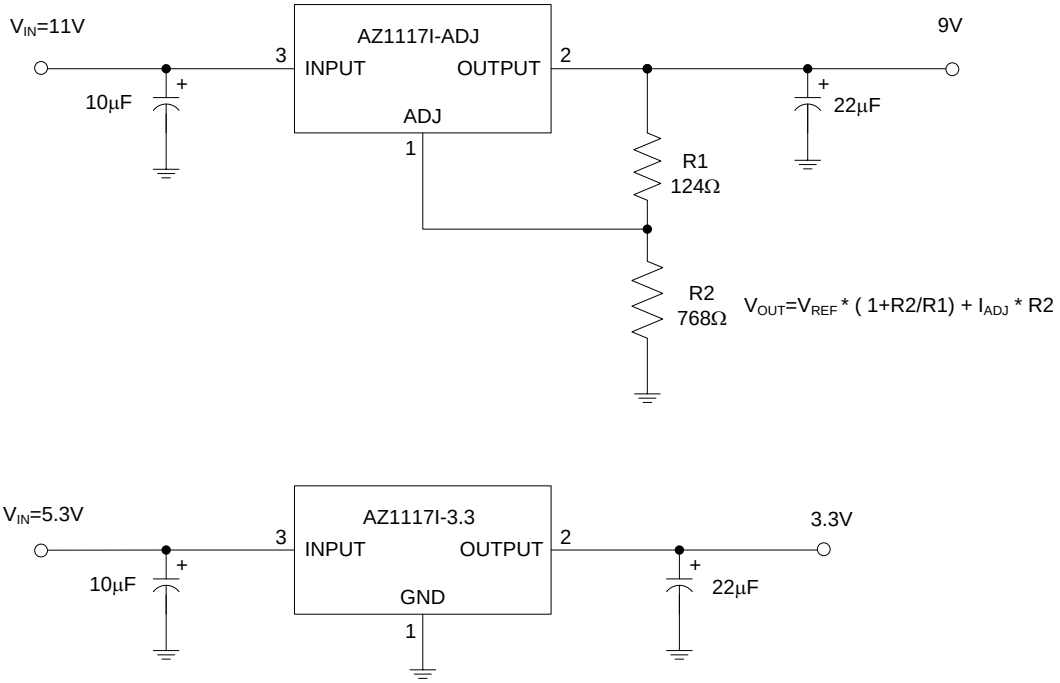
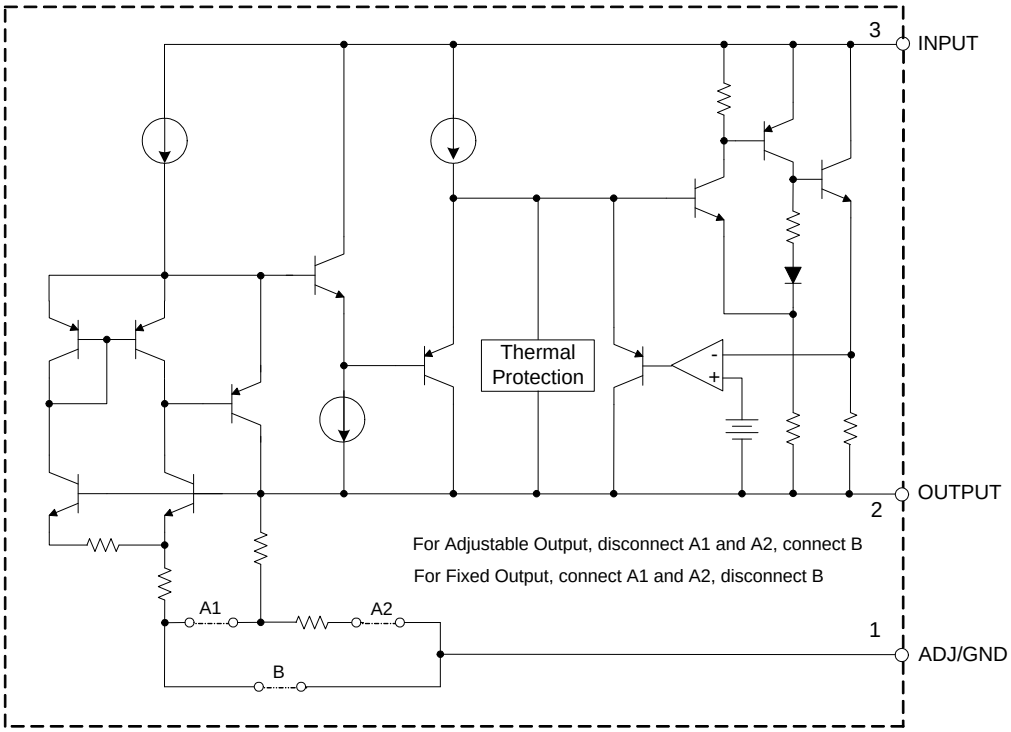
NEW PRODUCT

