



LD1117E

LINEAR INTEGRATED CIRCUIT

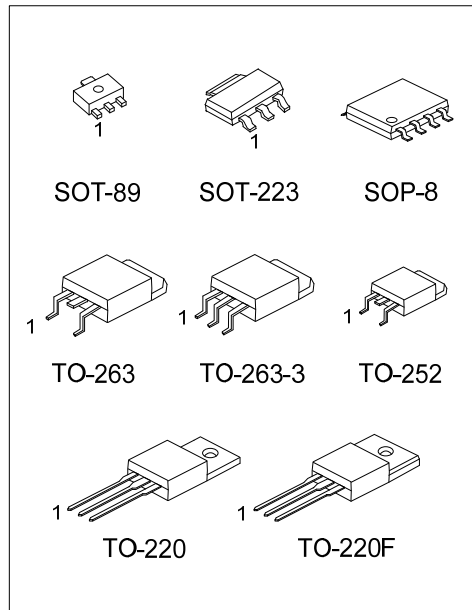
LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

DESCRIPTION

The UTC **LD1117E** is a low dropout, 3-terminal positive voltage regulator designed to provide output current up to 1A. There are adjustable voltage version ($V_{REF}=1.25V$) and various fixed voltage versions.

FEATURES

- * Low Dropout Voltage
- * Suitable For SCSI-2 Active Termination If V_{OUT} Set To 2.85V
- * Output Current Up To 1.0A
- * Built-In Current Limit And Over Temperature Protection
- * Available In $\pm 1\%$ (at 25°C) And 2% In All Temperature Range
- * Low Current Consumption



ORDERING INFORMATION

Ordering Number		Package	② Pin Assignment	Packing
Lead Free	Halogen Free			
LD1117EL-xx-AA3-①-②	LD1117EG-xx-AA3-①-②	SOT-223	A: GOI B: OGI C: GIO D: IGO	R: Tape Reel T: Tube
LD1117EL-xx-AB3-①-②	LD1117EG-xx-AB3-①-②	SOT-89		
LD1117EL-xx-TA3-①-②	LD1117EG-xx-TA3-①-②	TO-220		
LD1117EL-xx-TF3-①-②	LD1117EG-xx-TF3-①-②	TO-220F		
LD1117EL-xx-TN3-①-②	LD1117EG-xx-TN3-①-②	TO-252		
LD1117EL-xx-TQ2-①-②	LD1117EG-xx-TQ2-①-②	TO-263		
LD1117EL-xx-TQ3-①-②	LD1117EG-xx-TQ3-①-②	TO-263-3		
LD1117EL-xx-S08-①-②	LD1117EG-xx-S08-①-②	SOP-8		

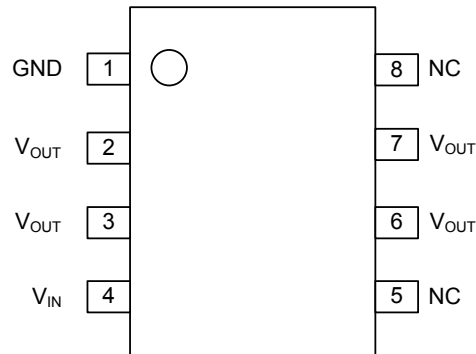
Note: Pin Assignment: I: V_{IN} O: V_{OUT} G: GND

