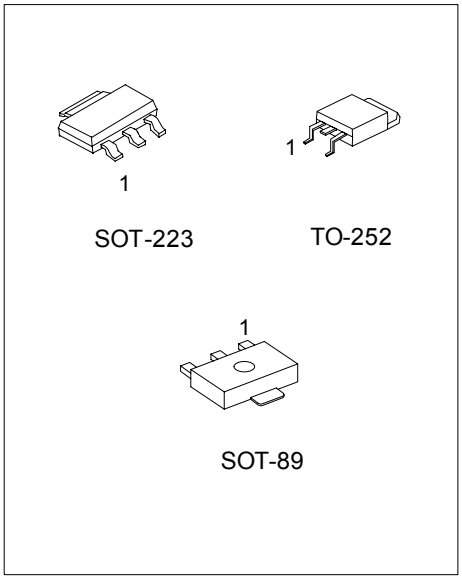
L1119

CMOS IC

1.5A LOW DROPOUT REGULATORS



*Pb-free plating product number: L1119L-xx

■ 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

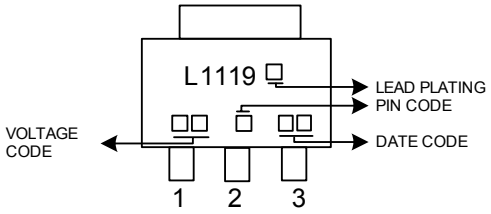
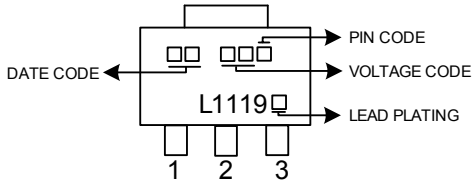
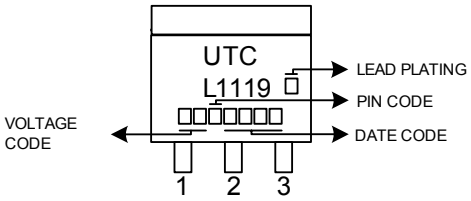
Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
L1119-xx-AA3-A-R	L1119L-xx-AA3-A-R	SOT-223	G	O	I	Tape Reel
L1119-xx-AA3-C-R	L1119L-xx-AA3-C-R	SOT-223	G	I	O	Tape Reel
L1119-xx-AB3-A-R	L1119L-xx-AB3-A-R	SOT-89	G	O	I	Tape Reel
L1119-xx-AB3-B-R	L1119L-xx-AB3-B-R	SOT-89	O	G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

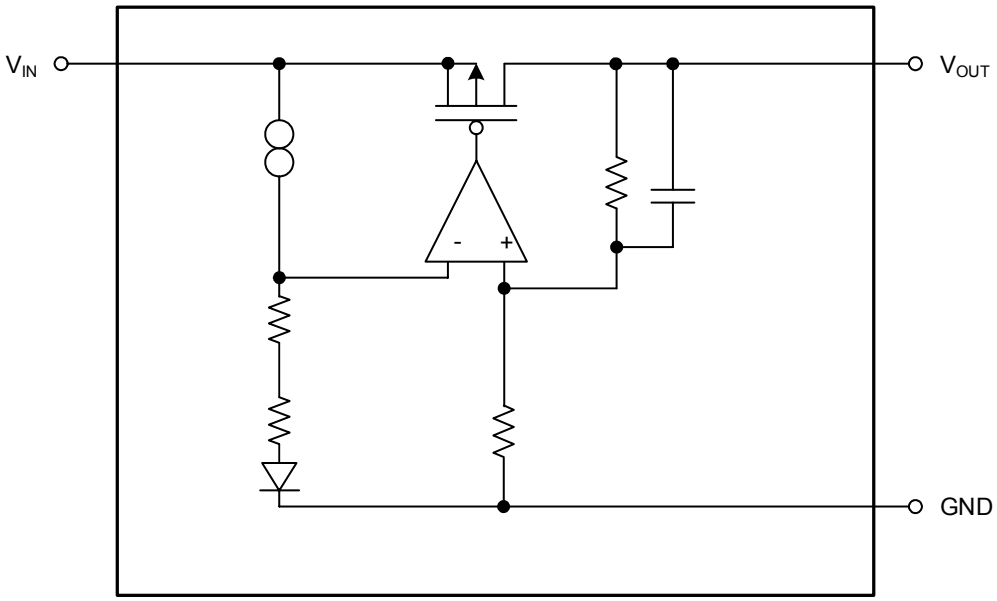
L1119L-xx-AA3-A-R
(1)Packing Type
(2)Pin Assignment
(3)Package Type
(4)Output Voltage Code
(5)Lead Plating

