



LD1117/A

LINEAR INTEGRATED CIRCUIT

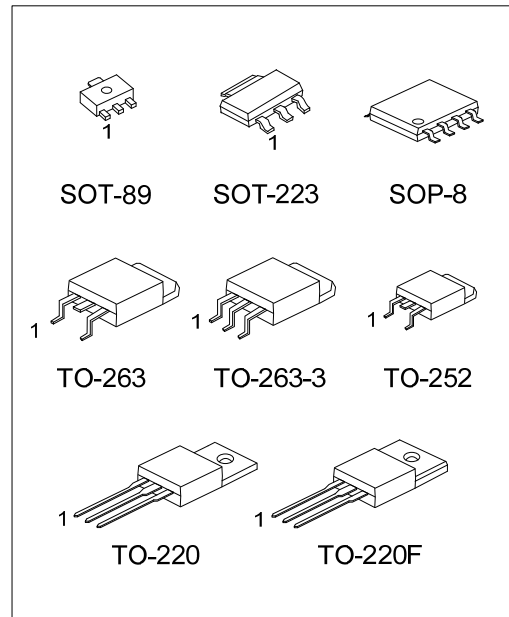
LOW DROPT FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

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



Lead-free: LD1117L-xx / LD1117AL-xx
 Halogen-free: LD1117G-xx / LD1117AG-xx

ORDERING INFORMATION

Ordering Number			Package	② Pin Assignment	Packing
Normal	Lead Free	Halogen Free			
LD1117①-xx-AA3-②-③	LD1117①L-xx-AA3-②-③	LD1117①G-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	LD1117①G-xx-AB3-②-③	SOT-89		
LD1117①-xx-TA3-②-③	LD1117①L-xx-TA3-②-③	LD1117①G-xx-TA3-②-③	TO-220		
LD1117①-xx-TF3-②-③	LD1117①L-xx-TF3-②-③	LD1117①G-xx-TF3-②-③	TO-220F		
LD1117①-xx-TN3-②-③	LD1117①L-xx-TN3-②-③	LD1117①G-xx-TN3-②-③	TO-252		
LD1117①-xx-TQ2-②-③	LD1117①L-xx-TQ2-②-③	LD1117①G-xx-TQ2-②-③	TO-263		
LD1117①-xx-TQ3-②-③	LD1117①L-xx-TQ3-②-③	LD1117①G-xx-TQ3-②-③	TO-263-3		
LD1117①-xx-S08-②-③	LD1117①L-xx-S08-②-③	LD1117①G-xx-S08-②-③	SOP-8		

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

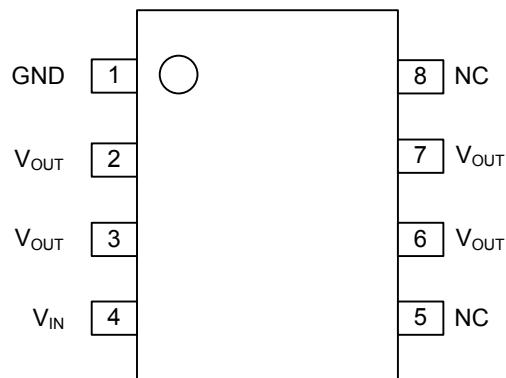
<p>LD1117①L-xx-AA3-②-③</p> <p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Output Voltage Code (5)Lead Plating (6)Current Code</p>	<p>(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, TA3:TO-220, TF3: TO-220F, TN3: TO-252, TQ2: TO-263, TQ3: TO-263-3, S08: SOT-8 (4) xx: refer to Marking Information (5) G: Halogen Free, L: Lead Free, Blank: Pb/Sn (6) Blank: 800mA, A: 1A</p>
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MARKING INFORMATION