Typical Applications Circuit (Note 4)



Note 4: The AZ1117I 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



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Absolute Maximum Ratings (Note 5) (@T_A = +25°C, unless otherwise specified.)

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)	SOT223	125	°C/W
		TO252-2	100	
θ_{JA}	Thermal Resistance (With Heatsink) (Note 6)	SOT223	100	°C/W
		TO252-2	70	
T_{LEAD}	Lead Temperature (Soldering, 10sec)	+260		°C

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 (@T_A = +25°C, unless otherwise specified.)

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

Electrical Characteristics AZ1117I-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, -40°C to +125°C.)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{REF}	Reference Voltage	1.5V ≤ V_{IN}-V_{OUT} ≤ 10V		1.238	1.250	1.262	V
				1.225	1.250	**1.275**	
V_{RLINE}	Line Regulation	1.5V ≤ V_{IN}-V_{OUT} ≤ 10V		—	0.001	0.1	%
				—	—	**0.2**	
V_{RLOAD}	Load Regulation	$V_{IN} = V_{OUT}$+2V 1mA ≤ I_{OUT} ≤ 1A		—	0.4	1.0	%
V_{DROP}	Dropout Voltage	ΔV_{REF} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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 ≤ (V_{IN}-V_{OUT}) ≤ 10V		—	0.2	**5**	µA
—	Minimum Load Current	1.5 ≤ (V_{IN}-V_{OUT}) ≤ 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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

NEW PRODUCT

Electrical Characteristics AZ1117I-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, -40°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	**1.248**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	$V_{IN} = V_{OUT}+2V$ 1mA ≤ I_{OUT} ≤ 1A		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

Electrical Characteristics AZ1117I-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, -40°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
				1.47	1.5	**1.53**	
V_{RLINE}	Line Regulation	$1.5V \leq V_{IN}-V_{OUT} \leq 10V$		—	0.5	6	mV
				—	—	**10**	
V_{RLOAD}	Load Regulation	$V_{IN} = V_{OUT}+2V$ 1mA ≤ I_{OUT} ≤ 1A		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

NEW PRODUCT

Electrical Characteristics AZ1117I-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, -40°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	$V_{IN} = V_{OUT}+2V$ 1mA ≤ $I_{OUT} \leq 1A$		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

Electrical Characteristics AZ1117I-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, -40°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	$V_{IN} = V_{OUT}+2V$ 1mA ≤ $I_{OUT} \leq 1A$		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

NEW PRODUCT

Electrical Characteristics AZ1117I-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, -40°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	$V_{IN} = V_{OUT}+2V$ $1mA \leq I_{OUT} \leq 1A$		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
				—		—	
		TO252-2		—	10	—	

Electrical Characteristics AZ1117I-5.0 (Cont.)

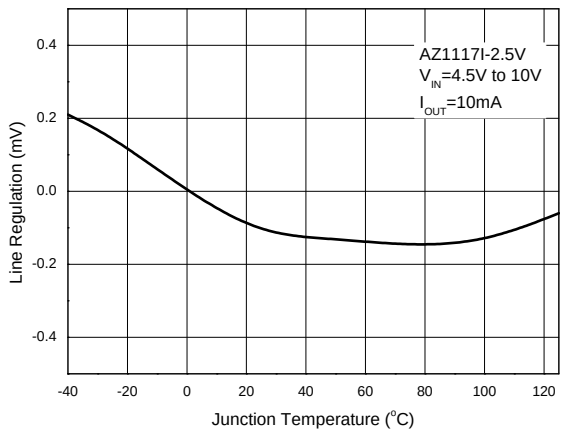
(Operating Conditions: $V_{IN} \leq 10V$, I_{OUT} = 10mA, T_J = +25°C, unless otherwise specified. (P ≤ maximum power dissipation). Limits appearing in **Boldface** type apply over the entire junction temperature range for operation, -40°C to +125°C.)

