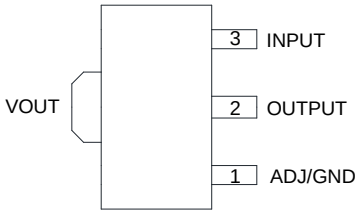
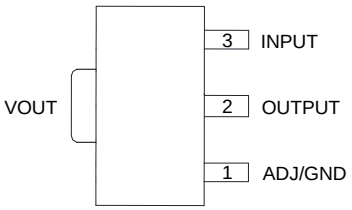
Pin Assignments (Cont.)

(Top View)



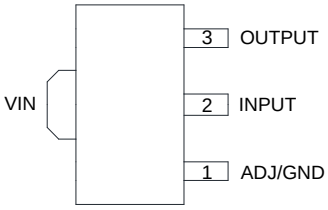
SOT89 Option 1/ R Package

(Top View)



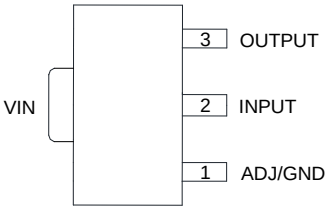
SOT89 Option 2/ R Package

(Top View)



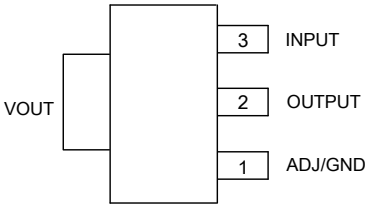
SOT89 Option 1/ R2 Package

(Top View)



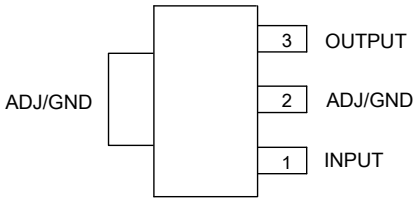
SOT89 Option 2/ R2 Package

(Top View)



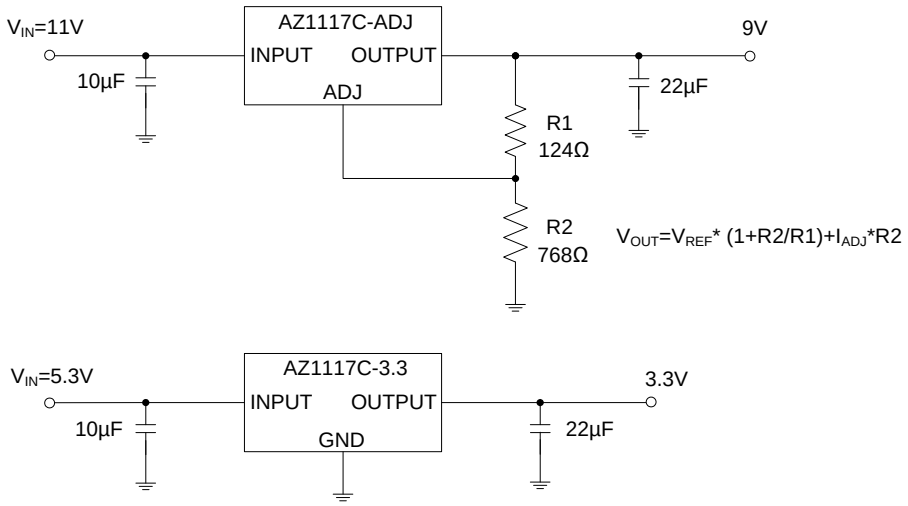
SOT223/ H Package

(Top View)



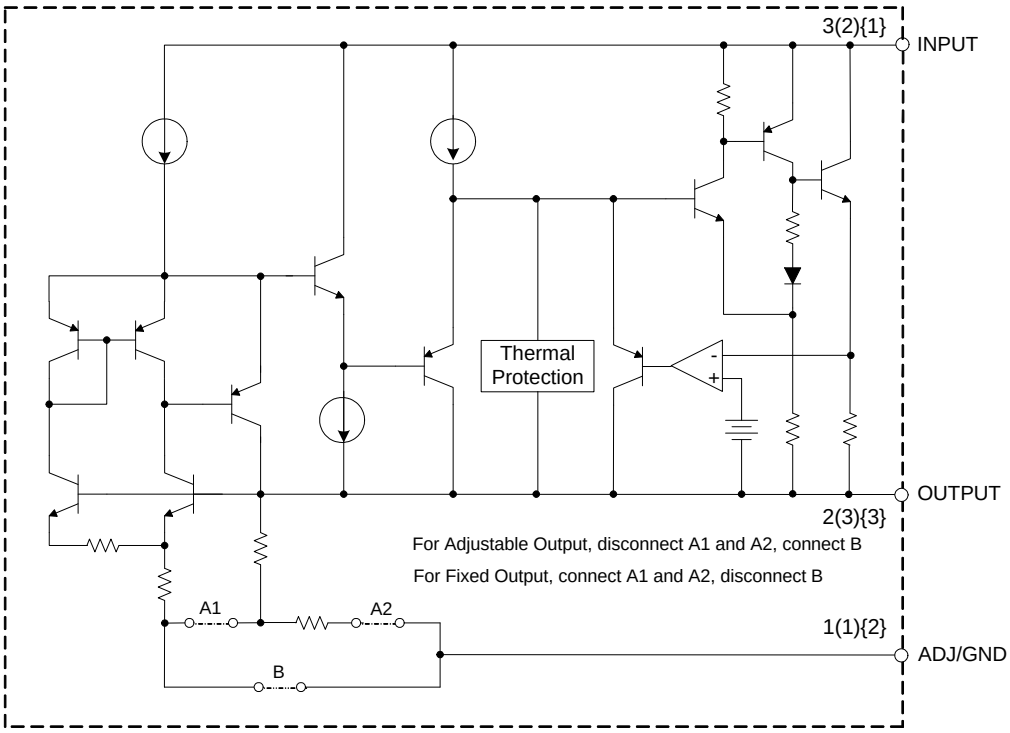
SOT223/ H2 Package

Typical Applications Circuit (Note 4)



Note 4: The AZ1117C is compatible with low ESR ceramic capacitor.
The ESR of the output capacitors must be less than 20Ω.
A minimum of 10µF output capacitor is required.

Functional Block Diagram



A(B){C}
A for TO252-2 Series/SOT223 (H)/SOT89 (R)
B for SOT89 (R2)
C for SOT223 (H2)

Absolute Maximum Ratings (Note 5)

Symbol	Parameter	Rating		Unit
V_{IN}	Input Voltage	18		V
T_J	Operating Junction Temperature Range	+150		°C
T_{STG}	Storage Temperature Range	-65 to +150		°C
θ_{JA}	Thermal Resistance (Without Heatsink)	SOT89	170	°C/W
		SOT223	125	
		TO252-2 Series	100	
θ_{JA}	Thermal Resistance (With Heatsink) (Note 6)	SOT89	150	°C/W
		SOT223	100	
		TO252-2 Series	70	
T_{LEAD}	Lead Temperature (Soldering, 10sec)	+260		°C
—	ESD (Human Body Model)	4000		V

Notes: 5. 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.

