

## LOW DROP LINEAR VOLTAGE REGULATORS

### FEATURES

- Low Dropout Voltage: 1.15V at 1A Output Current
- Three-Terminal Adjustable or Fixed :  
1.2V, 1.5V, 1.8V, 2.5V, 2.85V, 3.0V, 3.3V, 3.6V, 5V, ADJ
- Trimmed Current Limit
- On-Chip Thermal Shutdown
- Operation Junction Temperature: -25 °C to 125°C
- Surface Mount device

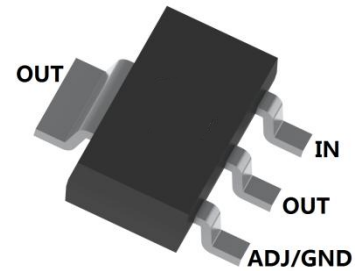
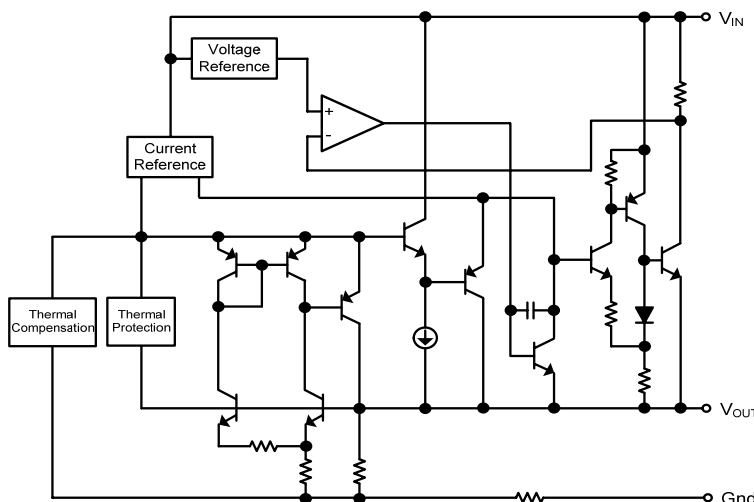
### APPLICATIONS

- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD-Video Player
- NIC/Switch
- Telecom Modem
- ADSL Modem
- Printer and other peripheral Equipment

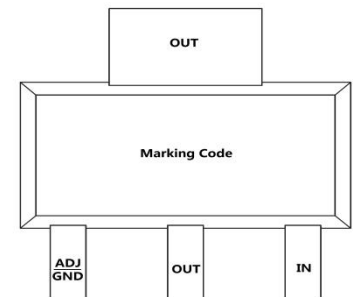
### MECHANICAL DATA

- Case: SOT-223
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.04 grams (approximate)

### SCHEMATIC DIAGRAM



**SOT-223**



## LOW DROP LINEAR VOLTAGE REGULATORS

**ABOSLUTE MAXIMUM RATINGS(Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	20	V
Maximum Junction Temperature	$T_J$	150	°C
Power Dissipation	$P_D$	Internally limited	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	°C/W
Lead Temperature (Soldering, 10sec.)	$T_L$	260	°C
Storage Temperature Range	$T_{STG}$	-55 ~+150	°C
ESD Voltage (Machine Model)	$V_{ESD}$	400	V

**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Value	Unit
Input Voltage	$V_{IN}$	15	V
Operating Junction Temperature Range	$T_J$	0~+125	°C

