



LR1118

LINEAR INTEGRATED CIRCUIT

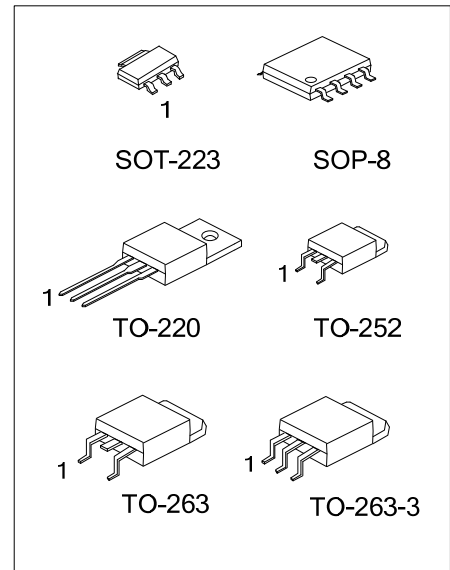
LOW DROP POSITIVE VOLTAGE REGULATORS

■ DESCRIPTION

The UTC LR1118 is a low drop voltage regulator able to provide up to 1A of output current, available also for adjustable version ($V_{REF}=1.24V$). Output consists of PNP power transistor. So that dropout voltage can be extremely low.

■ FEATURES

- * 2.85V device are suitable for SCSI-2 active termination
- * Output current up to 1A
- * Adjustable version available. ($V_{REF}=1.24V$)
- * Internal current and thermal limit



■ ORDERING INFORMATION

Ordering Number		Package	① Pin Assignment	② Packing
Lead Free	Halogen Free			
-	LR1118G-xx-AA3-①-②	SOT-223	A: GOI B: OGI C: GIO D: IGO	T: Tube R: Tape Reel
LR1118L-xx-TA3-①-②	LR1118G-xx-TA3-①-②	TO-220		
LR1118L-xx-TN3-①-②	LR1118G-xx-TN3-①-②	TO-252		
LR1118L-xx-TQ2-①-②	LR1118G-xx-TQ2-①-②	TO-263		
LR1118L-xx-TQ3-①-②	LR1118G-xx-TQ3-①-②	TO-263-3		
-	LR1118G-xx-S08-①-②	SOP-8	GOOIxOOx	

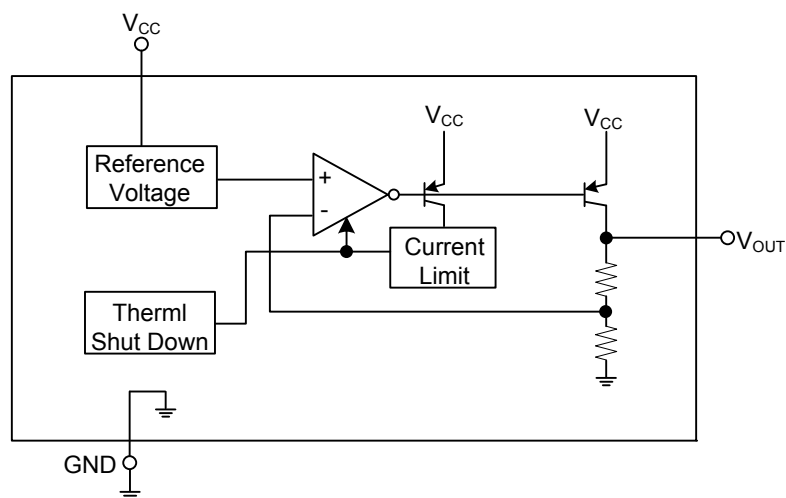
Note: 1. Pin assignment: I: V_{IN} O: V_{OUT} G: GND x: NC
 2. xx: Output Voltage, refer to Marking Information.