<p>LD1117EL-xx-AA3-①-②</p> <p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Output Voltage Code (5) Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, TA3: TO-220, (3) TF3: TO-220F, TN3: TO-252, TQ2: TO-263, (3) TQ3: TO-263-3, S08: SOP-8 (4) xx: refer to Marking Information (5) G: Halogen Free, L: Lead Free</p>
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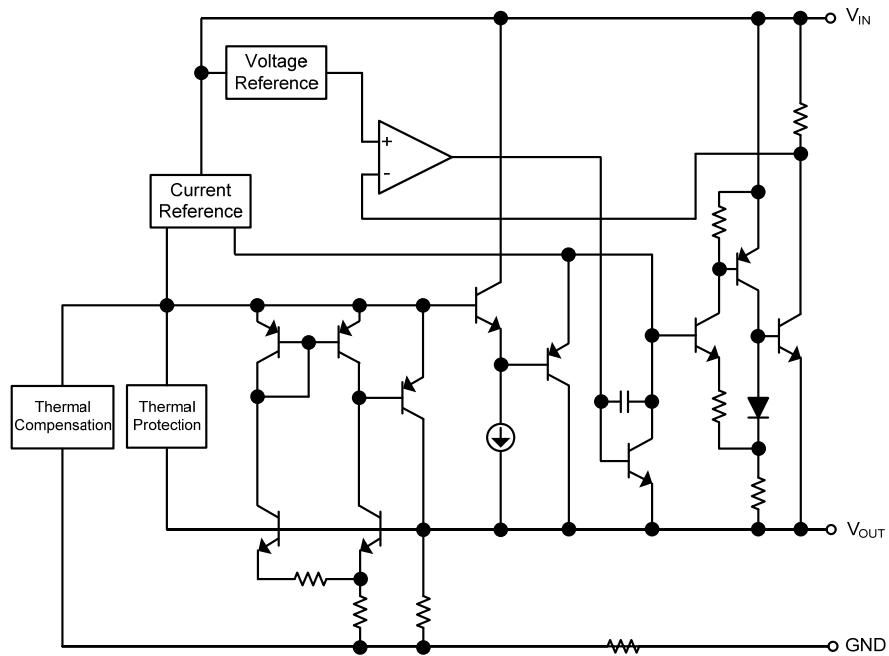
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89		
SOT-223	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	
TO-220 TO-220F TO-252 TO-263 TO-263-3		

PIN CONFIGURATION of SOP-8



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V_{IN}	18	V
Power Dissipation	P_D	Internally limited	
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

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	T_J	0 ~ +125	$^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	θ_{JA}	165	$^\circ\text{C/W}$
	SOT-89		180	$^\circ\text{C/W}$
	SOP-8		150	$^\circ\text{C/W}$
	TO-252		112	$^\circ\text{C/W}$
	TO-220		54	$^\circ\text{C/W}$
	TO-263		64	$^\circ\text{C/W}$
Junction to Case	SOT-223	θ_{JC}	15	$^\circ\text{C/W}$
	SOT-89		50	$^\circ\text{C/W}$
	SOP-8		20	$^\circ\text{C/W}$
	TO-252		12	$^\circ\text{C/W}$
	TO-220		4	$^\circ\text{C/W}$
	TO-263		4	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

($T_a=25^\circ\text{C}$, refer to the test circuits, $T_J=0$ to 125°C , $C_o=10\mu\text{F}$ unless otherwise specified)

For LD1117E-1.2

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=3.2\text{V}$, $I_{OUT}=10\text{mA}$, $T_J=25^\circ\text{C}$	1.176	1.200	1.224	V
Output Voltage	V_{OUT}	$V_{IN}=2.7$ to 8V $I_{OUT}=10\sim 1000\text{mA}$	1.176	1.200	1.224	V
Line Regulation	ΔV_{OUT}	$V_{IN}=2.7$ to 8V , $I_{OUT}=0\text{mA}$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=2.7$ $I_{OUT}=10\sim 1000\text{mA}$		9	12	mV
Temperature stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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_Q	$V_{IN}\leq 10\text{V}$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=6.2\text{V}$, $T_J=25^\circ\text{C}$	1000			mA
Minimum Load Current	$I_{O(MIN)}$	$V_{IN}=15\text{V}$		2	5	mA
Output Noise Voltage	eN	$B=10\text{Hz}$ to 10KHz , $T_J=25^\circ\text{C}$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40\text{mA}$, $f=120\text{Hz}$, $T_J=25^\circ\text{C}$, $V_{IN}=4.2\text{V}$, $V_{RIPPLE}=1\text{Vpp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100\text{mA}$		1.00	1.10	V
		$I_{OUT}=500\text{mA}$		1.15	1.25	
		$I_{OUT}=800\text{mA}$		1.20	1.30	
		$I_{OUT}=1\text{A}$		1.20	1.30	
Thermal Regulation		$T_a=25^\circ\text{C}$, 30ms Pulse		0.01	0.10	%/W