**ELECTRICAL CHARACTERISTICS OF 1117/A-1.2**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	$V_{OUT}$	1.188	1.200	1.212	V	$V_{IN}=3.2V, I_{OUT}=10mA, T_J=+25^\circ C$
		1.176	1.200	1.224	V	$V_{IN}=2.7\sim 8V$ 1117: $I_{OUT}=0\sim 800mA$ 1117A: $I_{OUT}=0\sim 1A$
Line regulation	$\Delta V_{OUT}$		1	6	mV	$V_{IN}=2.7\sim 8V, I_{OUT}=0mA$
Load Regulation	$\Delta V_{OUT}$		1	10	mV	$V_{IN}=2.7V$ 1117: $I_{OUT}=0\sim 800mA$ 1117A: $I_{OUT}=0\sim 1A$
Temperature stability	$\Delta V_{OUT}$		0.5		%	
Long Term Stability	$\Delta V_{OUT}$		0.3		%	1000hrs, $T_J=+125^\circ C$
Operating Input	$V_{IN}$			15	V	$I_{OUT}=100mA$
Quiescent Current	$I_q$		5	10	mA	$V_{IN}\leq 10V$
Current Limit	$I_{LIMIT}$	0.8			A	1117
		1			A	1117A
						$V_{IN}=6.2V, T_J=+25^\circ C$
Minimum Load Current	$I_{O(MIN)}$		2	5	mA	$V_{IN}=15V$
Output Noise Voltage	eN		100		µV	$B=10Hz\sim 10kHz, T_J=+25^\circ C$
Supply Voltage Rejection	SVR	60	75		dB	$I_{OUT}=40mA, f=120Hz, T_J=+25^\circ C$ $V_{IN}=4.2V, V_{RIPPLE}=1V_{pp}$
Dropout Voltage	$V_D$		1.00	1.10	V	$I_{OUT}=100mA$
			1.15	1.25	V	$I_{OUT}=500mA$
			1.20	1.30	V	$I_{OUT}=800mA$
			1.20	1.30	V	$I_{OUT}=1000mA$
Thermal Regulation			0.01	0.10	%/w	$T_A=+25^\circ C, 30ms$ Pulse

## LOW DROP LINEAR VOLTAGE REGULATORS

**ELECTRICAL CHARACTERISTICS OF 1117/A-1.5**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	1.485	1.500	1.515	V	V <sub>IN</sub> =3.5V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		1.470	1.500	1.530	V	V <sub>IN</sub> =3~8V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =3~8V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =3V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤10V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =4.5V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

**ELECTRICAL CHARACTERISTICS OF 1117/A-1.8**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	1.780	1.800	1.820	V	V <sub>IN</sub> =3.8V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		1.760	1.800	1.840	V	V <sub>IN</sub> =3.3~8V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =3.3~8V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =3.3V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			10	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤8V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =5.5V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

## LOW DROP LINEAR VOLTAGE REGULATORS

## ELECTRICAL CHARACTERISTICS OF 1117/A-2.5

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	2.475	2.500	2.525	V	V <sub>IN</sub> =4.5V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		2.450	2.500	2.550	V	
		2.450	2.500	2.550		V
		2.400	2.500	2.600	1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A	
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =3.9~10V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =3.9V
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤10V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =5.5V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

## ELECTRICAL CHARACTERISTICS OF 1117/A-2.85

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	2.828	2.850	2.880	V	V <sub>IN</sub> =4.85V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		2.790	2.850	2.910	V	V <sub>IN</sub> =4.25~10V
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =4.25V
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤10V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	V <sub>IN</sub> =7.85V, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =5.85V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
			1.15	1.25	V	I <sub>OUT</sub> =100mA
			1.20	1.30	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
Thermal Regulation			0.01	0.10	%/w	I <sub>OUT</sub> =1000mA T <sub>A</sub> =+25°C, 30ms Pulse

**LOW DROP LINEAR VOLTAGE REGULATORS**
**ELECTRICAL CHARACTERISTICS OF 1117/A-3.0**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	2.970	3.000	3.030	V	V <sub>IN</sub> =5V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		2.940	3.000	3.060		
		2.940	3.000	3.060	V	V <sub>IN</sub> =4.5~10V
		2.880	3.000	3.120		
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =4.5~12V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =4.5V
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤10V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =6V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

**ELECTRICAL CHARACTERISTICS OF 1117/A-3.3**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	3.267	3.300	3.333	V	V <sub>IN</sub> =5.3V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		3.235	3.300	3.365		
		3.235	3.300	3.365	V	V <sub>IN</sub> =4.75~10V
		3.160	3.300	3.440		
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =4.75~15V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =4.75V
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤15V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =6.3V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

## LOW DROP LINEAR VOLTAGE REGULATORS

**ELECTRICAL CHARACTERISTICS OF 1117/A-3.6**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	3.564	3.600	3.636	V	V <sub>IN</sub> =5.6V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		3.528	3.600	3.672	V	V <sub>IN</sub> =5~10V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =5~15V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =5V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤15V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =6.6V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