<p>LR1118G-xx-AA3-①-②</p>	<p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Output Voltage Code (5) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) refer to Pin Assignment (3) AA3: SOT-223, TA3: TO-220, TN3: TO-252, TQ2: TO-263, TQ3: TO-263-3, S08: SOP-8 (4) xx: refer to Marking Information (5) L: Lead Free, G: Halogen Free and Lead Free</p>
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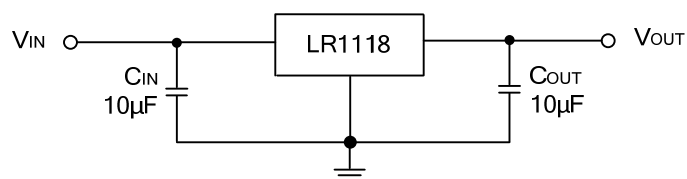
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223		
TO-220 TO-252 TO-263 TO-263-3	12:1.2V 15:1.5V 18:1.8V 25:2.5V 2J:2.85V 30:3.0V 33:3.3V 36:3.6V 50:5.0V	
SOP-8		

BLOCK DIAGRAM



APPLICATION CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V_{IN}	15	V
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	0 ~ +125	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C

Note: 1. 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
Junction to Case	SOT-223	15	°C/W
	TO-220/TO-263	4	
	TO-263-3		
	TO-252	8	
	SOP-8	20	

■ ELECTRICAL CHARACTERISTICS

($T_A=25^\circ\text{C}$, refer to the test circuits, $C_O=10\mu\text{F}$, unless otherwise specified.)

For LR1118-1.2V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5\text{V}$, $I_{OUT}=10\text{mA}$	1.176	1.2	1.224	V
		$V_{IN}=(V_{OUT}+2\text{V})\sim 15\text{V}$, $I_{OUT}=0$ to 1A	1.176	1.2	1.224	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2\text{V})\sim 15\text{V}$, $I_{OUT}=0\text{A}$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2\text{V}$, $I_{OUT}=0$ to 1A		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ\text{C}$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100\text{mA}$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10\text{V}$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5\text{V}$, $T_J=25^\circ\text{C}$	1000			mA
Output Noise Voltage	e_N	$B=10\text{Hz}\sim 10\text{KHz}$, $T_J=25^\circ\text{C}$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40\text{mA}$, $f=120\text{Hz}$, $T_J=25^\circ\text{C}$ $V_{IN}=V_{OUT}+2.5\text{V}$, $V_{RIPPLE}=1\text{V}_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100\text{mA}$		0.88	0.98	V
		$I_{OUT}=1\text{A}$		1.10	1.20	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1118-1.5V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	1.470	1.5	1.530	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0$ to 1A	1.470	1.5	1.530	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0$ to 1A		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz\sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.60	0.73	V
		$I_{OUT}=1A$		0.82	0.95	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

For LR1118-1.8V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	1.764	1.8	1.836	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0$ to 1A	1.764	1.8	1.836	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0$ to 1A		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz\sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.32	0.48	V
		$I_{OUT}=1A$		0.65	0.88	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1118-2.5V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	2.450	2.5	2.550	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0\text{ to }1A$	2.450	2.5	2.550	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0\text{ to }1A$		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz\sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.16	0.25	V
		$I_{OUT}=1A$		0.56	0.70	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

For LR1118-2.85V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	2.793	2.85	2.907	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0\text{ to }1A$	2.793	2.85	2.907	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0\text{ to }1A$		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz\sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.132	0.35	V
		$I_{OUT}=1A$		0.828	0.91	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1118-3.0V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	2.940	3.0	3.060	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0$ to 1A	2.940	3.0	3.060	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0$ to 1A		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz \sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}= 100mA$		0.11	0.26	V
		$I_{OUT}= 1A$		0.45	0.65	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

For LR1118-3.3V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	3.234	3.3	3.366	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0$ to 1A	3.234	3.3	3.366	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0$ to 1A		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz \sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}= 100mA$		0.11	0.26	V
		$I_{OUT}= 1A$		0.45	0.65	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

