

Description

The DIODES™ 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, which can provide the output voltage from 1.25V to 12V with only 2 external resistors.

The AZ1117 series is available in the industry standard SOT223, SOT89, TO220-3, TO252-2 (3), TO252-2 (4), TO252-2 (5) and TO263 power packages.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.

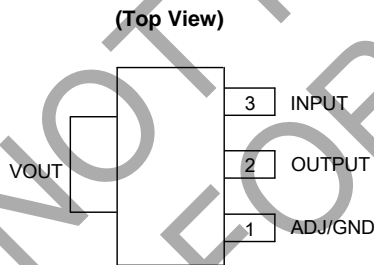
Features

- 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
- Lead-Free Packages: SOT223, SOT89, TO220-3, TO252-2 (3), TO252-2 (4), TO252-2 (5), TO263
- **Totally Lead-Free; RoHS Compliant (Notes 1 & 2)**

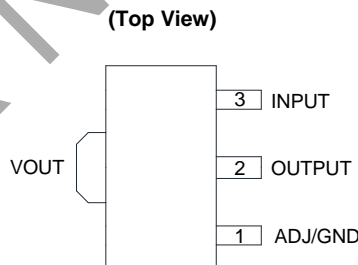
Applications

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

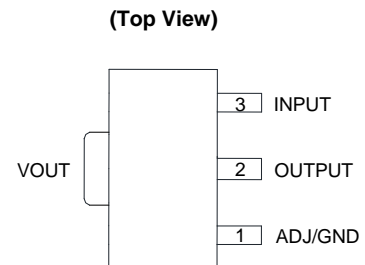
Pin Assignments



SOT223

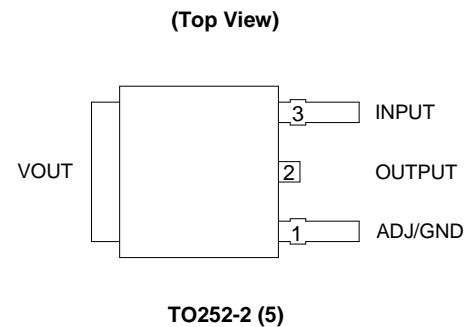
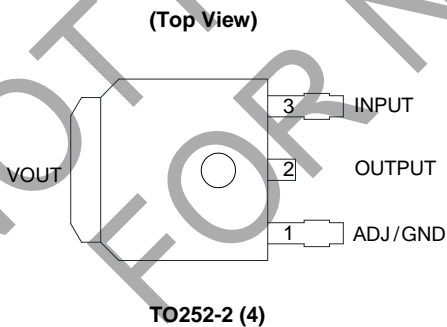
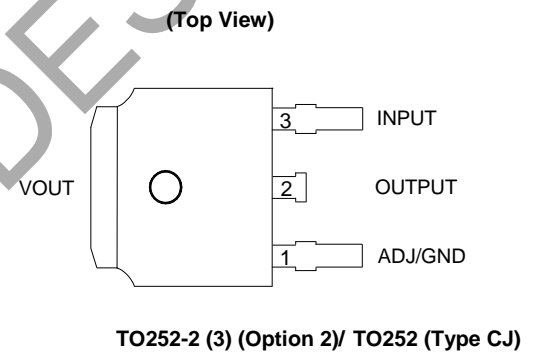
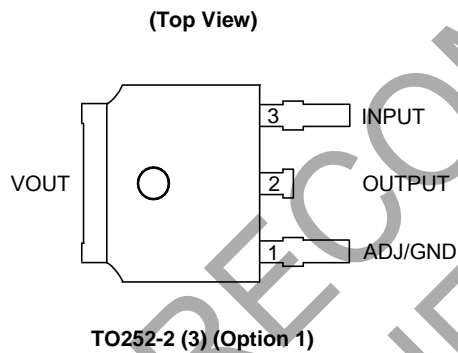
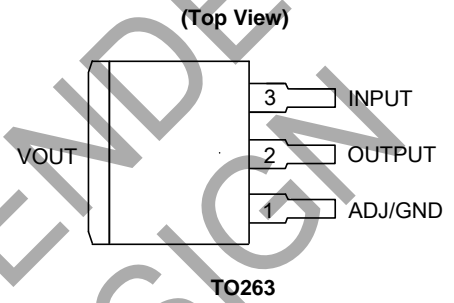
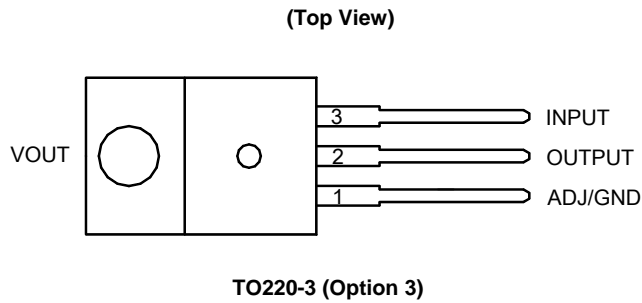
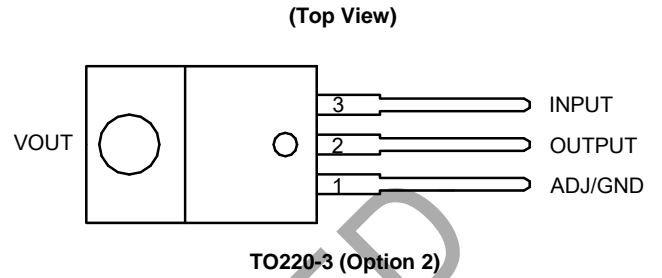
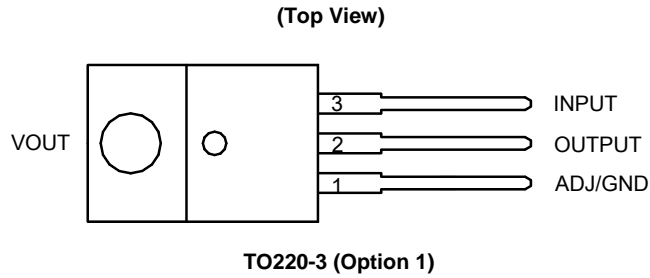


