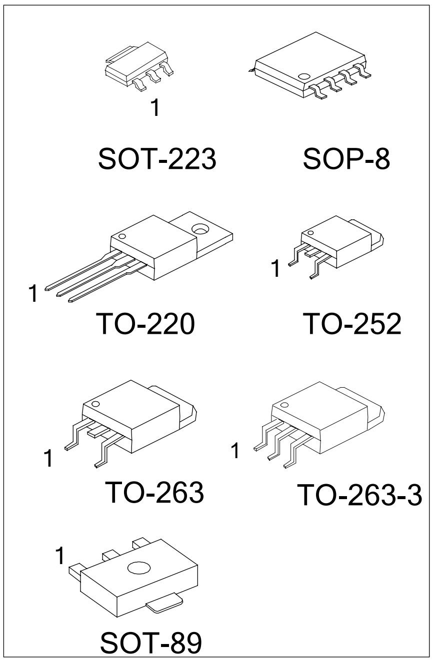
LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS



*Pb-free plating product number:
- LR1116L-xx
- LR1116AL-xx

■ DESCRIPTION

The UTC **LR1116/A** is a low drop voltage regulator able to provide up to 0.8/1.0A of output current, available also for adjustable version (V_{REF}=1.25V). Output consists of pnp power transistor. So that dropout voltage can be extremely low.

■ FEATURES

* Low dropout voltage (0.6V max.)
* 2.85V device are suitable for SCSI-2 active termination
* Output current up to 0.8/1.0A
* Adjustable version available.(V_{REF}=1.25V)
* Internal current and thermal limit
* Available in ±1%(at 25°C) and 2% in all temperature range

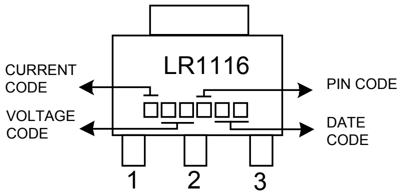
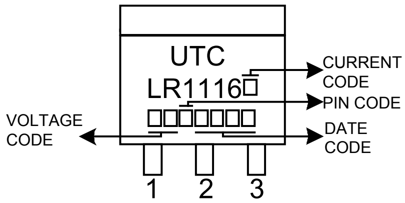
■ ORDERING INFORMATION

Order Number		Package	② Pin Assignment	③ Packing
Normal	Lead Free Plating			
LR1116①-xx-AA3-②-③	LR1116①L-xx-AA3-②-③	SOT-223	A: GOI B: OGI C: GIO D: IGO	R: Tape Reel T: Tube
LR1116①-xx-AB3-②-③	LR1116①L-xx-AB3-②-③	SOT-89		
LR1116①-xx-TA3-②-③	LR1116①L-xx-TA3-②-③	TO-220		
LR1116①-xx-TN3-②-③	LR1116①L-xx-TN3-②-③	TO-252		
LR1116①-xx-TQ2-②-③	LR1116①L-xx-TQ2-②-③	TO-263		
LR1116①-xx-TQ3-②-③	LR1116①L-xx-TQ3-②-③	TO-263-3		
LR1116①-xx-S08-②-③	LR1116①L-xx-S08-②-③	SOP-8	GOOIxOOx	

Note: 1. ①: Current code: Blank: 800mA A: 1A
2. Pin assignment: I:Vin O:Vout G:GND x:NC
3. xx: Output Voltage, refer to Marking Information.

Example: LR1116L-285-AA3-B-T
➔ 800mA, 2.85V, SOT-223 package, Pin1:Vout, Pin2:Ground, Pin3:Vin, packing by Tube.