6. Chip is soldered to 100mm^2(10mm*10mm) copper (top side solder mask) on 2oz.2 layers FR-4 PCB with 8*0.5mm vias.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{IN}	Input Voltage	—	15	V
T_J	Operating Junction Temperature Range	-20	+125	°C

Electrical Characteristics AZ1117C-ADJ

(Operating Conditions: $V_{IN} = V_{OUT}+2V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{REF}	Reference Voltage	$1.5V \le V_{IN}-V_{OUT} \le 10V$		1.238	1.250	1.262	V
				1.225	1.250	**1.270**	
V_{RLINE}	Line Regulation	$1.5V \le V_{IN}-V_{OUT} \le 10V$		—	0.001	0.1	%
				—	—	**0.2**	
V_{RLOAD}	Load Regulation	—		—	0.4	1.0	%
V_{DROP}	Dropout Voltage	ΔV_{REF} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
—	Adjust Pin Current	—		—	60	**120**	µA
—	Adjust Pin Current Change	$1.5 \le (V_{IN}-V_{OUT}) \le 10V$		—	0.2	**5**	µA
—	Minimum Load Current	$1.5 \le (V_{IN}-V_{OUT}) \le 10V$		—	1.7	**5**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF $(V_{IN}-V_{OUT})$ = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Electrical Characteristics AZ1117C-1.2 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		1.176	1.2	1.224	V
				1.152	1.2	**1.228**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Electrical Characteristics AZ1117C-1.5 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		1.485	1.5	1.515	V
				1.470	1.5	**1.530**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Electrical Characteristics AZ1117C-1.8 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		1.782	1.8	1.818	V
				1.764	1.8	**1.836**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Electrical Characteristics AZ1117C-2.5 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		2.475	2.5	2.525	V
				2.455	**2.5**	**2.545**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Electrical Characteristics AZ1117C-3.3 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		3.267	3.3	3.333	V
				3.235	3.3	**3.365**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25ºC, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

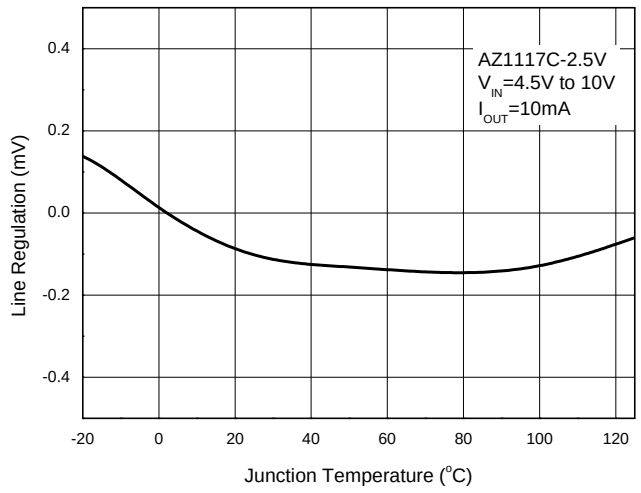
Electrical Characteristics AZ1117C-5.0 (Cont.)

(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -20°C to +125°C.)

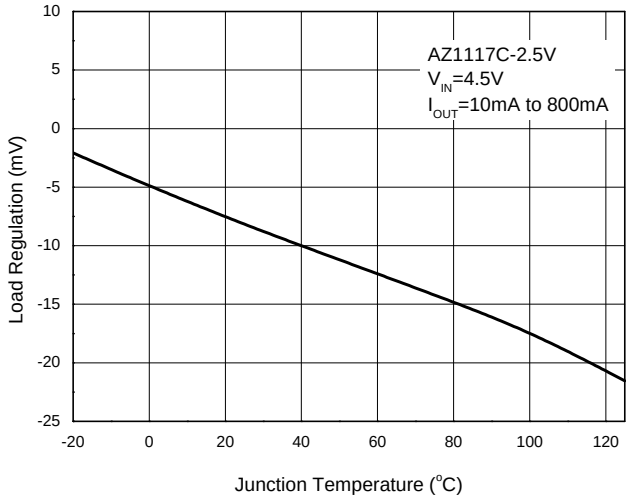
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OUT}	Output Voltage	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		4.950	5.0	5.050	V
				4.900	5.0	**5.100**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	—		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2 Series	—	1.3	1.4	V
I_{LIMIT}	Current Limit	—		1	1.35	—	A
I_Q	Quiescent Current	I_{OUT} = 0		—	4	**6**	mA
PSRR	Ripple Rejection	f = 120Hz, C_{OUT} = 22µF ($V_{IN}-V_{OUT}$) = 3V, I_{OUT} = 300mA		—	70	—	dB
—	Temperature Stability	—		—	0.5	—	%
—	RMS Output Noise (% of V_{OUT})	T_A = +25°C, 10Hz ≤ f ≤ 10kHz		—	0.003	—	%
—	Thermal Shutdown	Junction Temperature		—	+160	—	°C
—	Thermal Shutdown Hysteresis	—		—	+16	—	°C
θ_{JC}	Thermal Resistance (Junction to Case)	SOT89		—	30	—	°C/W
		SOT223		—	15	—	
		TO252-2 Series		—	10	—	

Performance Characteristics

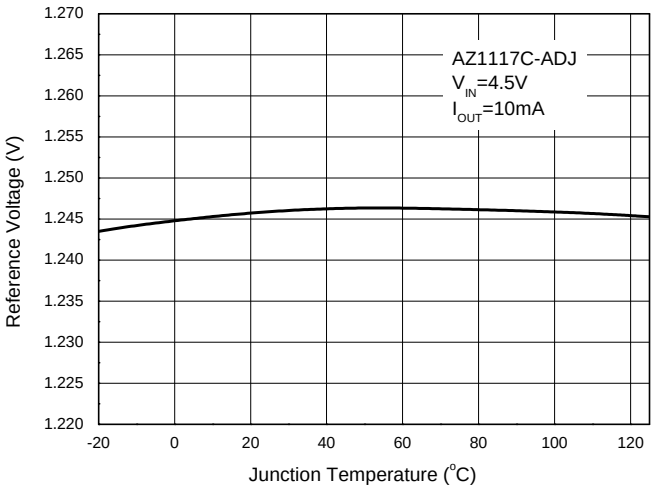
Line Regulation vs. Junction Temperature



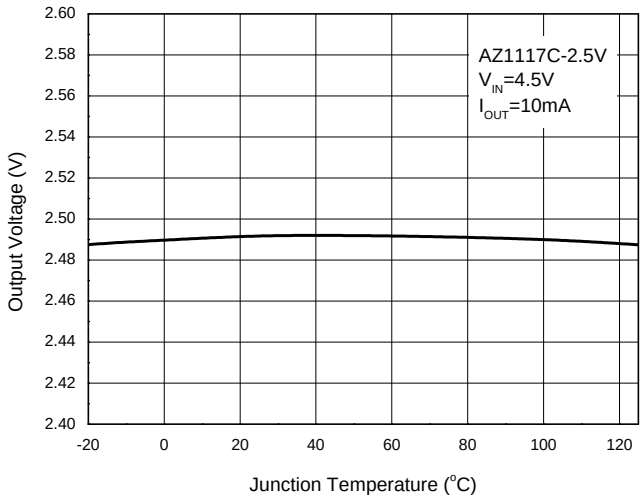
Load Regulation vs. Junction Temperature