**ELECTRICAL CHARACTERISTICS OF 1117/A-5.0**

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Output voltage	V <sub>OUT</sub>	4.950	5.000	5.050	V	V <sub>IN</sub> =7V, I <sub>OUT</sub> =10mA, T <sub>J</sub> =+25°C
		4.900	5.000	5.100	V	V <sub>IN</sub> =6.5~15V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
		4.900	5.000	5.100		
		4.800	5.000	5.200		
Line regulation	ΔV <sub>OUT</sub>		1	6	mV	V <sub>IN</sub> =6.5~15V, I <sub>OUT</sub> =0mA
Load Regulation	ΔV <sub>OUT</sub>		1	10	mV	V <sub>IN</sub> =6.5V 1117: I <sub>OUT</sub> =0~800mA 1117A: I <sub>OUT</sub> =0~1A
Temperature stability	ΔV <sub>OUT</sub>		0.5		%	
Long Term Stability	ΔV <sub>OUT</sub>		0.3		%	1000hrs, T <sub>J</sub> =+125°C
Operating Input Voltage	V <sub>IN</sub>			15	V	I <sub>OUT</sub> =100mA
Quiescent Current	I <sub>q</sub>		5	10	mA	V <sub>IN</sub> ≤15V
Current Limit	I <sub>LIMIT</sub>	0.8			A	1117
		1			A	1117A
Output Noise Voltage	eN		100		μV	B=10Hz~10kHz, T <sub>J</sub> =+25°C
Supply Voltage Rejection	SVR	60	75		dB	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =+25°C V <sub>IN</sub> =8V, V <sub>RIPPLE</sub> =1V <sub>pp</sub>
Dropout Voltage	V <sub>D</sub>		1.00	1.10	V	I <sub>OUT</sub> =100mA
			1.15	1.25	V	I <sub>OUT</sub> =500mA
			1.20	1.30	V	I <sub>OUT</sub> =800mA
			1.20	1.30	V	I <sub>OUT</sub> =1000mA
Thermal Regulation			0.01	0.10	%/w	T <sub>A</sub> =+25°C, 30ms Pulse

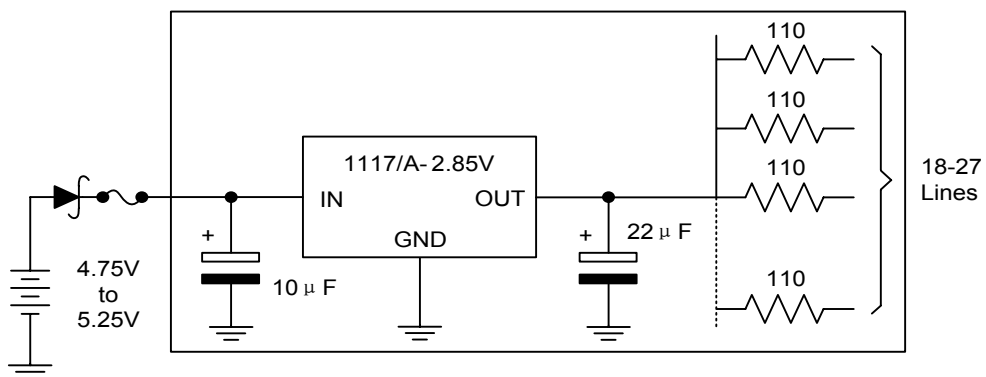
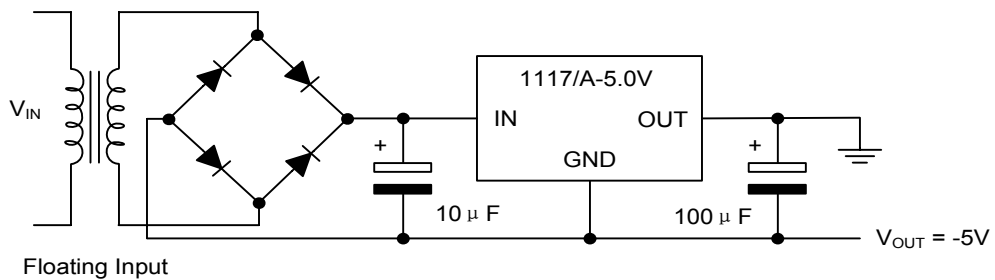
## LOW DROP LINEAR VOLTAGE REGULATORS

