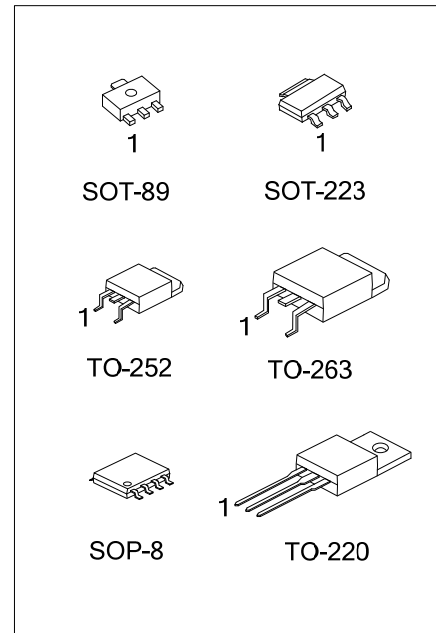


**LR1116/B****LINEAR INTEGRATED CIRCUIT****LOW DROP POSITIVE
VOLTAGE REGULATORS****DESCRIPTION**

The UTC **LR1116/B** is a low drop voltage regulator able to provide up to 0.8/0.5A of output current. 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 0.8/0.5A
- * Internal Current and Thermal Limit
- * Available in $\pm 1\%$ (at 25°C) and 2% in all Temperature

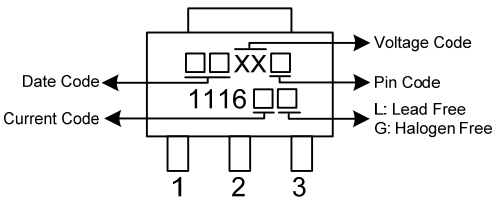
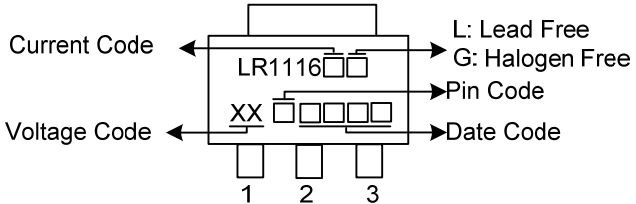
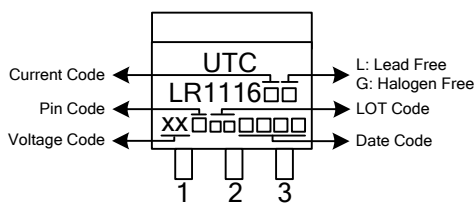
**ORDERING INFORMATION**

Ordering Number		Package	② Pin Assignment				③ Packing
Lead Free	Halogen Free		Pin Code	1	2	3	
LR1116①L-xx-AA3-A-R	LR1116①G-xx-AA3-②-③	SOT-223					R: Tape Reel T: Tube
LR1116①L-xx-AB3-A-R	LR1116①G-xx-AB3-②-③	SOT-89	A	G	O	I	
LR1116①L-xx-TA3-D-T	LR1116①G-xx-TA3-②-③	TO-220	B	O	G	I	
LR1116①L-xx-TN3-A-R	LR1116①G-xx-TN3-②-③	TO-252	C	G	I	O	
LR1116①L-xx-TQ2-D-R	LR1116①G-xx-TQ2-②-③	TO-263	D	I	G	O	
LR1116①L-xx-S08-R	LR1116①G-xx-S08-R	SOP-8	GOOIxOOx				

Notes: 1. ①: Current code: Blank: 0.8A B: 0.5A
 2. Pin Assignment: I: V_{IN} O: V_{OUT} G: GND x: NC
 3. xx: Output Voltage, Refer to Marking Information.