■ MARKING INFORMATION

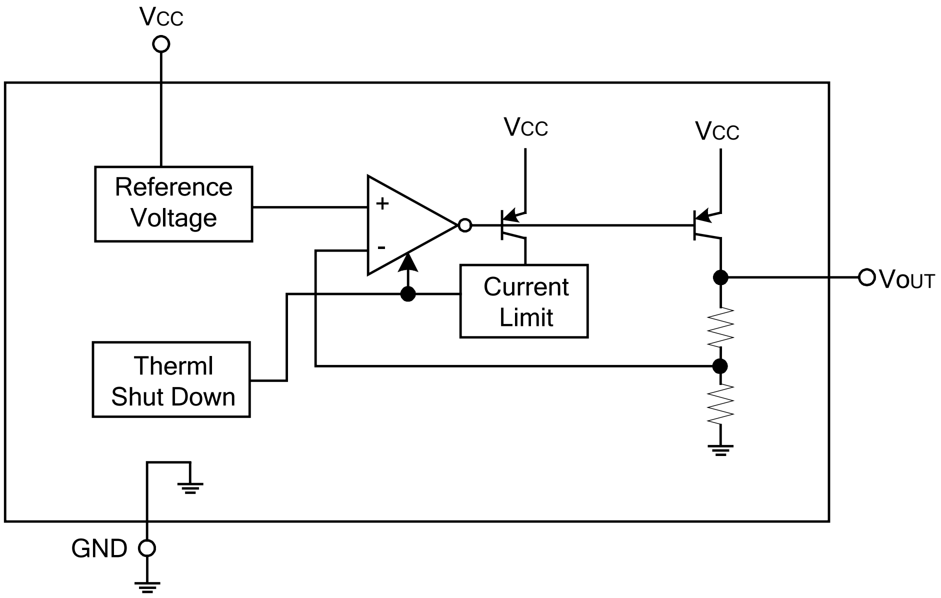
<table>
<tr><th>PACKAGE</th><th>VOLTAGE CODE</th><th>MARKING</th></tr>
<tr><td>SOT-223
SOT-89</td><td rowspan="2">12 :1.2V
15 :1.5V
18 :1.8V
25 :2.5V
285 :2.85V
30 :3.0V
33 :3.3V
36 :3.6V
50 :5.0V
AD :ADJ</td><td>
</td></tr>
<tr><td>TO-220
TO-252
TO-263
TO-263-3</td><td>
</td></tr>
</table>

Note: Current code: Blank: 0.8A A: 1A

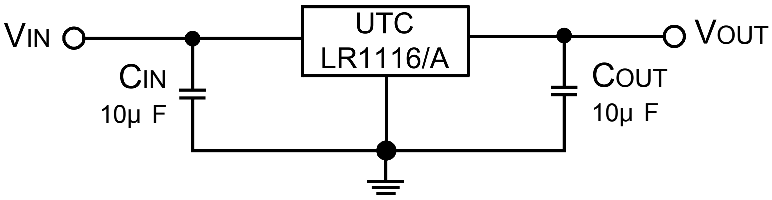
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Thermal Resistance Junction-Case	SOT-223	θ_{JC}	15	°C/W
	SOT-89		15	
	SOP-8		20	
	TO-252		8	
	TO-220		4	
	TO-263		4	

■ BLOCK DIAGRAM



■ APPLICATION CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

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

Note: 1. The device may be damaged while beyond Absolute Maximum Rating.
2. The device is guaranteed to meet performance specifications within 0°C~70°C operation temperature range, and is assured by design from 0°C~125°C.

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, refer to the test circuits, T_J=-0~125°C, C_O=10μF, unless otherwise specified.)