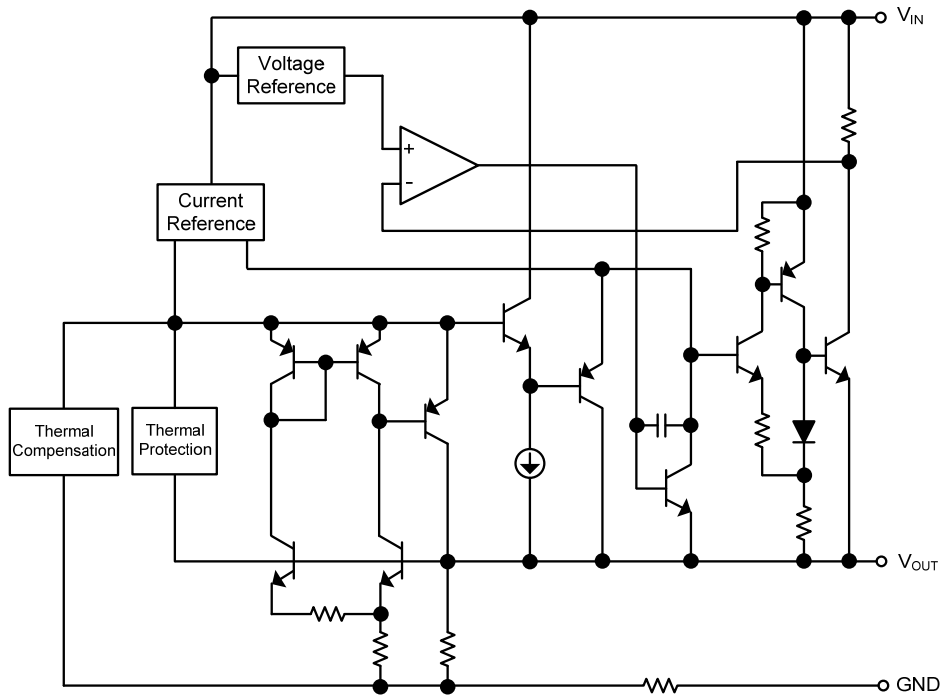
PACKAGE	VOLTAGE CODE	MARKING
SOT-89		
SOT-223	12 :1.2V 15 :1.5V 18 :1.8V 25 :2.5V 2J :2.85V 30 :3.0V 33 :3.3V 36 :3.6V 50 :5.0V AD :ADJ	
TO-220 TO-220F TO-252 TO-263 TO-263-3		

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

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 Range	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 LD1117/A-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 LD1117 : $I_{OUT}=10\sim 800\text{mA}$ LD1117A : $I_{OUT}=10\sim 1000\text{mA}$	1.176	1.200	1.224	V
Line Regulation	ΔV_{OUT}	$V_{IN}=2.7$ to 8V , $I_{OUT}=10\text{mA}$		1	30	mV
Load Regulation	ΔV_{OUT}	$V_{IN}=2.7\text{V}$ LD1117 : $I_{OUT}=10\sim 800\text{mA}$ LD1117A : $I_{OUT}=10\sim 1000\text{mA}$		1	30	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}	$V_{IN}=6.2\text{V}$, $T_J=25^\circ\text{C}$	LD1117	800		mA
			LD1117A	1000		
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 LD1117/A-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 LD1117 : $I_{OUT}=0\sim 800\text{mA}$ LD1117A : $I_{OUT}=0\sim 1000\text{mA}$	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}	$V_{IN}=3\text{V}$ LD1117 : $I_{OUT}=0\sim 800\text{mA}$ LD1117A : $I_{OUT}=0\sim 1000\text{mA}$		1	10	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}	$V_{IN}=6.5\text{V}$, $T_J=25^\circ\text{C}$	LD1117	800		mA
			LD1117A	1000		
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

■ ELECTRICAL CHARACTERISTICS(Cont.)

For LD1117/A-1.8

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	$V_{IN}=3.8V, I_{OUT}=10mA, T_J=25^{\circ}C$	1.764	1.800	1.836	V	
Output Voltage	V_{OUT}	$V_{IN}=3.3$ to 8V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=3.3V$ 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}	$V_{IN}=6.8V, T_J=25^{\circ}C$	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	$I_{OUT}=100mA$		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 LD1117/A-2.5

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V_{OUT}	$V_{IN}=4.5V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.450	2.500	2.550	V	
Output Voltage	V_{OUT}	$V_{IN}=3.9$ to 10V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=3.9V$ 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	$I_{OUT}=100mA$		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 LD1117/A-2.85

