



## LD2117/A

## LINEAR INTEGRATED CIRCUIT

### LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

#### DESCRIPTION

The UTC LD2117/A is a low dropout, 3-terminal positive voltage regulator designed to provide output current up to 800mA/1A, There are adjustable versions ( $V_{REF}=1.25V$ ) and various fixed versions.

#### FEATURES

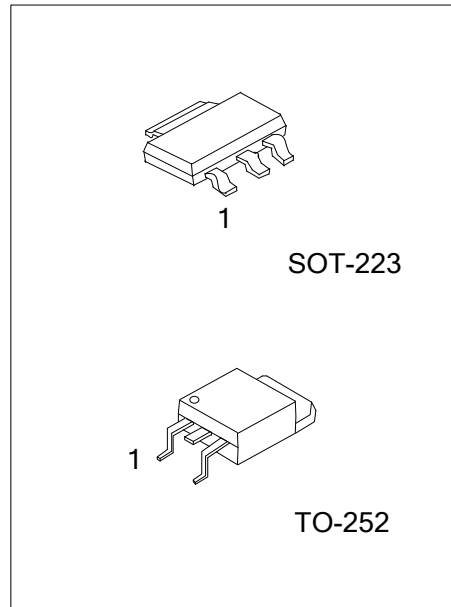
- \* Low dropout voltage
- \* Suitable for SCSI-2 active termination if  $V_{OUT}$  set to 2.85V
- \* Output current up to 0.8A for 2117 and 1.0A for 2117A
- \* Built-in current limit and over temperature protection
- \* Available in  $\pm 1\%$ (at 25°C) and 2% in all temperature range
- \* Ultra low current consumption (0.35mA typ.)
- \* Ultra low Adjustment Current (7 $\mu$ A typ.)
- \* Ultra low minimum Load (0.3mA typ.)
- \* Stable with low ESR ceramic output capacitor (MLCC)

#### ORDERING INFORMATION

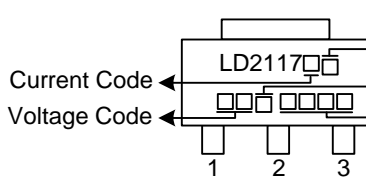
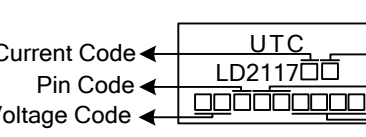
Ordering Number		Package	② Pin Assignment	Packing
Lead Free	Halogen Free			
LD2117①L-xx-AA3-②-R	LD2117①G-xx-AA3-②-R	SOT-223	A: AOI B: OAI C: AIO D: IAO	Tape Reel
LD2117①L-xx-TN3-②-R	LD2117①G-xx-TN3-②-R	TO-252		

- Notes: 1. ① : Current code: Blank: 800mA    A: 1A  
 2. Pin Assignment: I:  $V_{IN}$     O:  $V_{OUT}$     A: ADJ  
 3. xx: Output Voltage, Refer to Marking Information.