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	$V_{IN} = V_{OUT}+2V$ $1mA \leq I_{OUT} \leq 1A$		—	2	15	mV
V_{DROP}	Dropout Voltage	ΔV_{OUT} = 1%, I_{OUT} = 0.8A	SOT223	—	1.2	1.3	V
			TO252-2	—	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)	SOT223		—	15	—	°C/W
		TO252-2		—	10	—	

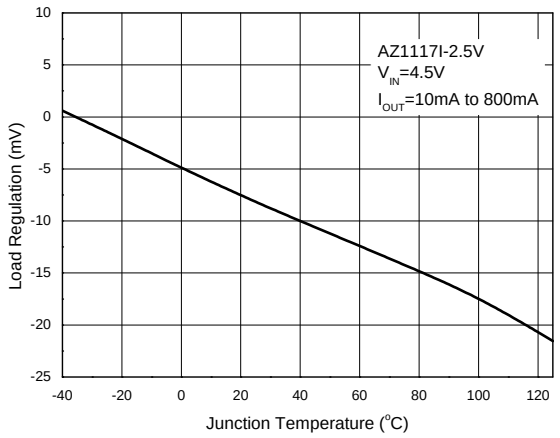
NEW PRODUCT

Performance Characteristics

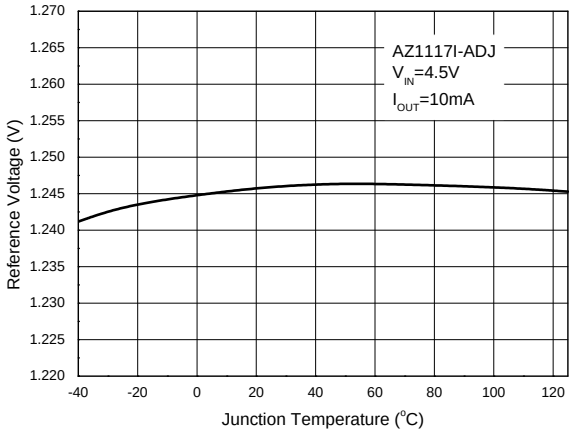
Line Regulation vs. Temperature



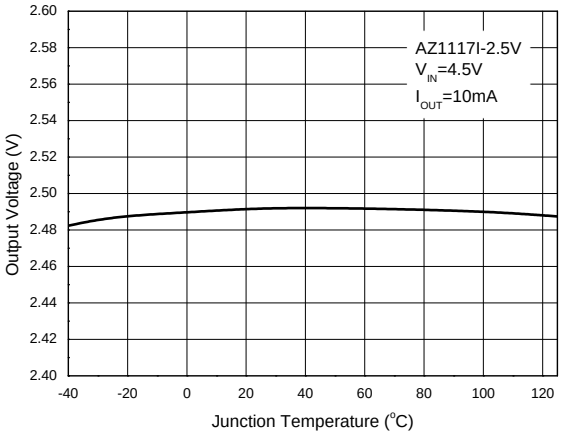
Load Regulation vs. Temperature



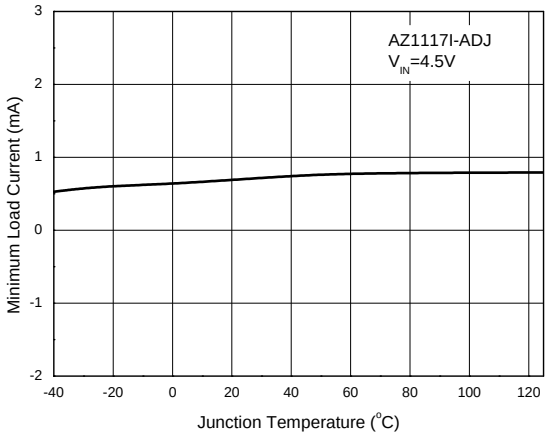
Reference Voltage vs. Temperature



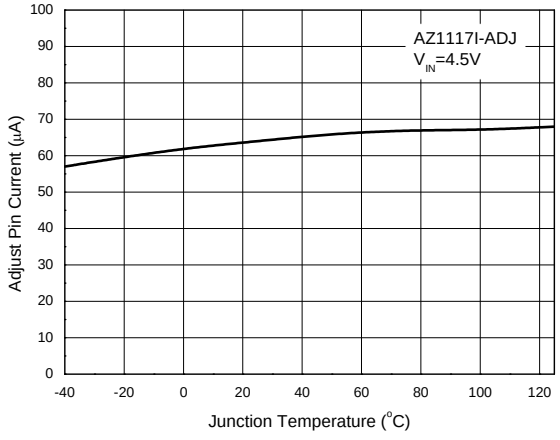
Output Voltage vs. Temperature



Minimum Load Current vs. Temperature



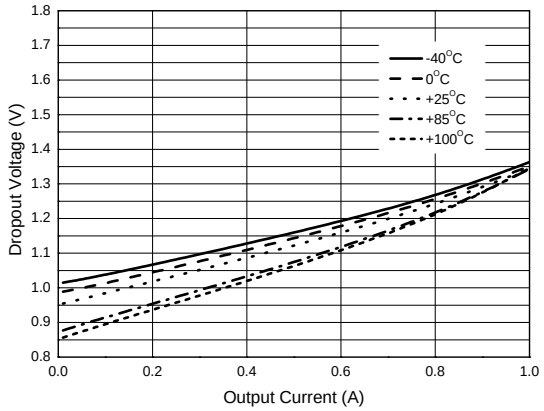
Adjust Pin Current vs. Temperature



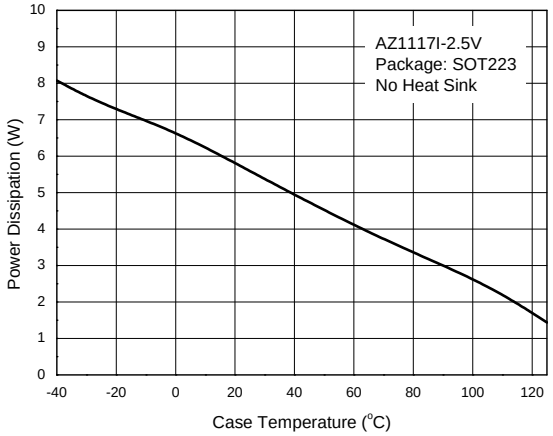
NEW PRODUCT

Performance Characteristics (Cont.)

