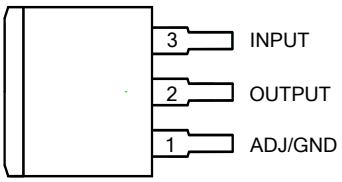
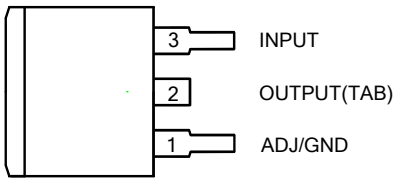
Pin Configuration

S Package
(TO-263-3)

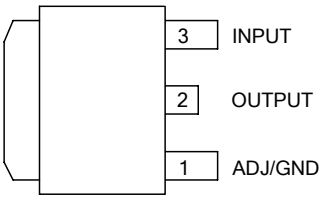


S2 Package
(TO-263-2)

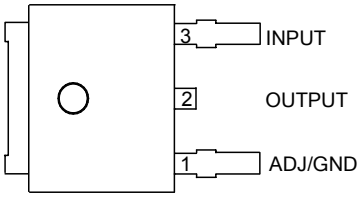


D Package

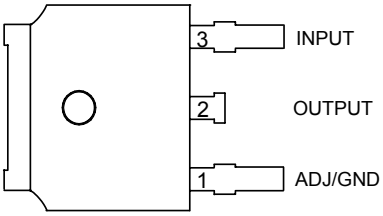
(TO-252-2 (1))



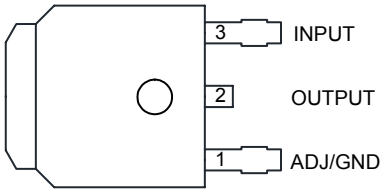
(TO-252-2 (2))



(TO-252-2 (3))



(TO-252-2 (4))



T Package
(TO-220-3)

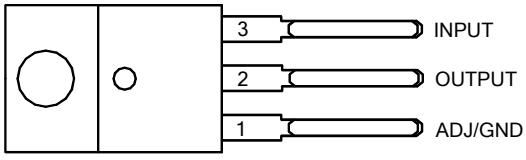


Figure 2. Pin Configuration of AZ1085 (Top View)

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Functional Block Diagram

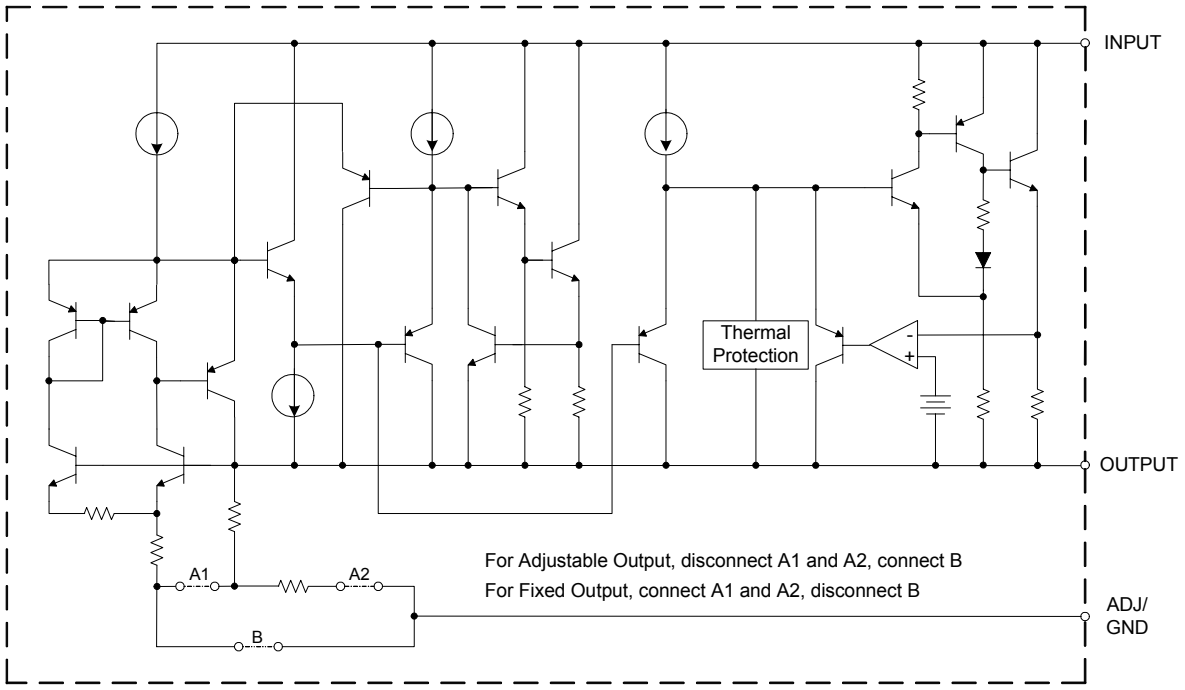

Figure 3. Functional Block Diagram of AZ1085

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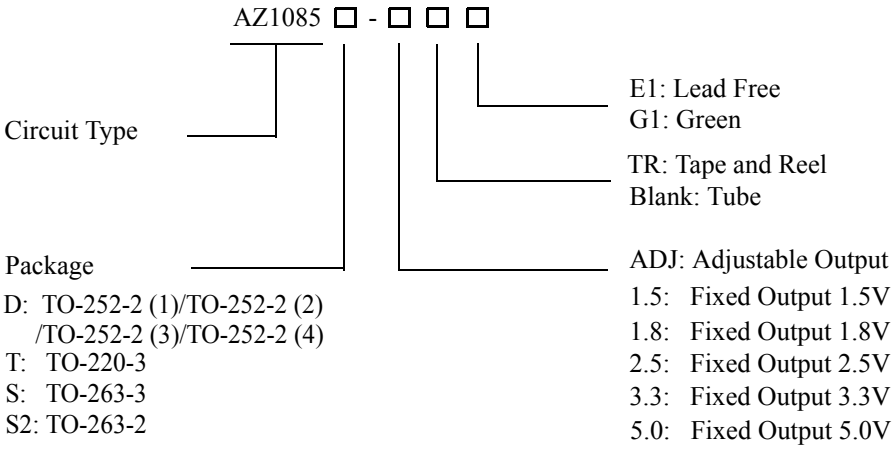
Ordering Information