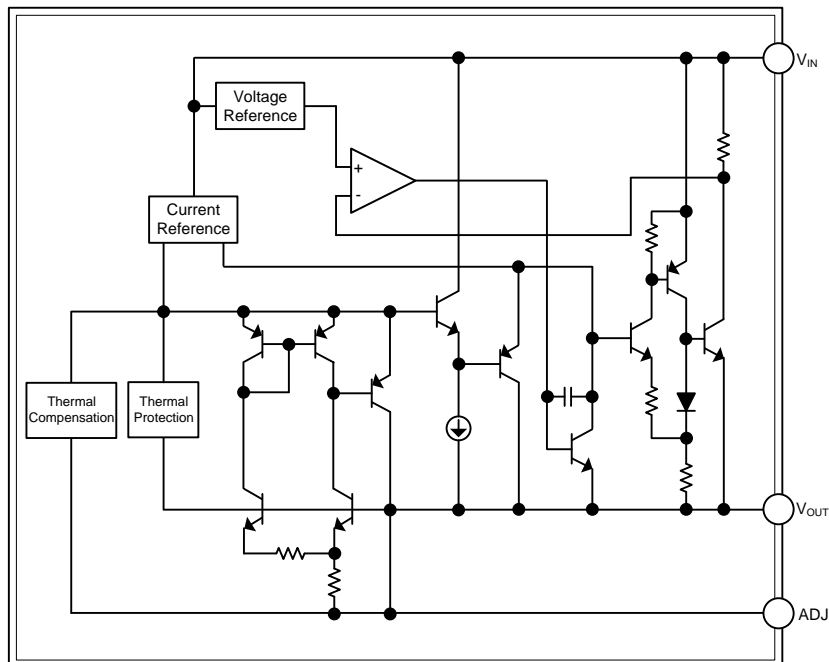
<p>LD2117①G-xx-AA3-②-R</p>	<p>(1) Packing Type</p> <p>(2) Pin Assignment</p> <p>(3) Package Type</p> <p>(4) Output Voltage Code</p> <p>(5) Green Package</p> <p>(6) Current Code</p>	<p>(1) R: Tape Reel</p> <p>(2) refer to Pin Assignment</p> <p>(3) AA3: SOT-223, TN3: TO-252</p> <p>(4) xx: refer to Marking Information</p> <p>(5) G: Halogen Free and Lead Free, L: Lead Free</p> <p>(6) Blank: 800mA, A: 1A</p>
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## MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	12 :1.2V 15 :1.5V 18 :1.8V 30 :3.0V 33 :3.3V	 <p>                         L: Lead Free                          G: Halogen Free                          Pin Code                          Date Code                     </p>
TO-252	36 :3.6V 50 :5.0V AD :ADJ	 <p>                         L: Lead Free                          G: Halogen Free                          Lot Code                          Date Code                     </p>

## BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V <sub>IN</sub>	18	V
Power Dissipation	P <sub>D</sub>	Internally limited	W
Junction Temperature	T <sub>J</sub>	+150	°C
Operating Temperature (Note 2)	T <sub>OPR</sub>	-40 ~ +125	°C
Storage temperature	T <sub>STG</sub>	-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 <sub>IN</sub>	15	V

### ■ THERMAL RESISTANCES CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	SOT-223	θ <sub>JA</sub>	165	°C/W
	TO-252		112	°C/W
Junction to Case	SOT-223	θ <sub>JC</sub>	15	°C/W
	TO-252		12	°C/W

### ■ ELECTRICAL CHARACTERISTICS

(T<sub>A</sub>=25°C, refer to the test circuits, T<sub>J</sub>=0 ~ 125°C, C<sub>O</sub>=10μF unless otherwise specified)

#### For LD2117/A-1.2

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>OUT</sub>	V <sub>IN</sub> =3.2V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =25°C	1.176	1.200	1.224	V
Output Voltage	V <sub>OUT</sub>	V <sub>IN</sub> =2.7 ~ 8V LD2117 : I <sub>OUT</sub> =10~800mA LD2117A : I <sub>OUT</sub> =10~1000mA	1.176	1.200	1.224	V
Line Regulation	ΔV <sub>OUT</sub>	V <sub>IN</sub> =2.7 ~ 8V, I <sub>OUT</sub> =10mA		1	6	mV
Load Regulation	ΔV <sub>OUT</sub>	V <sub>IN</sub> =2.7V LD2117 : I <sub>OUT</sub> =10~800mA LD2117A : I <sub>OUT</sub> =10~1000mA		1	10	mV
Temperature stability	ΔV <sub>OUT</sub>			0.5		%
Long Term Stability	ΔV <sub>OUT</sub>	1000 hrs, T <sub>J</sub> =125°C		0.3		%
Operating Input Voltage	V <sub>IN</sub>	I <sub>OUT</sub> =100mA			15	V
Quiescent Current	I <sub>Q</sub>	V <sub>IN</sub> ≤10V		0.35	0.5	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =6.2V, T <sub>J</sub> =25°C	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	e <sub>N</sub>	B=10Hz ~ 10KHz, T <sub>J</sub> =25°C		100		μV
Supply Voltage Rejection	SVR	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =25°C, V <sub>IN</sub> =4.2V, V <sub>RIPPLE</sub> =1V <sub>PP</sub>	75			dB
Dropout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =100mA		1.05	1.15	V
		I <sub>OUT</sub> =500mA		1.15	1.25	
		I <sub>OUT</sub> =800mA		1.18	1.28	
		I <sub>OUT</sub> =1A		1.22	1.35	
Thermal Regulation		T <sub>A</sub> =25°C, 30ms Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		°C