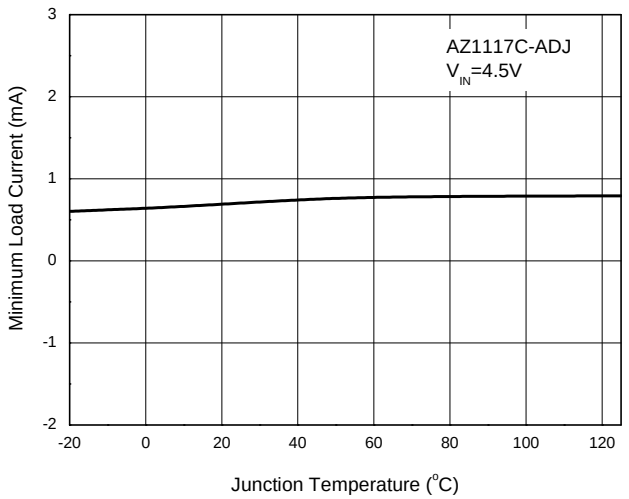
Reference Voltage vs. Junction Temperature



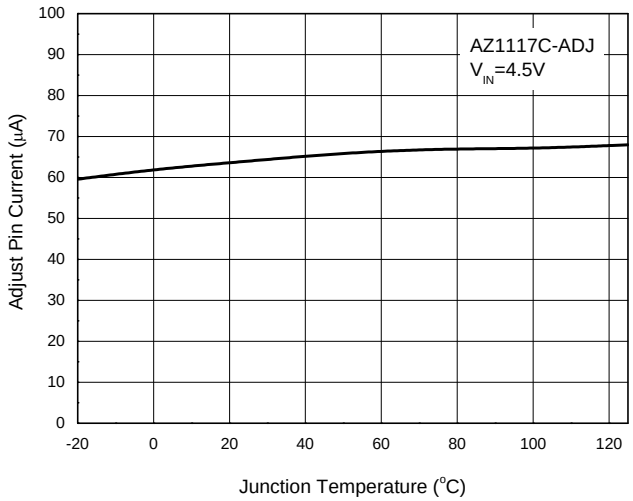
Output Voltage vs. Junction Temperature



Minimum Load Current vs. Junction Temperature

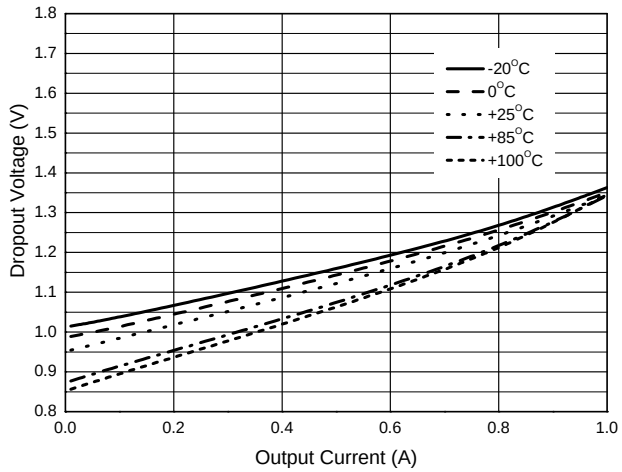


Adjust Pin Current vs. Junction Temperature

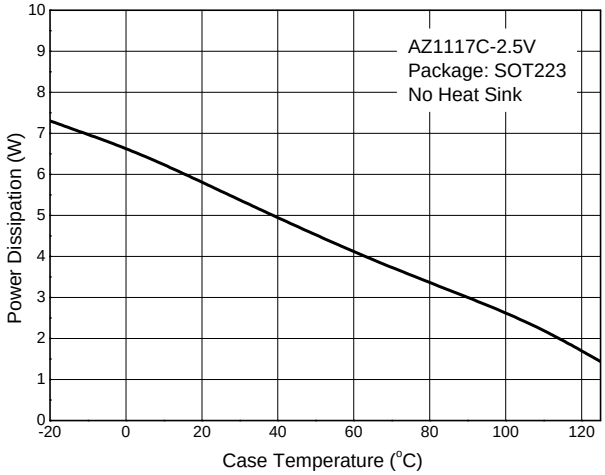


Performance Characteristics (Cont.)