Package	Tempera-ture Range	Part Number		Marking ID		Packing Type
		Lead Free	Green	Lead Free	Green	
TO-252-2 (1)/ TO-252-2 (2)/ TO-252-2 (3)/ TO-252-2 (4)	0 to 125°C	AZ1085D-ADJE1	AZ1085D-ADJG1	AZ1085D-ADJE1	AZ1085D-ADJG1	Tube
		AZ1085D-ADJTRE1	AZ1085D-ADJTRG1	AZ1085D-ADJE1	AZ1085D-ADJG1	Tape & Reel
		AZ1085D-1.5E1	AZ1085D-1.5G1	AZ1085D-1.5E1	AZ1085D-1.5G1	Tube
		AZ1085D-1.5TRE1	AZ1085D-1.5TRG1	AZ1085D-1.5E1	AZ1085D-1.5G1	Tape & Reel
		AZ1085D-1.8E1	AZ1085D-1.8G1	AZ1085D-1.8E1	AZ1085D-1.8G1	Tube
		AZ1085D-1.8TRE1	AZ1085D-1.8TRG1	AZ1085D-1.8E1	AZ1085D-1.8G1	Tape & Reel
		AZ1085D-2.5E1	AZ1085D-2.5G1	AZ1085D-2.5E1	AZ1085D-2.5G1	Tube
		AZ1085D-2.5TRE1	AZ1085D-2.5TRG1	AZ1085D-2.5E1	AZ1085D-2.5G1	Tape & Reel
		AZ1085D-3.3E1	AZ1085D-3.3G1	AZ1085D-3.3E1	AZ1085D-3.3G1	Tube
		AZ1085D-3.3TRE1	AZ1085D-3.3TRG1	AZ1085D-3.3E1	AZ1085D-3.3G1	Tape & Reel
		AZ1085D-5.0E1	AZ1085D-5.0G1	AZ1085D-5.0E1	AZ1085D-5.0G1	Tube
		AZ1085D-5.0TRE1	AZ1085D-5.0TRG1	AZ1085D-5.0E1	AZ1085D-5.0G1	Tape & Reel
TO-220-3	0 to 125°C	AZ1085T-ADJE1	AZ1085T-ADJG1	AZ1085T-ADJE1	AZ1085T-ADJG1	Tube
		AZ1085T-1.5E1	AZ1085T-1.5G1	AZ1085T-1.5E1	AZ1085T-1.5G1	Tube
		AZ1085T-1.8E1	AZ1085T-1.8G1	AZ1085T-1.8E1	AZ1085T-1.8G1	Tube
		AZ1085T-2.5E1	AZ1085T-2.5G1	AZ1085T-2.5E1	AZ1085T-2.5G1	Tube
		AZ1085T-3.3E1	AZ1085T-3.3G1	AZ1085T-3.3E1	AZ1085T-3.3G1	Tube
		AZ1085T-5.0E1	AZ1085T-5.0G1	AZ1085T-5.0E1	AZ1085T-5.0G1	Tube

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Ordering Information (Continued)

Package	Tempera-ture Range	Part Number		Marking ID		Packing Type
		Lead Free	Green	Lead Free	Green	
TO-263-3	0 to 125°C	AZ1085S-ADJE1	AZ1085S-ADJG1	AZ1085S-ADJE1	AZ1085S-ADJG1	Tube
		AZ1085S-ADJTRE1	AZ1085S-ADJTRG1	AZ1085S-ADJE1	AZ1085S-ADJG1	Tape & Reel
		AZ1085S-1.5E1	AZ1085S-1.5G1	AZ1085S-1.5E1	AZ1085S-1.5G1	Tube
		AZ1085S-1.5TRE1	AZ1085S-1.5TRG1	AZ1085S-1.5E1	AZ1085S-1.5G1	Tape & Reel
		AZ1085S-1.8E1	AZ1085S-1.8G1	AZ1085S-1.8E1	AZ1085S-1.8G1	Tube
		AZ1085S-1.8TRE1	AZ1085S-1.8TRG1	AZ1085S-1.8E1	AZ1085S-1.8G1	Tape & Reel
		AZ1085S-2.5E1	AZ1085S-2.5G1	AZ1085S-2.5E1	AZ1085S-2.5G1	Tube
		AZ1085S-2.5TRE1	AZ1085S-2.5TRG1	AZ1085S-2.5E1	AZ1085S-2.5G1	Tape & Reel
		AZ1085S-3.3E1	AZ1085S-3.3G1	AZ1085S-3.3E1	AZ1085S-3.3G1	Tube
		AZ1085S-3.3TRE1	AZ1085S-3.3TRG1	AZ1085S-3.3E1	AZ1085S-3.3G1	Tape & Reel
		AZ1085S-5.0E1	AZ1085S-5.0G1	AZ1085S-5.0E1	AZ1085S-5.0G1	Tube
		AZ1085S-5.0TRE1	AZ1085S-5.0TRG1	AZ1085S-5.0E1	AZ1085S-5.0G1	Tape & Reel
TO-263-2	0 to 125°C	AZ1085S2-ADJE1	AZ1085S2-ADJG1	AZ1085S2-ADJE1	AZ1085S2-ADJG1	Tube
		AZ1085S2-ADJTRE1	AZ1085S2-ADJTRG1	AZ1085S2-ADJE1	AZ1085S2-ADJG1	Tape & Reel
		AZ1085S2-1.5E1	AZ1085S2-1.5G1	AZ1085S2-1.5E1	AZ1085S2-1.5G1	Tube
		AZ1085S2-1.5TRE1	AZ1085S2-1.5TRG1	AZ1085S2-1.5E1	AZ1085S2-1.5G1	Tape & Reel
		AZ1085S2-1.8E1	AZ1085S2-1.8G1	AZ1085S2-1.8E1	AZ1085S2-1.8G1	Tube
		AZ1085S2-1.8TRE1	AZ1085S2-1.8TRG1	AZ1085S2-1.8E1	AZ1085S2-1.8G1	Tape & Reel
		AZ1085S2-2.5E1	AZ1085S2-2.5G1	AZ1085S2-2.5E1	AZ1085S2-2.5G1	Tube
		AZ1085S2-2.5TRE1	AZ1085S2-2.5TRG1	AZ1085S2-2.5E1	AZ1085S2-2.5G1	Tape & Reel
		AZ1085S2-3.3E1	AZ1085S2-3.3G1	AZ1085S2-3.3E1	AZ1085S2-3.3G1	Tube
		AZ1085S2-3.3TRE1	AZ1085S2-3.3TRG1	AZ1085S2-3.3E1	AZ1085S2-3.3G1	Tape & Reel
		AZ1085S2-5.0E1	AZ1085S2-5.0G1	AZ1085S2-5.0E1	AZ1085S2-5.0G1	Tube
		AZ1085S2-5.0TRE1	AZ1085S2-5.0TRG1	AZ1085S2-5.0E1	AZ1085S2-5.0G1	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green packages.

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Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value		Unit
Operating Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-65 to 150		°C
Lead Temperature (Soldering, 10sec)	T_{LEAD}	260		°C
Thermal Resistance(Note 2)	θ_{JA}	TO-220-3	60	°C/W
		TO-263-2	60	
		TO-263-3	60	
		TO-252-2 (1)/TO-252-2 (2)/ TO-252-2 (3)/TO-252-2 (4)	100	
ESD (Human Body Model)	ESD	2000		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}		12	V
Operating Junction Temperature Range	T_J	0	125	°C

