



LD1117/A

LINEAR INTEGRATED CIRCUIT

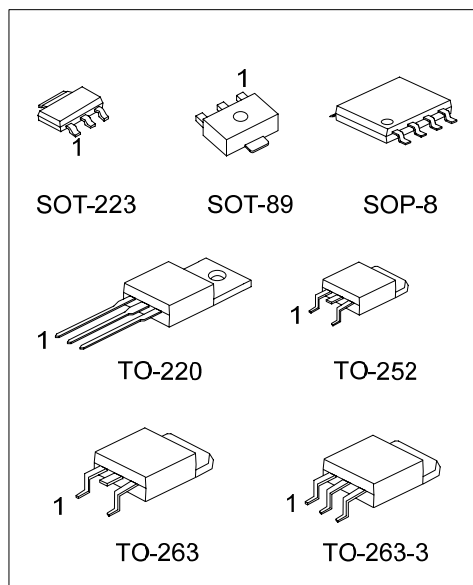
LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

DESCRIPTION

The UTC LD1117/A is a low dropout, 3-terminal positive voltage regulator designed to provide output current up to 800mA/1A. There are adjustable version ($V_{REF}=1.25V$) and various fixed versions.

FEATURES

- * Low dropout voltage
- * Suitable for SCSI-2 active termination if V_{OUT} set to 2.85V
- * Output current up to 0.8A for 1117 and 1.0A for 1117A
- * Built-in current limit and over temperature protection
- * Available in $\pm 1\%$ (at 25°C) and 2% in all temperature range
- * Low current consumption



*Pb-free plating product number:
LD1117L-xx / LD1117AL-xx

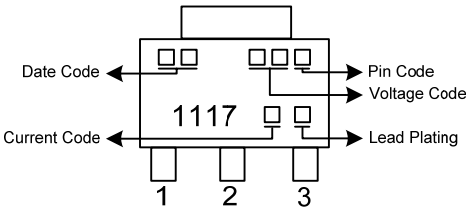
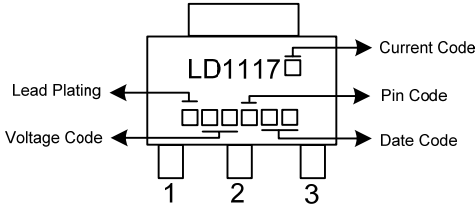
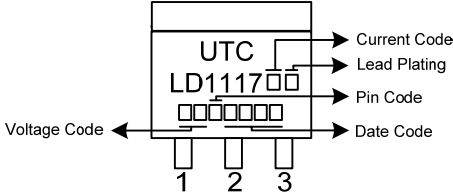
ORDERING INFORMATION

Order Number		Package	② Pin Assignment	③ Packing
Normal	Lead Free Plating			
LD1117①-xx-AA3-②-③	LD1117①L-xx-AA3-②-③	SOT-223	A: GOI B: OGI C: GIO D: IGO	R: Tape Reel T: Tube
LD1117①-xx-AB3-②-③	LD1117①L-xx-AB3-②-③	SOT-89		
LD1117①-xx-TA3-②-③	LD1117①L-xx-TA3-②-③	TO-220		
LD1117①-xx-TN3-②-③	LD1117①L-xx-TN3-②-③	TO-252		
LD1117①-xx-TQ2-②-③	LD1117①L-xx-TQ2-②-③	TO-263		
LD1117①-xx-TQ3-②-③	LD1117①L-xx-TQ3-②-③	TO-263-3		
LD1117①-xx-S08-②-③	LD1117①L-xx-S08-②-③	SOP-8	GOOIxOOx	

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

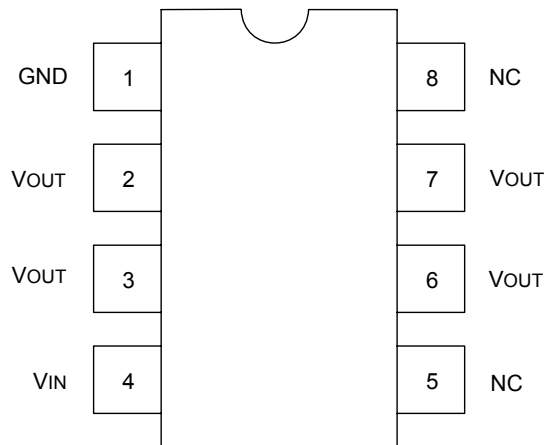
 LD1117①L-xx-AA3-②-③	(1) Packing Type (2) Pin Assignment (3) Package Type (4) Output Voltage Code (5) Lead Plating (6) Current Code	(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, TA3: TO-220, TN3: TO-252, TQ2: TO-263, TQ3: TO-263-3, S08: SOT-8 (4) xx: refer to Marking Information (5) L: Lead Free Plating, Blank: Pb/Sn (6) Blank: 800mA, A: 1A
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■ MARKING INFORMATION