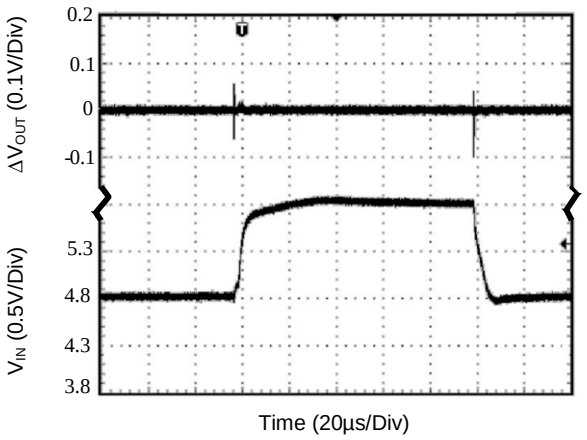
Dropout Voltage vs. Output Current



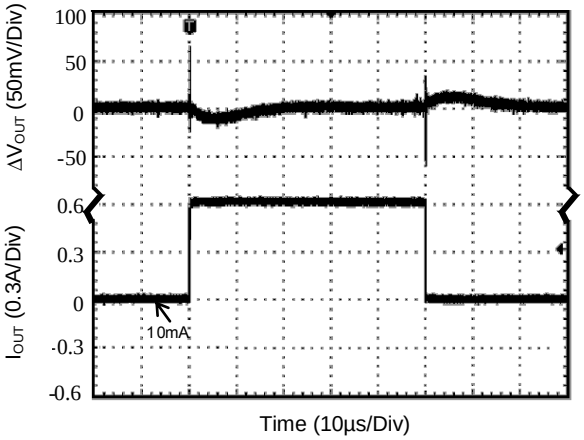
Power Dissipation vs. Case Temperature



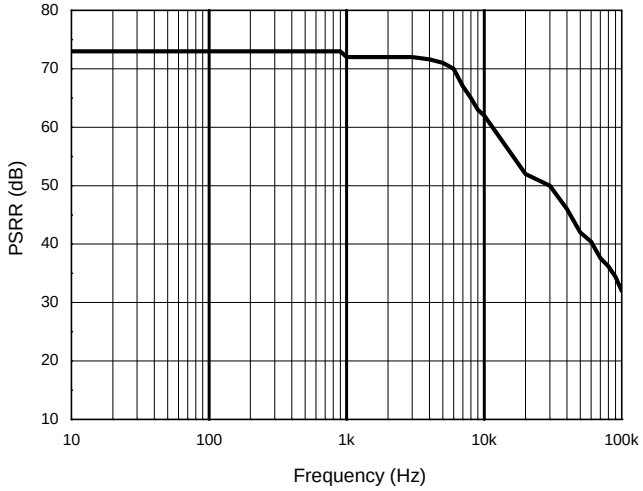
Line Transient Response



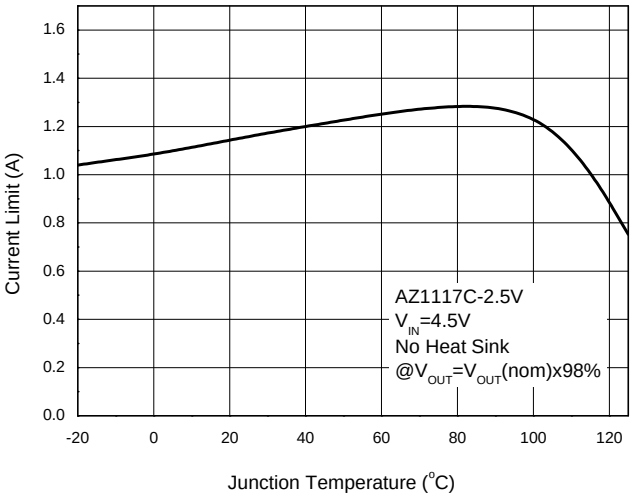
Load Transient Response



PSRR vs. Frequency

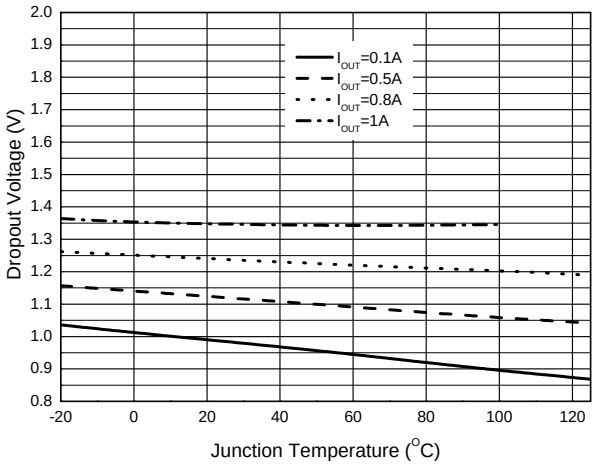


Current Limit vs. Junction Temperature

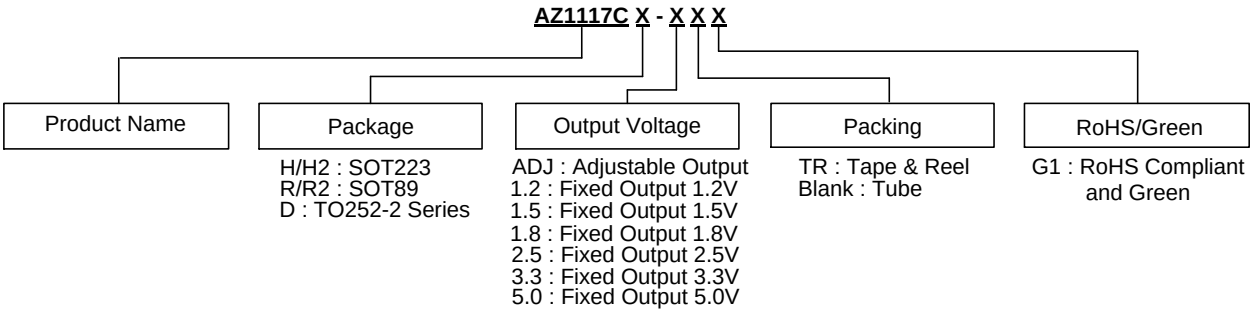


Performance Characteristics (Cont.)

Dropout Voltage vs. Junction Temperature



Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing
SOT223	-20°C to +125°C	AZ1117CH-ADJTRG1	GH15B	4000/Tape & Reel
		AZ1117CH-1.2TRG1	GH16B	4000/Tape & Reel
		AZ1117CH-1.5TRG1	GH15C	4000/Tape & Reel
		AZ1117CH-1.8TRG1	GH16C	4000/Tape & Reel
		AZ1117CH-2.5TRG1	GH15D	4000/Tape & Reel
		AZ1117CH-3.3TRG1	GH16D	4000/Tape & Reel
		AZ1117CH-5.0TRG1	GH15E	4000/Tape & Reel
SOT223		AZ1117CH2-ADJTRG1	GH14H	4000/Tape & Reel
		AZ1117CH2-1.2TRG1	GH15H	4000/Tape & Reel
		AZ1117CH2-1.5TRG1	GH17H	4000/Tape & Reel
		AZ1117CH2-1.8TRG1	GH27H	4000/Tape & Reel
		AZ1117CH2-2.5TRG1	GH28H	4000/Tape & Reel
		AZ1117CH2-3.3TRG1	GH38H	4000/Tape & Reel
		AZ1117CH2-5.0TRG1	GH13H	4000/Tape & Reel
SOT89	-20°C to +125°C	AZ1117CR-ADJTRG1	G27N	1000/Tape & Reel
		AZ1117CR-1.2TRG1	G28J	1000/Tape & Reel
		AZ1117CR-1.5TRG1	G28K	1000/Tape & Reel
		AZ1117CR-1.8TRG1	G28L	1000/Tape & Reel
		AZ1117CR-2.5TRG1	G28M	1000/Tape & Reel
		AZ1117CR-3.3TRG1	G28N	1000/Tape & Reel
		AZ1117CR-5.0TRG1	G27M	1000/Tape & Reel
SOT89		AZ1117CR2-ADJTRG1	G42O	1000/Tape & Reel
		AZ1117CR2-1.2TRG1	G43M	1000/Tape & Reel
		AZ1117CR2-1.5TRG1	G43N	1000/Tape & Reel
		AZ1117CR2-1.8TRG1	G43O	1000/Tape & Reel
		AZ1117CR2-2.5TRG1	G70M	1000/Tape & Reel
		AZ1117CR2-3.3TRG1	G70N	1000/Tape & Reel
		AZ1117CR2-5.0TRG1	G33N	1000/Tape & Reel

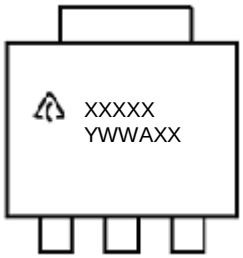
Ordering Information (Cont.)

Package	Temperature Range	Part Number	Marking ID	Packing
TO252-2 (3)/(4)/(5)	-20°C to +125°C	AZ1117CD-ADJG1	AZ1117CD-ADJG1	80/Tube
		AZ1117CD-ADJTRG1	AZ1117CD-ADJG1	2500/Tape & Reel
		AZ1117CD-1.2G1	AZ1117CD-1.2G1	80/Tube
		AZ1117CD-1.2TRG1	AZ1117CD-1.2G1	2500/Tape & Reel
		AZ1117CD-1.5G1	AZ1117CD-1.5G1	80/Tube
		AZ1117CD-1.5TRG1	AZ1117CD-1.5G1	2500/Tape & Reel
		AZ1117CD-1.8G1	AZ1117CD-1.8G1	80/Tube
		AZ1117CD-1.8TRG1	AZ1117CD-1.8G1	2500/Tape & Reel
		AZ1117CD-2.5G1	AZ1117CD-2.5G1	80/Tube
		AZ1117CD-2.5TRG1	AZ1117CD-2.5G1	2500/Tape & Reel
		AZ1117CD-3.3G1	AZ1117CD-3.3G1	80/Tube
		AZ1117CD-3.3TRG1	AZ1117CD-3.3G1	2500/Tape & Reel
		AZ1117CD-5.0G1	AZ1117CD-5.0G1	80/Tube
		AZ1117CD-5.0TRG1	AZ1117CD-5.0G1	2500/Tape & Reel

Marking Information

(1) SOT223 Series

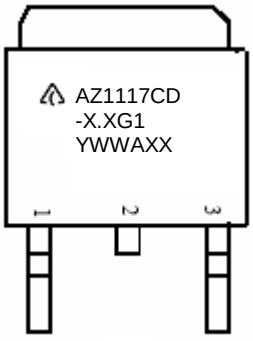
(Top View)



First Line: Logo and Marking ID
(See Ordering Information)
Second Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

(2) TO252-2 Series

(Top View)

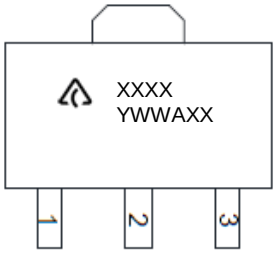


First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

Marking Information (Cont.)