(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

■ 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	
SOT-89		
TO-252		

■ 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°C, V_{IN} =V_{OUT}+1V, I_L=10mA, C_{OUT}=33μF, unless otherwise specified.)

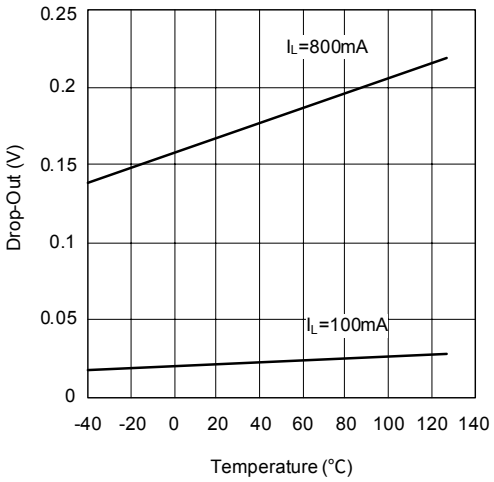
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Dropout Voltage (Note)	V_D	I_L = 150 mA		38	45	mV
		I_L = 1.5 A		870		
Peak Output Current	I_{PEAK}		2.0	2.5		A
Ground Pin Current	I_{GND}	I_L = 150 mA		4	9	mA
		I_L = 1.5 A		5	14	
Output Voltage Tolerance	V_{OUT}	10 mA ≤ I_L ≤ 1.5A V_{OUT} +1 ≤ V_{IN}≤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

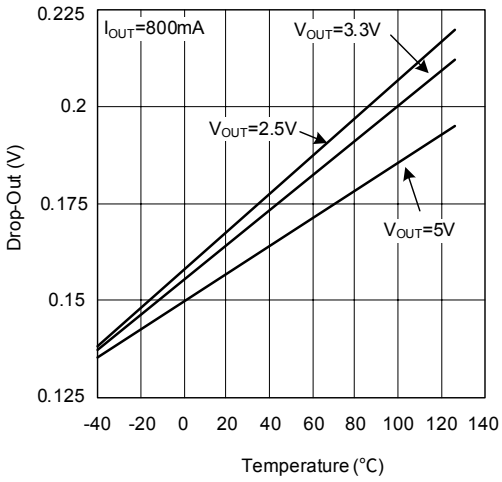
■ TYPICAL CHARACTERISTICS

(V_{IN}=V_{OUT}+1V, V_{OUT}=2.5V, C_{OUT}=33μF, I_{OUT} =10mA, C_{IN}=68μF, T_a=25°C.)

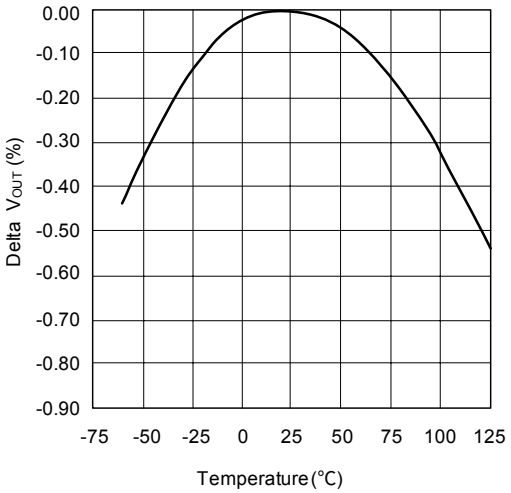
Drop-Out Voltage vs Temperature (I_L)