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Electrical Characteristics

Typicals and limits appearing in normal type apply for T_J=25°C. Limits appearing in **Boldface** type apply over the entire operating junction temperature range 0 to 125°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{REF}	AZ1085-ADJ, I_{OUT}=10mA,V_{IN}-V_{OUT}=3V, T_J=25°C, 10mA≤I_{OUT}≤3A, 1.5V≤V_{IN}-V_{OUT}≤5V	1.238 **1.225**	1.250 **1.250**	1.262 **1.275**	V
Output Voltage	V_{OUT}	AZ1085-1.5, I_{OUT}=0mA, V_{IN}=4.5V, T_J=25°C, 10mA≤ I_{OUT}≤ 3A, 3.0V≤V_{IN}≤ 6V	1.485 **1.47**	1.5 **1.5**	1.515 **1.53**	V
		AZ1085-1.8, I_{OUT}=0mA, V_{IN}=4.8V, T_J=25°C, 10mA≤ I_{OUT}≤3A, 3.3V≤V_{IN}≤7V	1.782 **1.764**	1.8 **1.8**	1.818 **1.836**	V
		AZ1085-2.5, I_{OUT}=0mA, V_{IN}=5.5V, T_J=25°C, 10mA≤I_{OUT}≤3A, 4.0V≤V_{IN}≤7V	2.475 **2.45**	2.5 **2.5**	2.525 **2.55**	V
		AZ1085-3.3, I_{OUT}=0mA, V_{IN}=6.3V, T_J=25°C, 10mA≤ I_{OUT}≤3A, 4.8V≤V_{IN}≤ 8V	3.267 **3.234**	3.3 **3.3**	3.333 **3.366**	V
		AZ1085-5.0, I_{OUT}=0mA, V_{IN}=8V, T_J=25°C, 10mA≤ I_{OUT}≤ 3A, 6.5V≤V_{IN}≤10V	4.95 **4.9**	5 **5**	5.05 **5.1**	V
Line Regulation	ΔV_{OUT}	AZ1085-ADJ, I_{OUT}=10mA, 2.85V≤V_{IN}≤10V		0.015 **0.035**	0.2 **0.2**	%
		AZ1085-1.5, I_{OUT}=10mA, 3.0V≤V_{IN}≤10V		0.5 **1**	6 **6**	mV
		AZ1085-1.8, I_{OUT}=10mA, 3.3V≤V_{IN}≤10V		0.5 **1**	6 **6**	mV
		AZ1085-2.5, I_{OUT}=10mA, 4.0V≤ V_{IN}≤10V		0.5 **1**	6 **6**	mV
		AZ1085-3.3, I_{OUT}=10mA, 4.8V≤ V_{IN}≤10V		0.5 **1**	6 **6**	mV
		AZ1085-5.0, I_{OUT}=10mA, 6.5V≤V_{IN}≤10V		0.5 **1**	10 **10**	mV

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Electrical Characteristics (Continued)

Typicals and limits appearing in normal type apply for T_J=25°C. Limits appearing in **Boldface** type apply over the entire operating junction temperature range 0 to 125°C.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Load Regulation	ΔV_{OUT}	AZ1085-ADJ, 0mA≤I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		0.1 **0.2**	0.3 **0.4**	%
		AZ1085-1.5, 0mA≤I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		3 **7**	15 **20**	mV
		AZ1085-1.8, 0mA≤I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		3 **7**	15 **20**	mV
		AZ1085-2.5, 0mA≤I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		3 **7**	15 **20**	mV
		AZ1085-3.3, 0mA≤I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		3 **7**	15 **20**	mV
		AZ1085-5.0, 0mA≤ I_{OUT}≤3A, V_{IN}-V_{OUT}=3V		5 **10**	20 **35**	mV
Dropout Voltage	V_{DROP}	I_{OUT}=3A, ΔV_{REF}, ΔV_{OUT}=1%		**1.3**	**1.5**	V
Thermal Resistance	θ_{JC}	TO-220-3		4.15		°C/W
		TO-252-2 (1)/TO-252-2 (2)/TO-252-2 (3)/ TO-252-2 (4)		7.36		
		TO-263-3		4.15		
		TO-263-2		4.15		
Current Limit	I_{LIMIT}	V_{IN}-V_{OUT}=3V	3.2	4.5		A
Minimum Load Current	I_{LOAD} (MIN)	V_{IN}=10V (AZ1085-ADJ)		**3**	**10**	mA
Quiescent Current	I_Q	V_{IN}=10V (AZ1085)		**5**	**10**	mA
Ripple Rejection	PSRR	f_{RIPPLE}=120Hz, C_{OUT}=25μF, I_{OUT}=3A, V_{IN}-V_{OUT} = 3V	**60**	**72**		dB
Adjust Pin Current	I_{ADJ}	V_{IN} = 4.25V, I_{OUT} = 10mA		55	**120**	μA
Adjust Pin Current Change	ΔI_{ADJ}	10mA ≤ I_{OUT} ≤ 3A, 1.5V ≤ V_{IN} -V_{OUT} ≤ 6V		**0.2**	**5**	μA
Long Term Stability		T_A = 125°C, 1000Hrs		0.5		%
Temperature Stability		I_{OUT}=10mA, V_{IN}-V_{OUT}=1.5V		**0.5**		%
RMS Noise (% of V_{OUT})		T_A=25°C, 10Hz≤f≤10kHz		0.003		%

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Typical Performance Characteristics