For LD1117E-1.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=3.5\text{V}$, $I_{OUT}=10\text{mA}$, $T_J=25^\circ\text{C}$	1.470	1.500	1.530	V
Output Voltage	V_{OUT}	$V_{IN}=3$ to 8V $I_{OUT}=10\sim 1000\text{mA}$	1.470	1.500	1.530	V
Line Regulation	ΔV_{OUT}	$V_{IN}=3$ to 8V , $I_{OUT}=0\text{mA}$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3\text{V}$ $I_{OUT}=10\sim 1000\text{mA}$		12	15	mV
Temperature stability	ΔV_{OUT}			0.5		%
Long Term Stability	ΔV_{OUT}	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_Q	$V_{IN}\leq 10\text{V}$		5	10	mA
Current Limit	I_{LIMIT}	$V_{IN}=6.5\text{V}$, $T_J=25^\circ\text{C}$	1000			mA
Output Noise Voltage	eN	$B=10\text{Hz}$ to 10KHz , $T_J=25^\circ\text{C}$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40\text{mA}$, $f=120\text{Hz}$, $T_J=25^\circ\text{C}$, $V_{IN}=4.5\text{V}$, $V_{RIPPLE}=1\text{Vpp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100\text{mA}$		1.00	1.10	V
		$I_{OUT}=500\text{mA}$		1.15	1.25	
		$I_{OUT}=800\text{mA}$		1.20	1.30	
		$I_{OUT}=1\text{A}$		1.20	1.30	
Thermal Regulation		$T_a=25^\circ\text{C}$, 30ms Pulse		0.01	0.10	%/W

LD1117E

LINEAR INTEGRATED CIRCUIT

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117E-1.8

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=3.8V, I_{OUT}=10mA, T_J=25^{\circ}C$	1.764	1.800	1.836	V
Output Voltage	V_{OUT}	$V_{IN}=3.3$ to 8V $I_{OUT}=10\sim 1000mA$	1.764	1.800	1.836	V
Line Regulation	ΔV_{OUT}	$V_{IN}=3.3$ to 8V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3.3V$ $I_{OUT}=10\sim 1000mA$		15	18	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}	$V_{IN}=6.8V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=5.5V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117E-2.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=4.5V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.450	2.500	2.550	V
Output Voltage	V_{OUT}	$V_{IN}=3.9$ to 10V $I_{OUT}=10\sim 1000mA$	2.450	2.500	2.550	V
Line Regulation	ΔV_{OUT}	$V_{IN}=3.9$ to 10V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=3.9V$ $I_{OUT}=10\sim 1000mA$		20	25	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}	$V_{IN}=7.5V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=5.5V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117E-2.85

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=4.85V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.793	2.850	2.907	V
Output Voltage	V_{OUT}	$V_{IN}=4.25$ to 10V $I_{OUT}=10\sim 1000mA$	2.793	2.850	2.907	V
Line Regulation	ΔV_{OUT}	$V_{IN}=4.25$ to 10V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.25V$ $I_{OUT}=10\sim 1000mA$		23	28	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}	$V_{IN}=7.85V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	eN	$B=10Hz$ to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=5.85V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117E-3.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.940	3.000	3.060	V
Output Voltage	V_{OUT}	$V_{IN}=4.5$ to 10V $I_{OUT}=10\sim 1000mA$	2.940	3.000	3.060	V
Line Regulation	ΔV_{OUT}	$V_{IN}=4.5$ to 12V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.5V$ $I_{OUT}=10\sim 1000mA$		24	30	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}	$V_{IN}=8V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	eN	$B=10Hz$ to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_a=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117E-3.3

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.3V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.234	3.300	3.366	V
Output Voltage	V_{OUT}	$V_{IN}=4.75$ to 10V $I_{OUT}=10\sim 1000mA$	3.234	3.300	3.366	V
Line Regulation	ΔV_{OUT}	$V_{IN}=4.75$ to 15V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=4.75V$ $I_{OUT}=10\sim 1000mA$		26	33	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}	$V_{IN}=8.3V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	eN	$B=10Hz$ to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.3V, V_{RIPPLE}=1V_{pp}$	60	75		dB
Dropout Voltage	V_D	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117E-3.6

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.6V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.528	3.600	3.672	V
Output Voltage	V_{OUT}	$V_{IN}=5$ to 10V $I_{OUT}=10\sim 1000mA$	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}	$V_{IN}=5V$ $I_{OUT}=10\sim 1000mA$		28	36	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}	$V_{IN}=8.6V, T_J=25^{\circ}C$	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	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

■ ELECTRICAL CHARACTERISTICS(Cont.)