For LR1116/A-Adj

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX	UNIT
Reference Voltage	V_{REF}	V_{IN}-V_{OUT}=1.5V, I_{OUT}=10mA, T_J=25°C	1.238	1.25	1.262	V
Reference Voltage	V_{REF}	V_{IN}-V_{OUT}=1V~10V LR1116 : I_{OUT}=10 to 800mA LR1116A : I_{OUT}=10 to 1000mA	1.225		1.275	V
Line Regulation	ΔV_{OUT}	V_{IN}-V_{OUT}=1V~13.75V, I_{OUT}=10mA		0.1	0.6	%
Load Regulation	ΔV_{OUT}	V_{IN}-V_{OUT}=1V, LR1116 : I_{OUT}=10 to 800mA LR1116A : I_{OUT}=10 to 1000mA		2	3	%
Temperature stability	ΔV_{OUT}			0.50		%
Long Term Stability	ΔV_{OUT}	1000 hrs, T_J=125°C		0.3		%
Operating Input Voltage	V_{IN}				15	V
Adjustment Pin Current	Iadj	V_{IN}≤15V		60	120	μA
Adjustment Pin Current Change	ΔIadj	V_{IN}-V_{OUT}=1V~10V, LR1116 : I_{OUT}=10 to 800mA LR1116A : I_{OUT}=10 to 1000mA		1	5	μA
Minimum Load Current	$I_{OUT(min)}$	V_{IN}=15V		2	5	mA
Output Current	I_{OUT}	V_{IN}-V_{OUT}=4.5V, T_J=25°C	800	950	1200	mA
Output Noise (%V_{OUT})	eN	B=10Hz~10KHz, T_J=25°C		0.003		%
Supply Voltage Rejection	SVR	I_{OUT}=40mA, f=120Hz, T_J=25°C, V_{IN}-V_{OUT}=2.5V, V_{RIPPLE}=1Vpp	60	75		dB
Dropout Voltage	V_D	I_{OUT}= 100mA I_{OUT}= 500mA I_{OUT}= 800mA I_{OUT}=1000mA			0.4 0.6 0.8 0.9	V V V V
Thermal Regulation		Ta=25°C, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1116/A-Fixed(V_{OUT}<3.0V)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25°C$	1%	$V_{OUT}×0.99$	V_{OUT}	$V_{OUT}×1.01$	V
			2%	$V_{OUT}×0.98$		$V_{OUT}×1.02$	
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)$~15V LR1116 : I_{OUT}=0 to 800mA LR1116A : I_{OUT}=0 to 1000mA		$V_{OUT}×0.98$	V_{OUT}	$V_{OUT}×1.02$	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)$~15V, Io=0mA			0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : I_{OUT}=0 to 800mA LR1116A : I_{OUT}=0 to 1000mA			2	3	%
Temperature stability	ΔV_{OUT}				0.5		%
Long Term Stability	ΔV_{OUT}	1000 hrs, $T_J=125°C$			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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25°C$		800	950	1200	mA
Output Noise Voltage	eN	B=10Hz~10KHz, $T_J=25°C$			100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA$, f=120Hz, $T_J=25°C$ $V_{IN}=V_{OUT}+2.5V$, $V_{RIPPLE}=1Vpp$		60	75		dB
Dropout Voltage	V_D	I_{OUT}= 100mA I_{OUT}= 500mA I_{OUT}= 800mA I_{OUT}=1000mA				0.4 0.6 0.8 0.9	V V V V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

For LR1116/A-Fixed(V_{OUT}≧3.0V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25°C$	$V_{OUT}×0.99$	V_{OUT}	$V_{OUT}×1.01$	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)$~15V LR1116 : I_{OUT}=0 to 800mA LR1116A : I_{OUT}=0 to 1000mA	$V_{OUT}×0.98$	V_{OUT}	$V_{OUT}×1.02$	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)$~15V, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : I_{OUT}=0 to 800mA LR1116A : I_{OUT}=0 to 1000mA		2	3	%
Temperature stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	1000 hrs, $T_J=125°C$		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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25°C$	800	950	1200	mA
Output Noise Voltage	eN	B=10Hz ~ 10KHz, $T_J=25°C$		100		μV
Supply Voltage Rejection	SVR	$I_O=40mA$, f=120Hz, $T_J=25°C$ $V_{IN}=V_{OUT}+2.5V$, $V_{RIPPLE}=1Vpp$	60	75		dB
Dropout Voltage	V_D	I_{OUT}= 100mA I_{OUT}= 500mA I_{OUT}= 800mA I_{OUT}=1000mA			0.3 0.4 0.6 0.7	V V V V
Thermal Regulation		Ta=25°C, 30ms Pulse		0.01	0.10	%/W

■ TYPICAL PERFORMANCE CHARACTERISTICS