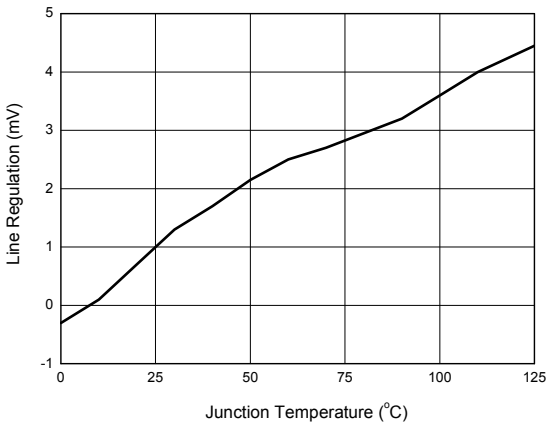

Figure 4. Line Regulation vs. Junction Temperature

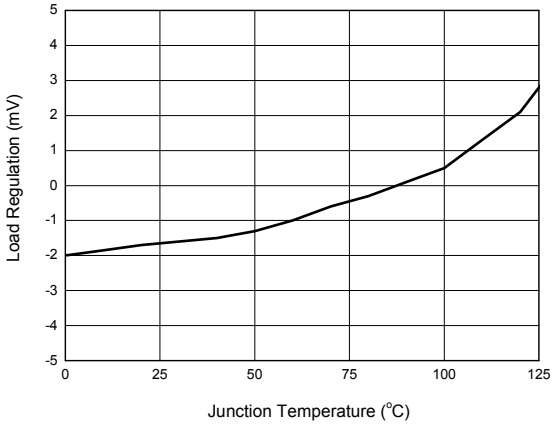

Figure 5. Load Regulation vs. Junction Temperature

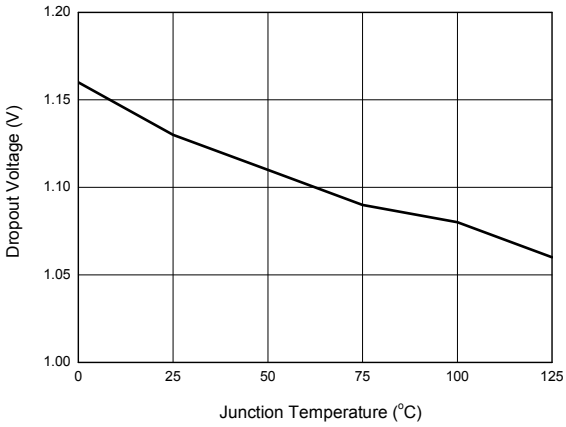

Figure 6. Dropout Voltage vs. Junction Temperature

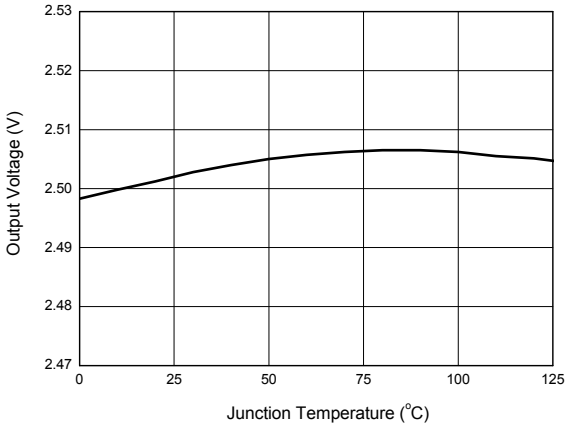

Figure 7. Output Voltage vs. Junction Temperature

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Typical Performance Characteristics (Continued)

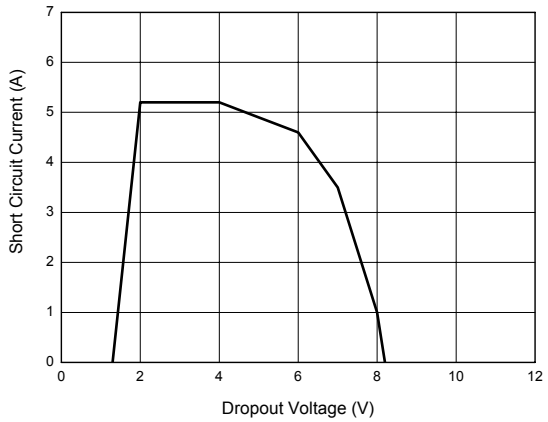

Figure 8. Short Circuit Current vs. Dropout Voltage

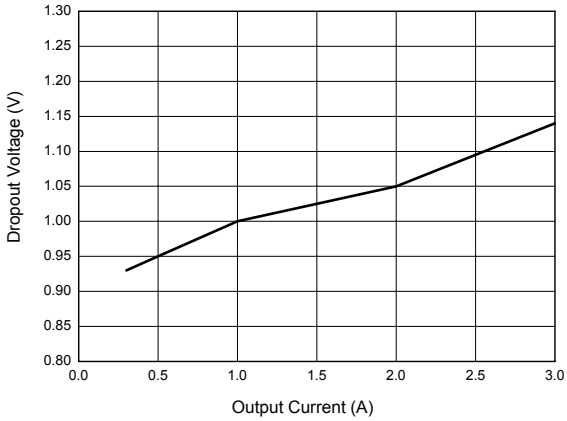

Figure 9. Dropout Voltage vs. Output Current

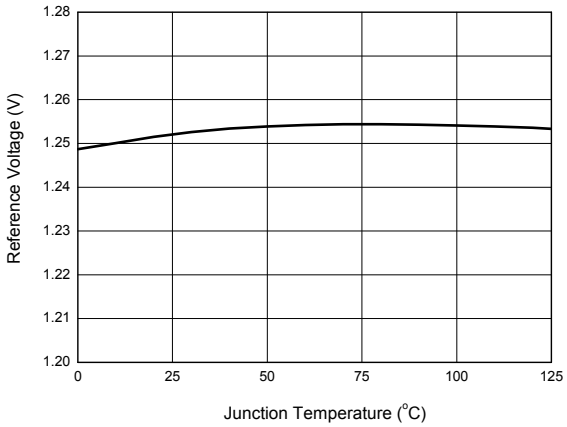

Figure10. Reference Voltage vs. Junction Temperature

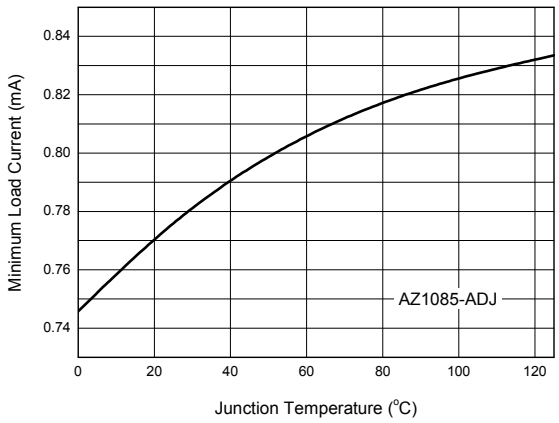

Figure11. Minimum Load Current vs. Junction Temperature

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Typical Performance Characteristics (Continued)

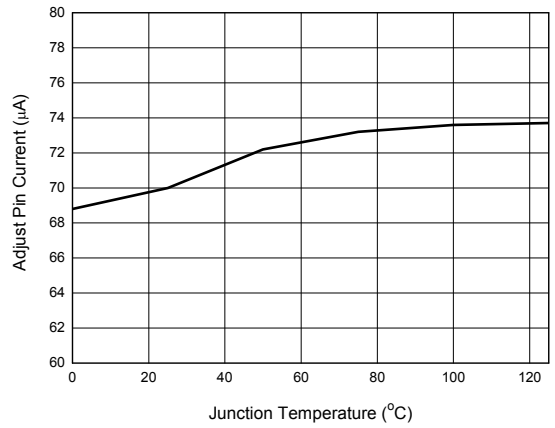

Figure12. Adjust Pin Current vs. Junction Temperature

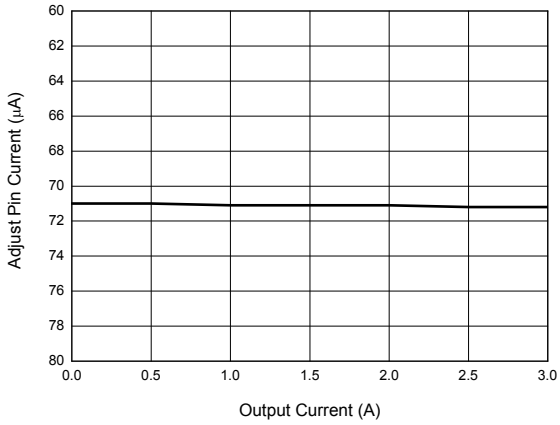

Figure13. Adjust Pin Current vs. Output Current

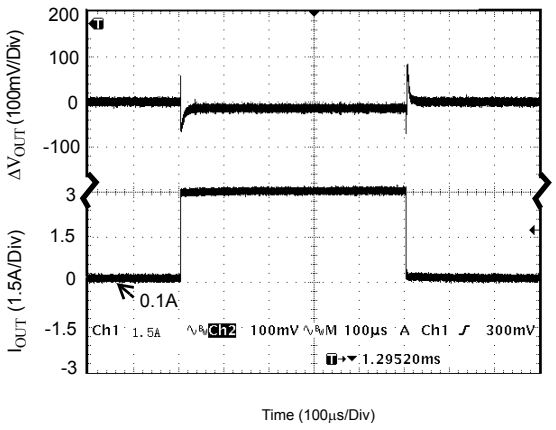

Figure 14. Load Transient Response
(Conditions: V_{IN}=5.5V, V_{OUT}=2.5V, I_{OUT}=100mA to 3A, C_{IN}=C_{OUT}=10μF)