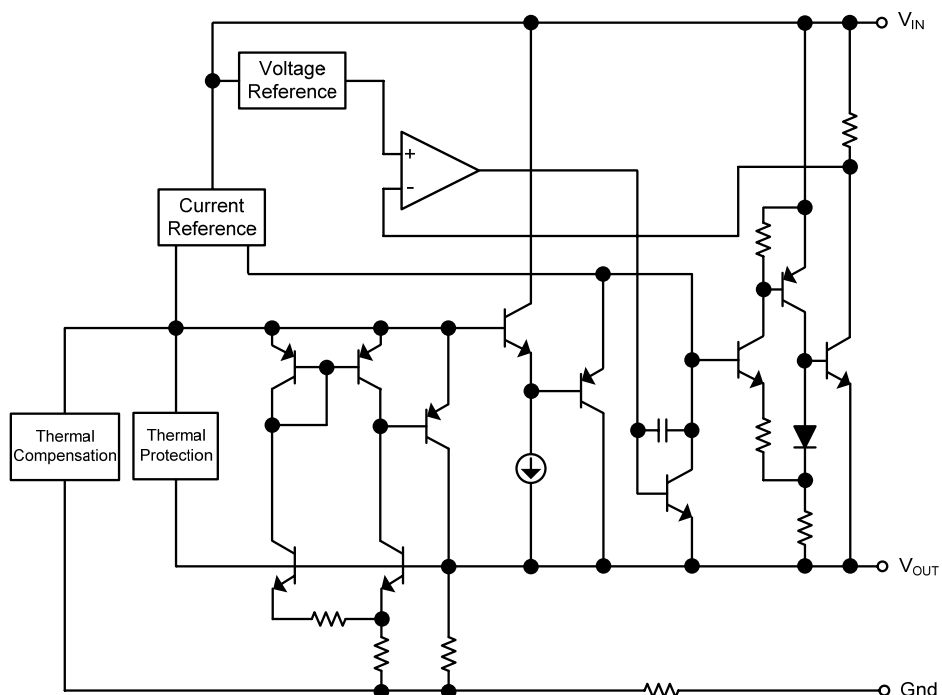
PACKAGE	VOLTAGE CODE	MARKING
SOT-89	12 :1.2V 15 :1.5V 18 :1.8V 25 :2.5V 2J :2.85V 30 :3.0V 33 :3.3V 36 :3.6V 50 :5.0V AD :ADJ	
SOT-223		
TO-220 TO-252 TO-263 TO-263-3		

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

■ PIN CONFIGURATION



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V _{IN}	18	V
Power Dissipation	P _D	Internally limited	
Junction Temperature	T _J	+150	°C
Storage temperature	T _{STG}	-65 ~ +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.

■ RECOMMENDED OPERATING RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	15	V
Operating Junction Temperature Range	T _J	0 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

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

For LD1117/A-1.2

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	V _{IN} =3.2V, I _{OUT} =10mA, T _J =25°C	1.188	1.200	1.212	V
Output Voltage	V _{OUT}	V _{IN} =2.7 to 8V LD1117 : I _{OUT} =0 ~ 800mA LD1117A : I _{OUT} =0 ~ 1.0A	1.176	1.200	1.224	V
Line Regulation	ΔV _{OUT}	V _{IN} =2.7 to 8V, I _{OUT} =0mA		1	6	mV
Load Regulation	ΔV _{OUT}	V _{IN} =2.7V LD1117 : I _{OUT} =0 ~ 800mA LD1117A : I _{OUT} =0 ~ 1000mA		1	10	mV
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 _Q	V _{IN} ≤10V		5	10	mA
Current Limit	I _{LIMIT}	V _{IN} =6.2V, T _J =25°C				
		LD1117	800			
		LD1117A	1000			
Minimum Load Current	I _{O(MIN)}	V _{IN} =15V		2	5	mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T _J =25°C		100		μV
Supply Voltage Rejection	SVR	I _{OUT} =40mA, f=120Hz, T _J =25°C, V _{IN} =4.2V, V _{RIPPLE} =1Vpp	60	75		dB
Dropout Voltage	V _D	I _{OUT} =100mA		1.00	1.10	V
		I _{OUT} =500mA		1.15	1.25	V
		I _{OUT} =800mA		1.20	1.30	V
		I _{OUT} =1000 mA		1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-1.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=3.5V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1.485	1.500	1.515	V
Output Voltage	V_{OUT}	$V_{IN}=3$ to 8V LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	1.470	1.500	1.530	V
Line Regulation	ΔV_{OUT}	$V_{IN}=3$ to 8V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 10V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=6.5V$, $T_J=25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA$, $f=120Hz$, $T_J=25^{\circ}C$, $V_{IN}=4.5V$, $V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00	1.10	V
				1.15	1.25	V
				1.20	1.30	V
				1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

