



## L1119

Preliminary

CMOS IC

### 1.5A LOW DROPOUT REGULATORS

#### DESCRIPTION

The UTC **L1119** is a fast ultra low-dropout linear regulator that developed in CMOS process which allows low quiescent current operation independent of output load current. This CMOS process also allows the device to operate under extremely low dropout conditions.

The UTC **L1119** allows to operate from a 2.5V~7.0V input supply. Wide range of preset output voltage options are available and respond very fast to step changes in load which makes them suitable for low voltage microprocessor applications.

#### FEATURES

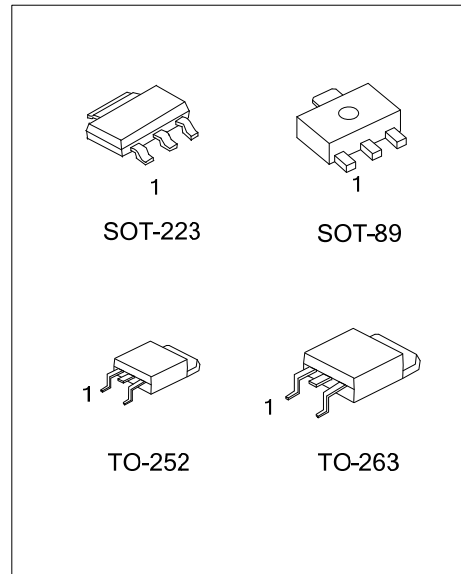
- \* Low Ground Current
- \* Load Regulation of 0.04%
- \* Output Current of 1.5A DC is Guaranteed
- \* Accurate Output Voltage.(± 1.5%)
- \* Extremely Low Output Capacitor Requirements
- \* Over Temperature/ Over Current Protection

#### ORDERING INFORMATION

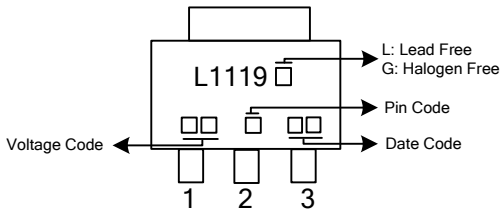
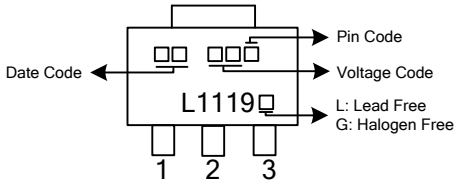
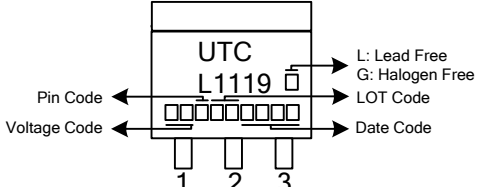
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
L1119L-xx-AA3-A-R	L1119G-xx-AA3-A-R	SOT-223	G	O	I	Tape Reel
L1119L-xx-AA3-C-R	L1119G-xx-AA3-C-R	SOT-223	G	I	O	Tape Reel
L1119L-xx-AB3-A-R	L1119G-xx-AB3-A-R	SOT-89	G	O	I	Tape Reel
L1119L-xx-AB3-B-R	L1119G-xx-AB3-B-R	SOT-89	O	G	I	Tape Reel
L1119L-xx-AB3-C-R	L1119G-xx-AB3-C-R	SOT-89	G	I	O	Tape Reel
L1119L-xx-AB3-D-R	L1119G-xx-AB3-D-R	SOT-89	I	G	O	Tape Reel
L1119L-xx-TN3-D-R	L1119G-xx-TN3-D-R	TO-252	I	G	O	Tape Reel
L1119L-xx-TN3-D-T	L1119G-xx-TN3-D-T	TO-252	I	G	O	Tube
L1119L-xx-TQ2-D-R	L1119G-xx-TQ2-D-R	TO-263	I	G	O	Tape Reel
L1119L-xx-TQ2-D-T	L1119G-xx-TQ2-D-T	TO-263	I	G	O	Tube