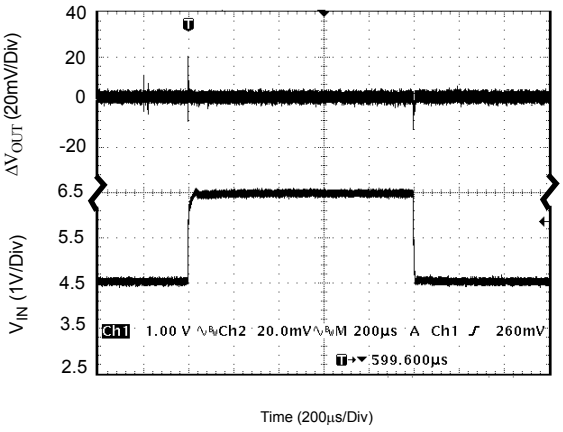

Figure 15. Line Transient Response
(Conditions: V_{IN}=4.5V to 6.5V, V_{OUT}=2.5V, I_{OUT}=200mA, C_{IN}=1μF, C_{OUT}=10μF)

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Typical Performance Characteristics (Continued)

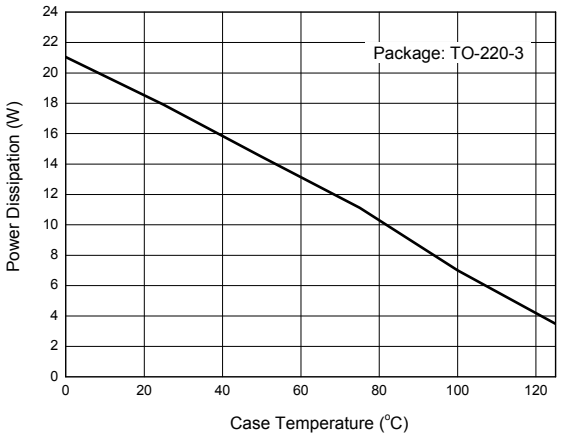

Figure16. Power Dissipation vs. Case Temperature

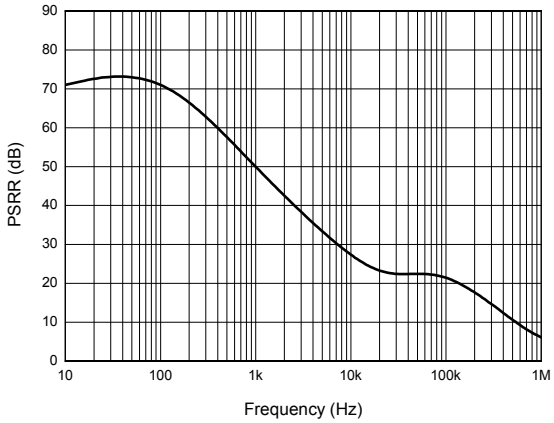

Figure17. PSRR vs. Frequency

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Typical Application

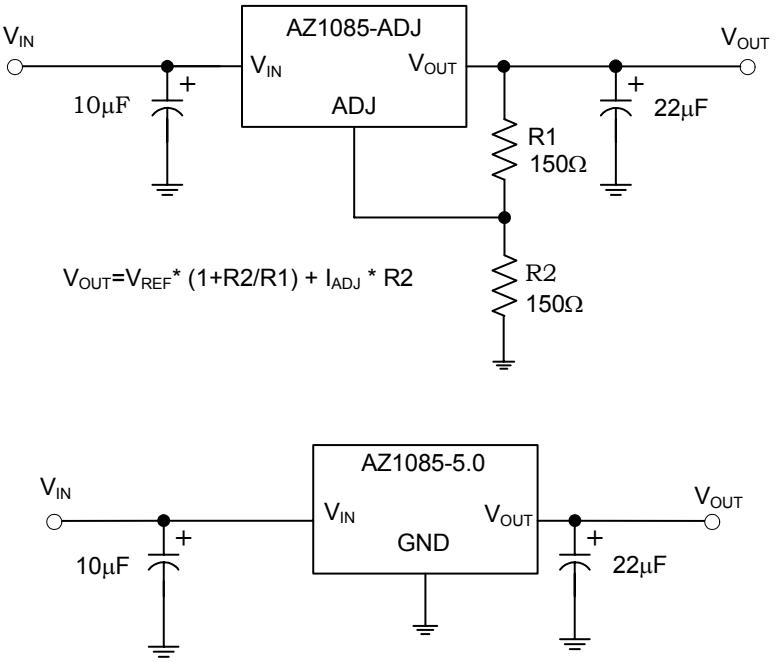

Figure 18. Typical Applications of AZ1085

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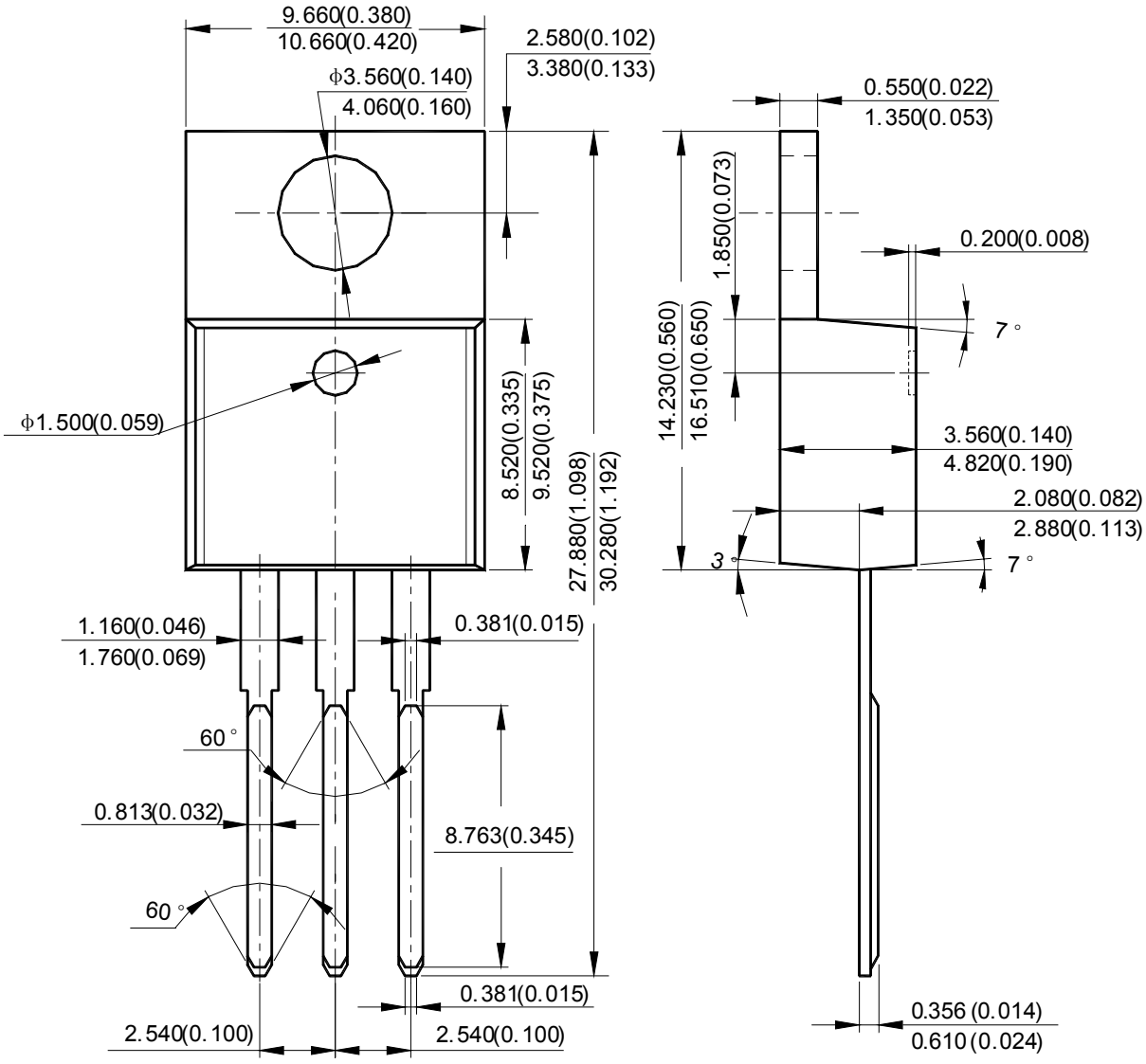
Mechanical Dimensions