For LD1117/A-1.8

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=3.8V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1.780	1.800	1.820	V
Output Voltage	V_{OUT}	$V_{IN}=3.3$ to 8V LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$	1.760	1.800	1.840	V
Line Regulation	ΔV_{OUT}	$V_{IN}=3.3$ to 8V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3.3V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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}	$I_{OUT}=100mA$			10	V
Quiescent Current	I_Q	$V_{IN} \leq 8V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=6.8V$, $T_J=25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA$, $f=120Hz$, $T_J=25^{\circ}C$, $V_{IN}=5.5V$, $V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00	1.10	V
				1.15	1.25	V
				1.20	1.30	V
				1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-2.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=4.5V, I_{OUT}=10mA, T_J=25^{\circ}C$	1%	2.475	2.500	V
			2%	2.450	2.500	
Output Voltage	V_{OUT}	$V_{IN}=3.9 \text{ to } 10V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	2%	2.450	2.500	V
			4%	2.400	2.500	
Line Regulation	ΔV_{OUT}	$V_{IN}=3.9 \text{ to } 10V, I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3.9V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 10V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=7.5V, T_J = 25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J = 25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J = 25^{\circ}C,$ $V_{IN}=5.5V, V_{ripple}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00	1.10	V
				1.15	1.25	V
				1.20	1.30	V
				1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W

For LD1117/A-2.85

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=4.85V, I_{OUT}=10mA, T_J = 25^{\circ}C$	2.828	2.850	2.880	V
Output Voltage	V_{OUT}	$V_{IN}=4.25 \text{ to } 10V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	2.790	2.850	2.910	V
Line Regulation	ΔV_{OUT}	$V_{IN}=4.25 \text{ to } 10V, I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.25V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 10V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=7.85V, T_J = 25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J = 25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J = 25^{\circ}C,$ $V_{IN}=5.85V, V_{ripple}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00	1.10	V
				1.15	1.25	V
				1.20	1.30	V
				1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-3.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5V, I_{OUT}=10mA, T_J=25^{\circ}C$	1%	2.970	3.000	V
			2%	2.940	3.000	
Output Voltage	V_{OUT}	$V_{IN}=4.5 \text{ to } 10V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	2%	2.940	3.000	V
			4%	2.880	3.000	
Line Regulation	ΔV_{OUT}	$V_{IN}=4.5 \text{ to } 12V, I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.5V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 10V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=8V, T_J=25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	V
		$I_{OUT}=800mA$		1.20	1.30	V
		$I_{OUT}=1000mA$		1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W

For LD1117/A-3.3

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.3V, I_{OUT}=10mA,$ $T_J=25^{\circ}C$	1%	3.267	3.300	V
			2%	3.235	3.300	
Output Voltage	V_{OUT}	$V_{IN}=4.75 \text{ to } 10V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	2%	3.235	3.300	V
			4%	3.160	3.300	
Line Regulation	ΔV_{OUT}	$V_{IN}=4.75 \text{ to } 15V, I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.75V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 15V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=8.3V, T_J=25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.3V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	V
		$I_{OUT}=800mA$		1.20	1.30	V
		$I_{OUT}=1000mA$		1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-3.6