(3) SOT89 Series

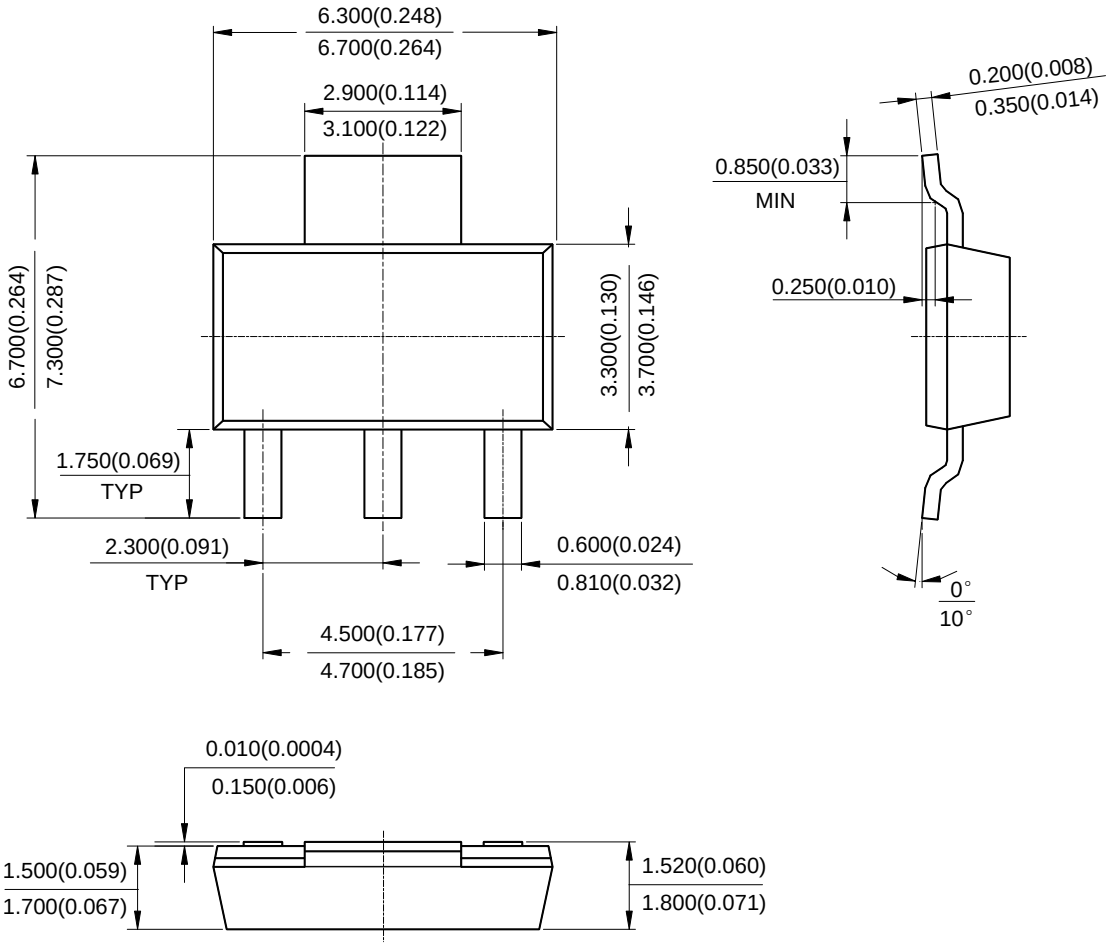
(Top View)



First Line: Logo and Marking ID
(See Ordering Information)
Second Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

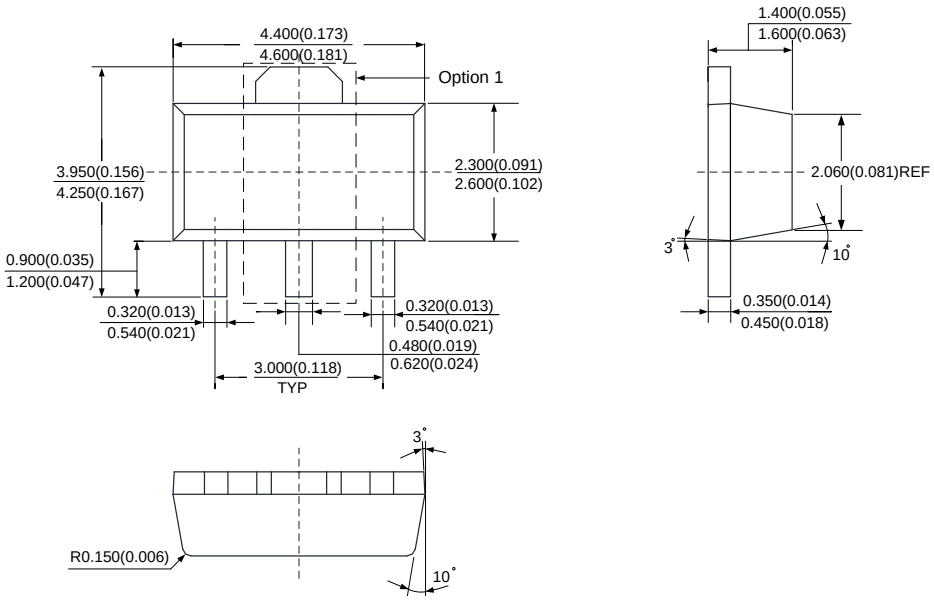
Package Outline Dimensions (All dimensions in mm (inch).)

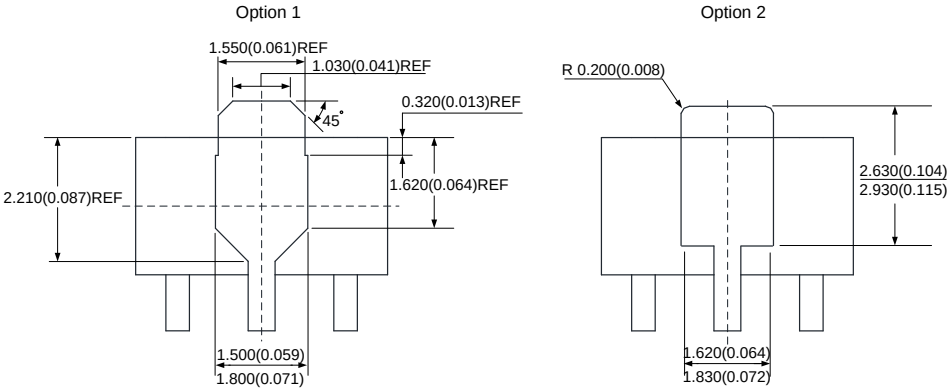
(1) Package Type: SOT223



Package Outline Dimensions (Cont.) (All dimensions in mm (inch).)