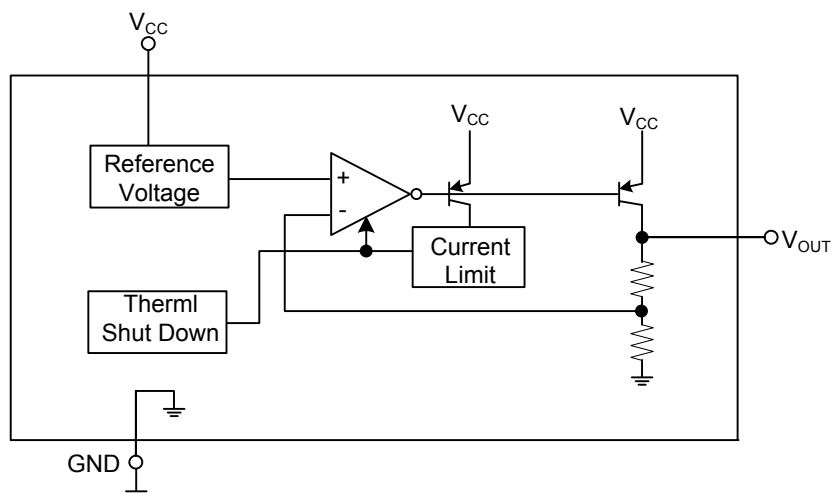
	(1) Packing Type	(1) R: Tape Reel, T: Tube
	(2) Pin Assignment	(2) Refer to Pin Assignment
	(3) Package Type	(3) AA3: SOT-223, AB3: SOT-89, TA3: TO-220 TN3: TO-252, TQ2: TO-263, S08: SOP-8
	(4) Output Voltage Code	(4) xx: Refer to Marking Information
	(5) Lead Free	(5) G: Halogen Free, L: Lead Free
	(6) Current Code	(6) Blank: 0.8A, B: 0.5A

MARKING INFORMATION

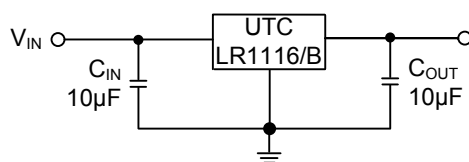
PACKAGE	VOLTAGE CODE	MARKING
SOT-89	12 :1.2V 15 :1.5V 18 :1.8V 25 :2.5V 2J :2.85V 30 :3.0V 33 :3.3V 36 :3.6V 50 :5.0V	
SOT-223		
TO-220 TO-252 TO-263		

Note: Current code: Blank: 0.8A B: 0.5A

■ BLOCK DIAGRAM



■ APPLICATION CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V_{IN}	15	V
Operating Junction Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	SOT-223/SOT-89	15	°C/W
	SOP-8	20	°C/W
	TO-252	8	°C/W
	TO-220/TO-263	4	°C/W

■ ELECTRICAL CHARACTERISTICS

($T_A=25^\circ\text{C}$, refer to the test circuits, $T_J=-0 \sim 125^\circ\text{C}$, $C_O=10\mu\text{F}$, unless otherwise specified).

For LR1116/B-1.2V

of LR1116B-1.2V							
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%	1.188	1.2	1.212	V
			2%	1.176		1.224	
Output Voltage	V _{OUT}	V _{IN} =(V _{OUT} +2V)~15V LR1116 : I _{OUT} =0 to 800mA LR1116B : I _{OUT} =0 to 500mA	1.176	1.2	1.224	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 LR1116B : I _{OUT} =0 to 500mA		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} ≤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	e _N	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} =1V _{PP}	60	75		dB	
Dropout Voltage	V _D	I _{OUT} = 100mA		0.9	1.0	V	
		I _{OUT} = 500mA		1.1	1.3	V	
		I _{OUT} = 800mA(only for LR1116)		1.2	1.4	V	
Thermal Regulation		T _A =25°C, 30ms Pulse		0.01	0.10	%/W	

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1116/B-1.5V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1% 2%	1.485 1.470	1.5 1.530	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	1.470	1.5	1.530	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	$I_{OUT}=100mA$		0.6	0.75	V
		$I_{OUT}=500mA$		0.80	0.95	V
		$I_{OUT}=800mA$ (only for LR1116)		0.95	1.1	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

For LR1116/B-1.8V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1% 2%	1.782 1.764	1.8 1.836	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	1.764	1.8	1.836	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	$I_{OUT}=100mA$		0.4	0.5	V
		$I_{OUT}=500mA$		0.6	0.8	V
		$I_{OUT}=800mA$ (only for LR1116)		0.8	0.95	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1116/B-2.5V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1%	2.475	2.5	V
			2%	2.450	2.550	
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	2.45	2.5	2.55	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.4	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

For LR1116/B-2.85V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1%	2.822	2.85	V
			2%	2.793	2.907	
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	2.793	2.85	2.907	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.45	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

For LR1116/B-3.0V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	2.970	3.0	3.030	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	2.940	3.0	3.060	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.45	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

For LR1116/B-3.3V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	3.267	3.3	3.333	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	3.234	3.3	3.366	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.4	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS (Cont.)