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.6V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.564	3.600	3.636	V
Output Voltage	V_{OUT}	$V_{IN}=5$ to 10V LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	3.528	3.600	3.672	V
Line Regulation	ΔV_{OUT}	$V_{IN}=5$ to 15V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=5V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 15V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=8.6V, T_J=25^{\circ}C$	LD1117 800 LD1117A 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.6V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00 1.15 1.20 1.20	1.10 1.25 1.30 1.30	V V V V
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117/A-5.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=7V, I_{OUT}=10mA, T_J=25^{\circ}C$	1% 4.950 2% 4.900	5.000	5.050 5.100	V
Output Voltage	V_{OUT}	$V_{IN}=6.5$ to 15V LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1.0A$	2% 4.900 4% 4.800	5.000	5.100 5.200	V
Line Regulation	ΔV_{OUT}	$V_{IN}=6.5$ to 15V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=6.5V$ LD1117 : $I_{OUT}=0 \sim 800mA$ LD1117A : $I_{OUT}=0 \sim 1000mA$		1	10	mV
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_Q	$V_{IN} \leq 15V$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=10V, T_J=25^{\circ}C$	LD1117 800 LD1117A 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=8V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$ $I_{OUT}=500mA$ $I_{OUT}=800mA$ $I_{OUT}=1000mA$		1.00 1.15 1.20 1.20	1.10 1.25 1.30 1.30	V V V V
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-ADJUSTABLE

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	V_{REF}	$V_{IN}-V_{OUT}=2V$, $I_{OUT}=10mA$, $T_J=25^{\circ}C$	1.238	1.25	1.262	V
Reference Voltage	V_{REF}	$V_{IN}-V_{OUT}=1.4$ to $10V$ LD1117 : $I_{OUT}=10 \sim 800mA$ LD1117A : $I_{OUT}=10 \sim 1000mA$	1.225		1.275	V
Line Regulation	ΔV_{OUT}	$V_{IN}-V_{OUT}=1.5$ to $13.75V$, $I_{OUT}=10mA$		0.035	0.200	%
Load Regulation	ΔV_{OUT}	$V_{IN}-V_{OUT}=3V$ LD1117 : $I_{OUT}=10 \sim 800mA$ LD1117A : $I_{OUT}=10 \sim 1000mA$		0.10	0.400	%
Temperature stability	ΔV_{OUT}			0.50		%
Long Term Stability	ΔV_{OUT}	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	V_{IN}				15	V
Adjustment Pin Current	I_{ADJ}	$V_{IN} \leq 15V$		60	120	μA
Adjustment Pin Current Change	ΔI_{ADJ}	$V_{IN}-V_{OUT}=1.4$ to $10V$, LD1117 : $I_{OUT}=10 \sim 800mA$ LD1117A : $I_{OUT}=10 \sim 1000mA$		1	5	μA
Minimum Load Current	$I_{O(MIN)}$	$V_{IN}=15V$		2	5	mA
Current Limit	I_{LIMIT}	$V_{IN}-V_{OUT}=5V$, $T_J=25^{\circ}C$				mA
		LD1117	800			
		LD1117A	1000			
Output Noise (%Vo)	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		0.003		%
Supply Voltage Rejection	SVR	$I_{OUT}=40mA$, $f=120Hz$, $T_J=25^{\circ}C$, $V_{IN}-V_{OUT}=3V$, $V_{ripple}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	V
		$I_{OUT}=800mA$		1.20	1.30	V
		$I_{OUT}=1000mA$		1.20	1.30	V
Thermal Regulation		$T_a=25^{\circ}C$, 30ms Pulse		0.01	0.10	%/W

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Thermal Resistance Junction-Case	SOT-223	θ_{JC}	15	$^{\circ}C/W$
	SOP-8		20	
	TO-252		12	
	TO-220		4	
	TO-263		4	
Thermal Resistance Junction-Ambient	SOT-223	θ_{JA}	165	$^{\circ}C/W$
	SOP-8		150	
	TO-252		112	
	TO-220		54	
	TO-263		64	