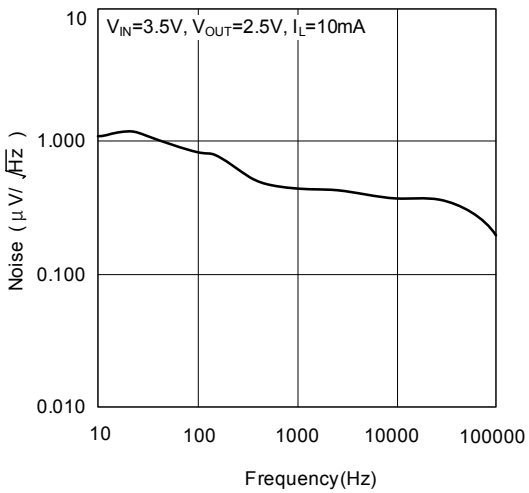
Drop-Out Voltage vs Temperature (V_{OUT})



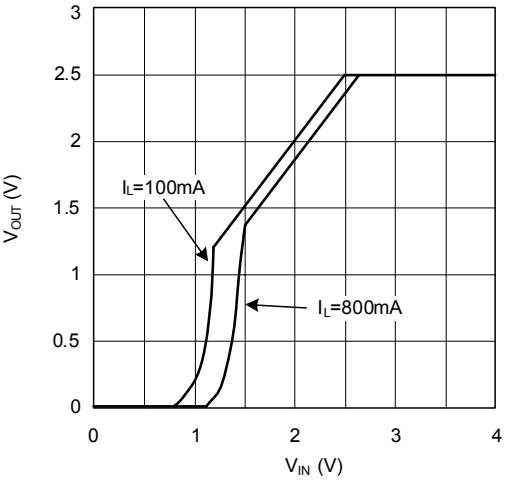
△V_{OUT} vs Temperature



Noise Density

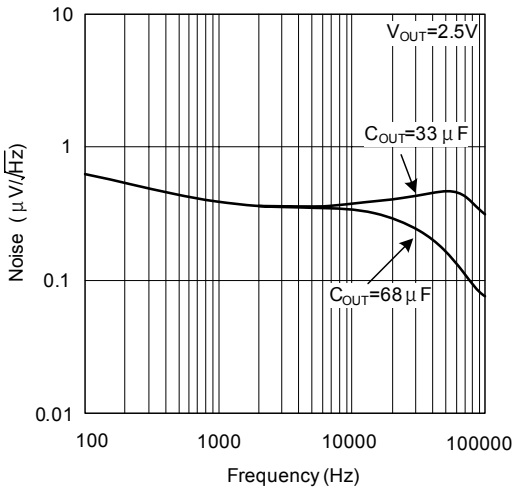


Input Voltage vs Output Voltage

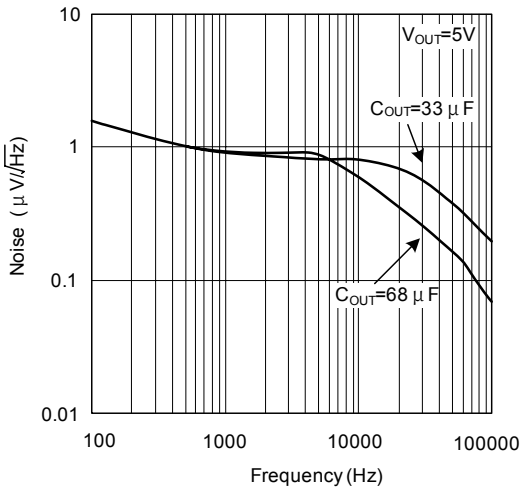


■ TYPICAL CHARACTERISTICS(Cont.)