## ELECTRICAL CHARACTERISTICS OF 1117/A-ADJ

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Reference Voltage	$V_{REF}$	1.188	1.200	1.212	V	$V_{IN}-V_{OUT}=2\text{V}, I_{OUT}=10\text{mA}, T_J=+25^{\circ}\text{C}$
		1.176	1.200	1.224	V	$V_{IN}-V_{OUT}=1.4\sim 10\text{V}$ 1117: $I_{OUT}=0\sim 800\text{mA}$ 1117A: $I_{OUT}=0\sim 1\text{A}$
Line regulation	$\Delta V_{OUT}$		1	6	mV	$V_{IN}-V_{OUT}=1.5\sim 13.75\text{V}, I_{OUT}=0\text{mA}$
Load Regulation	$\Delta V_{OUT}$		1	10	mV	$V_{IN}-V_{OUT}=3\text{V}$ 1117: $I_{OUT}=0\sim 800\text{mA}$ 1117A: $I_{OUT}=0\sim 1\text{A}$
Temperature stability	$\Delta V_{OUT}$		0.5		%	
Long Term Stability	$\Delta V_{OUT}$		0.3		%	1000hrs, $T_J=+125^{\circ}\text{C}$
Operating Input Voltage	$V_{IN}$			15	V	$I_{OUT}=100\text{mA}$
Adjustment Pin Current	$I_{ADJ}$		60	120	$\mu\text{A}$	$V_{IN}\leq 15\text{V}$
Adjustment Pin Current Change	$\Delta I_{ADJ}$		1	5	$\mu\text{A}$	$V_{IN}-V_{OUT}=1.4\sim 10\text{V}$ 1117: $I_{OUT}=0\sim 800\text{mA}$ 1117A: $I_{OUT}=0\sim 1\text{A}$
Current Limit	$I_{LIMIT}$	0.8			A	1117
		1			A	1117A
Minimum Load Current	$I_{O(MIN)}$		2	5	mA	$V_{IN}=15\text{V}$
Output Noise Voltage	eN		0.003		%	$B=10\text{Hz}\sim 10\text{kHz}, T_J=+25^{\circ}\text{C}$
Supply Voltage Rejection	SVR	60	75		dB	$I_{OUT}=40\text{mA}, f=120\text{Hz}, T_J=+25^{\circ}\text{C}$ $V_{IN}-V_{OUT}=3\text{V}, V_{RIPPLE}=1\text{V}_{pp}$
Dropout Voltage	$V_D$		1.00	1.10	V	$I_{OUT}=100\text{mA}$
			1.15	1.25	V	$I_{OUT}=500\text{mA}$
			1.20	1.30	V	$I_{OUT}=800\text{mA}$
			1.20	1.30	V	$I_{OUT}=1000\text{mA}$
Thermal Regulation			0.01	0.10	%/w	$T_A=+25^{\circ}\text{C}, 30\text{ms Pulse}$

## TYPICAL APPLICATION



## LOW DROP LINEAR VOLTAGE REGULATORS

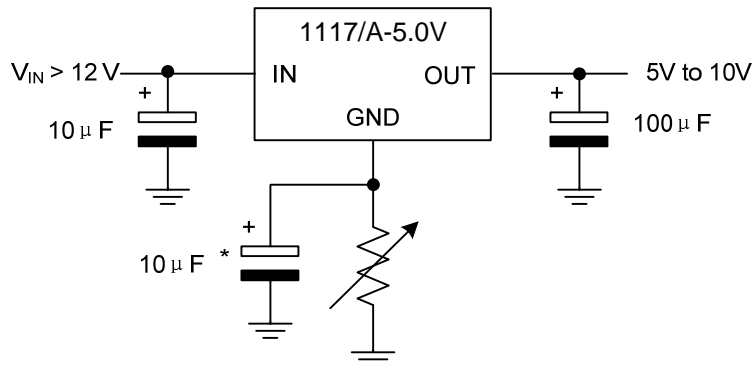


FIG.3 Circuit for Increasing Output Voltage

## APPLICATION NOTE of 1117/A ADJUSTABLE

The 1117/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  $\Delta I_{ADJ}$  is  $1\mu A$  typ. ( $5\mu A$  max.).