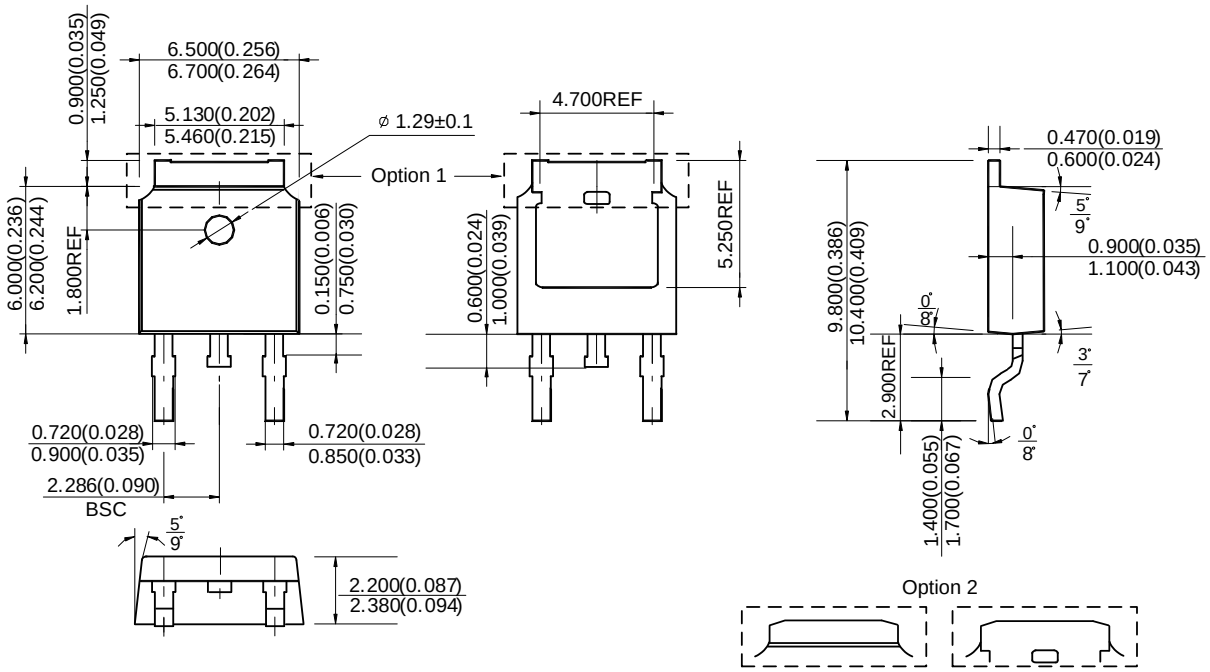
(2) Package Type: SOT89





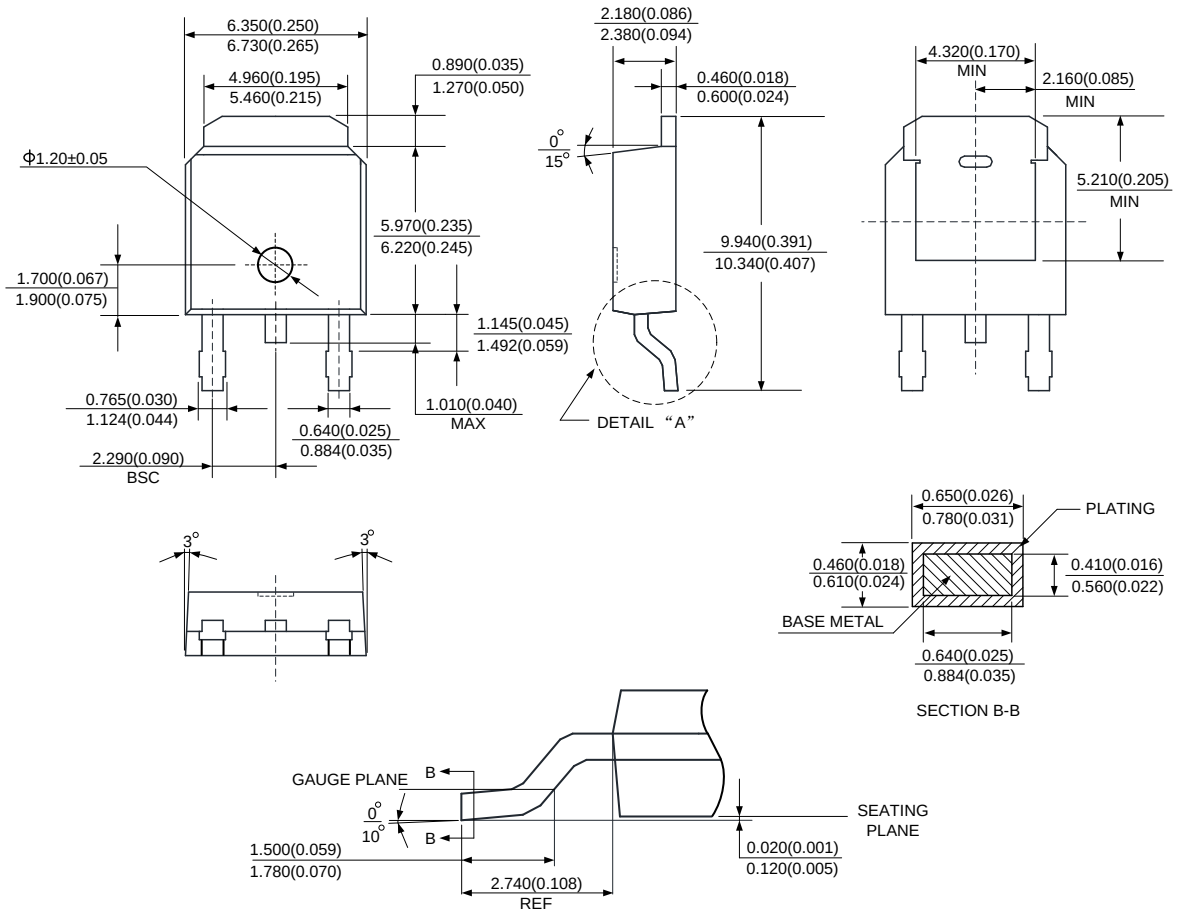
Package Outline Dimensions (Cont.) (All dimensions in mm (inch).)

