

**1A LOW DROPOUT LINEAR REGULATOR****AZ1117****General Description**

The AZ1117 is a series of low dropout three-terminal regulators with a dropout of 1.15V at 1A output current.

The AZ1117 series provides current limiting and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within 1% for 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V and adjustable versions or 2% for 1.2V version. Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal shutdown provides protection against any combination of overload and ambient temperature that would create excessive junction temperature.

The AZ1117 has an adjustable version, that can provide the output voltage from 1.25V to 12V with only 2 external resistors.

The AZ1117 series is available in the industry standard SOT-223, SOT-89-3, TO-220-3, TO-252-2 (1) and TO-263-3 power packages.

Features

- Low Dropout Voltage: 1.15V at 1A Output Current
- Trimmed Current Limit
- On-chip Thermal Shutdown
- Three-terminal Adjustable or Fixed 1.2V, 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V
- Operation Junction Temperature: -40 to 125°C

Applications

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

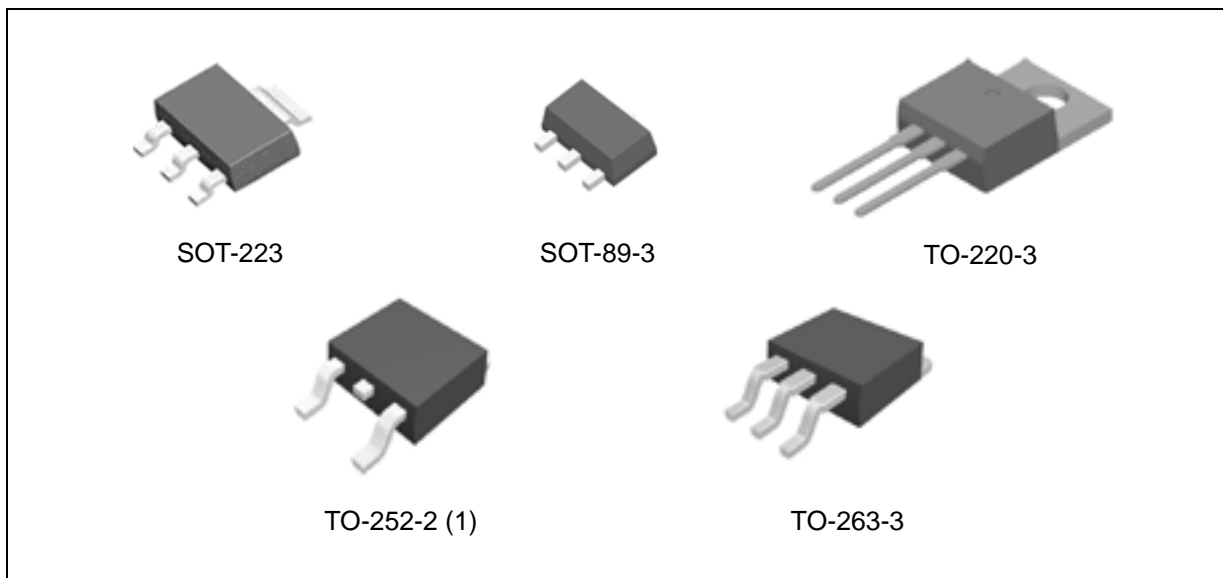


Figure 1. Package Types of AZ1117

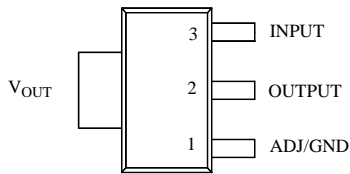


1A LOW DROPOUT LINEAR REGULATOR

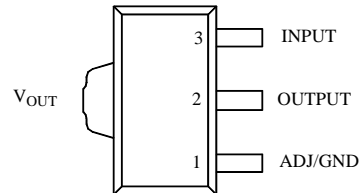
AZ1117

Pin Configuration

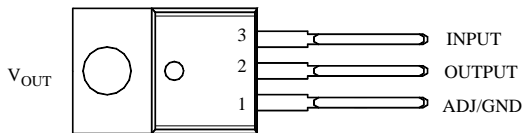
H Package
(SOT-223)



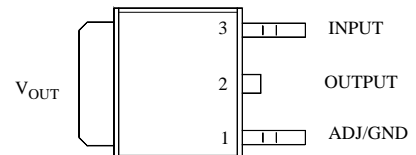
R Package
(SOT-89-3)



T Package
(TO-220-3)



D Package
(TO-252-2 (1))



S Package
(TO-263-3)