### ■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD2117/A-1.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=3.5V, I_{OUT}=10mA, T_J=25^{\circ}C$	1.470	1.500	1.530	V
Output Voltage	$V_{OUT}$	$V_{IN}=3 \sim 8V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$	1.470	1.500	1.530	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=3 \sim 8V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=3V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 10V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=6.5V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \sim 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=4.5V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

For LD2117/A-1.8

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=3.8V, I_{OUT}=10mA, T_J=25^{\circ}C$	1.764	1.800	1.836	V
Output Voltage	$V_{OUT}$	$V_{IN}=3.3 \sim 8V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$	1.764	1.800	1.836	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=3.3 \sim 8V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=3.3V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 10V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=6.8V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \sim 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=5.5V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

### ■ ELECTRICAL CHARACTERISTICS(Cont.)

#### For LD2117/A-3.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=5V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.940	3.000	3.060	V
Output Voltage	$V_{OUT}$	$V_{IN}=4.5 \sim 10V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$	2.940	3.000	3.060	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=4.5 \sim 12V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=4.5V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 15V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=8V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \sim 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

#### For LD2117/A-3.3

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=5.3V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.234	3.300	3.366	V
Output Voltage	$V_{OUT}$	$V_{IN}=4.75 \sim 10V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$	3.234	3.300	3.366	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=4.75 \sim 15V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=4.75V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 15V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=8.3V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \sim 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.3V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

## ■ ELECTRICAL CHARACTERISTICS(Cont.)

### For LD2117/A-3.6

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=5.6V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.528	3.600	3.672	V
Output Voltage	$V_{OUT}$	$V_{IN}=5 \sim 10V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$	3.528	3.600	3.672	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=5 \sim 15V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=5V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 15V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=8.6V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \text{ to } 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.6V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

### For LD2117/A-5.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=7V, I_{OUT}=10mA, T_J=25^{\circ}C$	4.9	5.000	5.1	V
Output Voltage	$V_{OUT}$	$V_{IN}=6.5 \sim 15V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1.0A$	4.9	5.000	5.1	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=6.5 \sim 15V, I_{OUT}=0mA$		1	6	mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=6.5V$ LD2117 : $I_{OUT}=0\sim 800mA$ LD2117A : $I_{OUT}=0\sim 1000mA$		1	15	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$	$I_{OUT}=100mA$			15	V
Quiescent Current	$I_Q$	$V_{IN}\leq 15V$		0.35	0.5	mA
Current Limit	$I_{LIMIT}$	$V_{IN}=10V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise Voltage	$e_N$	$B=10Hz \text{ to } 10KHz, T_J=25^{\circ}C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=8V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$		$I_{OUT}=100mA$	1.05	1.15	V
			$I_{OUT}=500mA$	1.15	1.25	
			$I_{OUT}=800mA$	1.18	1.28	
			$I_{OUT}=1A$	1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms \text{ Pulse}$		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

### ■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD2117/A-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	$V_{REF}$	$V_{IN}-V_{OUT}=1.4\sim 10V$ LD2117A : $I_{OUT}=10\sim 1000mA$	1.225	1.25	1.275	V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}-V_{OUT}=1.5 \sim 13.75V, I_{OUT}=10mA$		0.035	0.2	%
Load Regulation	$\Delta V_{OUT}$	$V_{IN}-V_{OUT}=3V$ LD2117 : $I_{OUT}=10\sim 800mA$ LD2117A : $I_{OUT}=10\sim 1000mA$		0.1	0.5	%
Temperature stability	$\Delta V_{OUT}$			0.50		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, $T_J=125^{\circ}C$		0.3		%
Operating Input Voltage	$V_{IN}$				15	V
Adjustment Pin Current	$I_{ADJ}$	$V_{IN}\leq 15V$		7	10	$\mu A$
Adjustment Pin Current Change	$\Delta I_{ADJ}$	$V_{IN}-V_{OUT}=1.4\sim 10V,$ LD2117A : $I_{OUT}=10 \sim 1000mA$		0.3	2	$\mu A$
Minimum Load Current	$I_{O(MIN)}$	$V_{IN}=15V$		0.3	1	mA
Current Limit	$I_{LIMIT}$	$V_{IN}-V_{OUT}=5V, T_J=25^{\circ}C$	LD2117	800		mA
			LD2117A	1000		
Output Noise (% $V_O$ )	$e_N$	$B=10Hz \sim 10KHz, T_J=25^{\circ}C$		0.003		%
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}-V_{OUT}=3V, V_{RIPPLE}=1V_{PP}$	75			dB
Dropout Voltage	$V_D$	$I_{OUT}=100mA$		1.05	1.15	V
		$I_{OUT}=500mA$		1.15	1.25	
		$I_{OUT}=800mA$		1.18	1.28	
		$I_{OUT}=1A$		1.22	1.35	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W
Thermal Shutdown	OTP			150		$^{\circ}C$