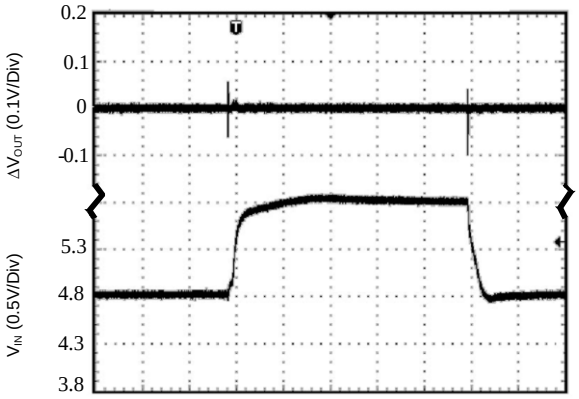
Dropout Voltage vs. Output Current



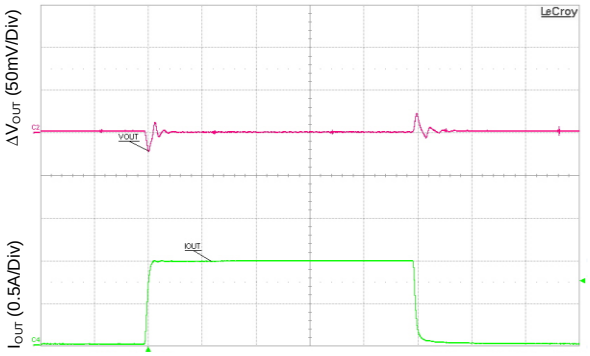
Power Dissipation vs. Temperature



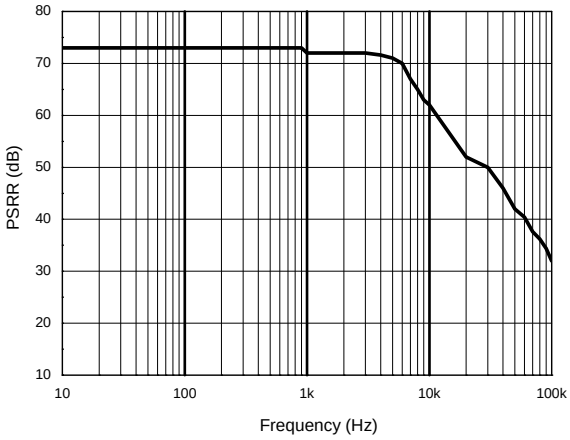
Line Transient Response



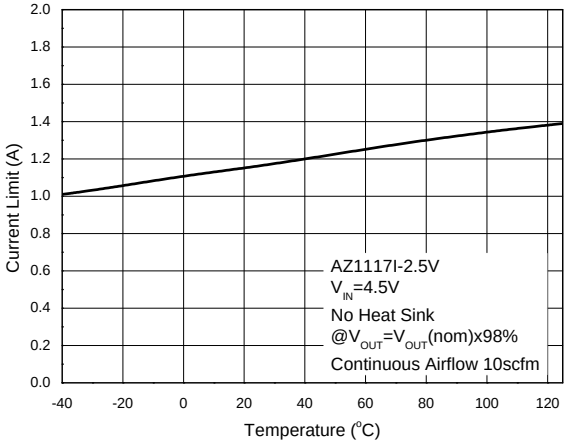
Load Transient Response



PSRR vs. Frequency



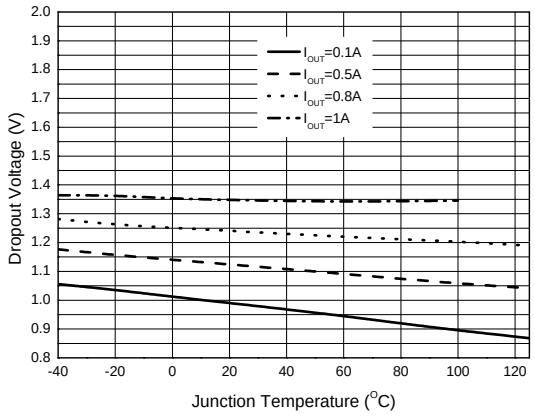
Current Limit vs. Temperature



NEW PRODUCT

Performance Characteristics (Cont.)

Dropout Voltage vs. Temperature



NEW PRODUCT

Ordering Information

AZ1117I X - XX XX XX

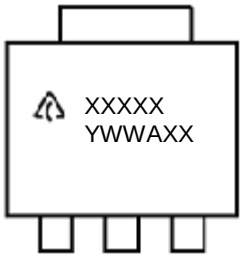
Product Name	Package	Output Voltage	Packing	RoHS/Green
	H : SOT223 D : TO252-2	ADJ : Adjustable Output 1.2 : Fixed Output 1.2V 1.5 : Fixed Output 1.5V 1.8 : Fixed Output 1.8V 2.5 : Fixed Output 2.5V 3.3 : Fixed Output 3.3V 5.0 : Fixed Output 5.0V	TR : Tape & Reel	G1 : Green