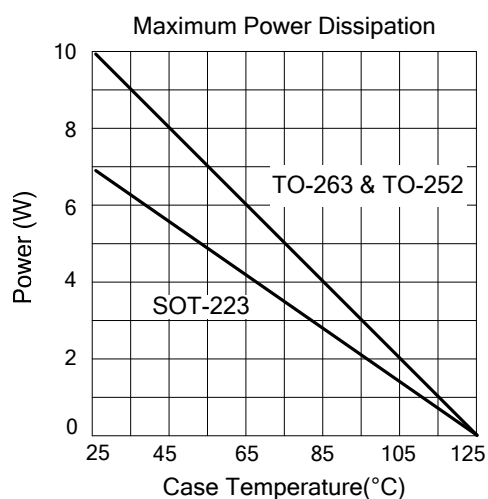
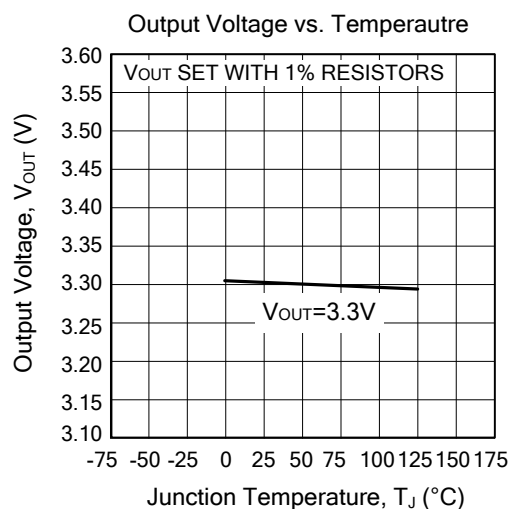
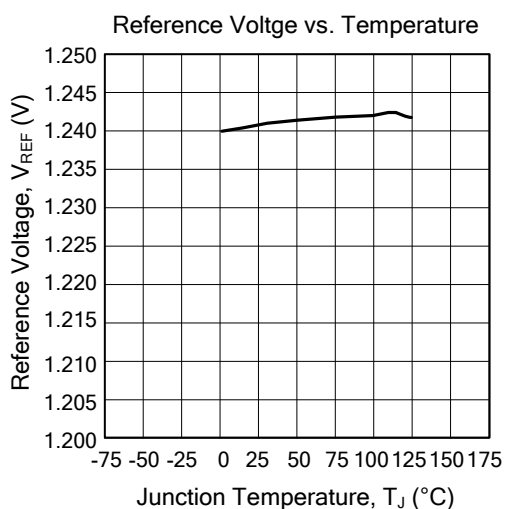
For LR1116/B-3.6V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	3.564	3.6	3.636	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	3.528	3.6	3.672	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.4	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

For LR1116/B-5.0V

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	4.95	5.0	5.05	V
Output Voltage	V_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA	4.90	5.0	5.10	V
Line Regulation	ΔV_{OUT}	$V_{IN}=(V_{OUT}+2V)\sim 15V$, $I_{OUT}=0mA$		0.1	0.6	%
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$ LR1116 : $I_{OUT}=0$ to 800mA LR1116B : $I_{OUT}=0$ to 500mA		2	3	%
Temperature Stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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}	$V_{IN}=V_{OUT}+4.5V$, $T_J=25^{\circ}C$	800	950	1200	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	0.3	V
		$I_{OUT}=500mA$		0.4	0.6	V
		$I_{OUT}=800mA$ (only for LR1116)		0.6	0.8	V
Thermal Regulation		$T_A=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ TYPICAL PERFORMANCE CHARACTERISTICS



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