## APPLICATION NOTE of LD2117/A ADJUSTABLE

The LD2117/A adjustable has a reference voltage of between the OUT and ADJ pins.  $I_{ADJ}$  is  $7\mu A$  typ. ( $10\mu A$  max.) and  $\Delta I_{ADJ}$  is  $0.3\mu A$  typ. ( $2\mu A$  max.).

$R_1$  is normally fixed to  $1.2k\Omega$ .

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  $k\Omega$ , 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  $10\mu F$  electrolytic capacitor placed in parallel to the  $R_2$  resistor (See Fig. 5)

The UTC LD2117/A also supports MLCC. See Fig.6 for adjustable output and Fig.7 for fixed Output

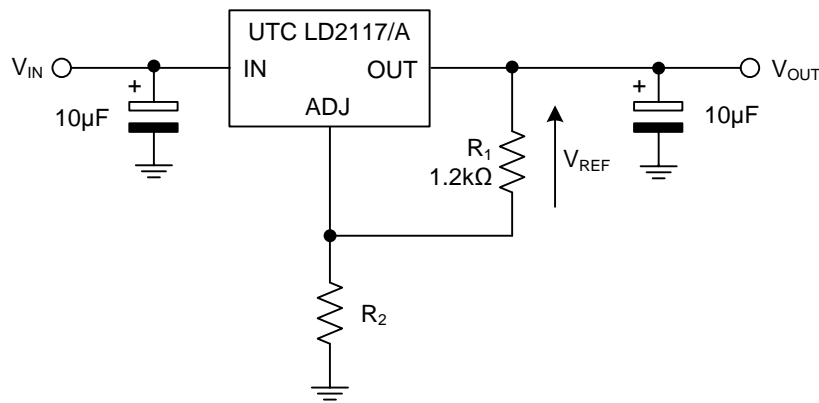


Fig.4 Adjustable Output Voltage Application Circuit

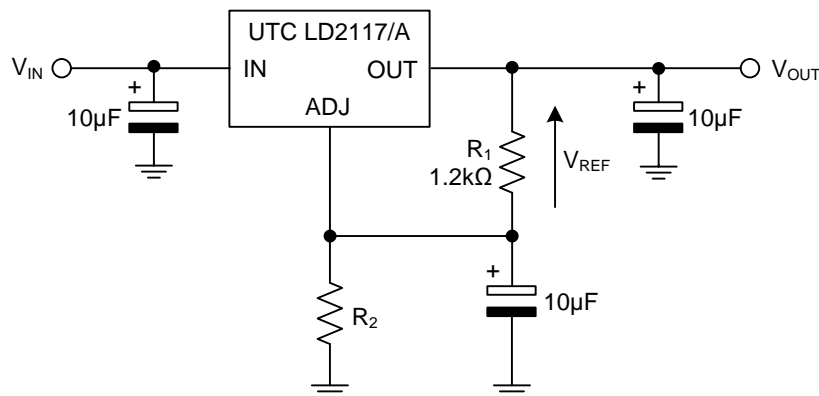


Fig.5 Adjustable Output Voltage Application with improved Ripple Rejection.



