



L1119

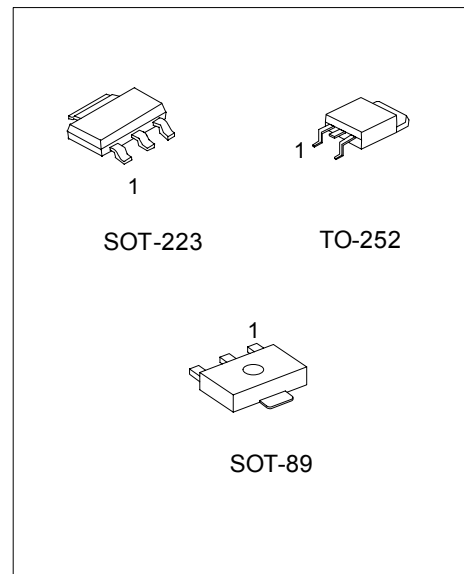
CMOS IC

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.



*Pb-free plating product number: L1119L-xx

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

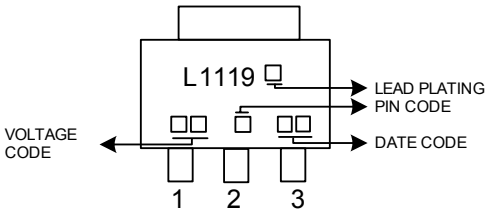
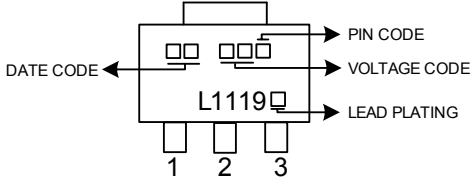
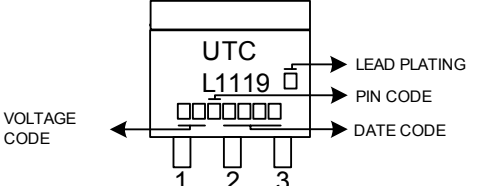
ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
L1119-xx-AA3-A-R	L1119L-xx-AA3-A-R	SOT-223	G	O	I	Tape Reel
L1119-xx-AA3-C-R	L1119L-xx-AA3-C-R	SOT-223	G	I	O	Tape Reel
L1119-xx-AB3-A-R	L1119L-xx-AB3-A-R	SOT-89	G	O	I	Tape Reel
L1119-xx-AB3-B-R	L1119L-xx-AB3-B-R	SOT-89	O	G	I	Tape Reel
L1119-xx-AB3-C-R	L1119L-xx-AB3-C-R	SOT-89	G	I	O	Tape Reel
L1119-xx-AB3-D-R	L1119L-xx-AB3-D-R	SOT-89	I	G	O	Tape Reel
L1119-xx-TN3-D-R	L1119L-xx-TN3-D-R	TO-252	I	G	O	Tape Reel
L1119-xx-TN3-D-T	L1119L-xx-TN3-D-T	TO-252	I	G	O	Tube