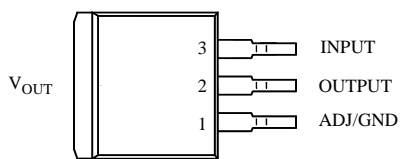


Figure 2. Pin Configuration of AZ1117



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Functional Block Diagram

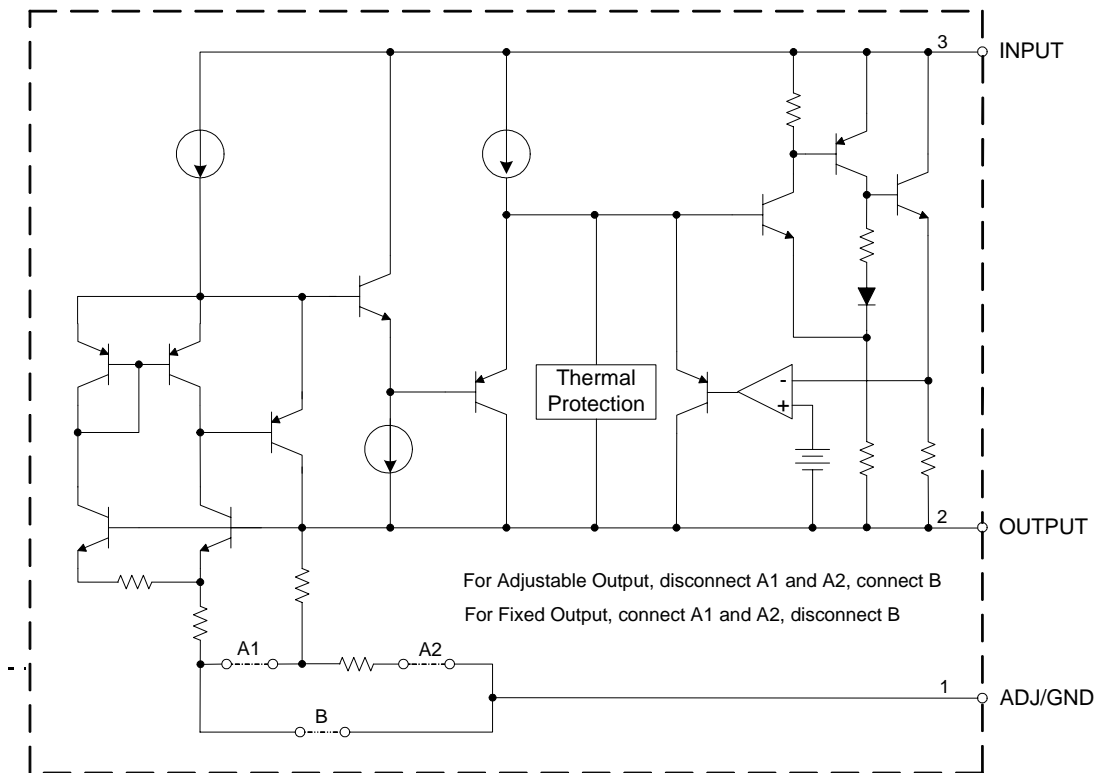


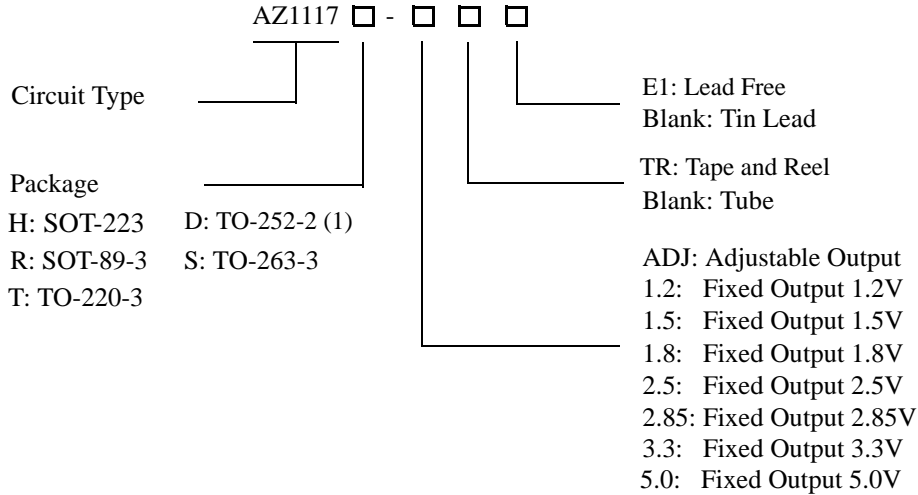
Figure 3. Functional Block Diagram of AZ1117



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing Type
		Tin Lead	Lead Free	Tin Lead	Lead Free	
SOT-223	-40 to 125°C	AZ1117H-ADJTR	AZ1117H-ADJTRE1	H11A	EH11A	Tape & Reel
		AZ1117H-1.2TR	AZ1117H-1.2TRE1	H18A	EH18A	Tape & Reel
		AZ1117H-1.5TR	AZ1117H-1.5TRE1	H12A	EH12A	Tape & Reel
		AZ1117H-1.8TR	AZ1117H-1.8TRE1	H13A	EH13A	Tape & Reel
		AZ1117H-2.5TR	AZ1117H-2.5TRE1	H14A	EH14A	Tape & Reel
		AZ1117H-2.85TR	AZ1117H-2.85TRE1	H15A	EH15A	Tape & Reel
		AZ1117H-3.3TR	AZ1117H-3.3TRE1	H16A	EH16A	Tape & Reel
SOT-89-3	-40 to 125°C	AZ1117R-ADJTR	AZ1117R-ADJTRE1	R17A	E17A	Tape & Reel
		AZ1117R-1.2TR	AZ1117R-1.2TRE1	R17G	E17G	Tape & Reel
		AZ1117R-1.5TR	AZ1117R-1.5TRE1	R17B	E17B	Tape & Reel
		AZ1117R-1.8TR	AZ1117R-1.8TRE1	R17C	E17C	Tape & Reel
		AZ1117R-2.5TR	AZ1117R-2.5TRE1	R17D	E17D	Tape & Reel
		AZ1117R-2.85TR	AZ1117R-2.85TRE1	R17H	E17H	Tape & Reel
		AZ1117R-3.3TR	AZ1117R-3.3TRE1	R17E	E17E	Tape & Reel
TO-220-3	-40 to 125°C	AZ1117T-ADJ	AZ1117T-ADJE1	AZ1117T-ADJ	AZ1117T-ADJE1	Tube
		AZ1117T-1.2	AZ1117T-1.2E1	AZ1117T-1.2	AZ1117T-1.2E1	Tube
		AZ1117T-1.5	AZ1117T-1.5E1	AZ1117T-1.5	AZ1117T-1.5E1	Tube
		AZ1117T-1.8	AZ1117T-1.8E1	AZ1117T-1.8	AZ1117T-1.8E1	Tube
		AZ1117T-2.5	AZ1117T-2.5E1	AZ1117T-2.5	AZ1117T-2.5E1	Tube
		AZ1117T-2.85	AZ1117T-2.85E1	AZ1117T-2.85	AZ1117T-2.85E1	Tube
		AZ1117T-3.3	AZ1117T-3.3E1	AZ1117T-3.3	AZ1117T-3.3E1	Tube
AZ1117T-5.0	AZ1117T-5.0E1	AZ1117T-5.0	AZ1117T-5.0E1	Tube		



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Ordering Information (Continued)

Package	Temperature Range	Part Number		Marking ID		Packing Type
		Tin Lead	Lead Free	Tin Lead	Lead Free	
TO-252-2 (1)	-40 to 125°C	AZ1117D-ADJ	AZ1117D-ADJE1	AZ1117D-ADJ	AZ1117D-ADJE1	Tube
		AZ1117D-ADJTR	AZ1117D-ADJTRE1	AZ1117D-ADJ	AZ1117D-ADJE1	Tape & Reel
		AZ1117D-1.2	AZ1117D-1.2E1	AZ1117D-1.2	AZ1117D-1.2E1	Tube
		AZ1117D-1.2TR	AZ1117D-1.2TRE1	AZ1117D-1.2	AZ1117D-1.2E1	Tape & Reel
		AZ1117D-1.5	AZ1117D-1.5E1	AZ1117D-1.5	AZ1117D-1.5E1	Tube
		AZ1117D-1.5TR	AZ1117D-1.5TRE1	AZ1117D-1.5	AZ1117D-1.5E1	Tape & Reel
		AZ1117D-1.8	AZ1117D-1.8E1	AZ1117D-1.8	AZ1117D-1.8E1	Tube
		AZ1117D-1.8TR	AZ1117D-1.8TRE1	AZ1117D-1.8	AZ1117D-1.8E1	Tape & Reel
		AZ1117D-2.5	AZ1117D-2.5E1	AZ1117D-2.5	AZ1117D-2.5E1	Tube
		AZ1117D-2.5TR	AZ1117D-2.5TRE1	AZ1117D-2.5	AZ1117D-2.5E1	Tape & Reel
		AZ1117D-2.85	AZ1117D-2.85E1	AZ1117D-2.85	AZ1117D-2.85E1	Tube
		AZ1117D-2.85TR	AZ1117D-2.85TRE1	AZ1117D-2.85	AZ1117D-2.85E1	Tape & Reel
		AZ1117D-3.3	AZ1117D-3.3E1	AZ1117D-3.3	AZ1117D-3.3E1	Tube
		AZ1117D-3.3TR	AZ1117D-3.3TRE1	AZ1117D-3.3	AZ1117D-3.3E1	Tape & Reel
		AZ1117D-5.0	AZ1117D-5.0E1	AZ1117D-5.0	AZ1117D-5.0E1	Tube
AZ1117D-5.0TR	AZ1117D-5.0TRE1	AZ1117D-5.0	AZ1117D-5.0E1	Tape & Reel		
TO-263-3	-40 to 125°C	AZ1117S-ADJ	AZ1117S-ADJE1	AZ1117S-ADJ	AZ1117S-ADJE1	Tube
		AZ1117S-ADJTR	AZ1117S-ADJTRE1	AZ1117S-ADJ	AZ1117S-ADJE1	Tape & Reel
		AZ1117S-1.2	AZ1117S-1.2E1	AZ1117S-1.2	AZ1117S-1.2E1	Tube
		AZ1117S-1.2TR	AZ1117S-1.2TRE1	AZ1117S-1.2	AZ1117S-1.2E1	Tape & Reel
		AZ1117S-1.5	AZ1117S-1.5E1	AZ1117S-1.5	AZ1117S-1.5E1	Tube
		AZ1117S-1.5TR	AZ1117S-1.5TRE1	AZ1117S-1.5	AZ1117S-1.5E1	Tape & Reel
		AZ1117S-1.8	AZ1117S-1.8E1	AZ1117S-1.8	AZ1117S-1.8E1	Tube
		AZ1117S-1.8TR	AZ1117S-1.8TRE1	AZ1117S-1.8	AZ1117S-1.8E1	Tape & Reel
		AZ1117S-2.5	AZ1117S-2.5E1	AZ1117S-2.5	AZ1117S-2.5E1	Tube
		AZ1117S-2.5TR	AZ1117S-2.5TRE1	AZ1117S-2.5	AZ1117S-2.5E1	Tape & Reel
		AZ1117S-2.85	AZ1117S-2.85E1	AZ1117S-2.85	AZ1117S-2.85E1	Tube
		AZ1117S-2.85TR	AZ1117S-2.85TRE1	AZ1117S-2.85	AZ1117S-2.85E1	Tape & Reel
		AZ1117S-3.3	AZ1117S-3.3E1	AZ1117S-3.3	AZ1117S-3.3E1	Tube
		AZ1117S-3.3TR	AZ1117S-3.3TRE1	AZ1117S-3.3	AZ1117S-3.3E1	Tape & Reel
		AZ1117S-5.0	AZ1117S-5.0E1	AZ1117S-5.0	AZ1117S-5.0E1	Tube
AZ1117S-5.0TR	AZ1117S-5.0TRE1	AZ1117S-5.0	AZ1117S-5.0E1	Tape & Reel		