## ■ APPLICATION NOTE of LD2117/A ADJUSTABLE(Cont.)

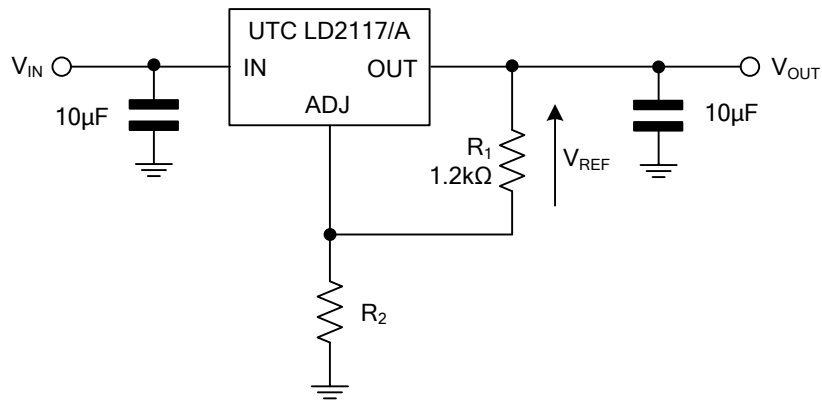


Fig.6 Adjustable Output Voltage Application Circuit for MLCC

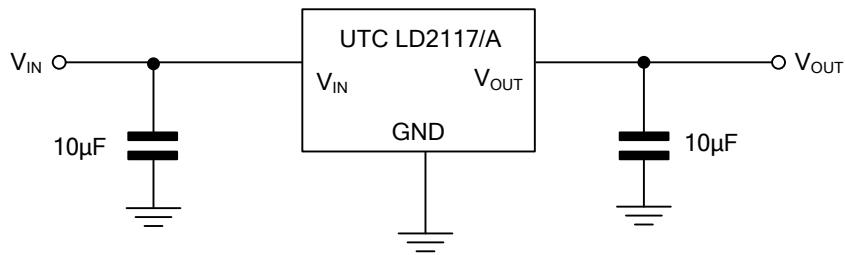
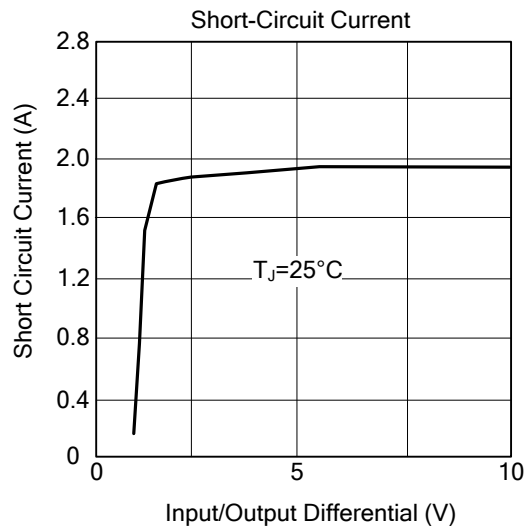
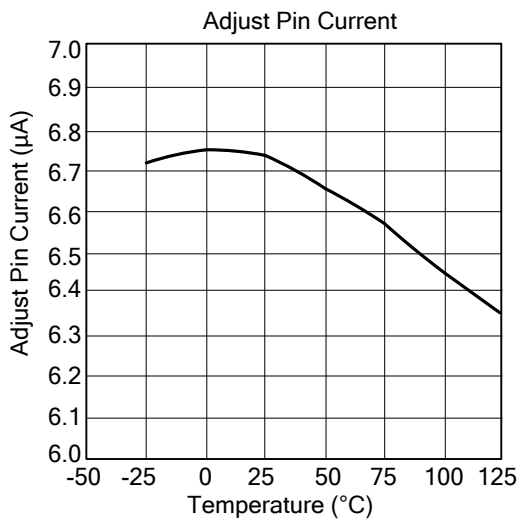