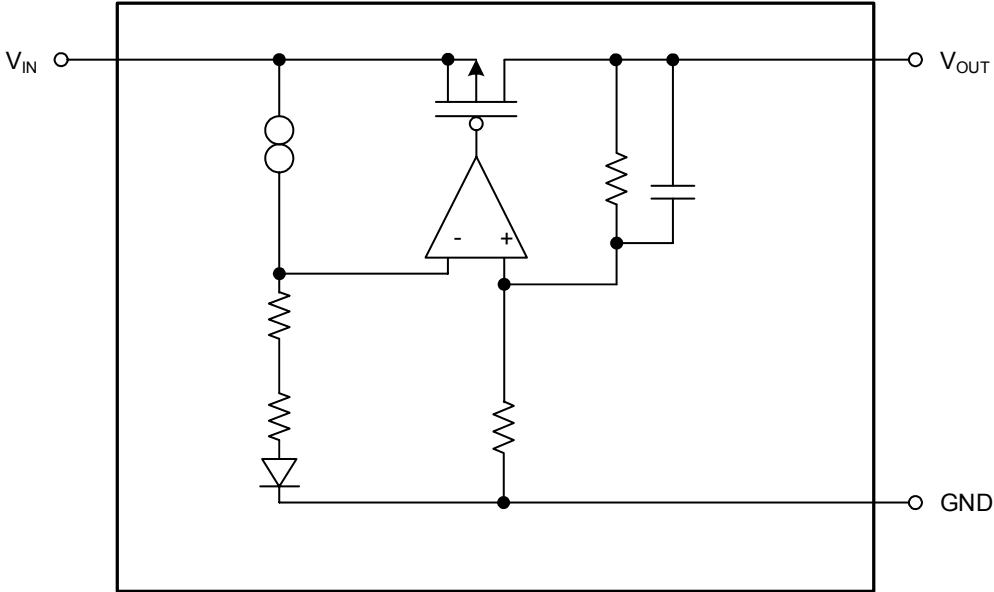
Note: Pin assignment: I: V_{IN} O: V_{OUT} G:GND

<p>L1119L-xx-AA3-A-R</p> <p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Output Voltage Code (5)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, TN3: TO-252 (4) xx: refer to Marking Information (5) L: Lead Free Plating, Blank: Pb/Sn</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 package is a small rectangle with three pins labeled 1, 2, and 3. The marking 'L1119' is centered. To the left of the package, an arrow points to a box labeled 'VOLTAGE CODE'. To the right, two arrows point to boxes labeled 'LEAD PLATING' and 'PIN CODE'. Below these, an arrow points to a box labeled 'DATE CODE'.</p>
SOT-89		 <p>Diagram of SOT-89 package marking. The package is a wider rectangle with three pins labeled 1, 2, and 3. The marking 'L1119' is centered. To the left, an arrow points to a box labeled 'DATE CODE'. To the right, three arrows point to boxes labeled 'PIN CODE', 'VOLTAGE CODE', and 'LEAD PLATING'.</p>
TO-252		 <p>Diagram of TO-252 package marking. The package is a tall rectangle with three pins labeled 1, 2, and 3. The marking 'UTC' is at the top, and 'L1119' is below it. To the left, an arrow points to a box labeled 'VOLTAGE CODE'. To the right, three arrows point to boxes labeled 'LEAD PLATING', 'PIN CODE', and 'DATE CODE'.</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	
Operating Junction 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.