■ TYPICAL APPLICATIONS

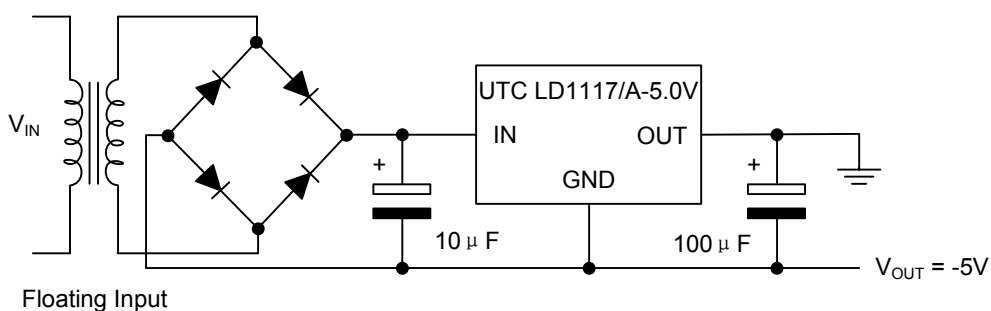


FIG.1 Negative Supply

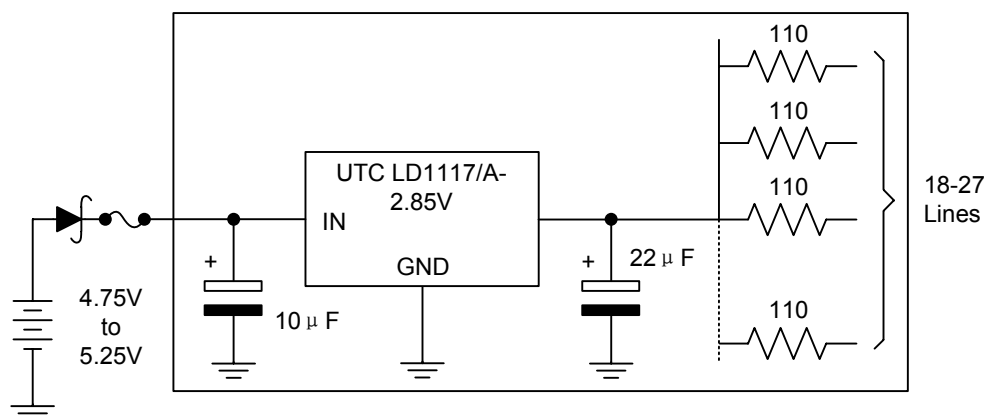


FIG.2 Active Terminator for SCSI-2 BUS

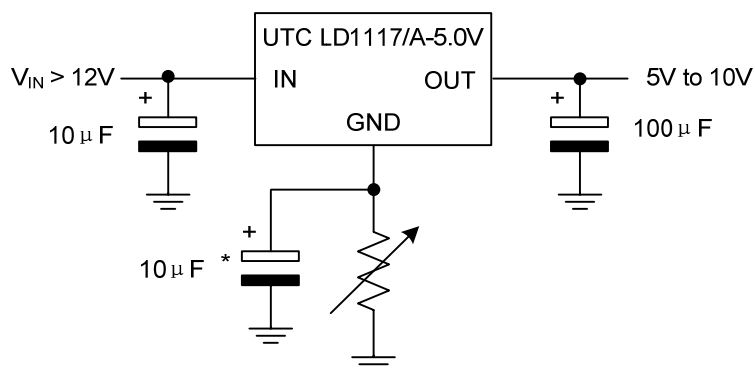


FIG.3 Circuit for Increasing Output Voltage

■ APPLICATION NOTE of LD1117/A ADJUSTABLE

The LD1117/A ADJUSTABLE has a reference voltage of between the OUT and ADJ pins. I_{ADJ} is 60 μ A typ. (120 μ A max.) and ΔI_{ADJ} is 1 μ A typ. (5 μ A max.).

R1 is normally fixed to 120 Ω .

From figure 4 we obtain:

$$V_{OUT} = V_{REF} + R2(I_{ADJ} + I_{R1}) = V_{REF} + R2(I_{ADJ} + V_{REF} / R1) = V_{REF}(1 + R2/R1) + R2 \times I_{ADJ}$$

Usually R2 value is in the range of few K Ω , so the $R2 \times I_{ADJ}$ product could be neglected; then the above expression becomes: $V_{OUT} = V_{REF}(1 + R2/R1)$

For better load regulation, realize a good Kelvin connection of R1 and R2 is important. Particularly R1 connection must be realized very close to OUT and ADJ pin, while R2 ground connection must be placed as near as possible to the negative Load pin. Ripple rejection can be improved by introducing a 10 μ F electrolytic capacitor placed in parallel to the R2 resistor (See Fig. 5)