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant.

**1A LOW DROPOUT LINEAR REGULATOR****AZ1117****Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Value		Unit
Input Voltage	V_{IN}	20		V
Operating Junction Temperature	T_J	150		°C
Storage Temperature	T_S	-65 to 150		°C
Lead Temperature (Soldering, 10sec)	T_{LEAD}	260		°C
Thermal Resistance (No Heatsink, Note 2)	θ_{JA}	SOT-223	120	°C/W
		SOT-89-3	165	
		TO-220-3	60	
		TO-252-2 (1)	100	
		TO-263-3	60	
ESD (Human Body Model)	ESD	2000		V
ESD (Machine Model)	ESD	250		V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Note 2: Absolute maximum ratings indicate limits beyond which damage to the component may occur. Electrical specifications do not apply when operating the device outside of its operating ratings. The maximum allowable power dissipation is a function of the maximum junction temperature, $T_{J(max)}$, the junction-to-ambient thermal resistance, θ_{JA} , and the ambient temperature, T_A . The maximum allowable power dissipation at any ambient temperature is calculated using: $P_{D(max)} = (T_{J(max)} - T_A) / \theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Input Voltage	V_{IN}		15	V
Operating Junction Temperature Range	T_J	-40	125	°C



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics

AZ1117-ADJ Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{REF}	$I_{OUT} = 10mA$, $V_{IN} - V_{OUT} = 2V$ $10mA \leq I_{OUT} \leq 1A$, $1.4V \leq V_{IN} - V_{OUT} \leq 8V$, $P \leq$ Maximum Power Dissipation	1.238 1.225	1.250 1.250	1.262 1.270	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		0.035	0.2	%
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq A$		0.2	0.4	%
Dropout Voltage	V_{DROP}	$\Delta V_{REF} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{REF} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{REF} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Adjust Pin Current	I_{ADJ}			60	120	μA
Adjust Pin Current Change	ΔI_{ADJ}	$1.4V \leq V_{IN} - V_{OUT} \leq 10V$, $10mA \leq I_{OUT} \leq 1A$		0.2	5	μA
Minimum Load Current (ADJ)	$I_{LOAD(MIN)}$	$1.5V \leq V_{IN} - V_{OUT} \leq 10V$ (ADJ only)		1.7	5	mA
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics (Continued)

AZ1117-1.2 Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 3.2V$ $10mA \leq I_{OUT} \leq 1A$, $3.0V \leq V_{IN} \leq 10V$	1.176 1.152	1.2 1.2	1.224 1.248	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$

**1A LOW DROPOUT LINEAR REGULATOR****AZ1117****Electrical Characteristics (Continued)****AZ1117-1.5 Electrical Characteristics**Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT}=10mA$, $V_{IN}=3.5V$ $10mA \leq I_{OUT} \leq 1A$, $3.0V \leq V_{IN} \leq 10V$	1.485 1.470	1.5 1.5	1.515 1.530	V
Line Regulation	ΔV_{OUT}	$I_{OUT}=10mA$, $1.5V \leq V_{IN}-V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN}-V_{OUT}=2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT}=1\%$, $I_{OUT}=0.1A$		1.00	1.1	V
		$\Delta V_{OUT}=1\%$, $I_{OUT}=0.5A$		1.08	1.18	V
		$\Delta V_{OUT}=1\%$, $I_{OUT}=1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN}-V_{OUT}=2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN}=V_{OUT}+1.25V$		5	10	mA
Ripple Rejection	PSRR	$f=120Hz$, $C_{OUT}=22\mu F$ Tantalum, $V_{IN}-V_{OUT}=3V$, $I_{OUT}=1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A=125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A=25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics (Continued)

AZ1117-1.8 Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 3.8V$ $10mA \leq I_{OUT} \leq 1A$, $3.2V \leq V_{IN} \leq 10V$	1.782 1.746	1.8 1.8	1.818 1.854	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$

**1A LOW DROPOUT LINEAR REGULATOR****AZ1117****Electrical Characteristics (Continued)****AZ1117-2.5 Electrical Characteristics**Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 4.5V$ $10mA \leq I_{OUT} \leq 1A$, $3.9V \leq V_{IN} \leq 10V$	2.475 2.450	2.5 2.5	2.525 2.550	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics (Continued)

AZ1117-2.85 Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT}=10mA$, $V_{IN}=4.85V$ $10mA \leq I_{OUT} \leq 1A$, $4.25V \leq V_{IN} \leq 10V$	2.822 2.793	2.85 2.85	2.878 2.907	V
Line Regulation	ΔV_{OUT}	$I_{OUT}=10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{REF}=1\%$, $I_{OUT}=0.1A$		1.00	1.1	V
		$\Delta V_{REF}=1\%$, $I_{OUT}=0.5A$		1.08	1.18	V
		$\Delta V_{REF}=1\%$, $I_{OUT}=1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics (Continued)

AZ1117-3.3 Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 5.0V$ $10mA \leq I_{OUT} \leq 1A$, $4.75V \leq V_{IN} \leq 10V$	3.267 3.235	3.3 3.3	3.333 3.365	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	6	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	10	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Electrical Characteristics (Continued)