$R1$  is normally fixed to  $120\Omega$ .

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  $K\Omega$ , 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  $10\mu F$  electrolytic capacitor placed in parallel to the  $R2$  resistor (See Fig. 5)

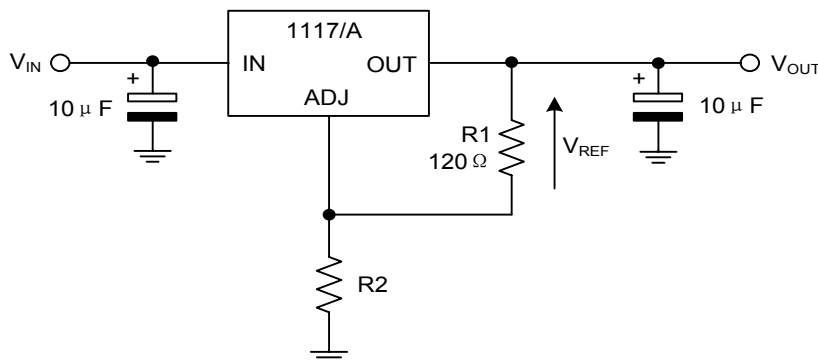


FIG.4 Adjustable Output Voltage Application Circuit

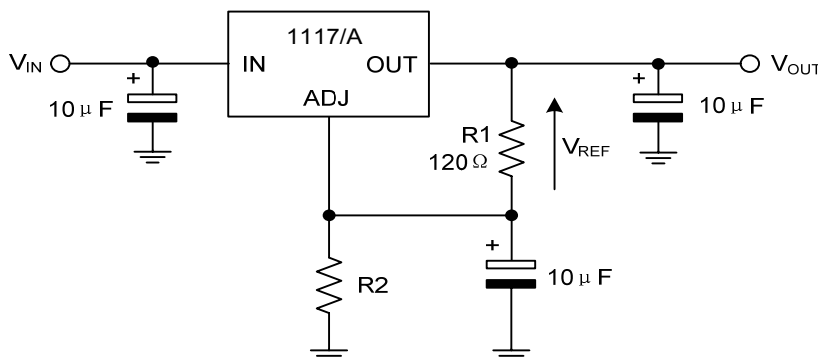


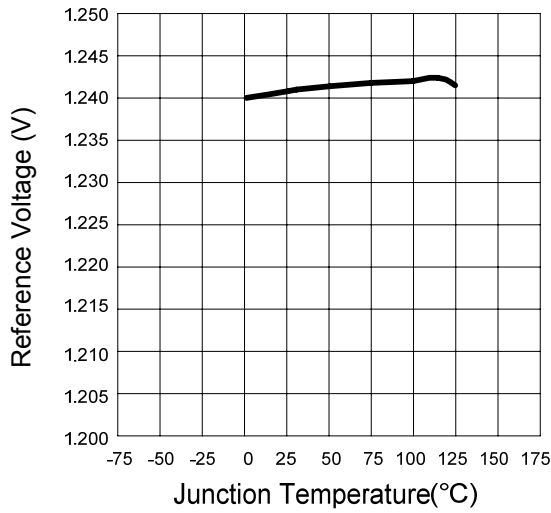
FIG.5 Adjustable Output Voltage Application with improved Ripple Rejection.