Package	Temperature Range	Part Number	Marking ID	Packing
SOT223	-40°C to +125°C	AZ1117IH-ADJTRG1	GH86J	4000/Tape & Reel
		AZ1117IH-1.2TRG1	GH86K	4000/Tape & Reel
		AZ1117IH-1.5TRG1	GH86L	4000/Tape & Reel
		AZ1117IH-1.8TRG1	GH86M	4000/Tape & Reel
		AZ1117IH-2.5TRG1	GH86N	4000/Tape & Reel
		AZ1117IH-3.3TRG1	GH86P	4000/Tape & Reel
		AZ1117IH-5.0TRG1	GH86Q	4000/Tape & Reel
TO252-2		AZ1117ID-ADJTRG1	AZ1117ID-ADJG1	2500/Tape & Reel
		AZ1117ID-1.2TRG1	AZ1117ID-1.2G1	2500/Tape & Reel
		AZ1117ID-1.5TRG1	AZ1117ID-1.5G1	2500/Tape & Reel
		AZ1117ID-1.8TRG1	AZ1117ID-1.8G1	2500/Tape & Reel
		AZ1117ID-2.5TRG1	AZ1117ID-2.5G1	2500/Tape & Reel
		AZ1117ID-3.3TRG1	AZ1117ID-3.3G1	2500/Tape & Reel
		AZ1117ID-5.0TRG1	AZ1117ID-5.0G1	2500/Tape & Reel