(3) Package Type: TO252-2 (3)



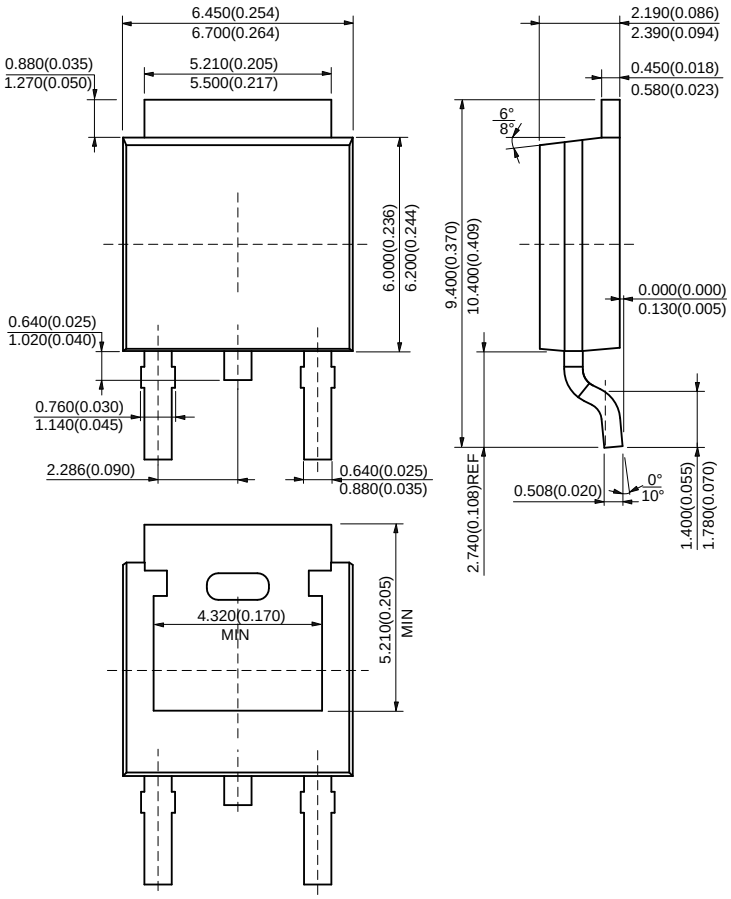
Package Outline Dimensions (Cont.) (All dimensions in mm (inch).)

(4) Package Type: TO252-2 (4)



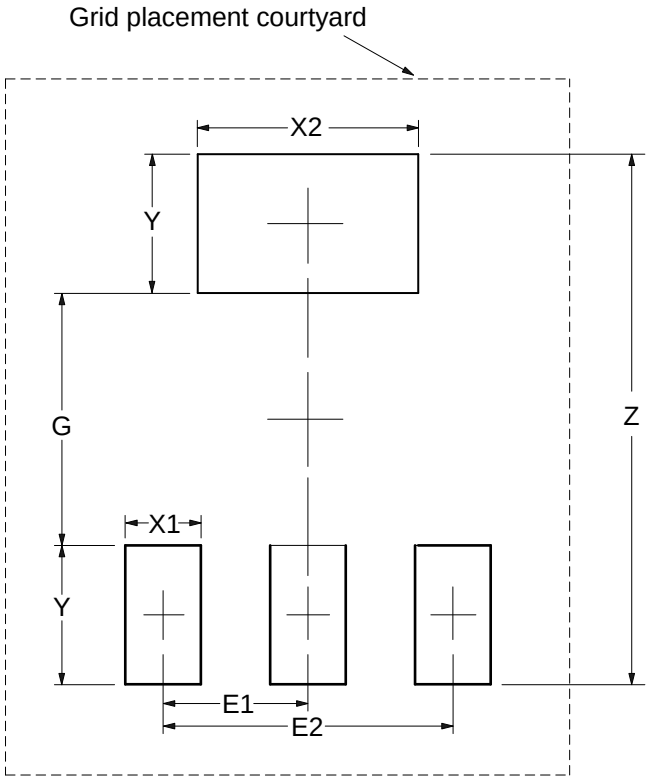
Package Outline Dimensions (Cont.) (All dimensions in mm (inch).)

(5) Package Type: TO252-2 (5)



Suggested Pad Layout

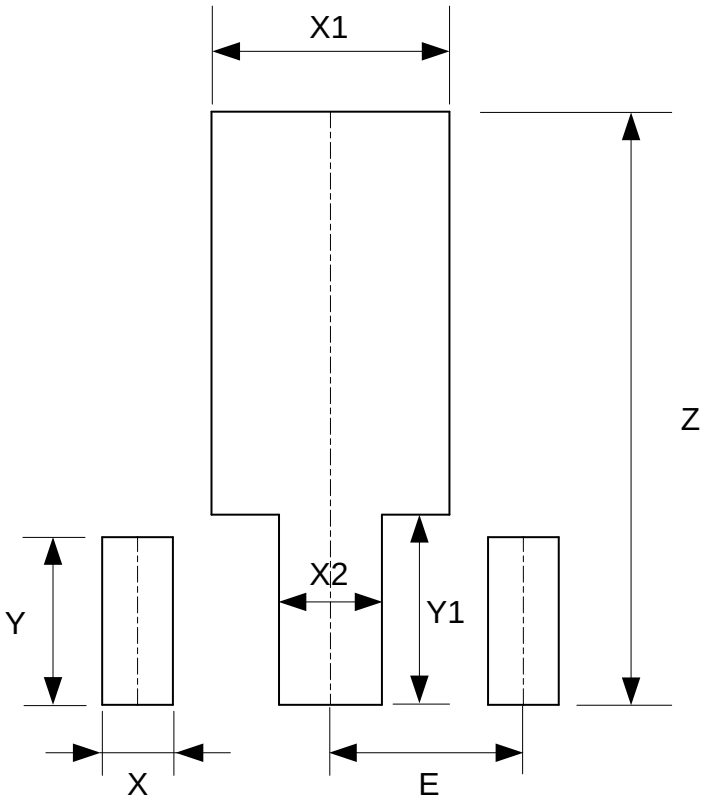
(1) Package Type: SOT223



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X1 (mm)/(inch)	X2 (mm)/(inch)	Y (mm)/(inch)	E1 (mm)/(inch)	E2 (mm)/(inch)
Value	8.400/0.331	4.000/0.157	1.200/0.047	3.500/0.138	2.200/0.087	2.300/0.091	4.600/0.181

Suggested Pad Layout (Cont.)