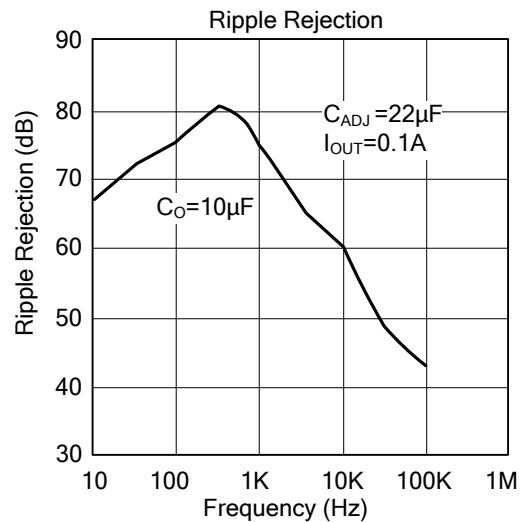
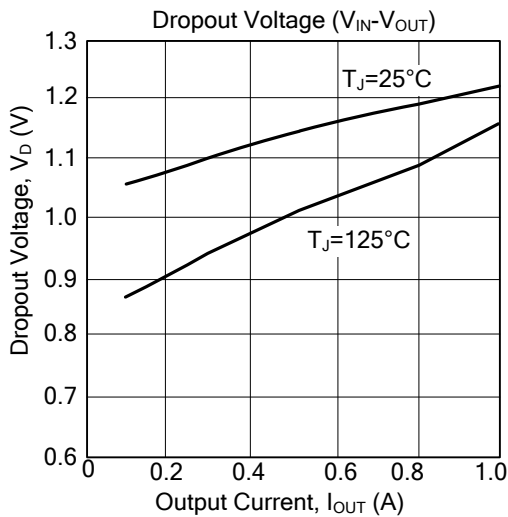
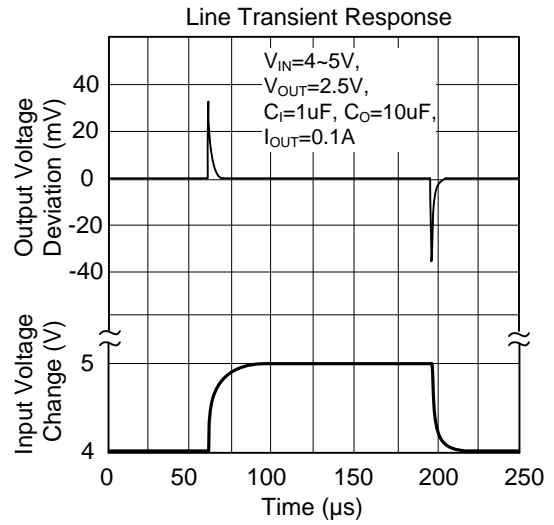
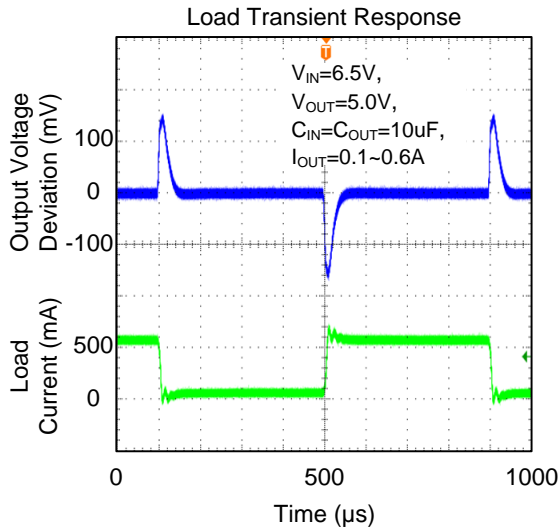
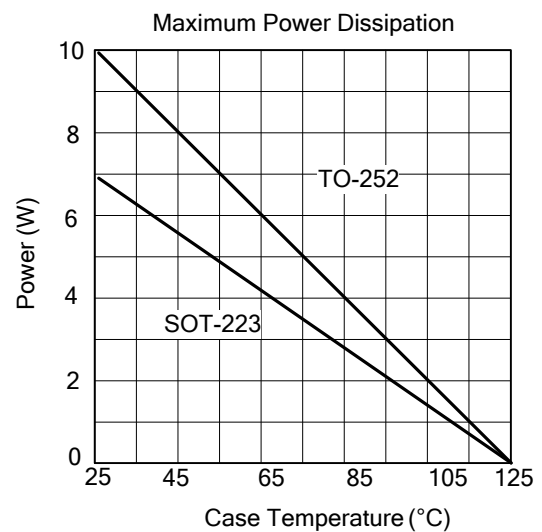
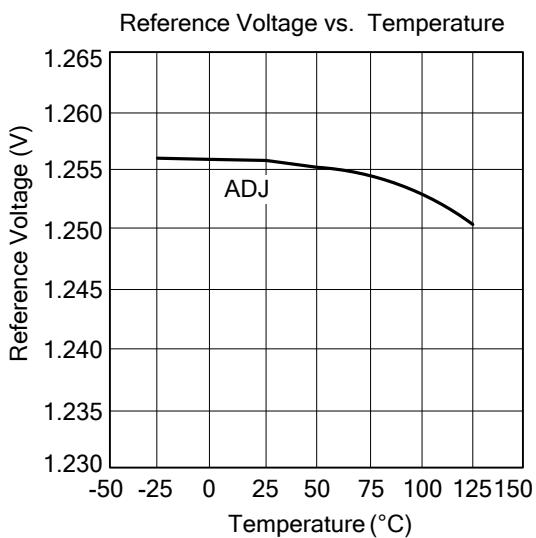
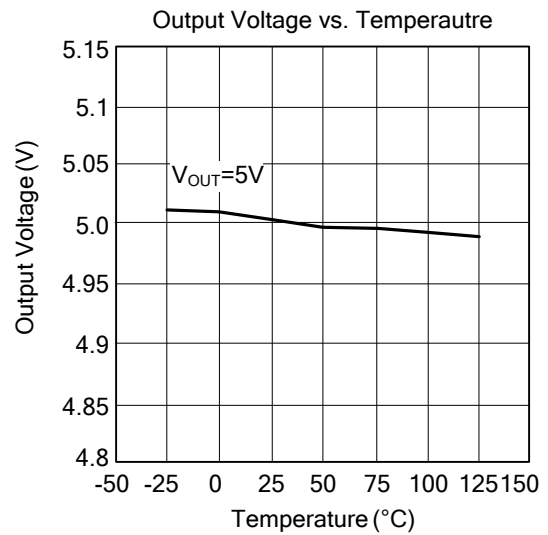
