

## LR1101

CMOS IC

### 100mA, 4μA 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 4μA 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

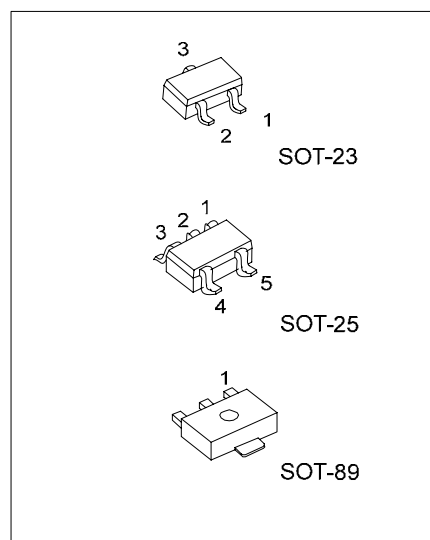
- \* 450mV typically dropout at 100mA
- \* Ultra-low quiescent current: 4μA
- \* Wide operating voltage ranges: 2V ~ 6V
- \* Thermal current limiting protection
- \* For stability only 1μF output capacitor is required
- \* High power supply rejection ratio

#### ORDERING INFORMATION

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

Note: Pin Assignment: I:  $V_{IN}$  O:  $V_{OUT}$  G: GND NC: No Connection 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) L:Lead Free Plating, Blank:Pb/Sn</p>
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\*Pb-free plating product number:LR1101L

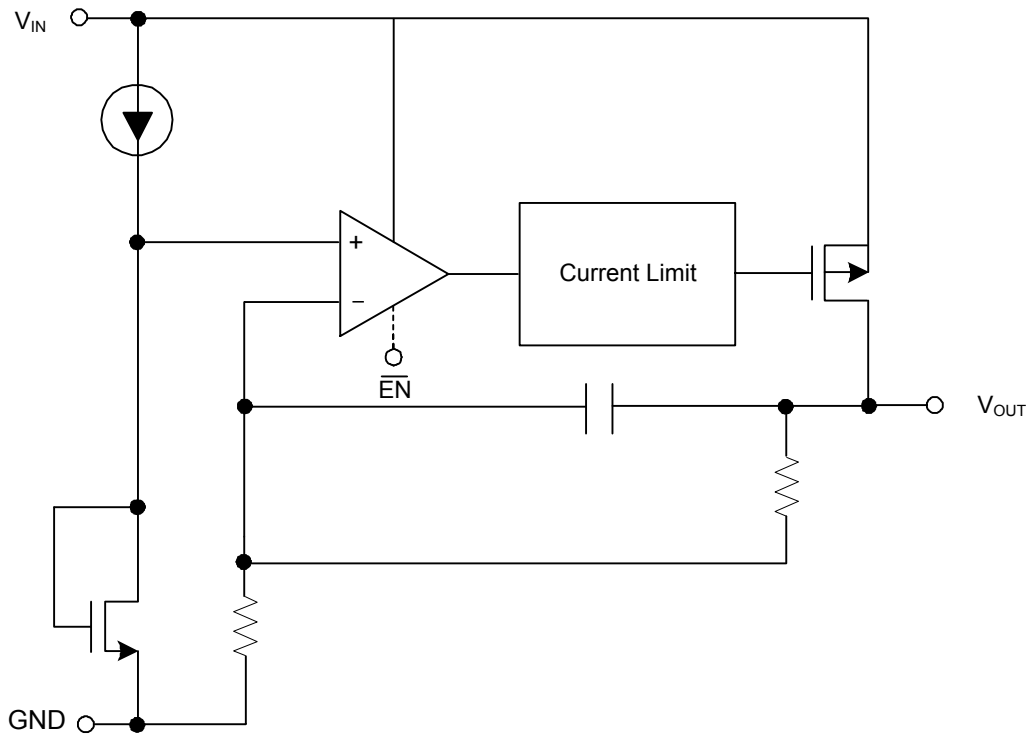
MARKING INFORMATION

PACKAGE	VOLTAGE CODE		PIN CODE	1	2	3	4	5	MARKING
SOT-89	12:1.2V	30:3.0V	C	G	I	O	-	-	
	13:1.3V	31:3.1V							
	14:1.4V	32:3.2V							
	15:1.5V	33:3.3V							
	16:1.6V	34:3.4V							
	17:1.7V	35:3.5V							
	18:1.8V	36:3.6V							
SOT-25	19:1.9V	37:3.7V	-	I	G	$\overline{\text{EN}}$	NC	O	
	20:2.0V	38:3.8V							
	21:2.1V	39:3.9V							
	22:2.2V	40:4.0V							
	23:2.3V	41:4.1V							
	24:2.4V	42:4.2V							
	25:2.5V	43:4.3V							
SOT-23	26:2.6V	44:4.4V	5	G	O	I	-	-	
	27:2.7V	45:4.5V							
	28:2.8V	46:4.6V							
	2J:2.85V	47:4.7V							
	29:2.9V	48:4.8V							
		49:4.9V							
	50:5.0V								