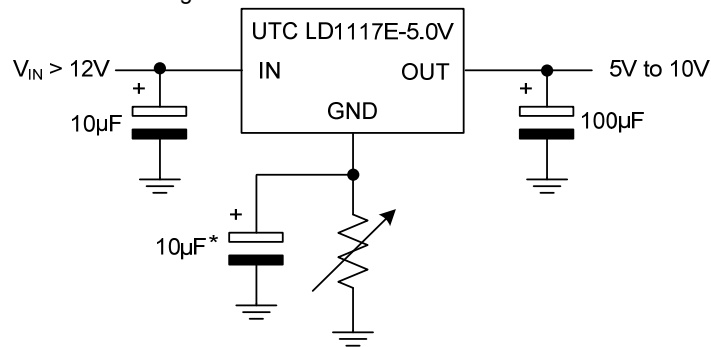
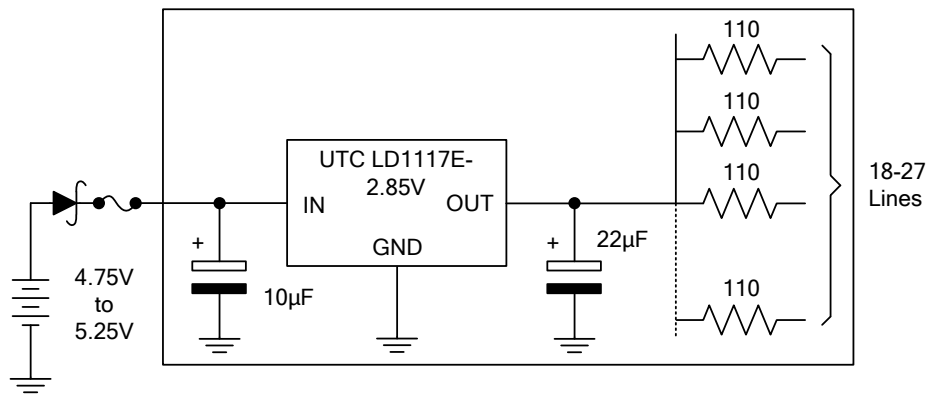
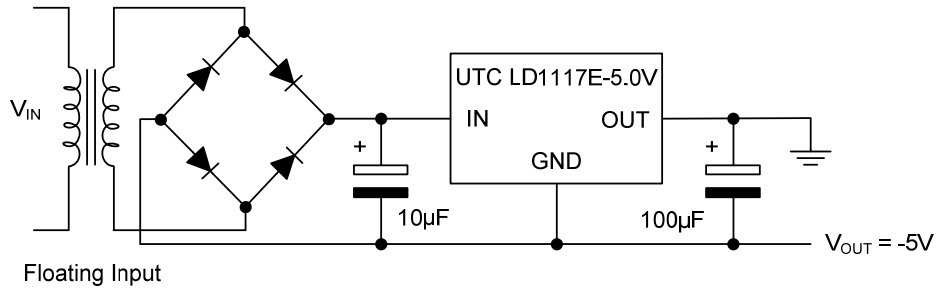
For LD1117E-5.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=7V, I_{OUT}=10mA, T_J=25^{\circ}C$	4.900	5.000	5.100	V
Output Voltage	V_{OUT}	$V_{IN}=6.5$ to 15V $I_{OUT}=10\sim 1000mA$	4.900	5.000	5.100	V
Line Regulation	ΔV_{OUT}	$V_{IN}=6.5$ to 15V, $I_{OUT}=0mA$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=6.5V$ $I_{OUT}=10\sim 1000mA$		40	50	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}	$V_{IN}=10V, T_J=25^{\circ}C$	1000			mA
Output Noise Voltage	e_N	$B=10Hz$ 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	$I_{OUT}=100mA$		1.00	1.10	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117E-ADJ