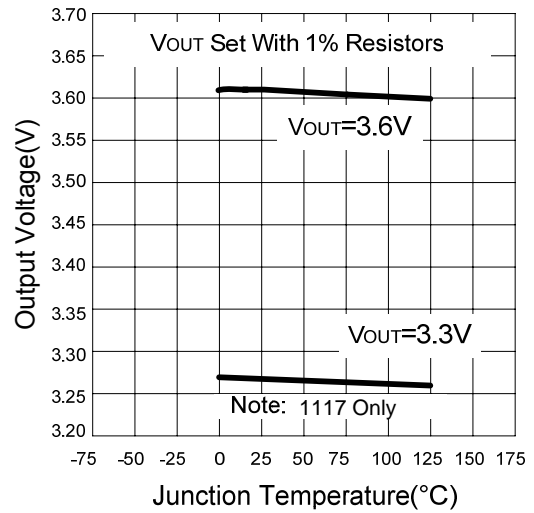
LOW DROP LINEAR VOLTAGE REGULATORS

Typical Characteristics

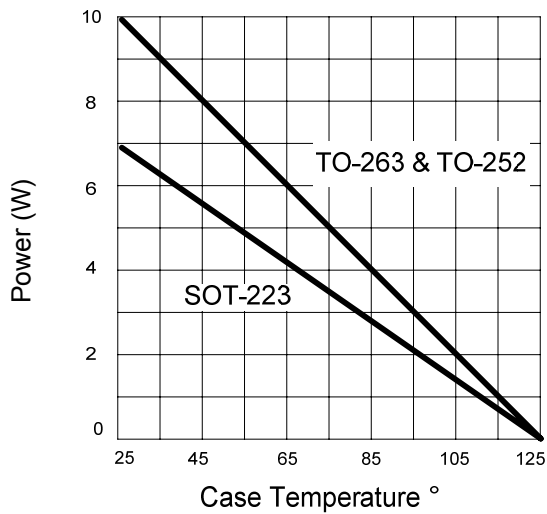
Reference Voltage vs. Temperature



Output Voltage vs. Temperature

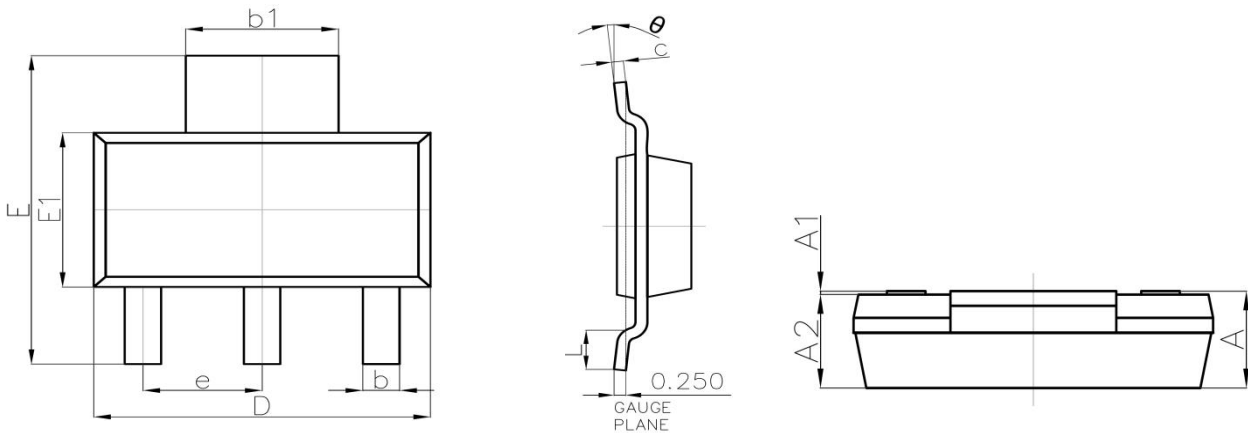


Maximum Power Dissipation



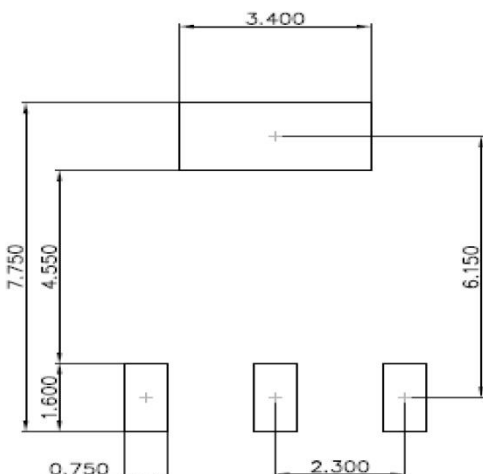
## LOW DROP LINEAR VOLTAGE REGULATORS

## SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	-----	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	-----	0.030	-----
θ	0°	10°	0°	10°