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	$\text{GND}$	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	
Operating Temperature		$T_{OPR}$	-40 ~ +125	
Storage Temperature		$T_{STG}$	-65 ~ +150	

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	/W
	SOT-23		250	/W
	SOT-25		250	/W

■ ELECTRICAL CHARACTERISTICS

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

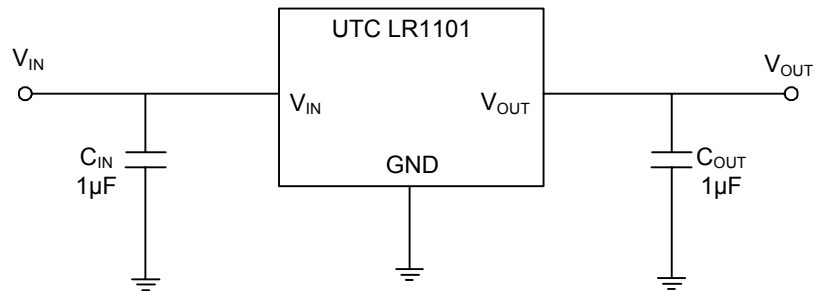
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Voltage Range	$V_{IN}$		2		6	V
Output Voltage Accuracy	$\Delta V_{OUT}$	$I_L = 1\text{mA}$	-2		+2	%
Line Regulation	$\Delta V_{LINE}$	$V_{IN} = (V_{OUT} + 0.3\text{V})$ to 6V, $V_{IN} = 3.6\text{V}$ , $I_{OUT} = 1\text{mA}$	-0.2		0.2	%/V
Load Regulation	$\Delta V_{LOAD}$	$I_{LOAD} = 0\text{mA}$ to 100mA		0.01	0.04	%/mA
Maximum Output Current	$I_{MAX}$	$V_{IN} = V_{OUT} + 0.6\text{V}$ , $V_{IN} = 3.6\text{V}$	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	$V_D$	$I_{OUT} = 1\text{mA}$ , $V_{IN} = 3.6\text{V}$		4	10	mV
		$I_{OUT} = 50\text{mA}$ , $V_{IN} = 3.6\text{V}$		200	300	
		$I_{OUT} = 100\text{mA}$ , $V_{IN} = 3.6\text{V}$		450	600	
Stand By Current	$I_{STN-BY}$	$\overline{EN} = V_{IN}$		0.1	1	$\mu\text{A}$
$\overline{EN}$ Threshold	$\overline{EN}$	$V_{OUT} = \text{High}$	0.6	1	2	V
		$V_{OUT} = \text{Low}$	0.6	1	2	
Short Current	$I_{SC}$	$V_{OUT} = 0$	0.157	0.156	0.168	A
Thermal Shutdown		Exterior Calefaction	125			