TO-220-3 **Unit: mm(inch)**



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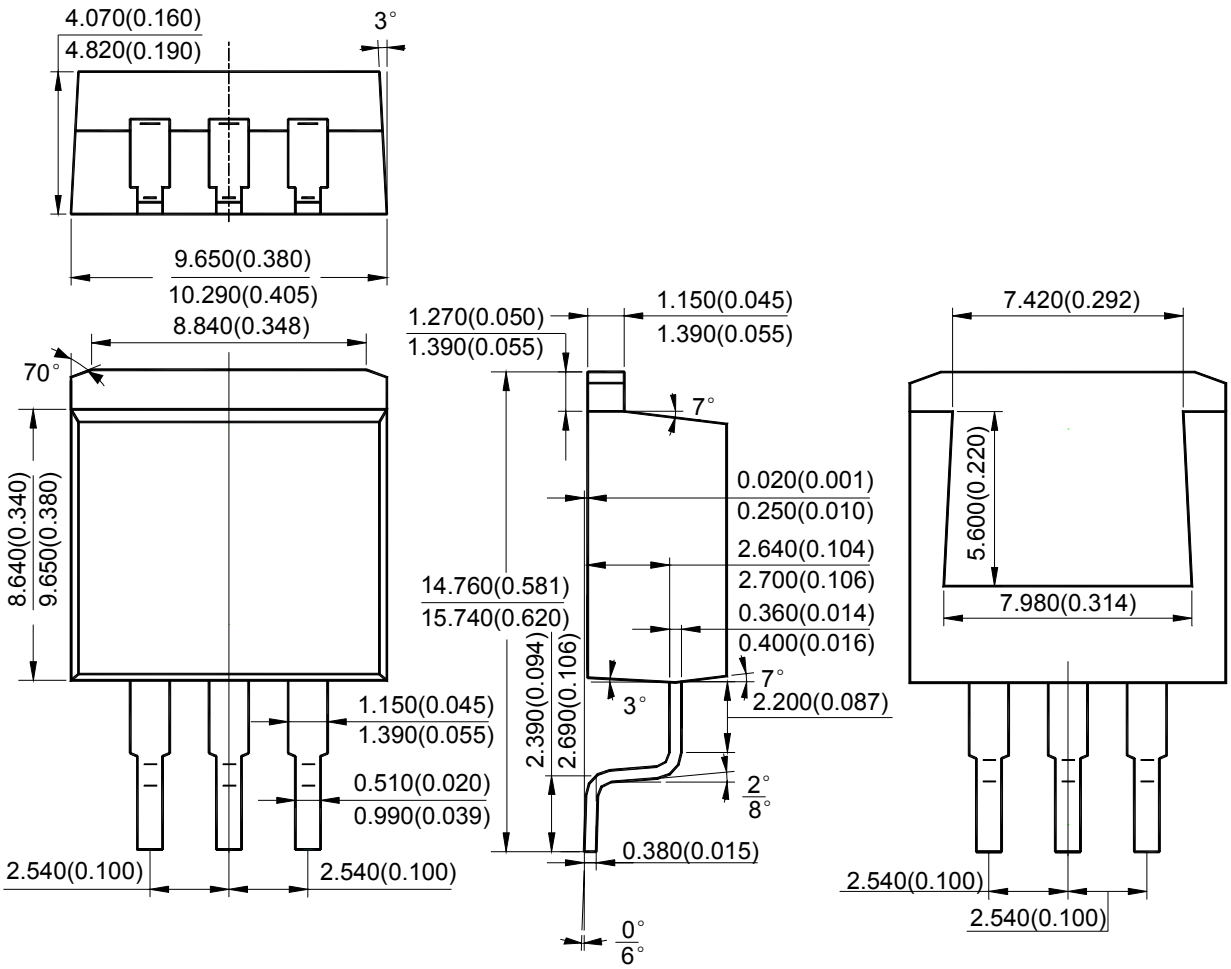
Mechanical Dimensions (Continued)