Marking Information

(1) SOT223

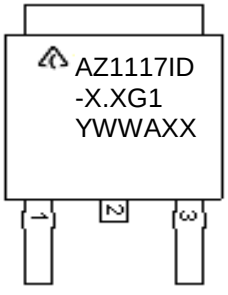
(Top View)



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

(Top View)

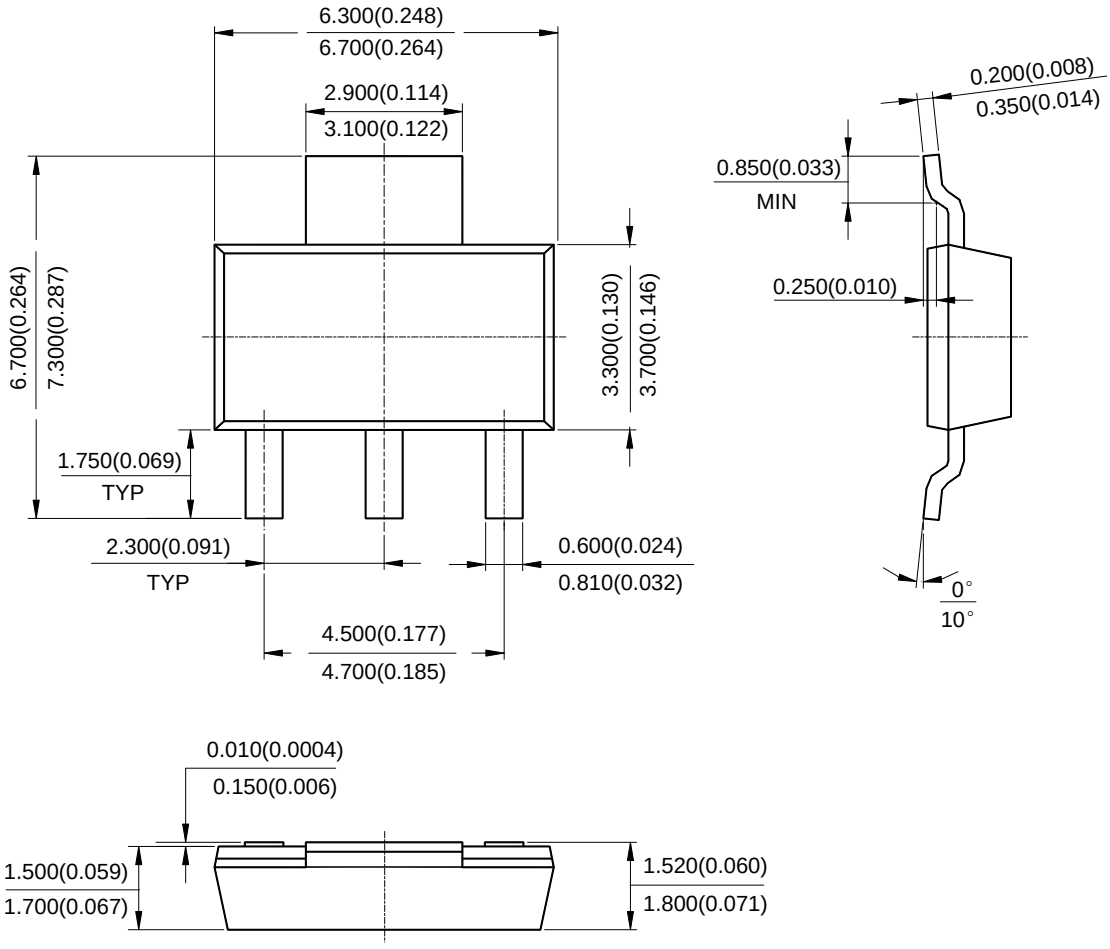


First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

NEW PRODUCT

Package Outline Dimensions (All dimensions in mm.)