AZ1117-5.0 Electrical Characteristics

Operating Conditions: $V_{IN} \leq 10V$, $T_J = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 7.0V$ $10mA \leq I_{OUT} \leq 1A$, $6.5V \leq V_{IN} \leq 12V$	4.950 4.900	5.0 5.0	5.050 5.100	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$		1	10	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$		1	15	mV
Dropout Voltage	V_{DROP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$		1.00	1.1	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.5A$		1.08	1.18	V
		$\Delta V_{OUT} = 1\%$, $I_{OUT} = 1.0A$		1.15	1.25	V
Current Limit	I_{LIMIT}	$V_{IN} - V_{OUT} = 2V$	1.25	1.35		A
Quiescent Current	I_Q	$V_{IN} = V_{OUT} + 1.25V$		5	10	mA
Ripple Rejection	PSRR	$f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$	60	75		dB
Temperature Stability				0.5		%
Long-term Stability		$T_A = 125^\circ C$, 1000hrs		0.3		%
RMS Output Noise (% of V_{OUT})		$T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Shutdown		Junction Temperature		150		$^\circ C$
Thermal Shutdown Hysteresis				25		$^\circ C$



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Typical Performance Characteristics

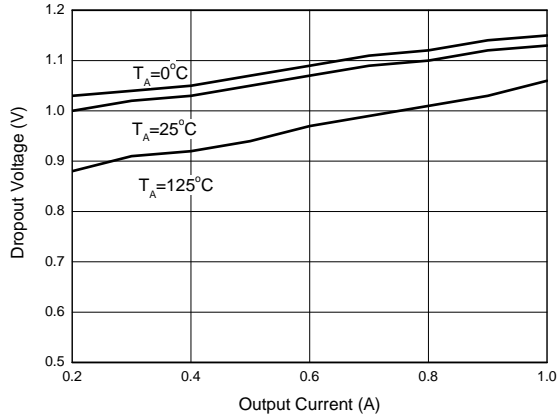


Figure 4. Dropout Voltage vs. Output Current

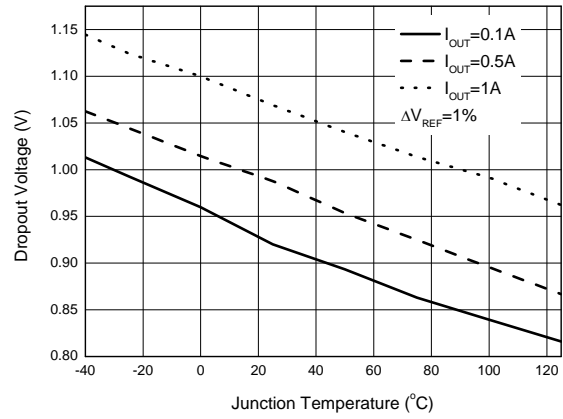


Figure 5. Dropout Voltage vs. Junction Temperature

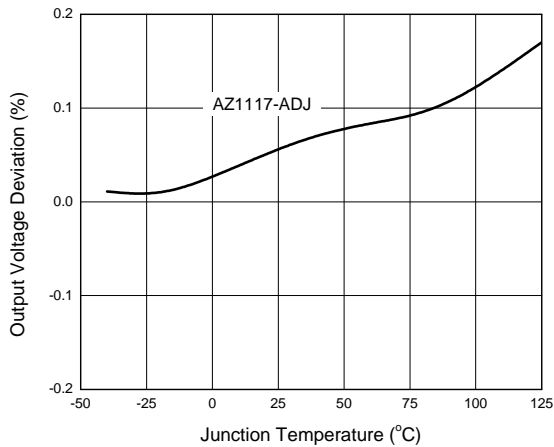


Figure 6. Load Regulation vs. Junction Temperature

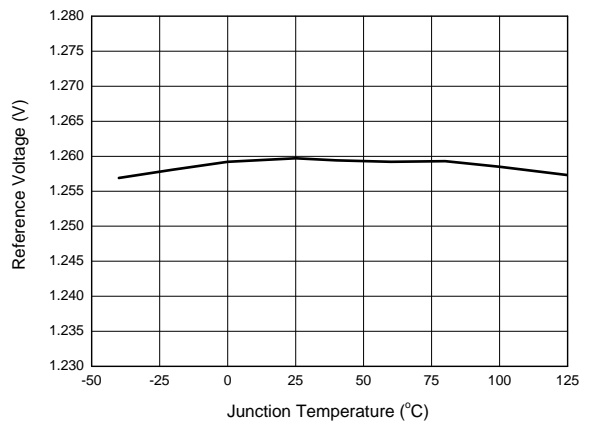


Figure 7. Reference Voltage vs. Junction Temperature



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Typical Performance Characteristics (Continued)