TO-263-3 **Unit: mm(inch)**



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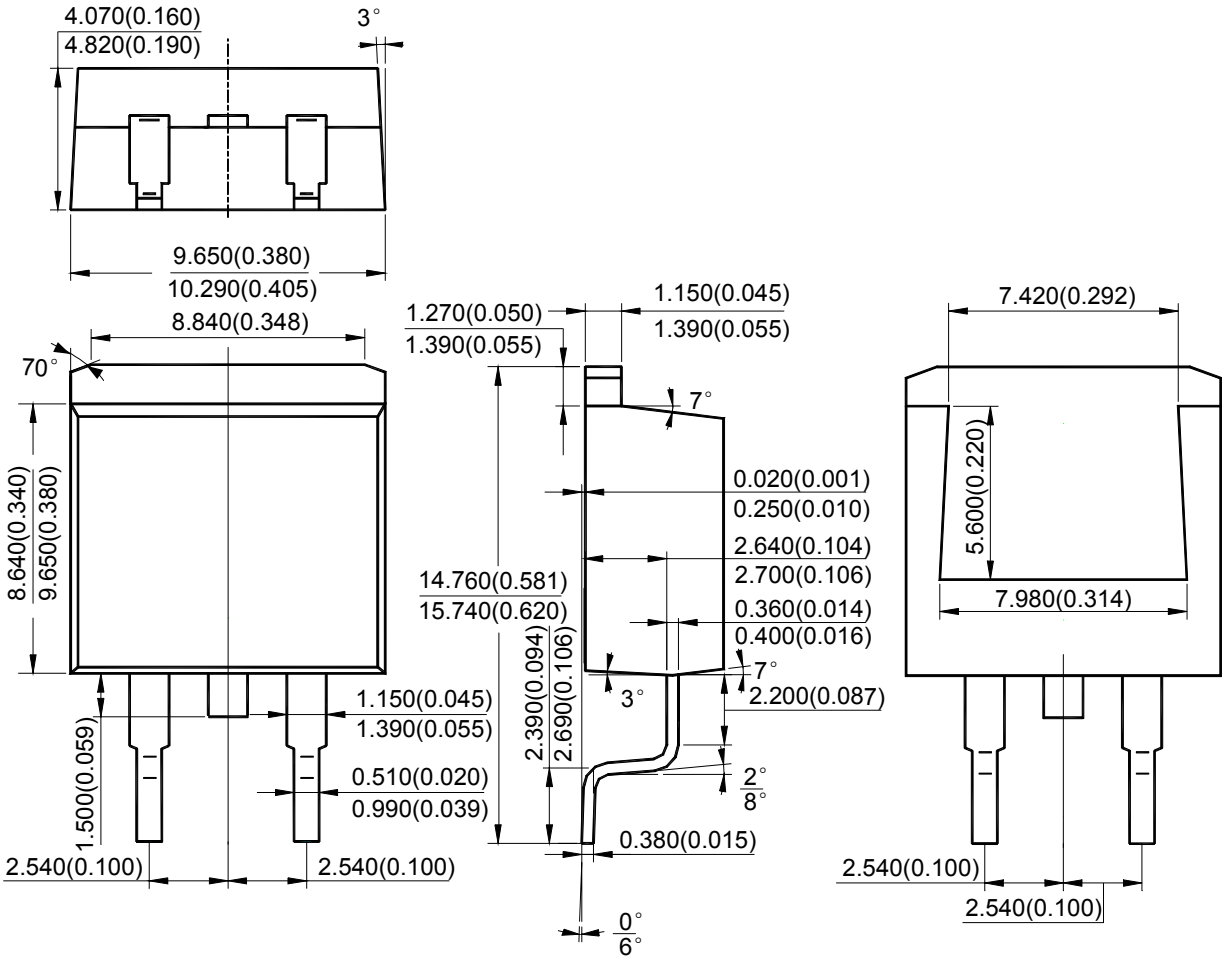
Mechanical Dimensions (Continued)

TO-263-2 **Unit: mm(inch)**



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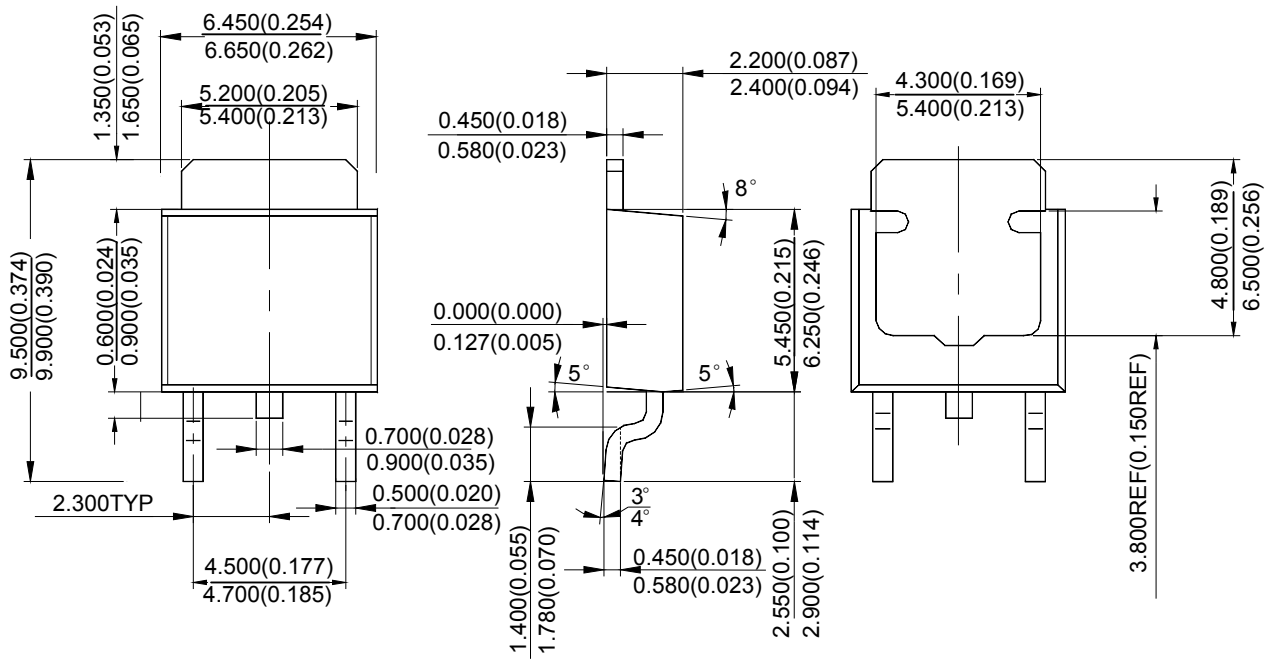
Mechanical Dimensions (Continued)

TO-252-2 (1) **Unit: mm(inch)**



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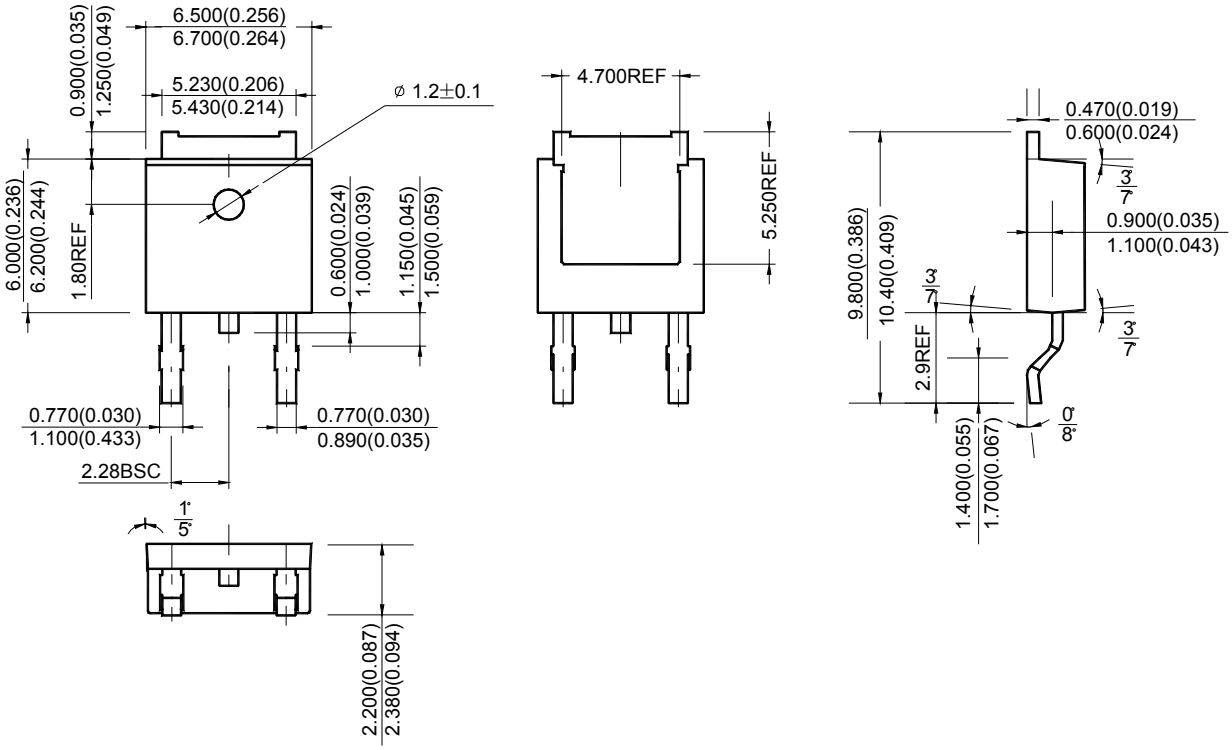
Mechanical Dimensions (Continued)