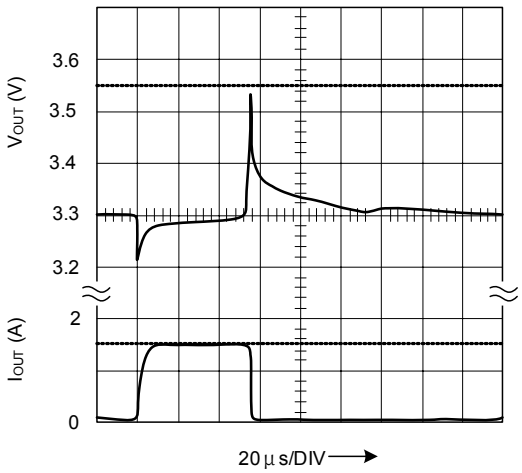
Output Noise Density



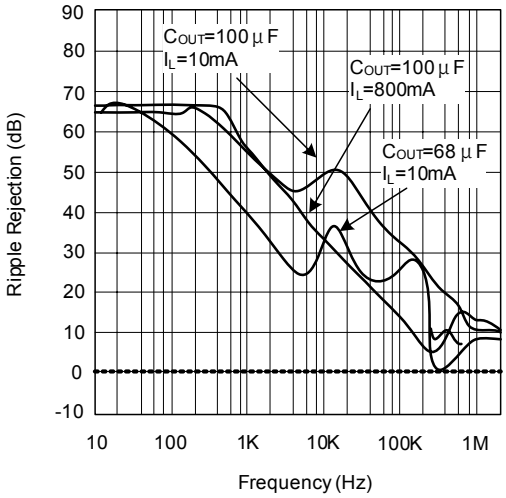
Output Noise Density



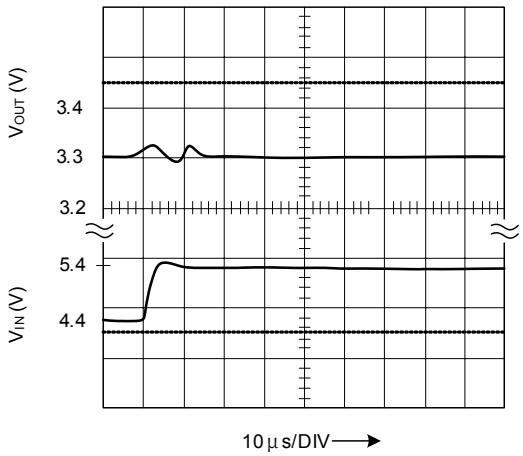
Load Transient Response



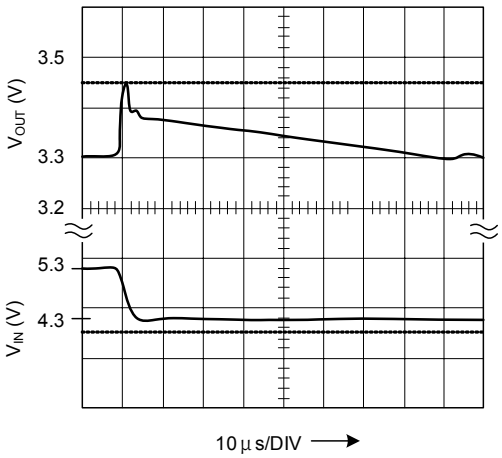
Ripple Rejection vs Frequency



Line Transient Response

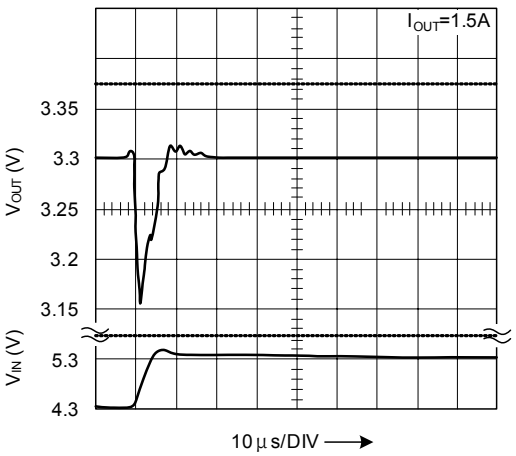


Line Transient Response



■ TYPICAL CHARACTERISTICS(Cont.)

Line Transient Response



Line Transient Response