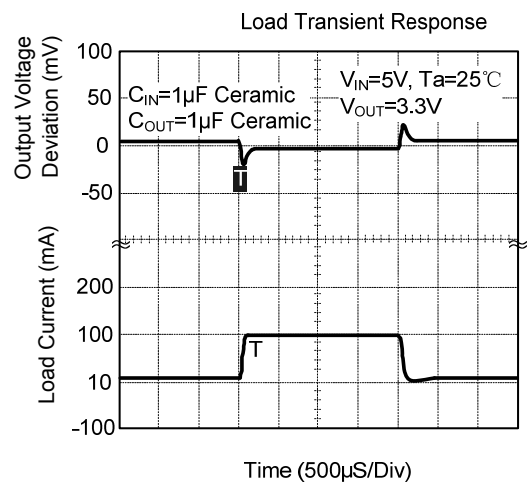
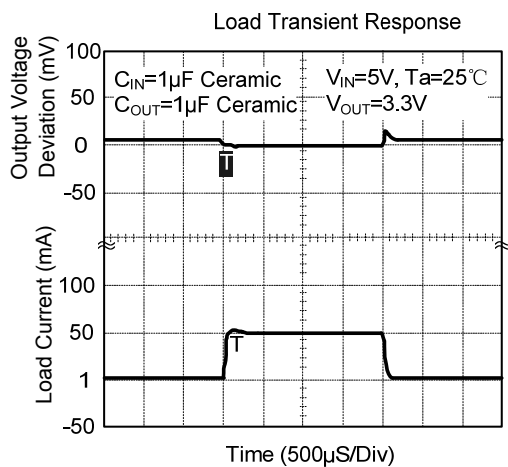
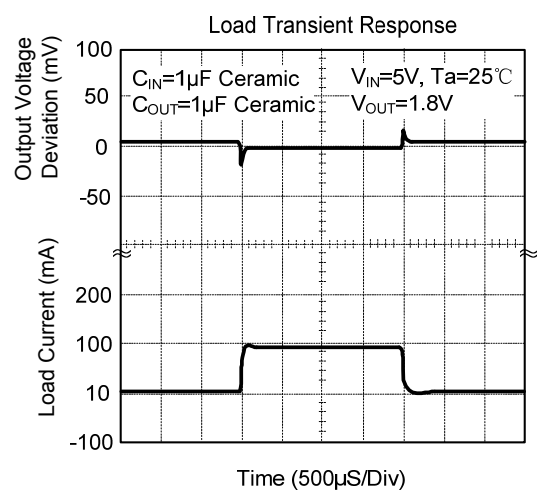
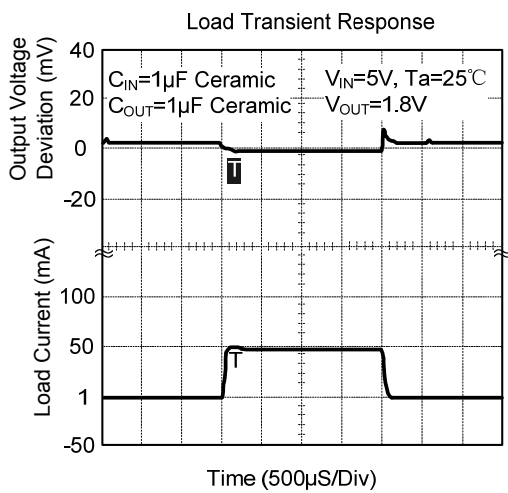
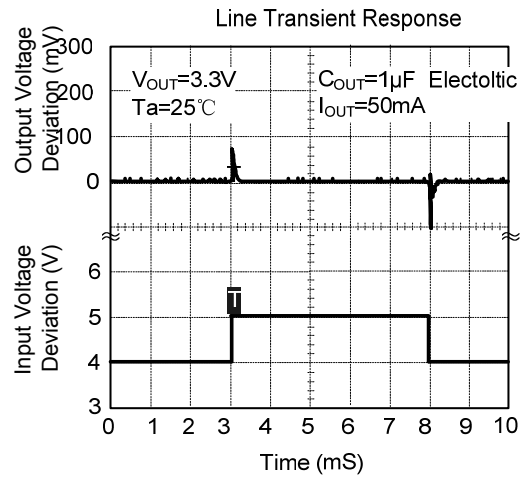
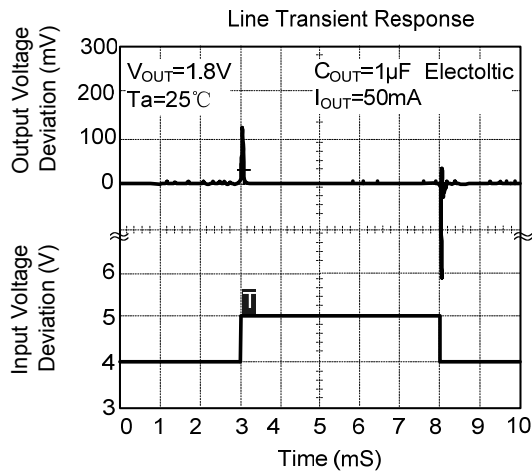
## ■ APPLICATION CIRCUIT



## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS(Cont.)



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