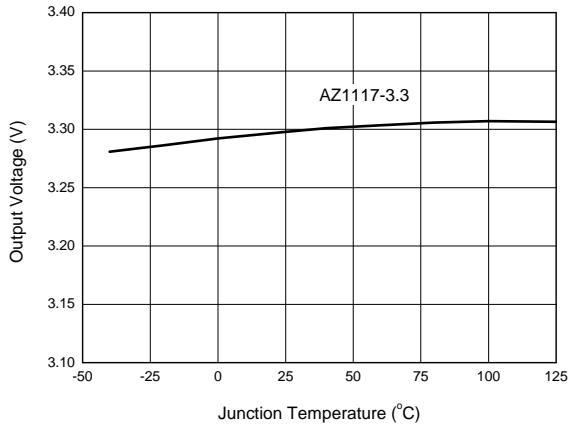


Figure 8. Output Voltage vs. Junction Temperature

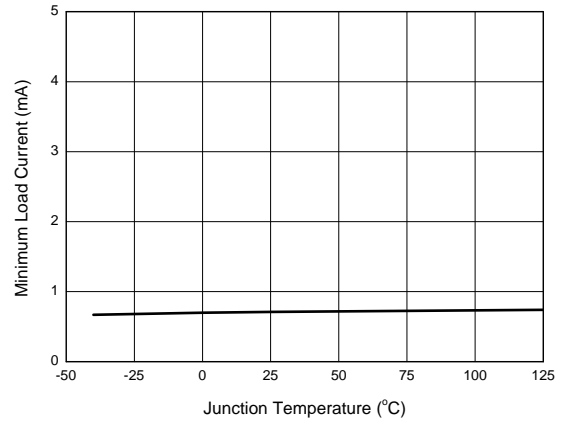


Figure 9. Minimum Load Current vs. Junction Temperature

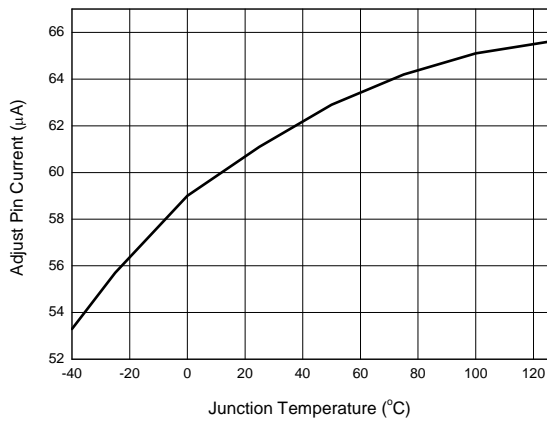


Figure 10. Adjust Pin Current vs. Junction Temperature

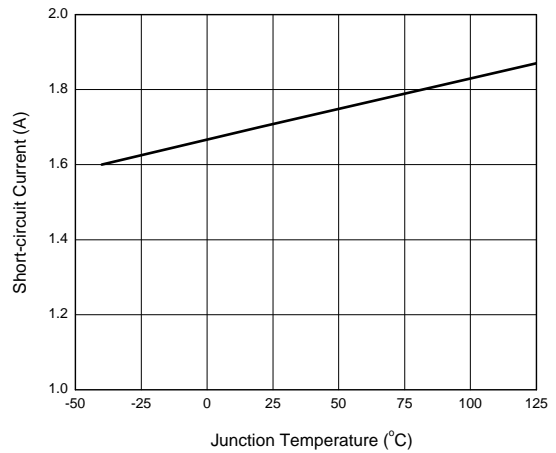


Figure 11. Short-circuit Current vs. Junction Temperature



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Typical Performance Characteristics (Continued)

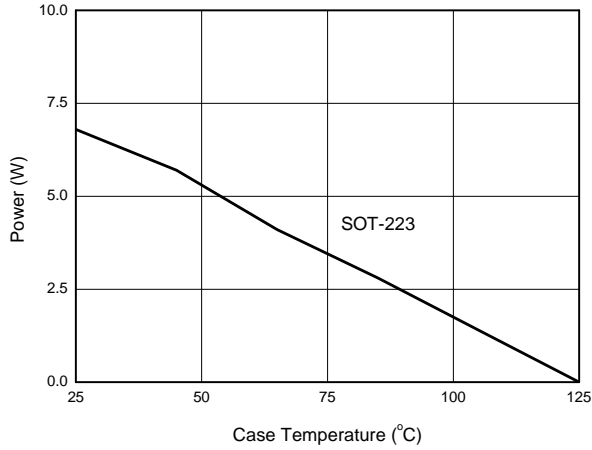


Figure 12. Maximum Power Dissipation

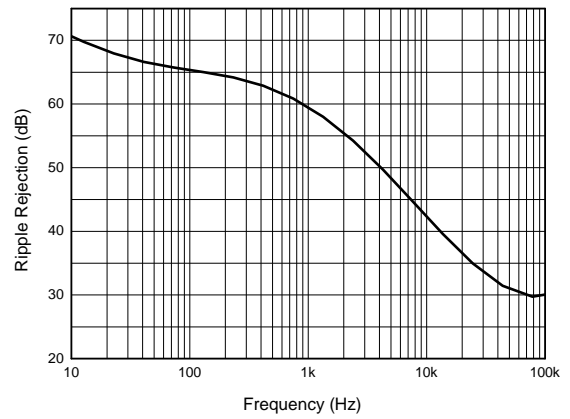


Figure 13. Ripple Rejection vs. Frequency

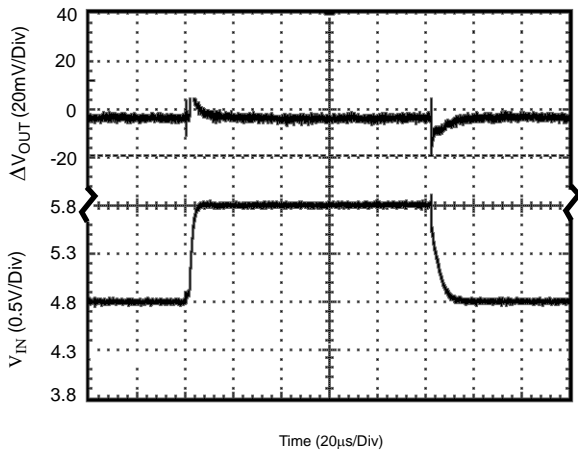


Figure 14. Line Transient Response
(Conditions: $V_{IN}=4.8$ to $5.8V$, $V_{OUT}=3.33V$, $I_{OUT}=0.1A$, $C_{IN}=1\mu F$, $C_{OUT}=10\mu F$)

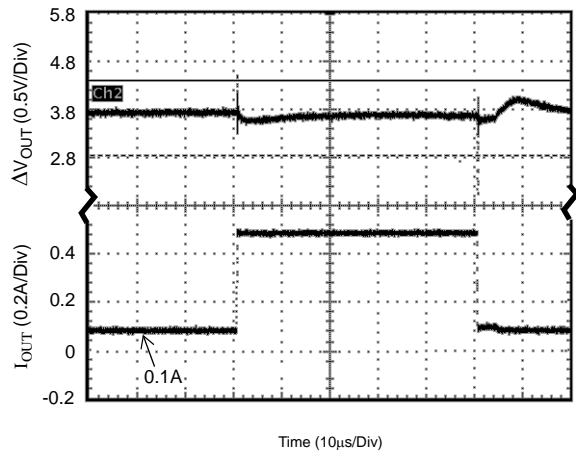


Figure 15. Load Transient Response
(Conditions: $V_{IN}=4.8V$, $V_{OUT}=3.33V$, $I_{OUT}=0.1$ to $0.5A$, $C_{IN}=C_{OUT}=10\mu F$)