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=4.85V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.793	2.850	2.907	V
Output Voltage	V_{OUT}	$V_{IN}=4.25$ to 10V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=4.25V$ 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		$I_{OUT}=100mA$	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 LD1117/A-3.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5V, I_{OUT}=10mA, T_J=25^{\circ}C$	2.940	3.000	3.060	V
Output Voltage	V_{OUT}	$V_{IN}=4.5$ to 10V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=4.5V$ 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}	$V_{IN}=8V, T_J=25^{\circ}C$	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	
			$I_{OUT}=800mA$	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 LD1117/A-3.3

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.3V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.234	3.300	3.366	V
Output Voltage	V_{OUT}	$V_{IN}=4.75$ to 10V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=4.75V$ 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	
		$I_{OUT}=800mA$		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 LD1117/A-3.6

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=5.6V, I_{OUT}=10mA, T_J=25^{\circ}C$	3.528	3.600	3.672	V
Output Voltage	V_{OUT}	$V_{IN}=5$ to 10V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1000mA$	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}	$V_{IN}=5V$ 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		mA
			LD1117A	1000		
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J=25^{\circ}C$		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}=40mA, f=120Hz, T_J=25^{\circ}C,$ $V_{IN}=6.6V, V_{RIPPLE}=1V_{pp}$	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 LD1117/A-5.0

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=7V, I_{OUT}=10mA, T_J=25^{\circ}C$	4.900	5.000	5.100	V
Output Voltage	V_{OUT}	$V_{IN}=6.5$ to 15V LD1117 : $I_{OUT}=0\sim 800mA$ LD1117A : $I_{OUT}=0\sim 1.0A$	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}	$V_{IN}=6.5V$ 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		mA
			LD1117A	1000		
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
				1.15	1.25	
				1.20	1.30	
				1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

For LD1117/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}	$V_{IN}-V_{OUT}=1.4$ to 10V LD1117 : $I_{OUT}=10\sim 800mA$ LD1117A : $I_{OUT}=10\sim 1000mA$	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}	$V_{IN}-V_{OUT}=3V$ LD1117 : $I_{OUT}=10\sim 800mA$ LD1117A : $I_{OUT}=10\sim 1000mA$		0.1	0.4	%
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}	$V_{IN}-V_{OUT}=5V, T_J=25^{\circ}C$	LD1117	800		mA
			LD1117A	1000		
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
				1.15	1.25	
				1.20	1.30	
				1.20	1.30	
Thermal Regulation		$T_A=25^{\circ}C, 30ms$ Pulse		0.01	0.10	%/W