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	V_{REF}	$V_{IN}-V_{OUT}=2V, I_{OUT}=10mA, T_J=25^{\circ}C$	1.225	1.25	1.275	V
Reference Voltage	V_{REF}	$V_{IN}-V_{OUT}=1.4$ to 10V $I_{OUT}=10\sim 1000mA$	1.225	1.25	1.275	V
Line Regulation	ΔV_{OUT}	$V_{IN}-V_{OUT}=1.5$ to 13.75V, $I_{OUT}=10mA$		0.035	0.2	%
Load Regulation	ΔV_{OUT}	$V_{IN}-V_{OUT}=1.5V$ $I_{OUT}=10\sim 1000mA$			1	%
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, $I_{OUT}=10\sim 1000mA$		1	5	μA
Minimum Load Current	$I_{O(MIN)}$	$V_{IN}=15V$		2	5	mA
Current Limit	I_{LIMIT}	$V_{IN}-V_{OUT}=5V, T_J=25^{\circ}C$	1000			mA
Output Noise (%Vo)	e_N	$B=10Hz$ 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	
		$I_{OUT}=800mA$		1.20	1.30	
		$I_{OUT}=1A$		1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

TYPICAL APPLICATIONS



■ APPLICATION NOTE of LD1117E ADJUSTABLE

The **LD1117E** 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.).

R_1 is normally fixed to 120 Ω .

From figure 4 we obtain:

$$V_{OUT} = V_{REF} + R_2(I_{ADJ} + I_{R1}) = V_{REF} + R_2(I_{ADJ} + V_{REF}/R_1) = V_{REF}(1 + R_2/R_1) + R_2 \times I_{ADJ}$$

Usually R_2 value is in the range of few K Ω , so the $R_2 \times I_{ADJ}$ product could be neglected; then the above expression becomes: $V_{OUT} = V_{REF}(1 + R_2/R_1)$

For better load regulation, realize a good Kelvin connection of R_1 and R_2 is important. Particularly R_1 connection must be realized very close to OUT and ADJ pin, while R_2 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 R_2 resistor (See Fig. 5)