1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Typical Applications

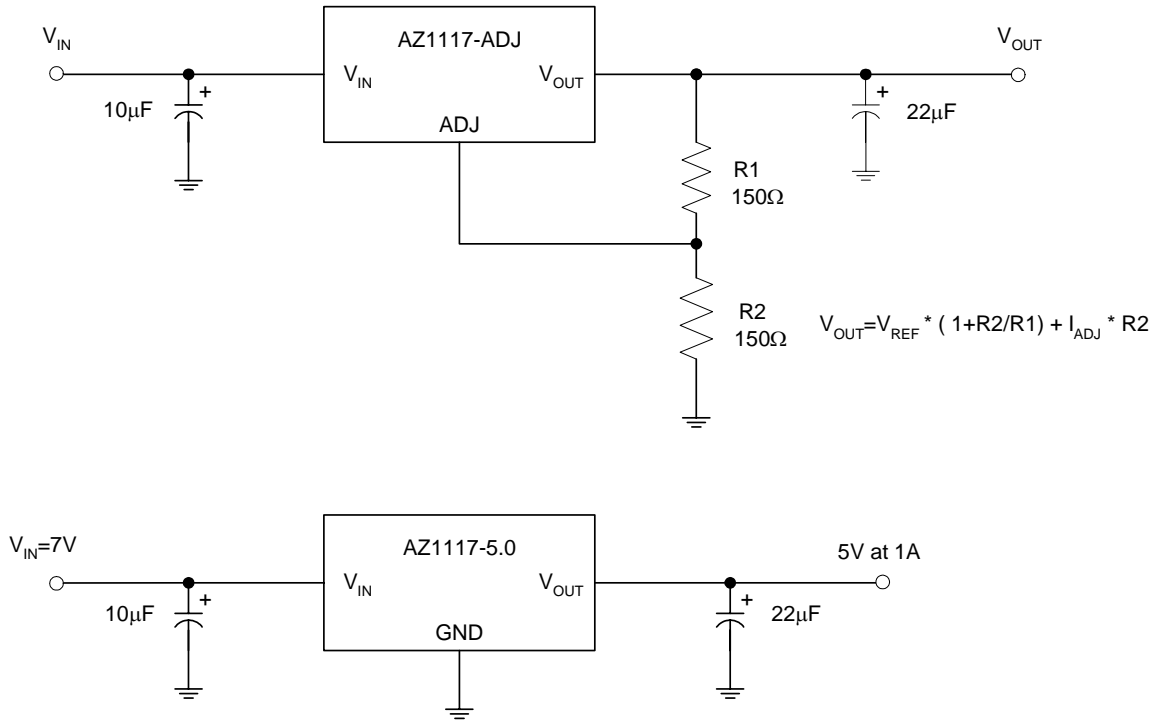


Figure 16. Typical Applications of AZ1117



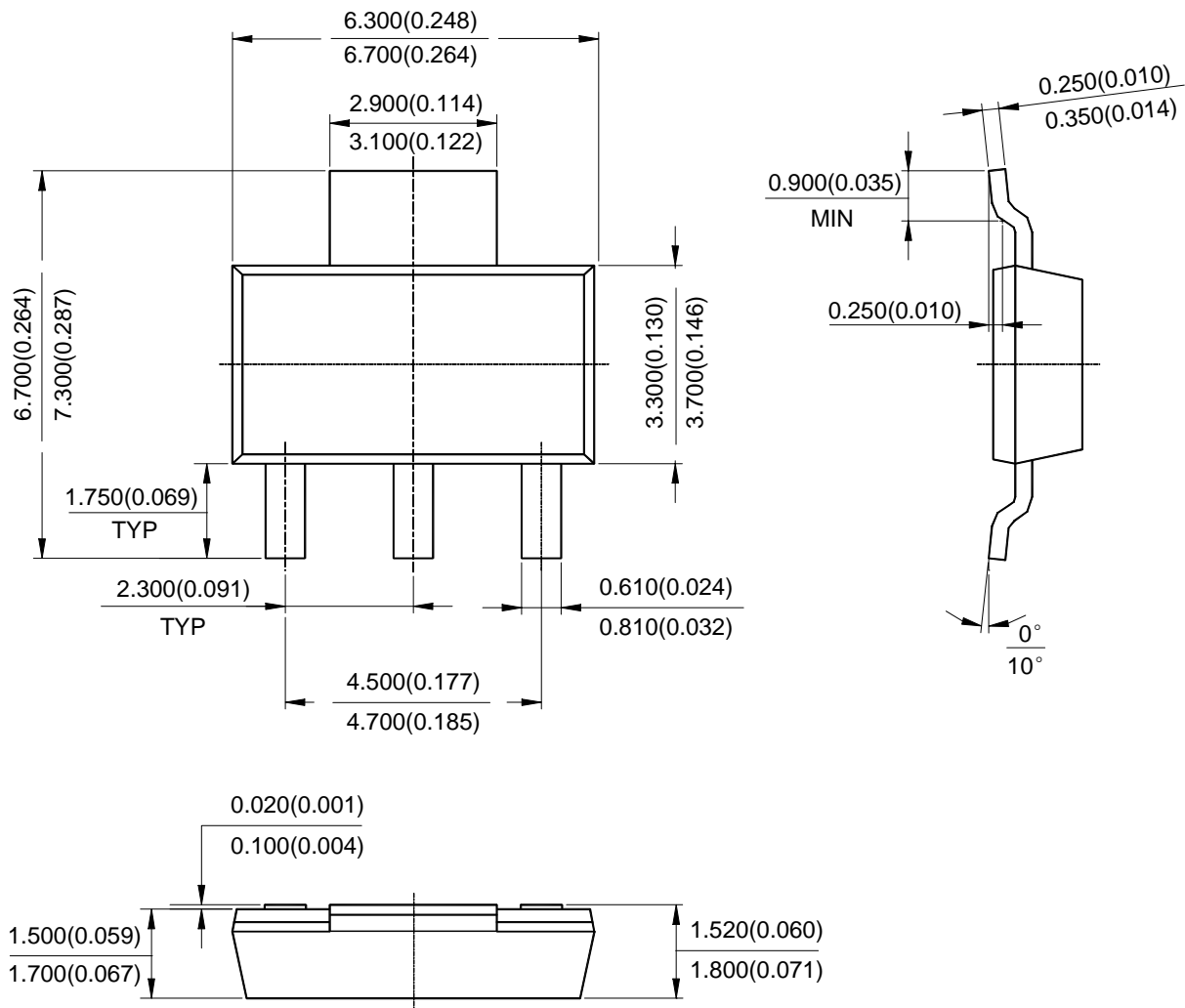
1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Mechanical Dimensions

SOT-223

Unit: mm(inch)





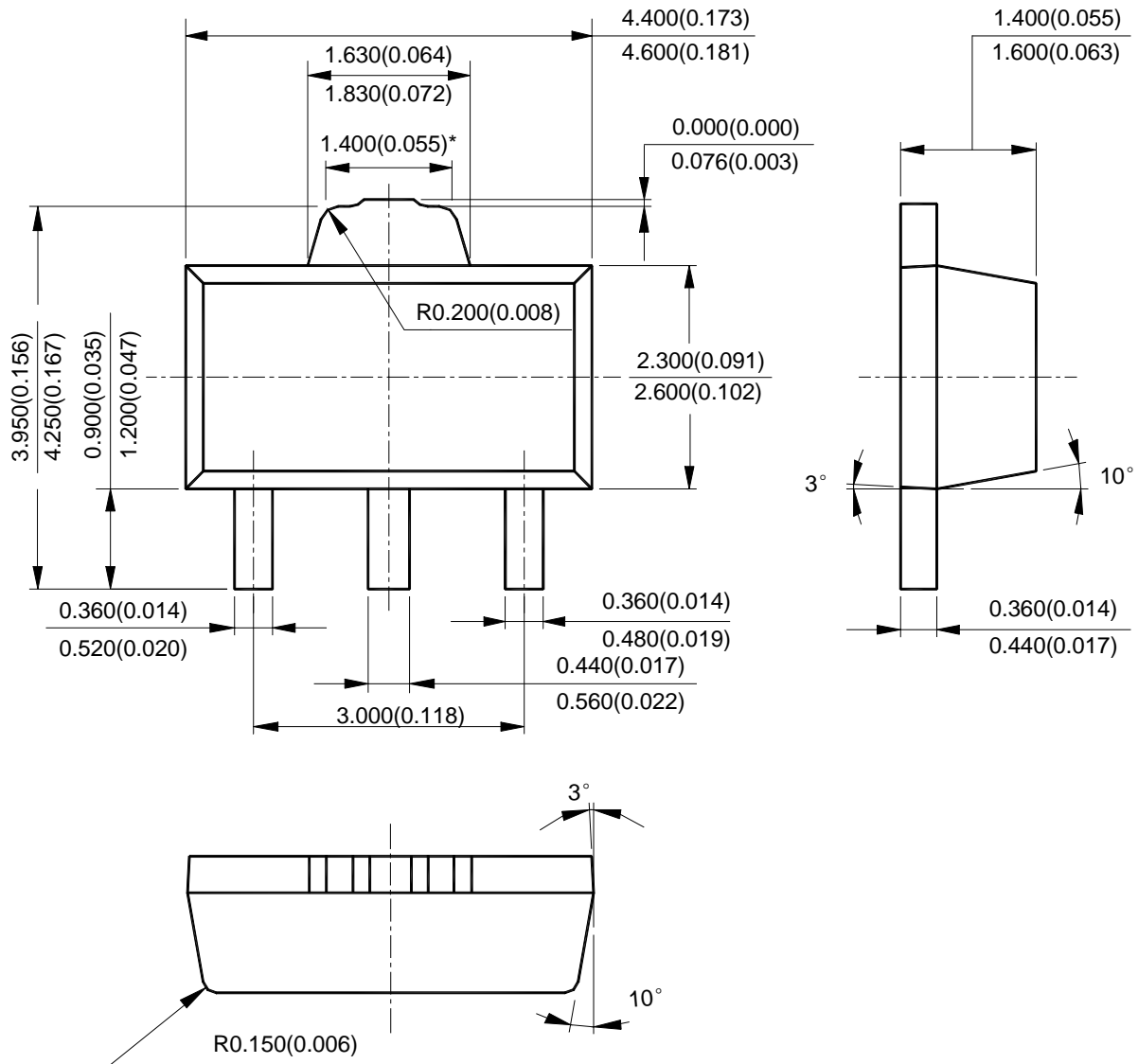
1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Mechanical Dimensions (Continued)