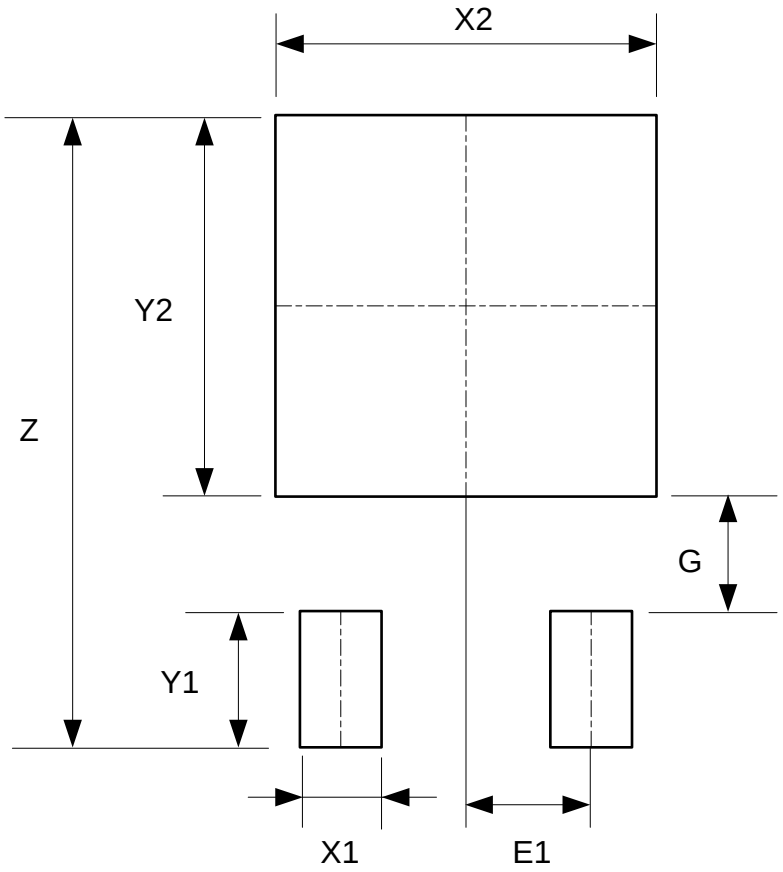
(2) Package Type: SOT89



Dimensions	Z (mm)/(inch)	X (mm)/(inch)	X1 (mm)/(inch)	X2 (mm)/(inch)	Y (mm)/(inch)	Y1 (mm)/(inch)	E (mm)/(inch)
Value	4.600/0.181	0.550/0.022	1.850/0.073	0.800/0.031	1.300/0.051	1.475/0.058	1.500/0.059

Suggested Pad Layout (Cont.)

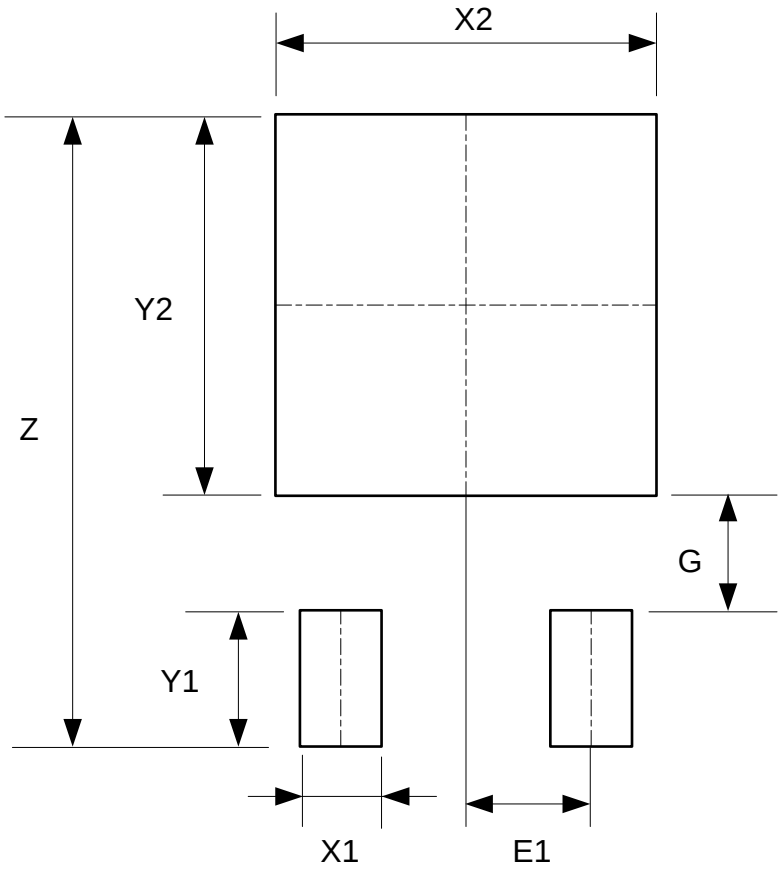
(3) Package Type: TO252-2 (3)



Dimensions	Z (mm)/(inch)	X1 (mm)/(inch)	X2=Y2 (mm)/(inch)	Y1 (mm)/(inch)	G (mm)/(inch)	E1 (mm)/(inch)
Value	11.600/0.457	1.500/0.059	7.000/0.276	2.500/0.098	2.100/0.083	2.300/0.091

Suggested Pad Layout (Cont.)

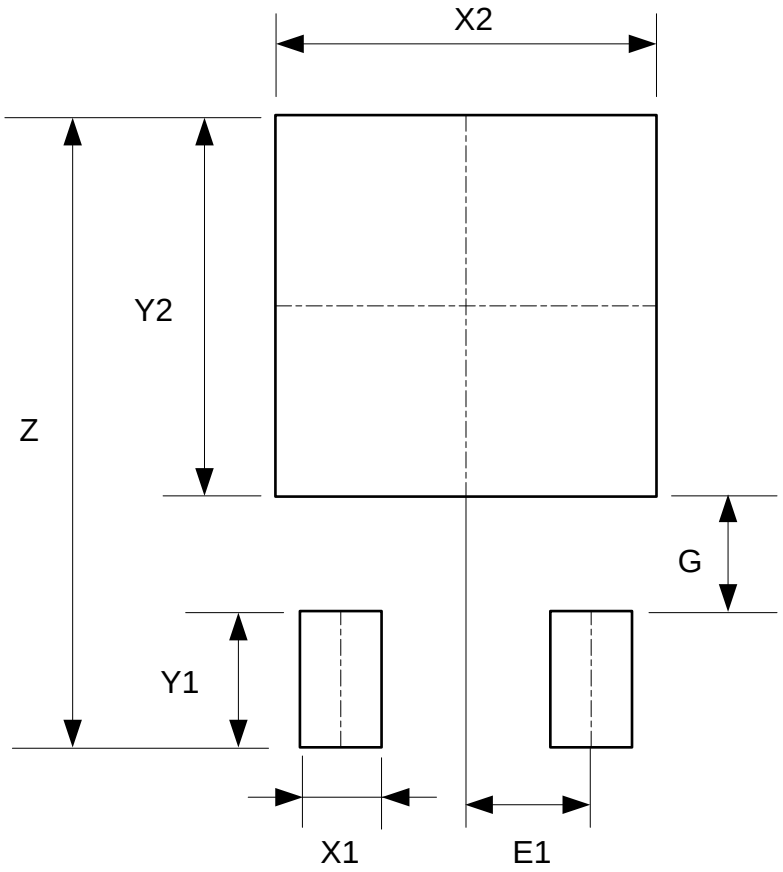
(4) Package Type: TO252-2 (4)



Dimensions	Z (mm)/(inch)	X1 (mm)/(inch)	X2=Y2 (mm)/(inch)	Y1 (mm)/(inch)	G (mm)/(inch)	E1 (mm)/(inch)
Value	11.600/0.457	1.500/0.059	7.000/0.276	2.500/0.098	2.100/0.083	2.300/0.091

Suggested Pad Layout (Cont.)

(5) Package Type: TO252-2 (5)



Dimensions	Z (mm)/(inch)	X1 (mm)/(inch)	X2=Y2 (mm)/(inch)	Y1 (mm)/(inch)	G (mm)/(inch)	E1 (mm)/(inch)
Value	11.600/0.457	1.500/0.059	7.000/0.276	2.500/0.098	2.100/0.083	2.300/0.091

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