■ APPLICATION INFORMATION

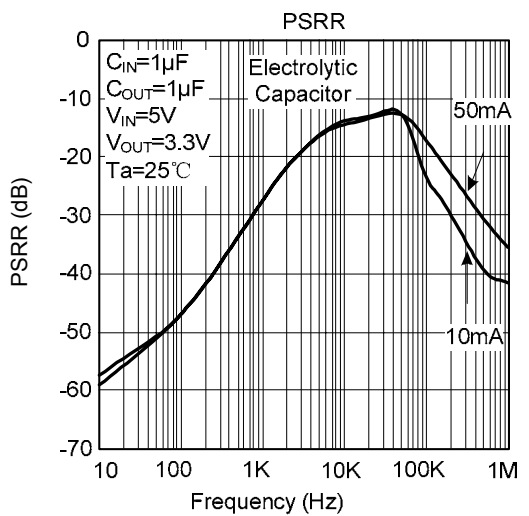
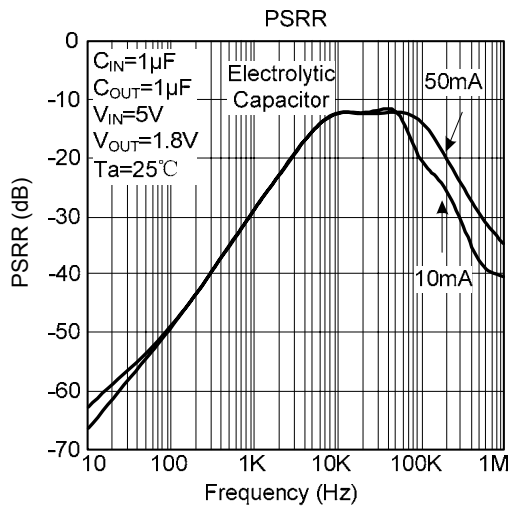
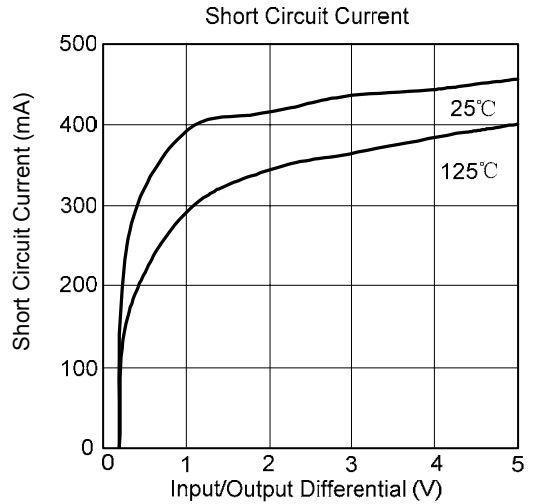
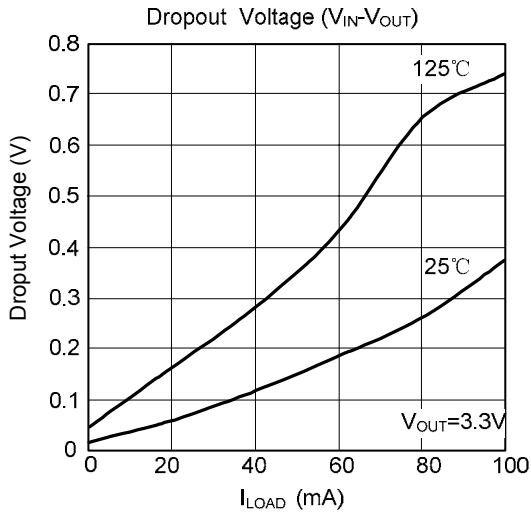
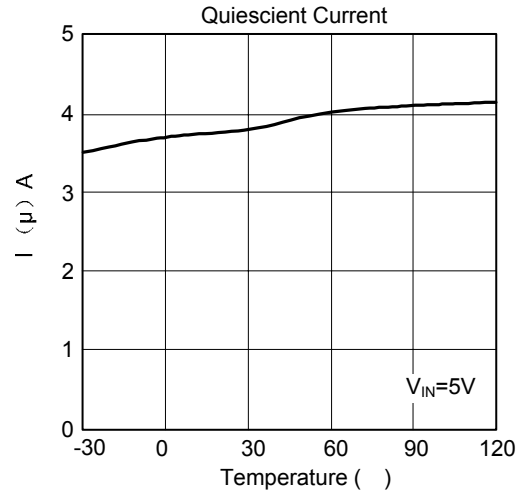
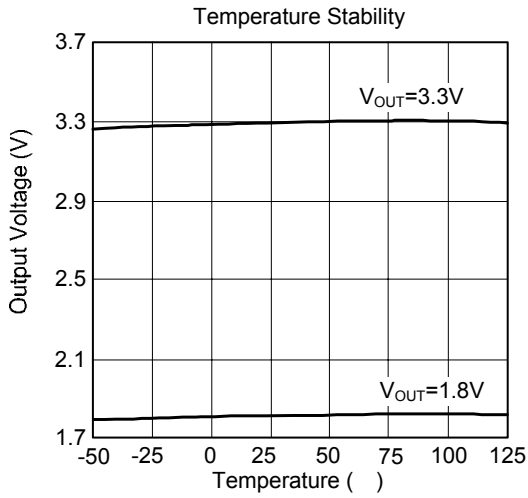
Between  $V_{OUT}$  and GND a  $1\mu F$  (or larger) capacitor is recommended for stability. Without the capacitor the part may oscillate. When operating below  $-25$  any type of capacitor can be used, but not Aluminum electrolytes. If there's no limit the capacitance may be increased.