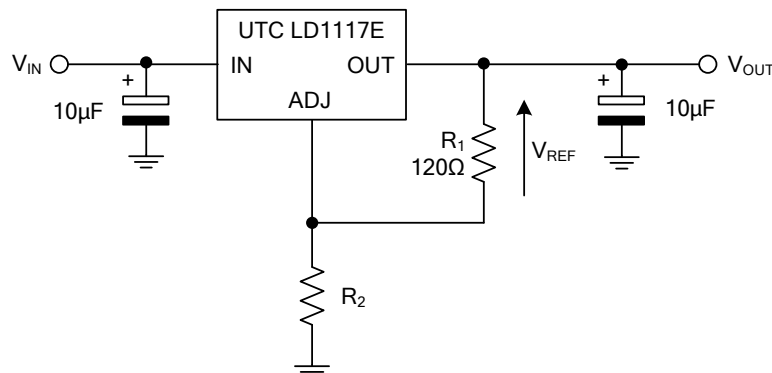


Fig.4 Adjustable Output Voltage Application Circuit

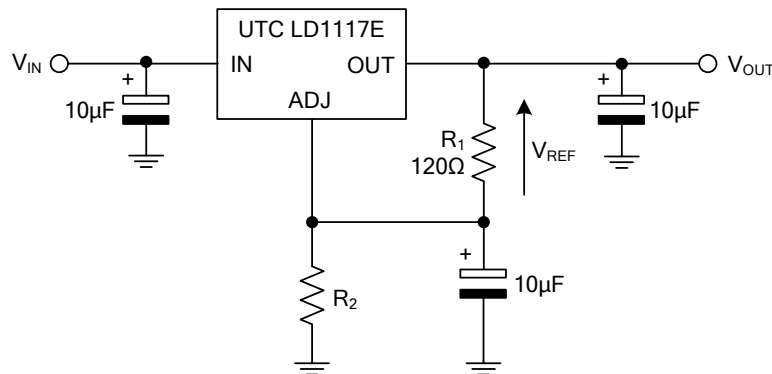
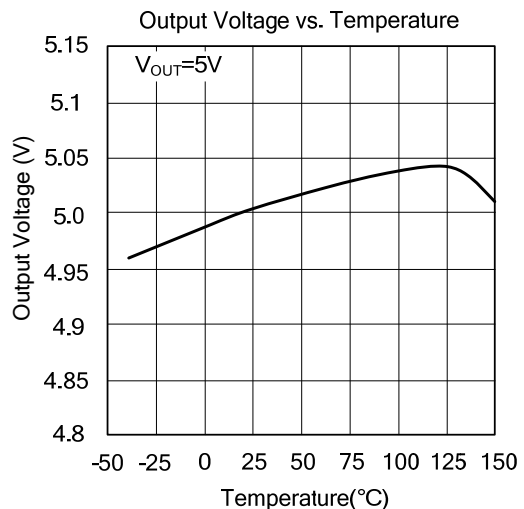
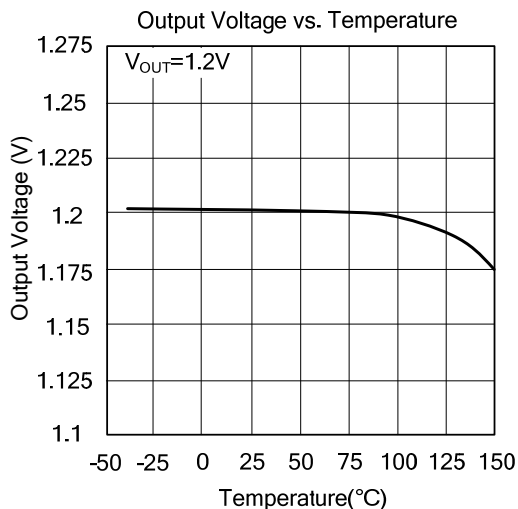
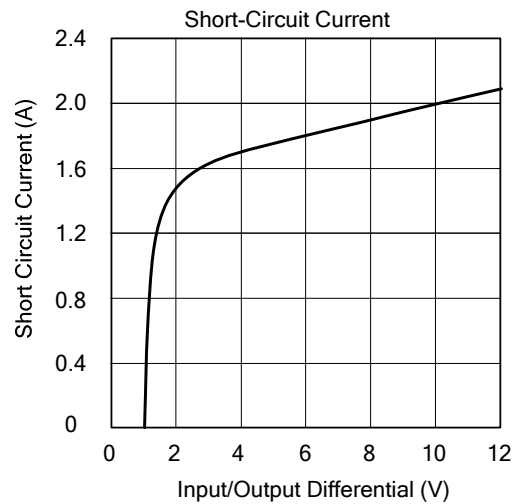
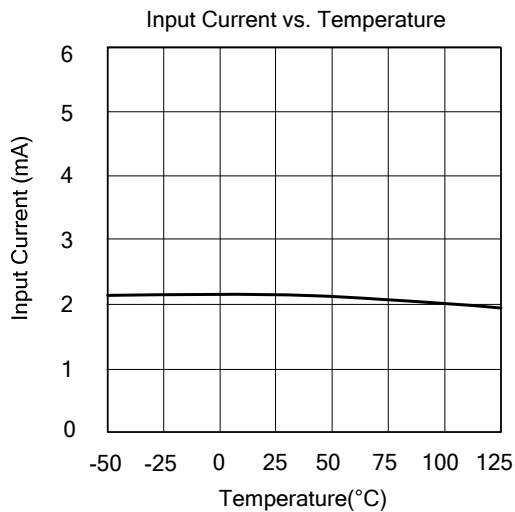
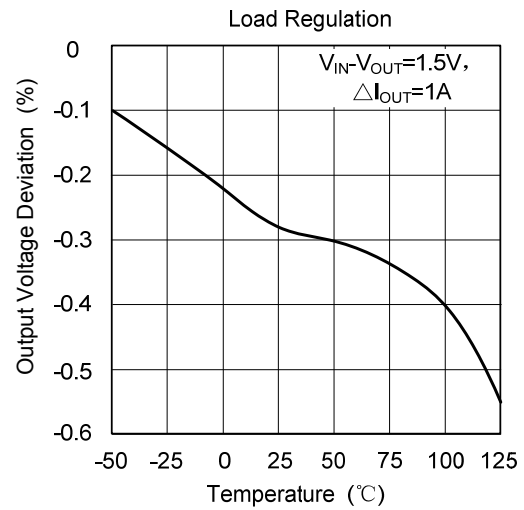
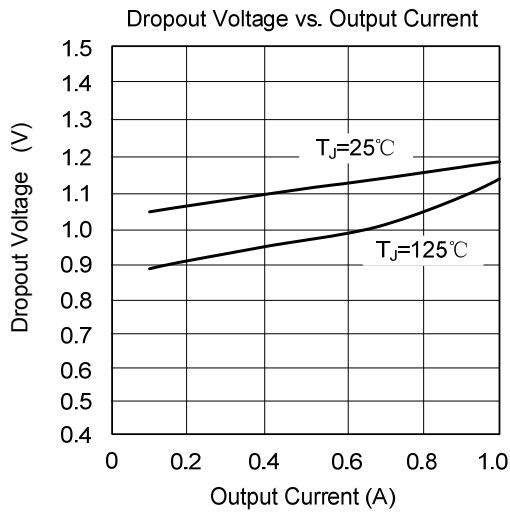