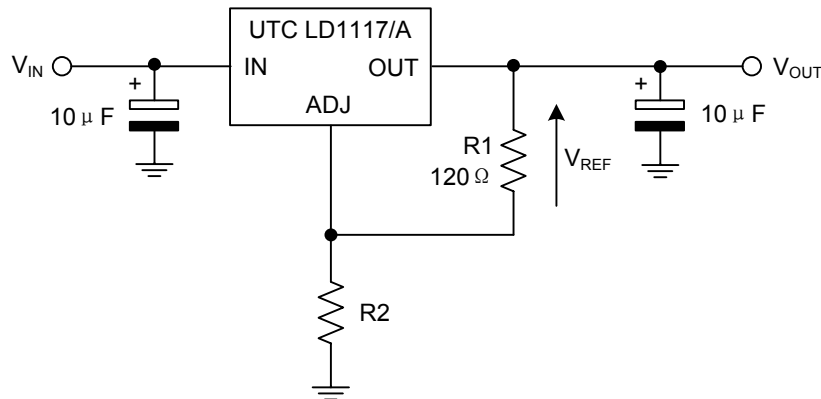


FIG.4 Adjustable Output Voltage Application Circuit

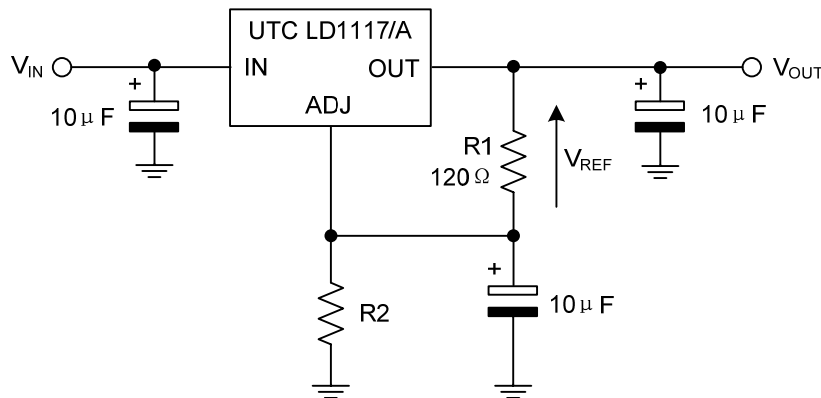
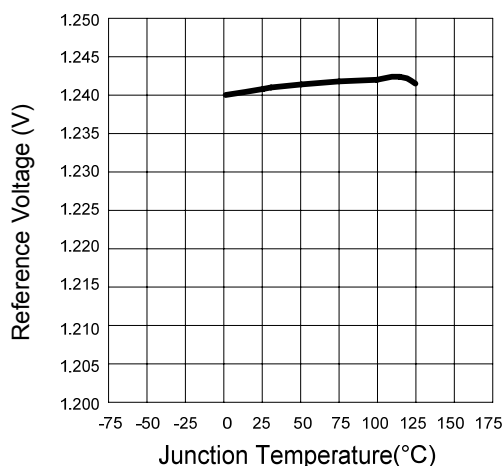


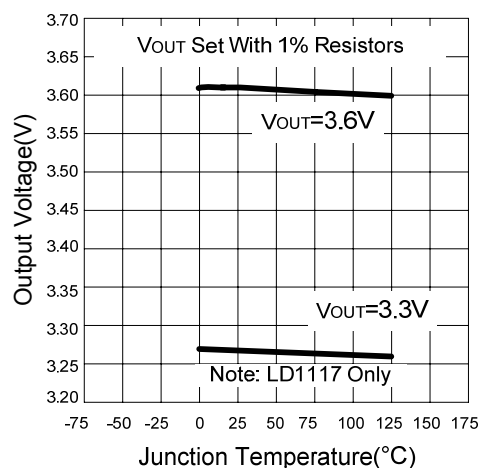
FIG.5 Adjustable Output Voltage Application with improved Ripple Rejection.

■ TYPICAL PERFORMANCE CHARACTERISTICS

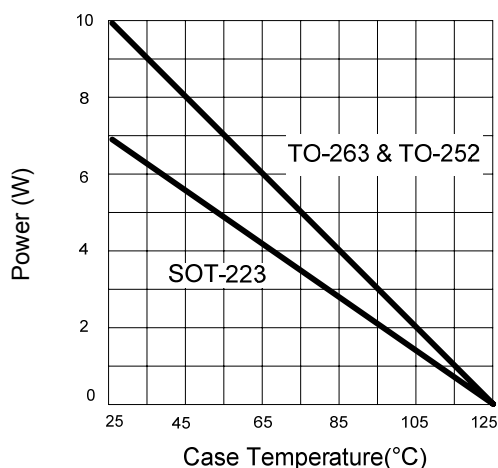
Reference Voltage vs. Temperature



Output Voltage vs. Temperature



Maximum Power Dissipation



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