## SOT-223 Suggested Pad Layout

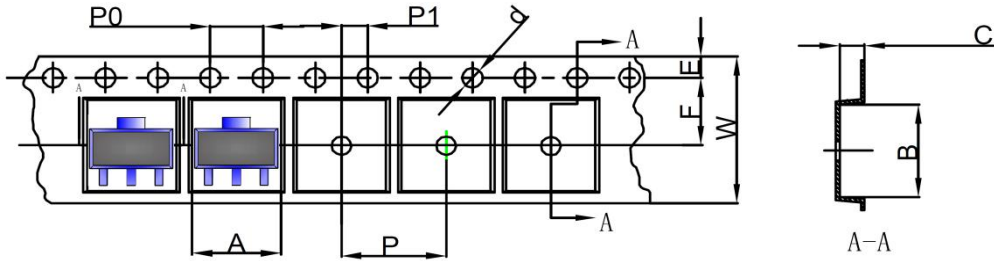

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

## LOW DROP LINEAR VOLTAGE REGULATORS

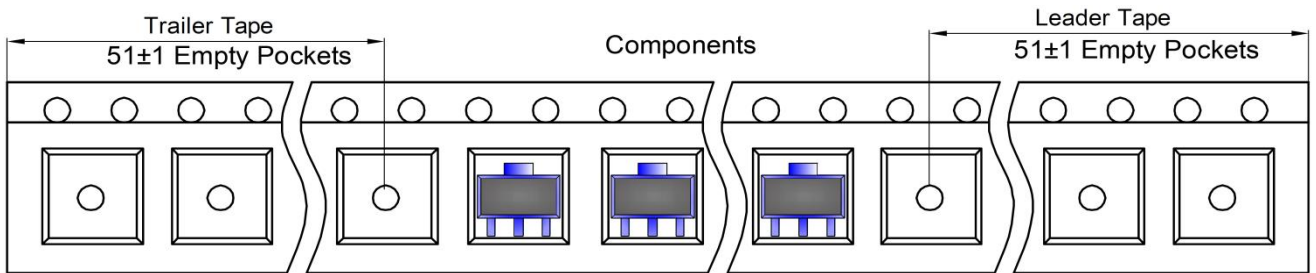
## SOT-223 Tape and Reel

## SOT-223 Embossed Carrier Tape

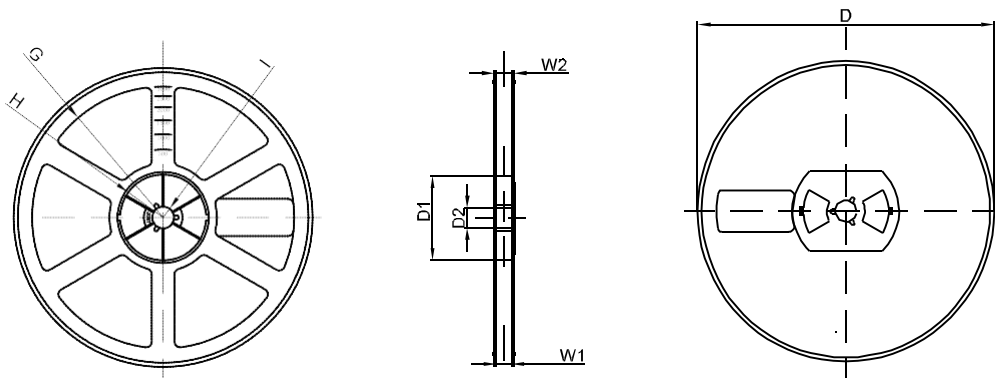


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-223	6.765	7.335	1.88	Ø1.50	1.75	5.50	4.00	4.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

## SOT-223 Tape Leader and Trailer



## SOT-223 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1