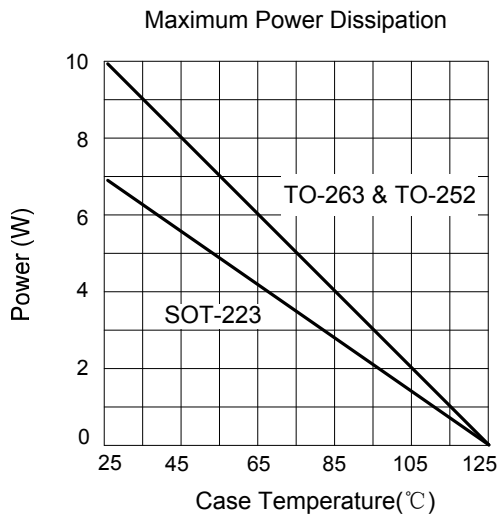
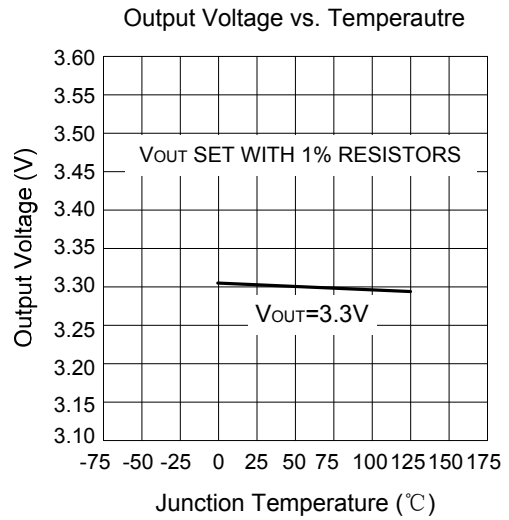
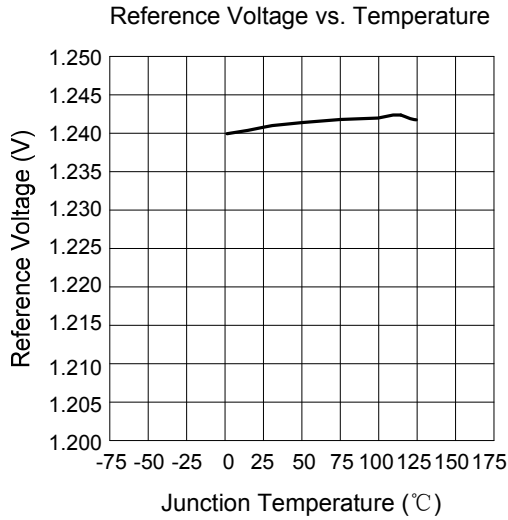
For LR1118-3.6V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	3.528	3.6	3.672	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0 \text{ to } 1A$	3.528	3.6	3.672	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0 \text{ to } 1A$		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz \sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.19	0.31	V
		$I_{OUT}=1A$		0.81	0.89	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

For LR1118-5.0V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA$	4.90	5.0	5.10	V
		$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0 \text{ to } 1A$	4.90	5.0	5.10	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V, I_{OUT}=0A$		0.1	0.6	%
Load Regulation		$V_{IN}=V_{OUT}+2V, I_{OUT}=0 \text{ to } 1A$		2	3	%
Temperature Stability				0.5		%
Long Term Stability		1000 hrs, $T_J=125^\circ C$		0.3		%
Operating Input Voltage	V_{IN}	$I_{OUT}=100mA$			15	V
Quiescent Current	I_D	$V_{IN}\leq 10V$		5	10	mA
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+4.5V, T_J=25^\circ C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz \sim 10KHz, T_J=25^\circ C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^\circ C$ $V_{IN}=V_{OUT}+2.5V, V_{RIPPLE}=1V_{PP}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		0.11	0.26	V
		$I_{OUT}=1A$		0.45	0.62	
Thermal Regulation		30ms Pulse		0.01	0.10	%/W

TYPICAL CHARACTERISTICS



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