Note: Pin assignment: I:  $V_{IN}$  O:  $V_{OUT}$  G:GND

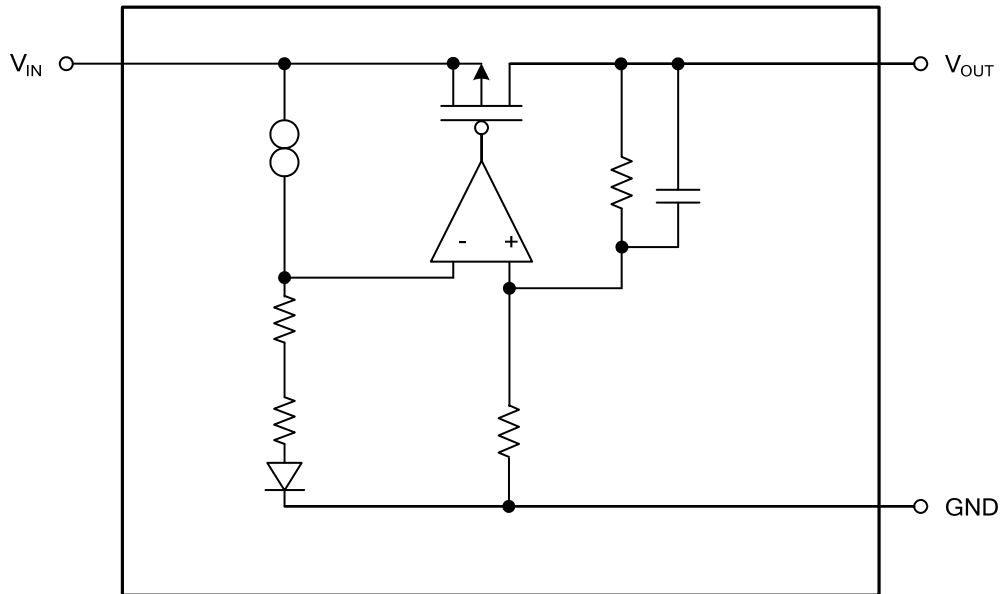
<p>L1119L-xx-AA3-A-R</p> <p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Output Voltage Code (5)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, TN3: TO-252 TQ2: TO-263 (4) xx: refer to Marking Information (5) G: Halogen Free, L: Lead Free</p>
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■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	12 :1.2V 15 :1.5V 18 :1.8V 25 :2.5V 33 :3.3V 50 :5.0V	 <p>Diagram of SOT-223 package marking. The top surface is marked with 'L1119'. The bottom surface has three pins labeled 1, 2, and 3. Marking locations are indicated: 'L: Lead Free' and 'G: Halogen Free' on the top right; 'Pin Code' on the top right; 'Date Code' on the bottom right; and 'Voltage Code' on the bottom left.</p>
SOT-89		 <p>Diagram of SOT-89 package marking. The top surface is marked with 'L1119'. The bottom surface has three pins labeled 1, 2, and 3. Marking locations are indicated: 'Pin Code' on the top right; 'Voltage Code' on the top right; 'L: Lead Free' and 'G: Halogen Free' on the bottom right; and 'Date Code' on the bottom left.</p>
TO-252 TO-263		 <p>Diagram of TO-252/TO-263 package marking. The top surface is marked with 'UTC' and 'L1119'. The bottom surface has three pins labeled 1, 2, and 3. Marking locations are indicated: 'L: Lead Free' and 'G: Halogen Free' on the top right; 'LOT Code' on the top right; 'Date Code' on the bottom right; 'Pin Code' on the bottom left; and 'Voltage Code' on the bottom left.</p>

■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	$V_{IN}$	-0.3 ~ +7.5	V
Output Voltage	$V_{OUT}$	-0.3 ~ +7.5	V
Output Current	$I_{OUT}$	Short Circuit Protected	
Power Dissipation	$P_D$	Internally Limited	°C
Operating Junction Temperature	$T_J$	-40 ~ +125	°C
Storage Temperature	$T_{STG}$	-65 ~ +150	°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.

### ■ RECOMMENDED OPERATING RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	$V_{IN}$	2.5 ~ 7.0	V
Maximum Operating Current (DC)	$I_{OPR(MAX)}$	1.5	A
Operating Junction Temperature	$T_J$	-40 ~ +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

( $T_J=25^\circ\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{V}$ ,  $I_L=10\text{mA}$ ,  $C_{OUT}=33\mu\text{F}$ , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Dropout Voltage (Note)	$V_D$	$I_L = 150\text{ mA}$		38	45	mV
		$I_L = 1.5\text{ A}$		870		
Peak Output Current	$I_{PEAK}$		2.0	2.5		A
Ground Pin Current	$I_{GND}$	$I_L = 150\text{ mA}$		4	9	mA
		$I_L = 1.5\text{ A}$		5	14	
Output Voltage Tolerance	$V_{OUT}$	$10\text{ mA} \leq I_L \leq 1.5\text{ A}$ $V_{OUT} + 1 \leq V_{IN} \leq 7.0\text{V}$	-1.5	0	+1.5	%
Line Regulation	$\Delta V_{OUT}$	$V_{OUT} + 1\text{V} < V_{IN} < 7.0\text{V}$		0.1		%
Load Regulation	$\Delta V_{OUT}$	$10\text{ mA} < I_L < 1.5\text{ A}$		1.5		%
<b>SHORT CIRCUIT PROTECTION</b>						
Short Circuit Current	$I_{SC}$			4.5		A
<b>AC PARAMETERS</b>						
Output Noise Density	$\rho_{N(f)}$	$f = 120\text{Hz}$		0.8		$\mu\text{V}$
Output Noise Voltage	eN	BW = 10Hz – 100kHz		150		$\mu\text{V(rms)}$
		BW = 300Hz – 300kHz		100		
Ripple Rejection	RR	$V_{IN} = V_{OUT} + 1.5\text{V}$ $C_{OUT} = 100\mu\text{F}$ , $V_{OUT} = 3.3\text{V}$		60		dB
		$V_{IN} = V_{OUT} + 0.3\text{V}$ $C_{OUT} = 100\mu\text{F}$ , $V_{OUT} = 3.3\text{V}$		40		
<b>OVER TEMPERATURE PROTECTION</b>						
Shutdown Threshold	$T_{SHDN}$			165		°C
Thermal Shutdown Hysteresis	$T_{HYS}$			10		°C

**Note:** Dropout voltage is defined as the minimum input to output differential voltage at which the output drops 2% below the nominal value. Dropout voltage specification applies only to output voltages of 2.5V and above. For output voltages below 2.5V, the drop-out voltage is nothing but the input to output differential, since the minimum input voltage is 2.5V.

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