■ TYPICAL APPLICATIONS

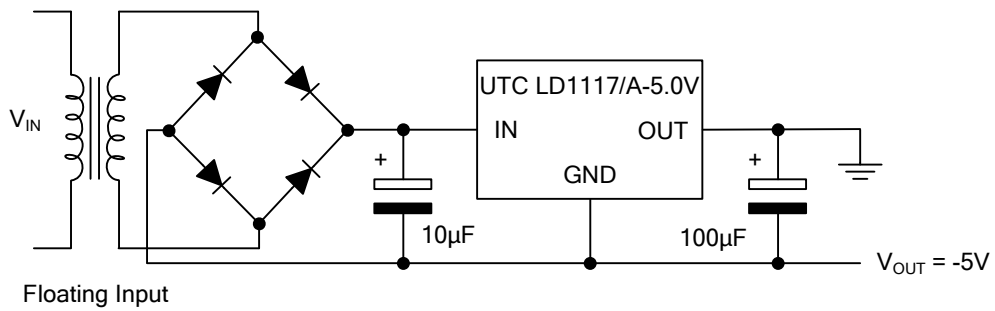


Fig.1 Negative Supply

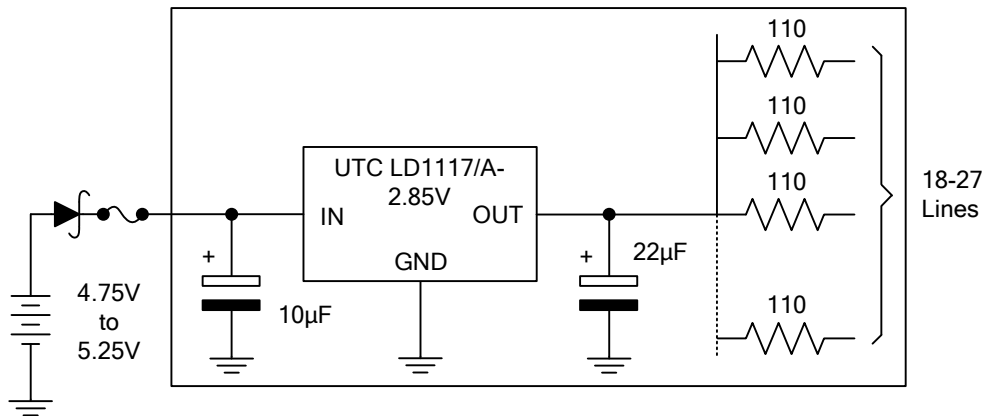


Fig.2 Active Terminator for SCSI-2 BUS

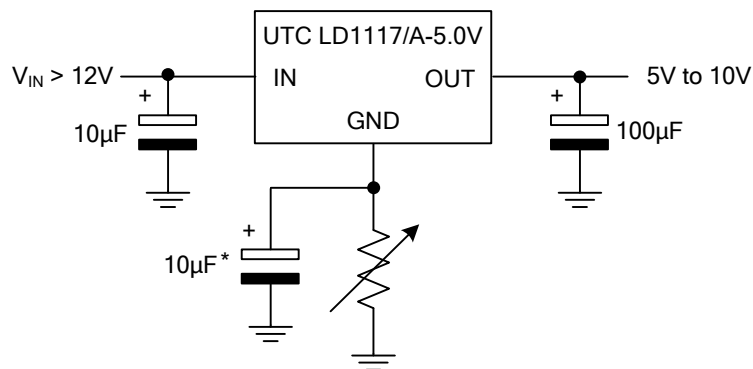


Fig.3 Circuit for Increasing Output Voltage

APPLICATION NOTE of LD1117/A ADJUSTABLE

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

R_1 is normally fixed to 120Ω .

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)

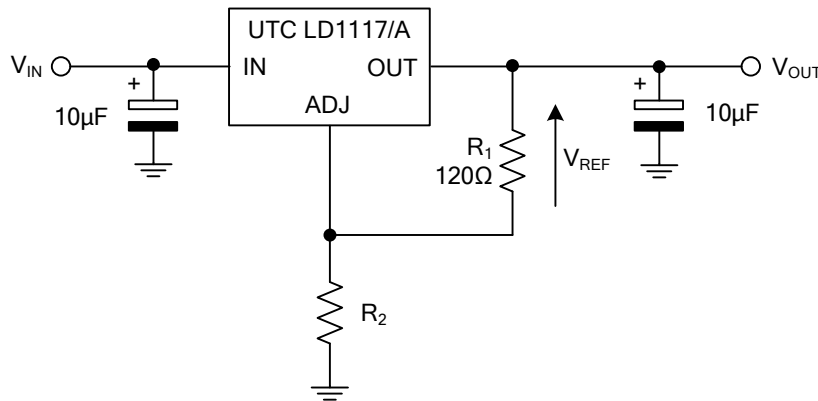


Fig.4 Adjustable Output Voltage Application Circuit

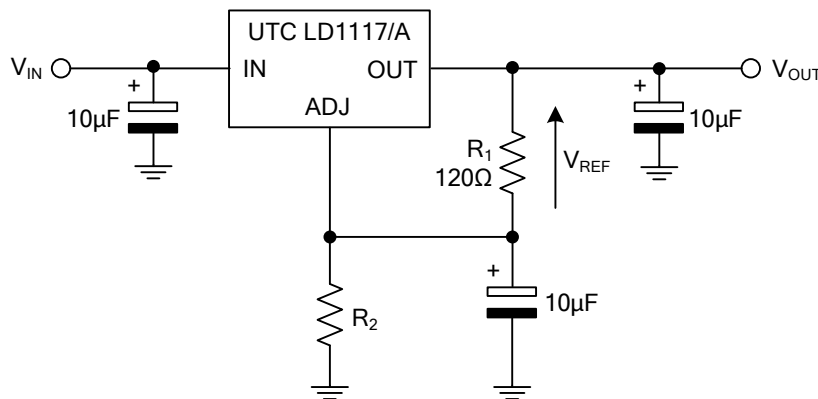
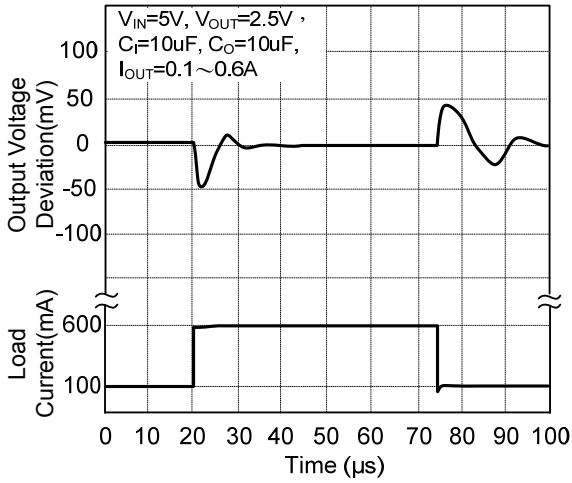