SOT-89-3

Unit: mm(inch)





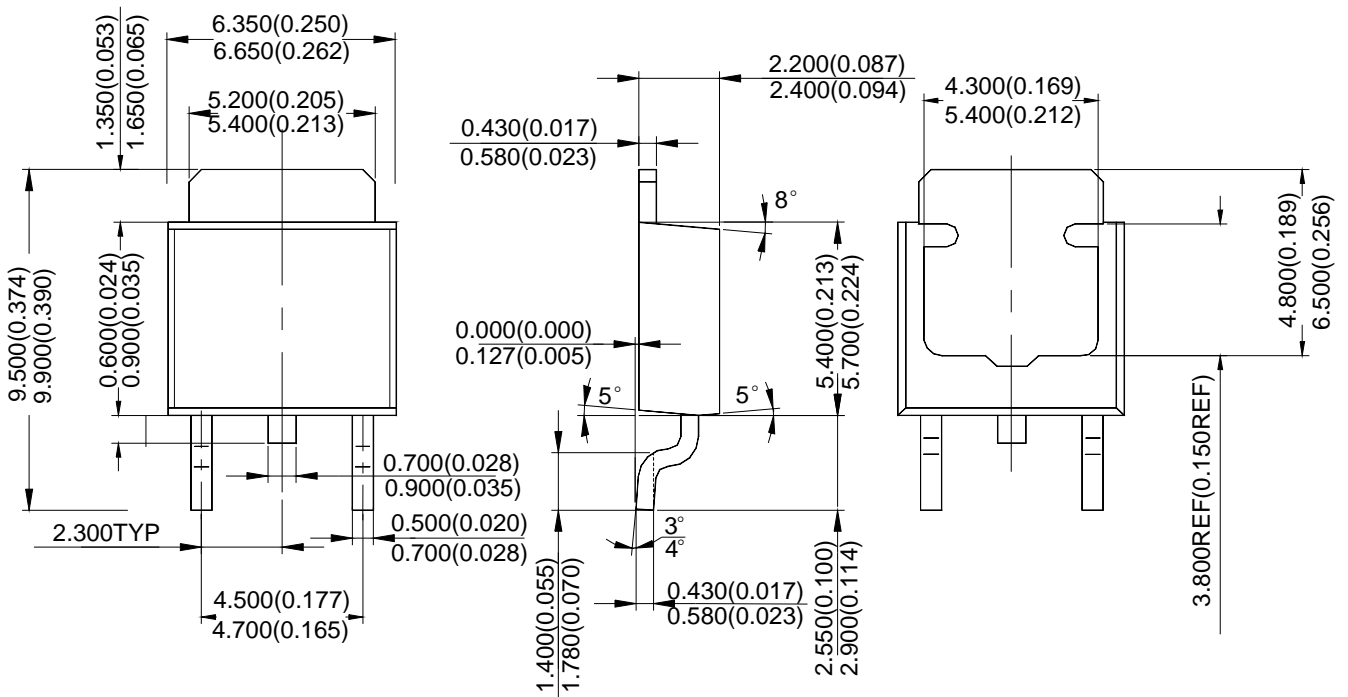
1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Mechanical Dimensions (Continued)

TO-252-2 (1)

Unit: mm(inch)





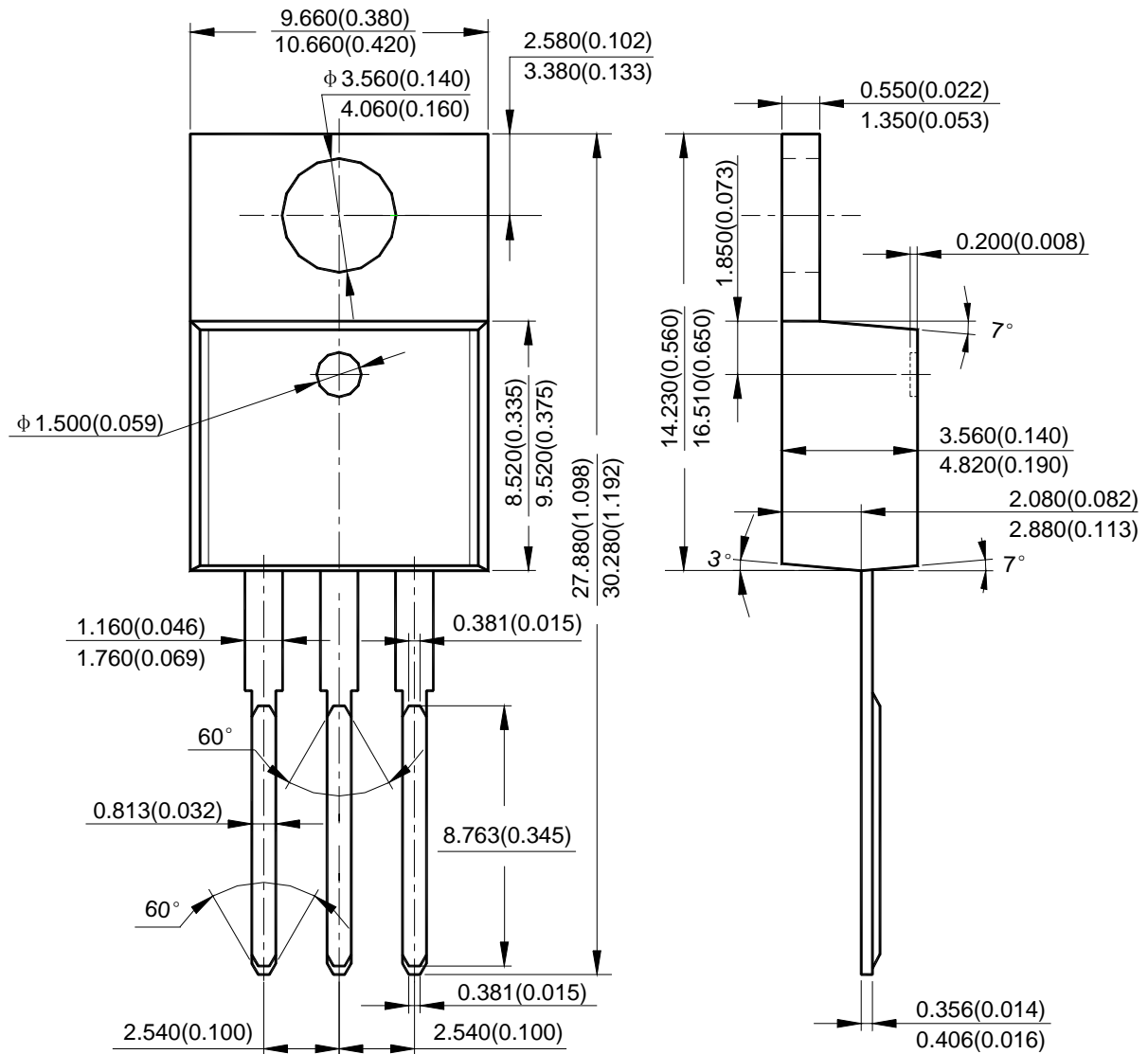
1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Mechanical Dimensions (Continued)