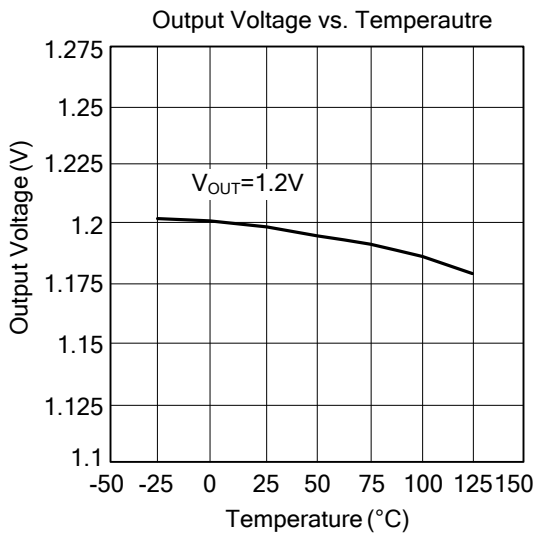
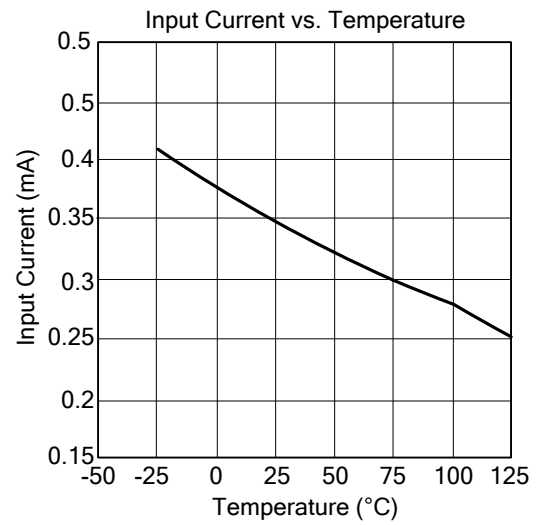
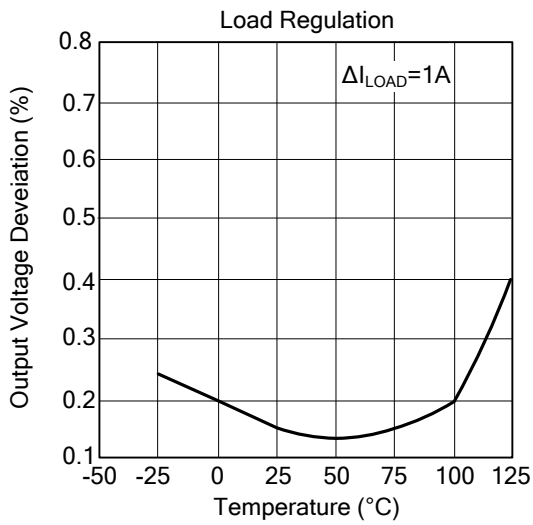


Fig.7 Fixed Output Voltage Application Circuit for MLCC

## ■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS (Cont.)



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