TO-252-2 (2) **Unit: mm(inch)**



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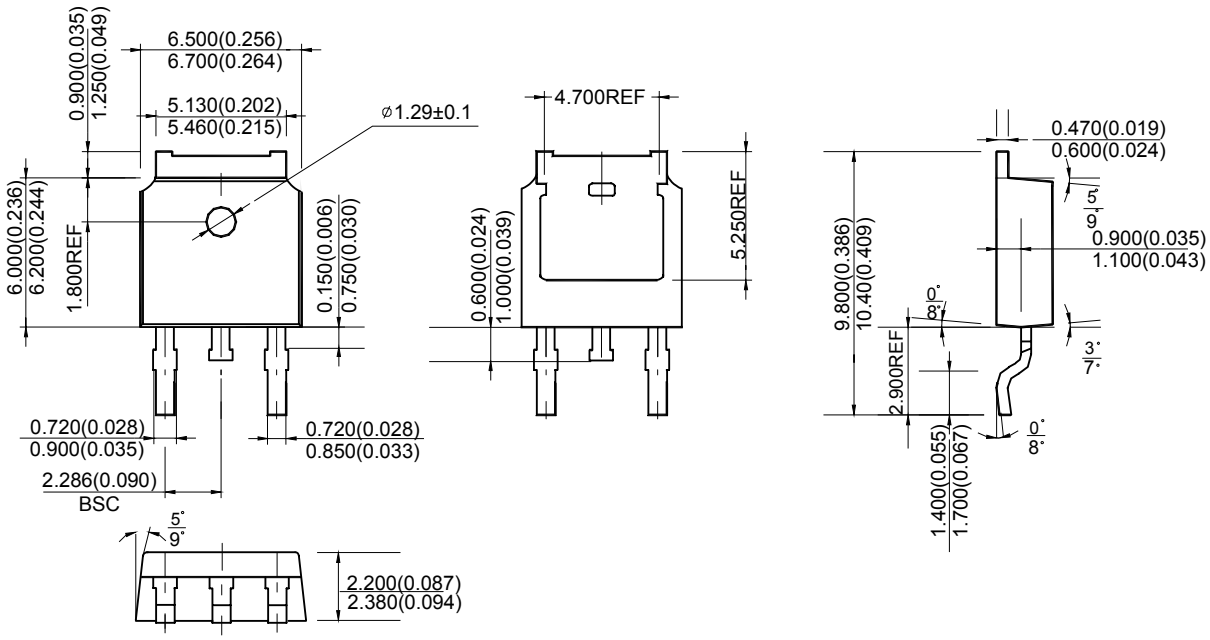
Mechanical Dimensions (Continued)

TO-252-2 (3) **Unit: mm(inch)**



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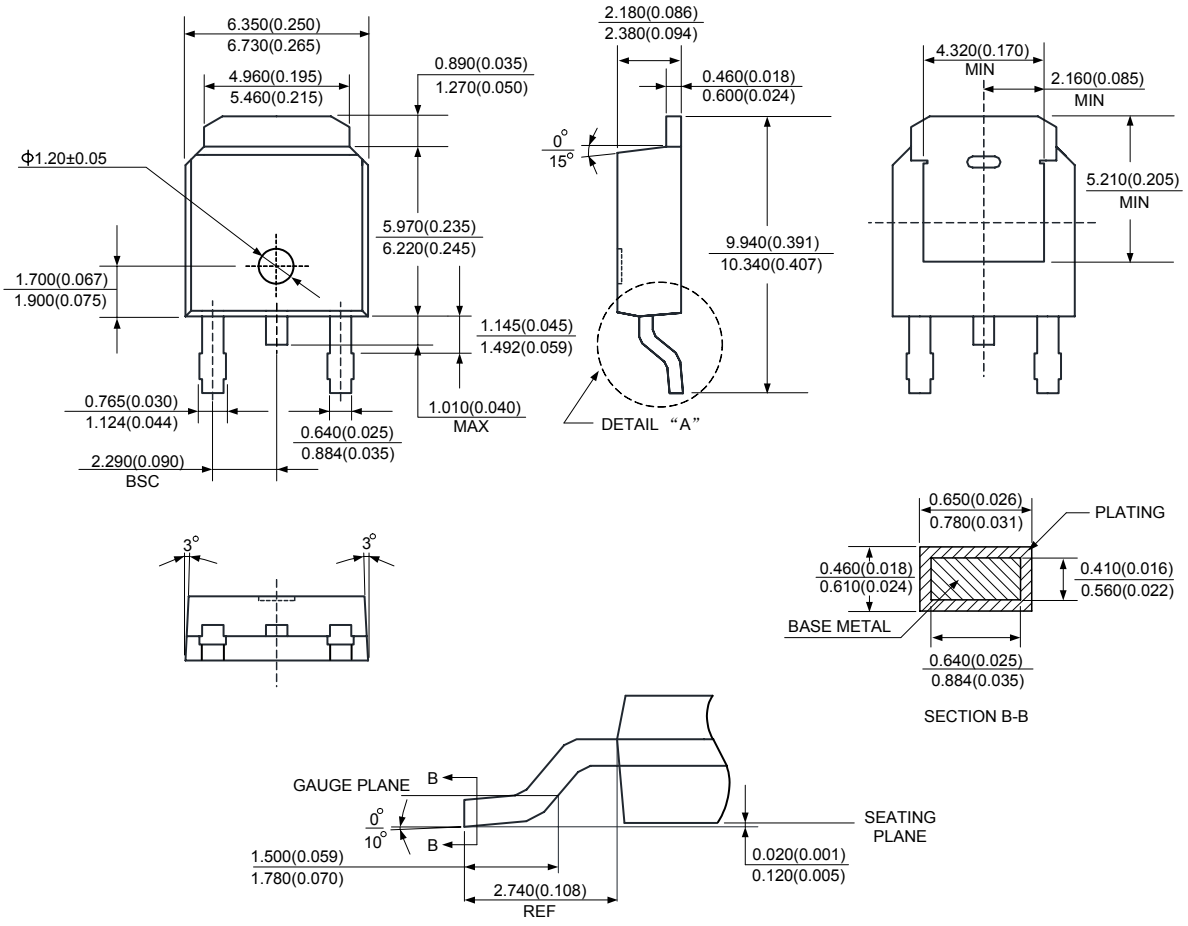
Mechanical Dimensions (Continued)

TO-252-2 (4) **Unit: mm(inch)**



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