SOT89 (Option 1)

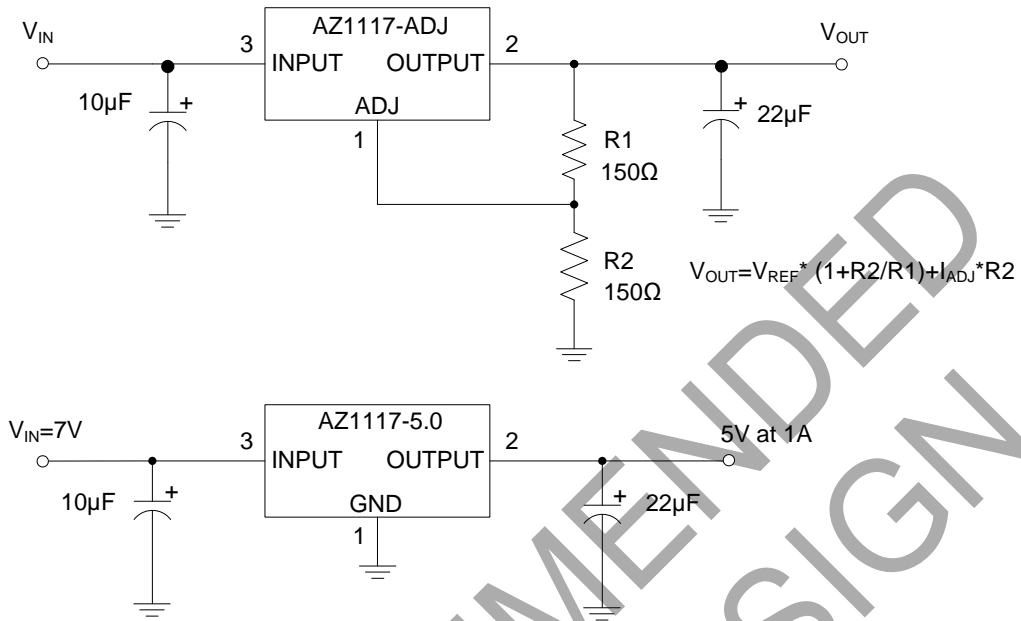


SOT89 (Option 2)