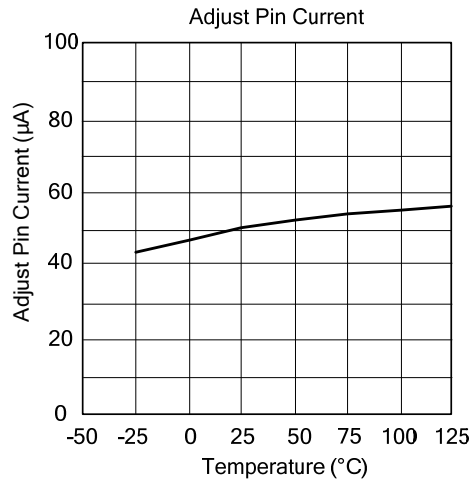
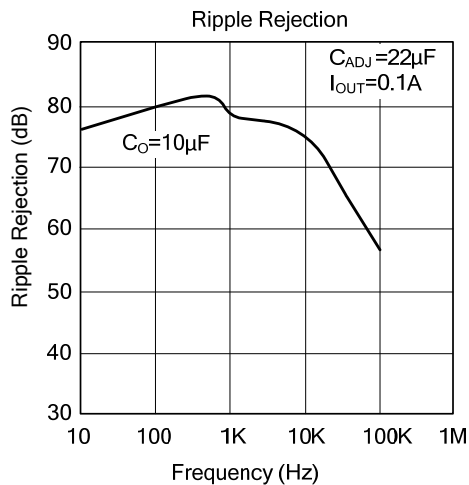
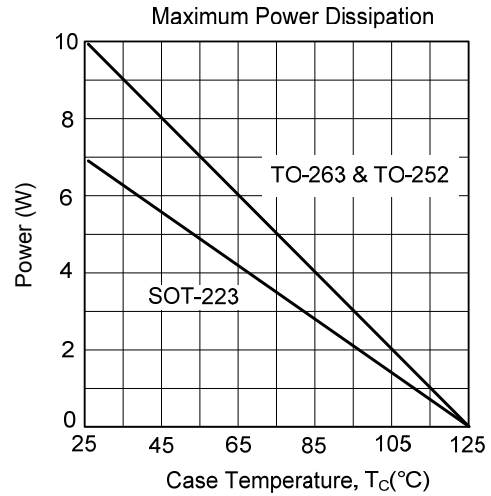
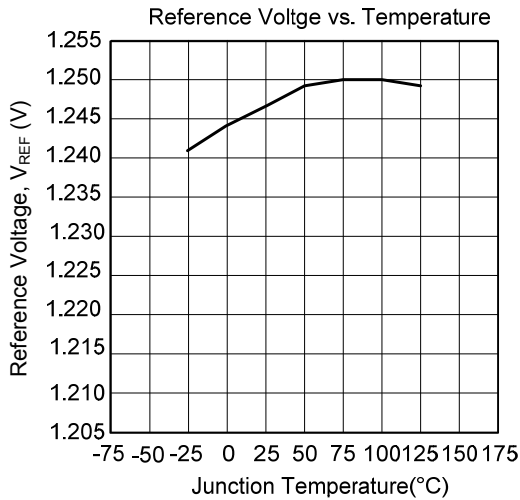


Fig.5 Adjustable Output Voltage Application with improved Ripple Rejection.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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