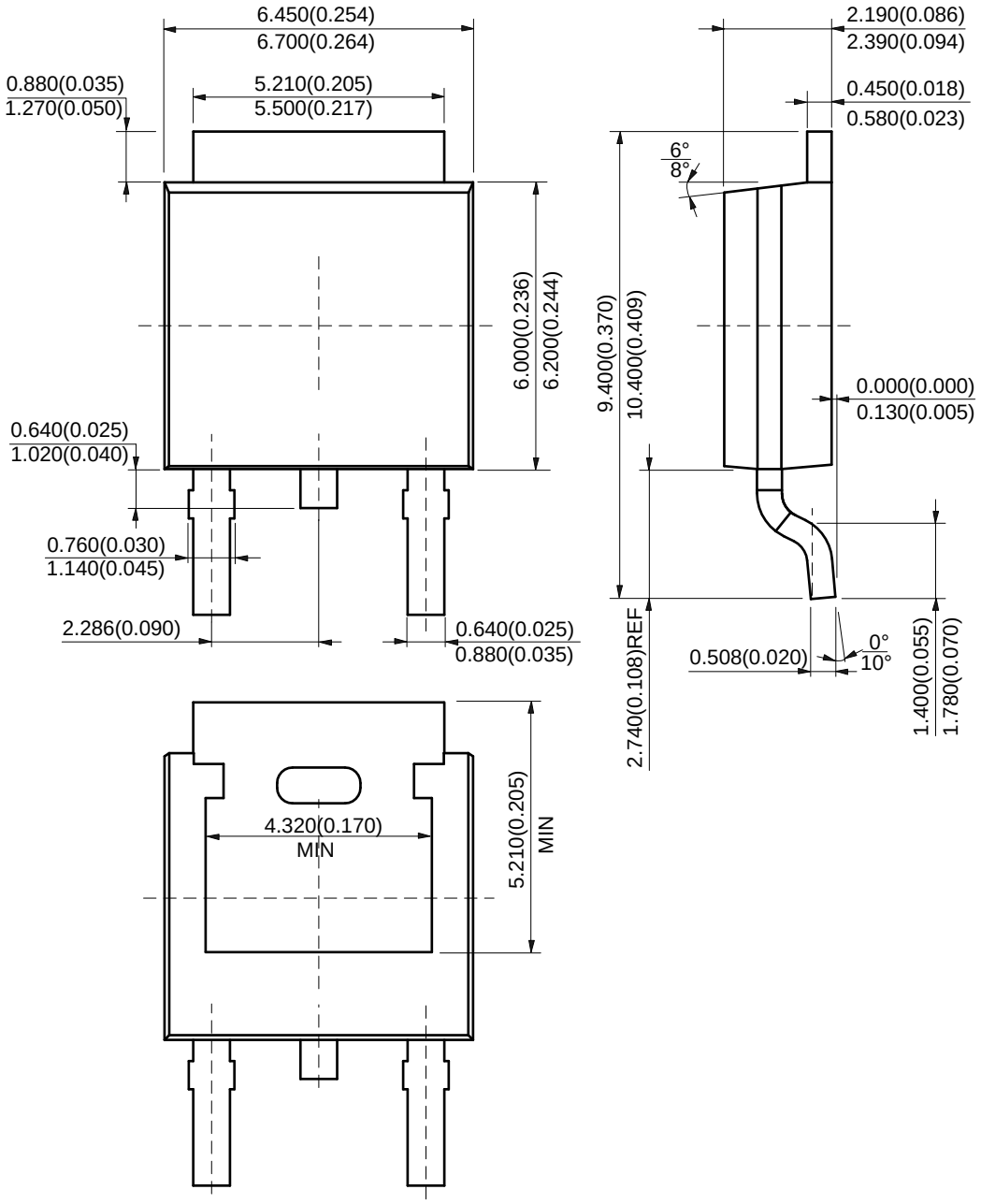
(1) Package Type: SOT223



NEW PRODUCT

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

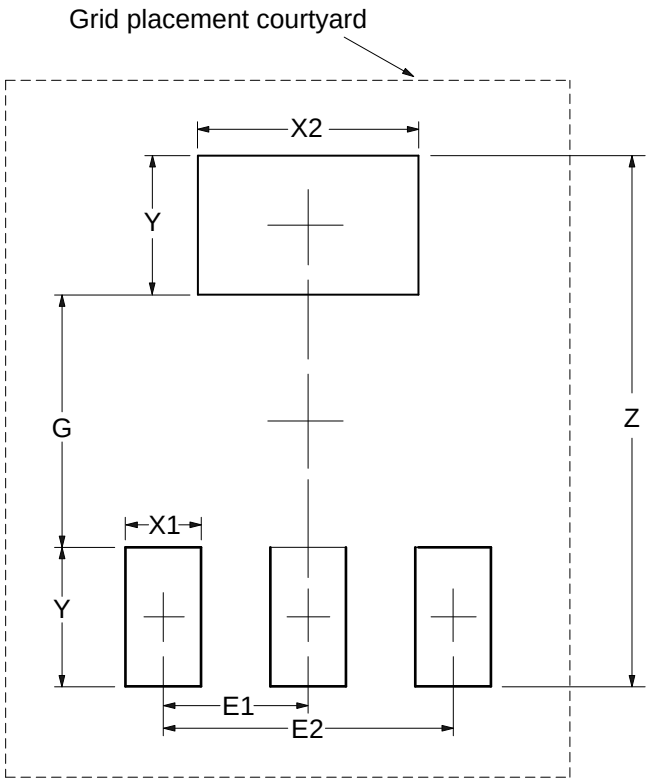
(2) Package Type: TO252-2 (5)



NEW PRODUCT

Suggested Pad Layout

(1) Package Type: SOT223

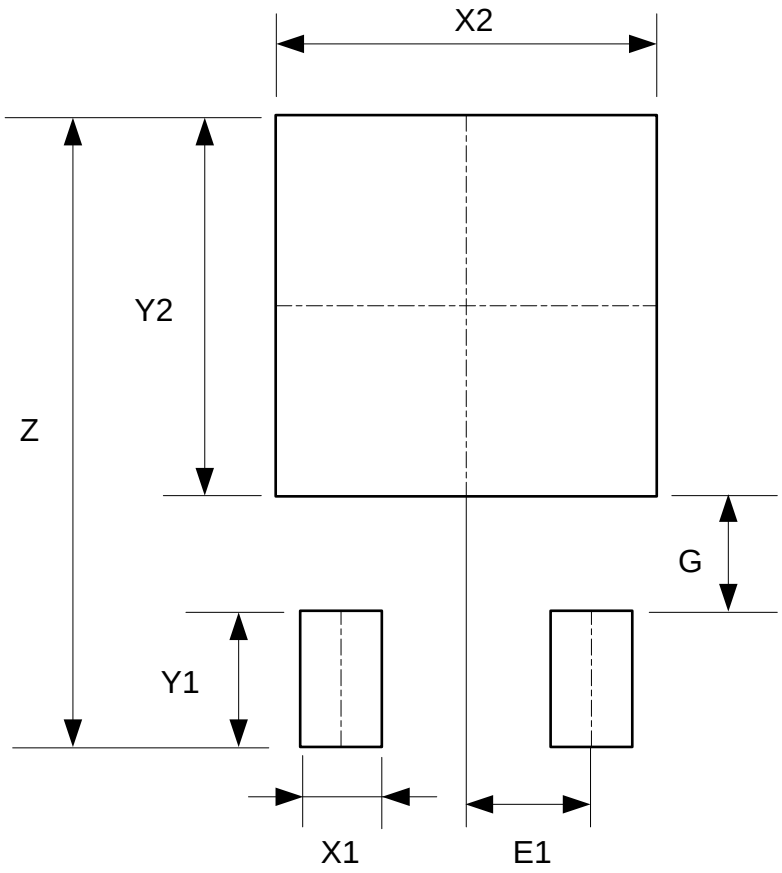


Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X1 (mm)/(inch)	X2 (mm)/(inch)	Y (mm)/(inch)	E1 (mm)/(inch)	E2 (mm)/(inch)
Value	8.400/0.331	4.000/0.157	1.200/0.047	3.500/0.138	2.200/0.087	2.300/0.091	4.600/0.181

NEW PRODUCT

Suggested Pad Layout (Cont.)

(2) 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

NEW PRODUCT

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