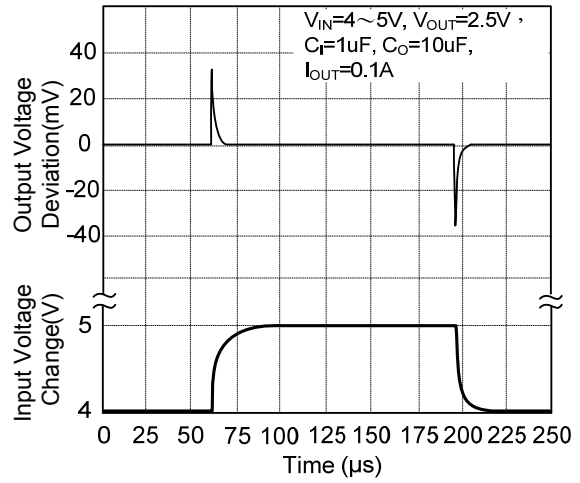
Fig.5 Adjustable Output Voltage Application with improved Ripple Rejection.

TYPICAL CHARACTERISTICS

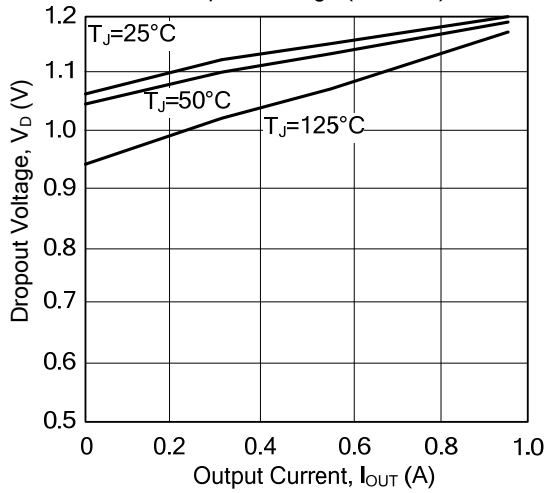
Load Transient Response



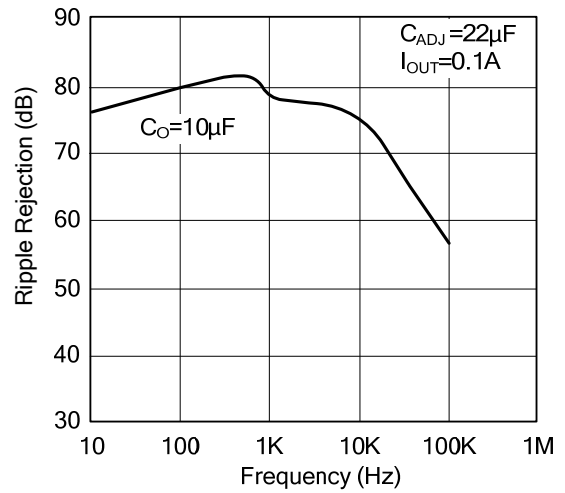
Line Transient Response



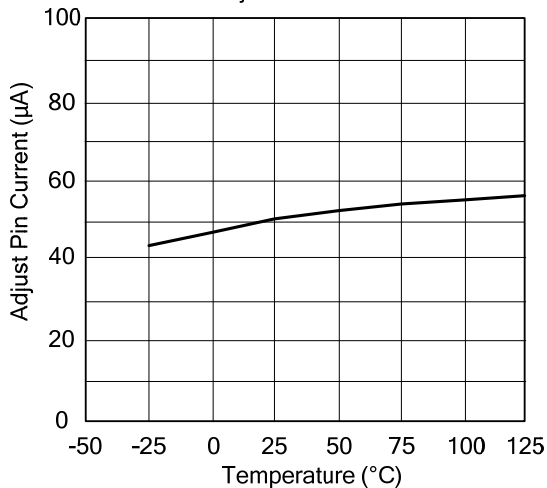
Dropout Voltage ($V_{IN}-V_{OUT}$)