■ 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	

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

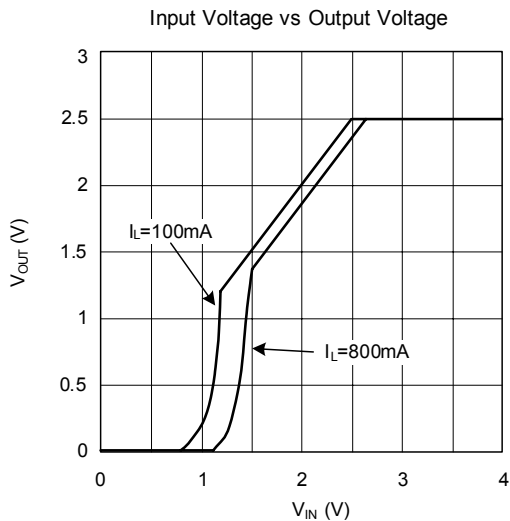
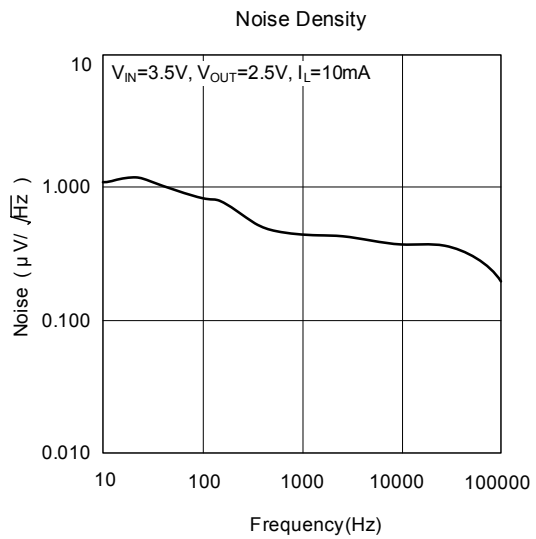
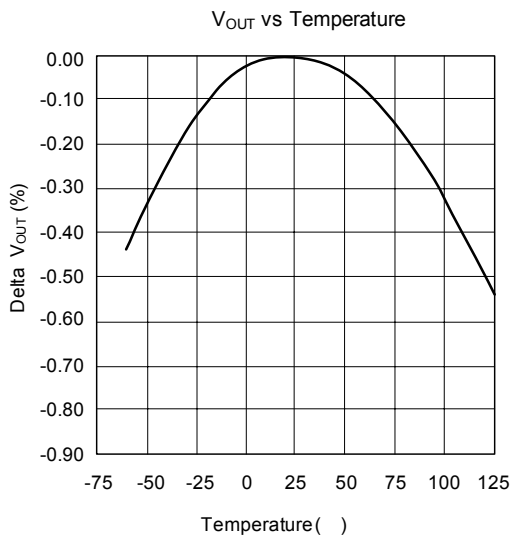
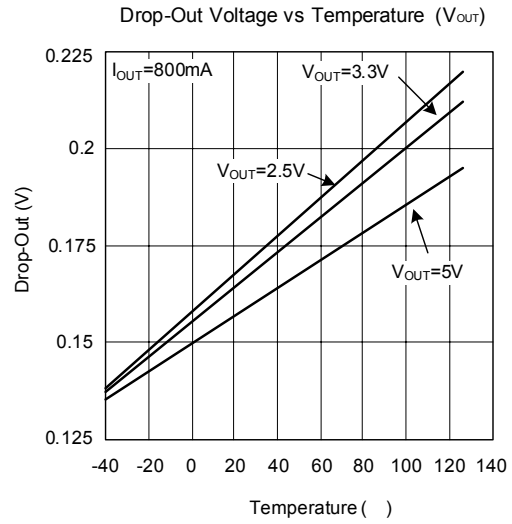
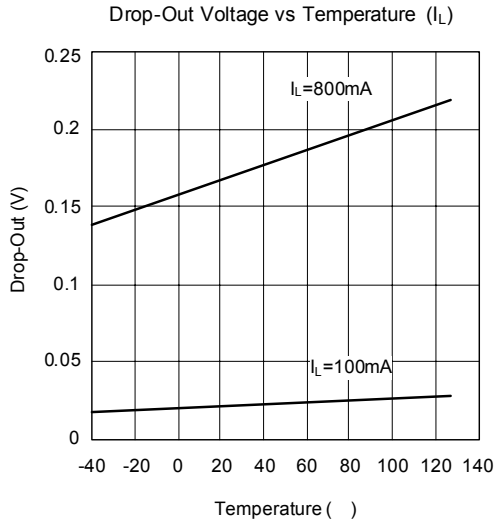
($T_J=25^\circ\text{C}$, $V_{IN}=V_{OUT}+1\text{V}$, $I_L=10\text{mA}$, $C_{OUT}=33\mu\text{F}$, unless otherwise specified.)