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

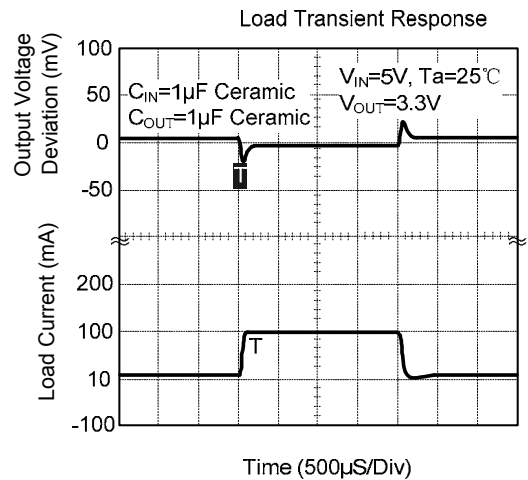
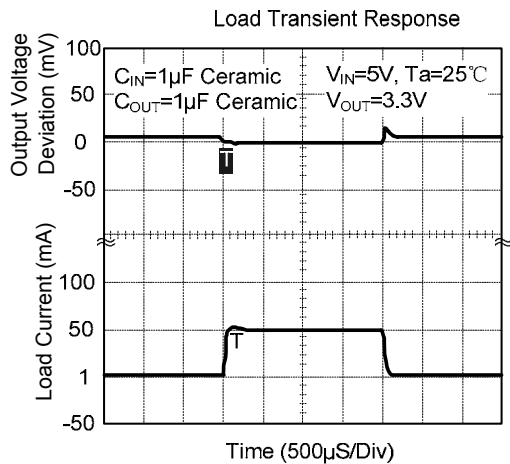
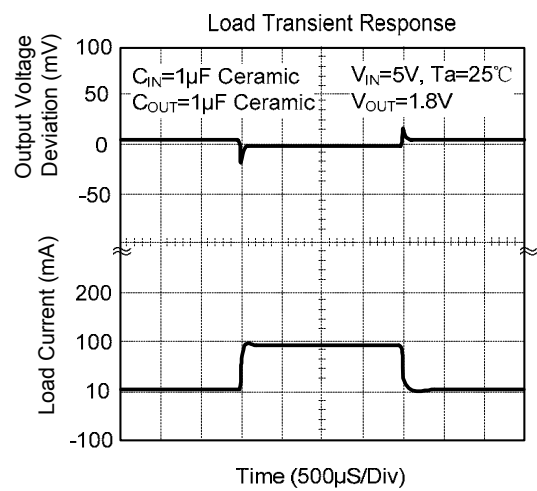
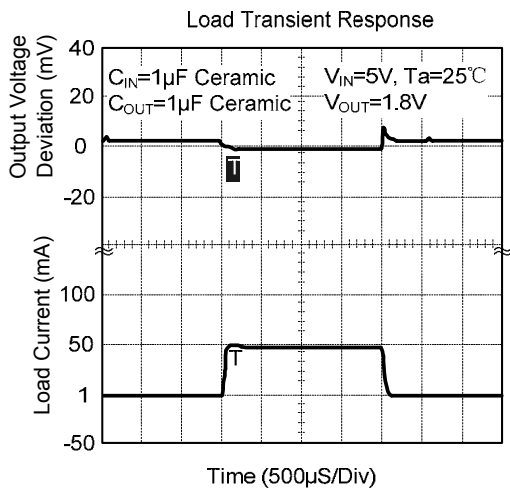
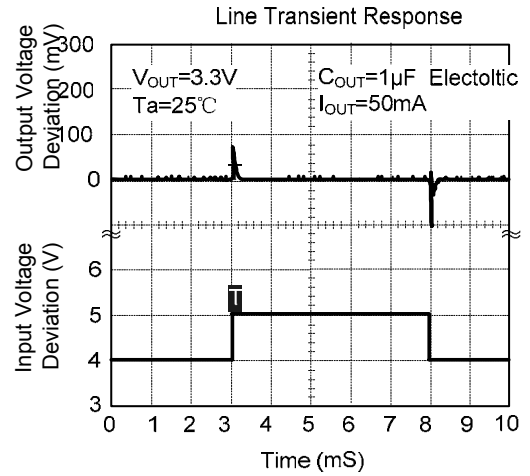
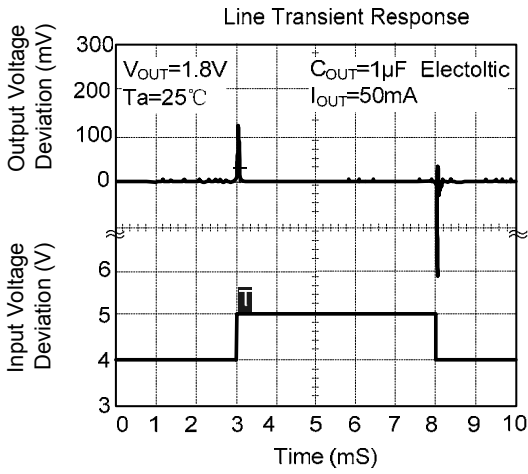
■ APPLICATION CIRCUIT



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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