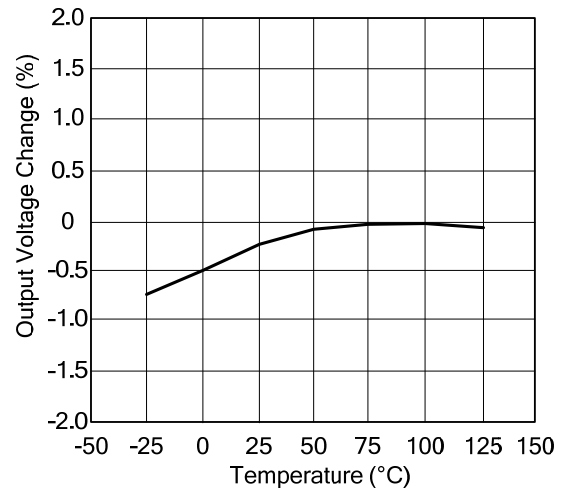
Ripple Rejection



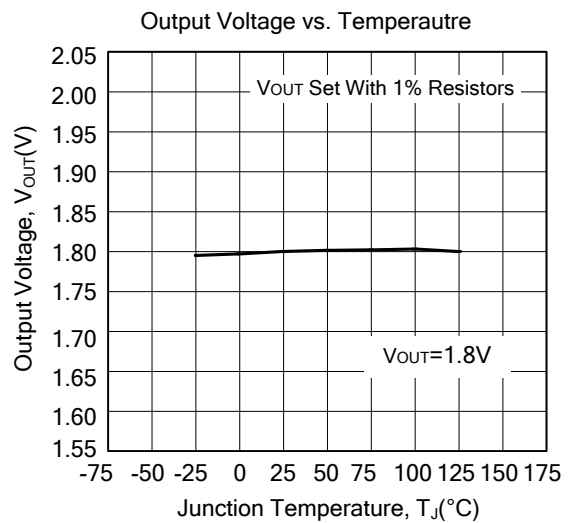
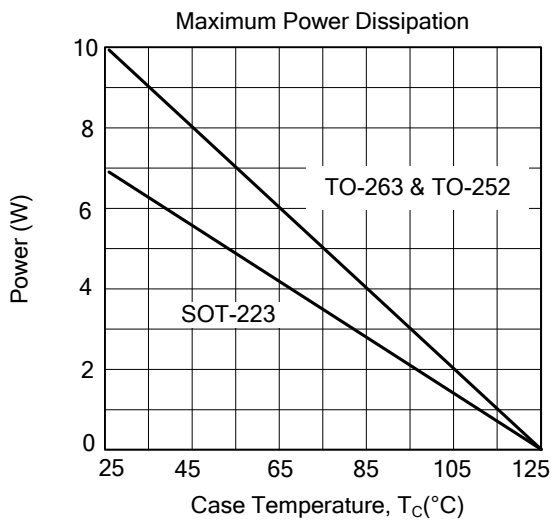
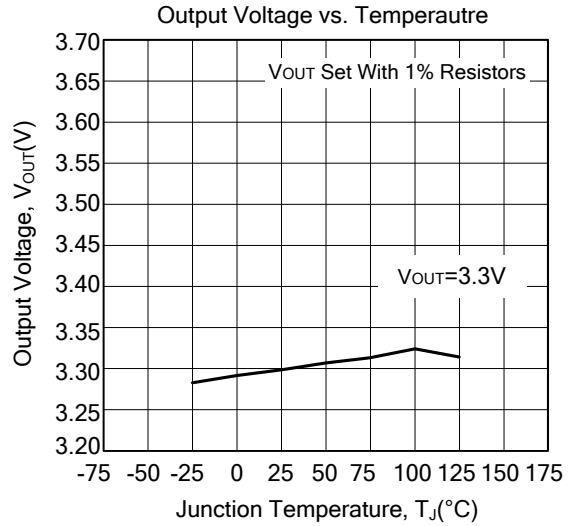
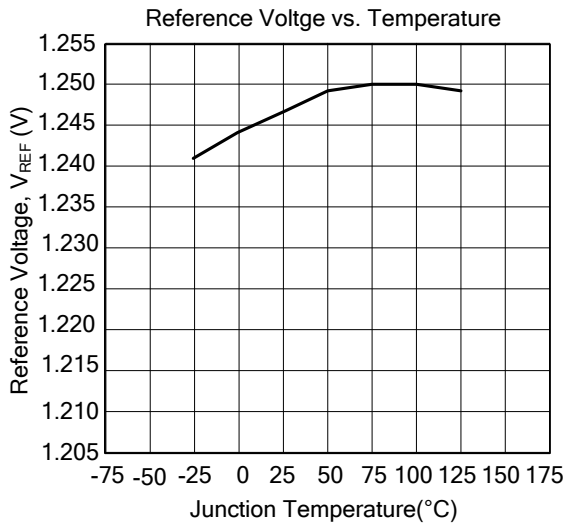
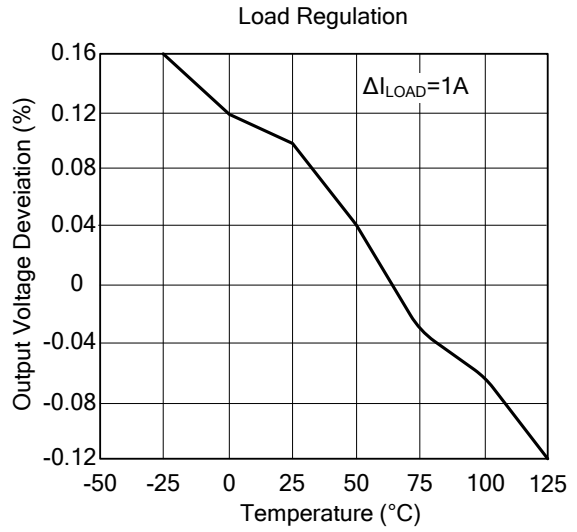