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	ΔV_{OUT}	$V_{OUT} + 1\text{V} < V_{IN} < 7.0\text{V}$		0.1		%
Load Regulation	ΔV_{OUT}	$10\text{ mA} < I_L < 1.5\text{ A}$		1.5		%
SHORT CIRCUIT PROTECTION						
Short Circuit Current	I_{SC}			4.5		A
AC PARAMETERS						
Output Noise Density	$\rho_{N(f)}$	$f = 120\text{Hz}$		0.8		μV
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		
OVER TEMPERATURE PROTECTION						
Shutdown Threshold	T_{SHDN}			165		$^\circ\text{C}$
Thermal Shutdown Hysteresis	T_{HYS}			10		$^\circ\text{C}$

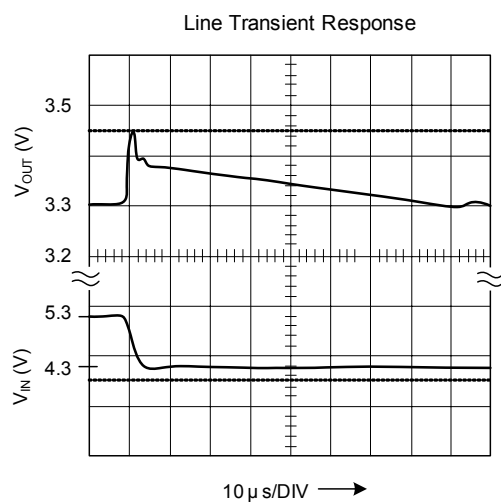
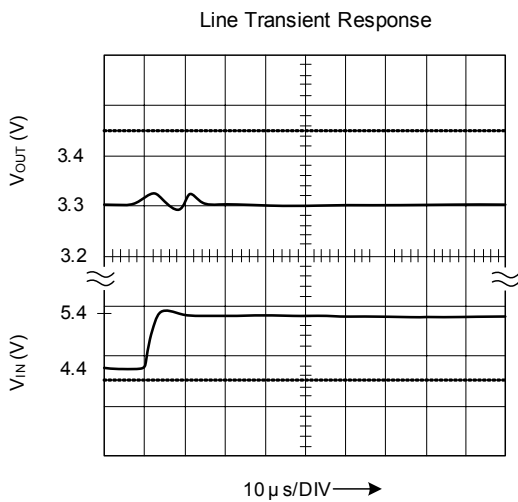
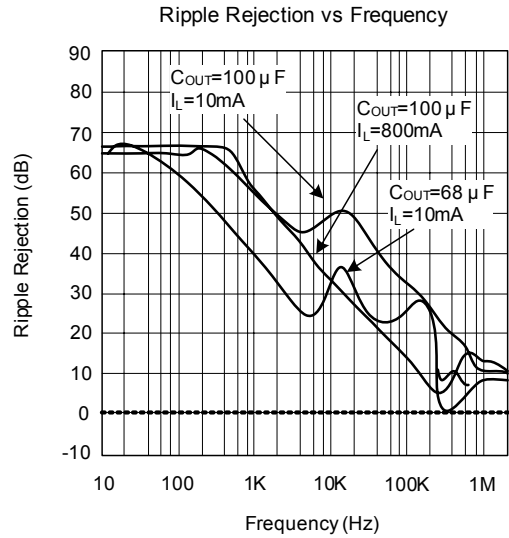
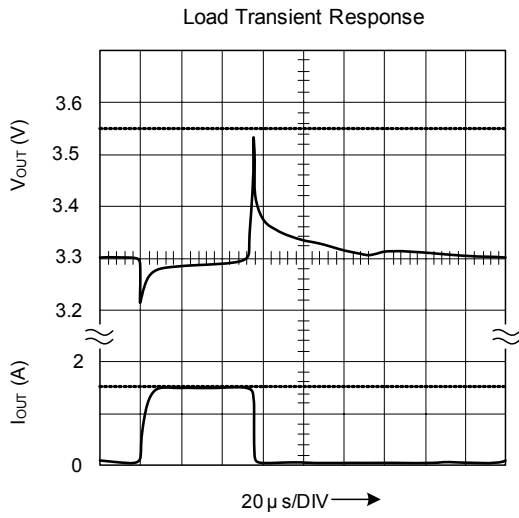
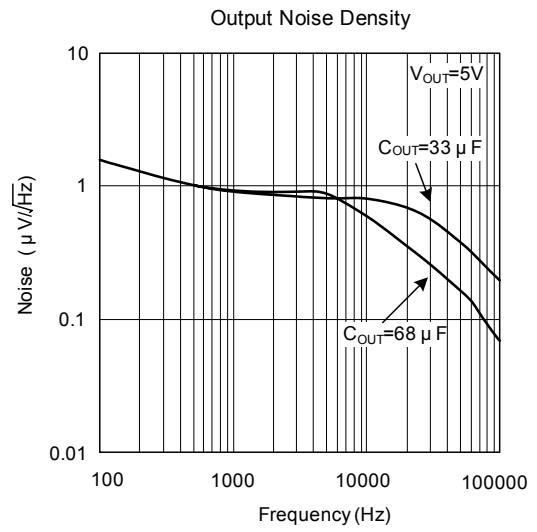
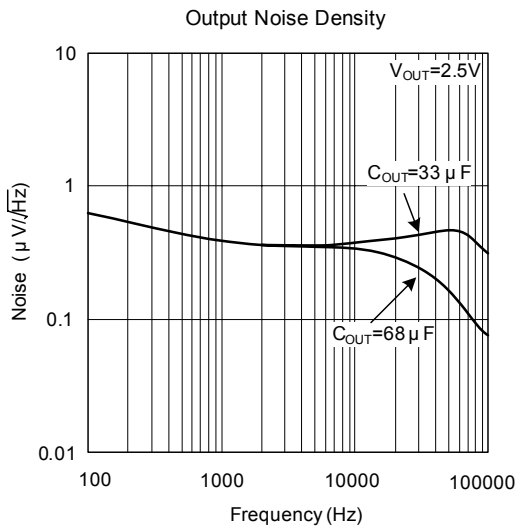
Note: Dropout voltage is defined as the minimum input to output differential voltage at which the output drops 2% below the nominal value. Dropout voltage specification applies only to output voltages of 2.5V and above. For output voltages below 2.5V, the drop-out voltage is nothing but the input to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