TO-220-3

Unit: mm(inch)





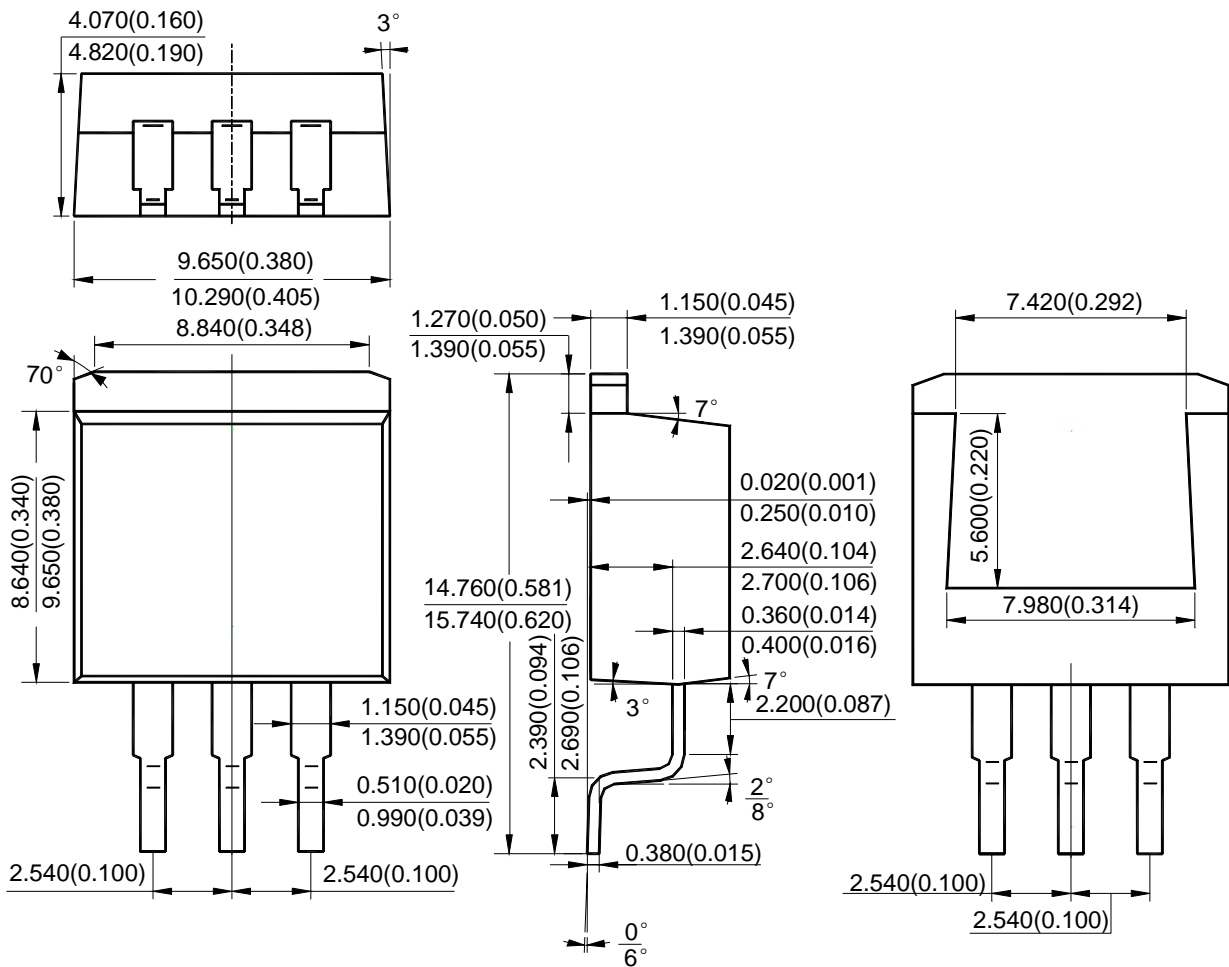
1A LOW DROPOUT LINEAR REGULATOR

AZ1117

Mechanical Dimensions (Continued)

TO-263-3

Unit: mm(inch)





BCD Semiconductor Manufacturing Limited

<http://www.bcdsemi.com>

IMPORTANT NOTICE

BCD Semiconductor Manufacturing Limited reserves the right to make changes without further notice to any products or specifications herein. BCD Semiconductor Manufacturing Limited does not assume any responsibility for use of any its products for any particular purpose, nor does BCD Semiconductor Manufacturing Limited assume any liability arising out of the application or use of any its products or circuits. BCD Semiconductor Manufacturing Limited does not convey any license under its patent rights or other rights nor the rights of others.

MAIN SITE

BCD Semiconductor Manufacturing Limited
- Wafer Fab
Shanghai SIM-BCD Semiconductor Manufacturing Limited
800, Yi Shan Road, Shanghai 200233, China
Tel: +86-21-6485 1491, Fax: +86-21-5450 0008

BCD Semiconductor Manufacturing Limited
- IC Design Group
Advanced Analog Circuits (Shanghai) Corporation
8F, Zone B, 900, Yi Shan Road, Shanghai 200233, China
Tel: +86-21-6495 9539, Fax: +86-21-6485 9673

REGIONAL SALES OFFICE

Shenzhen Office
Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd. Shenzhen Office
Advanced Analog Circuits (Shanghai) Corporation Shenzhen Office
Room E, 5F, Noble Center, No.1006, 3rd Fuzhong Road, Futian District, Shenzhen 518026, China
Tel: +86-755-8826 7951
Fax: +86-755-8826 7865

Taiwan Office
BCD Semiconductor (Taiwan) Company Limited
4F, 298-1, Rui Guang Road, Nei-Hu District, Taipei,
Taiwan
Tel: +886-2-2656 2808
Fax: +886-2-2656 2806

USA Office
BCD Semiconductor Corporation
30920 Huntwood Ave. Hayward,
CA 94544, U.S.A
Tel : +1-510-324-2988
Fax: +1-510-324-2788