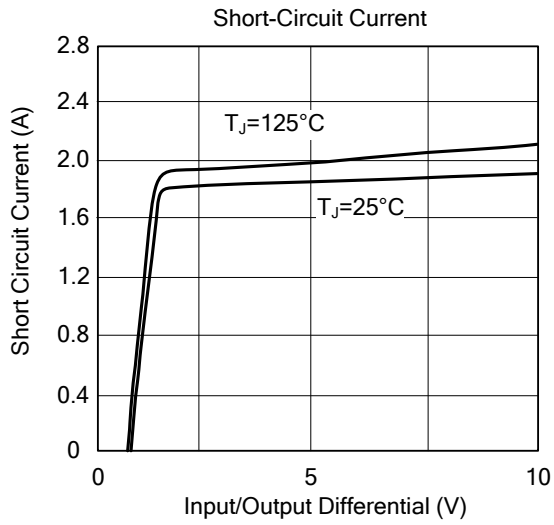
Adjust Pin Current



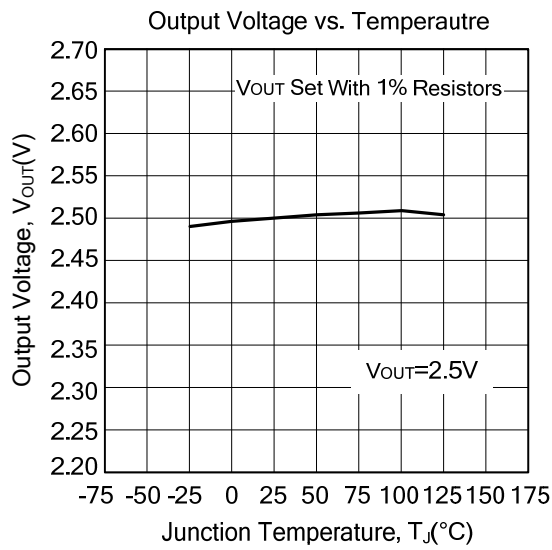
Temperature Stability



TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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