■ TYPICAL CHARACTERISTICS

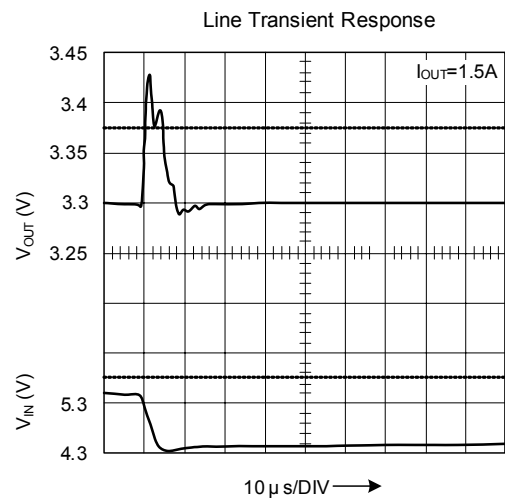
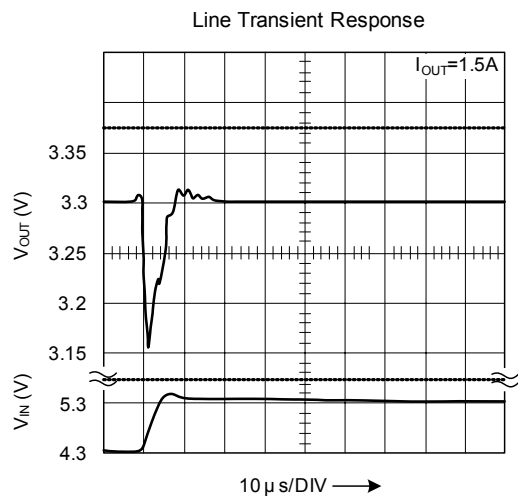
($V_{IN}=V_{OUT}+1V$, $V_{OUT}=2.5V$, $C_{OUT}=33\mu F$, $I_{OUT}=10mA$, $C_{IN}=68\mu F$, $T_a=25^\circ C$.)



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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