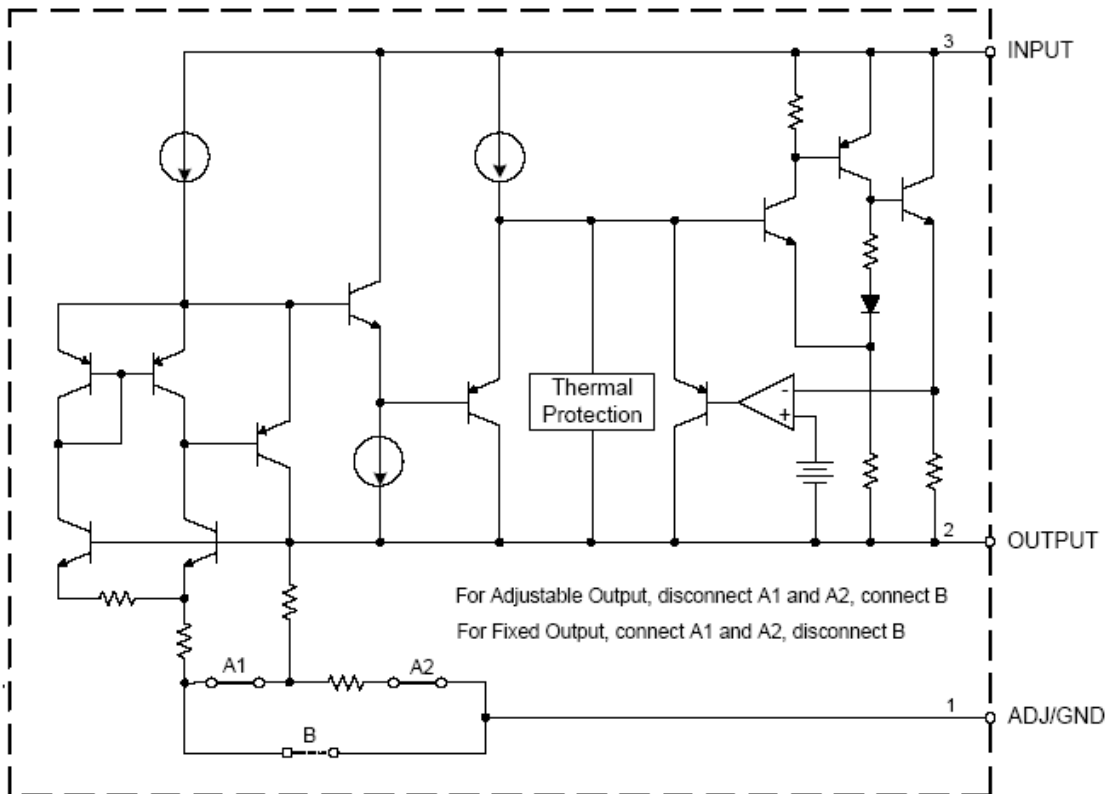
Pin Assignments (Cont.)



Typical Applications Circuit



Functional Block Diagram



Absolute Maximum Ratings (Note 3)

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 4)	θ_{JA}	SOT223	120
		SOT89	165
		TO220-3	60
		TO252-2 (3) TO252-2 (4) TO252-2 (5)	100
		TO263	60
ESD (Human Body Model)	ESD	2000	V
ESD (Machine Model)	ESD	250	V

- Notes:
- 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.
 - 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

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}	$V_{IN}-V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$	—	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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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_{DROPP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$	—	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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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_{DROPP}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$	—	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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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_{DROPO}	$\Delta V_{OUT} = 1\%$, $I_{OUT} = 0.1A$	—	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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Electrical Characteristics (Cont.)

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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

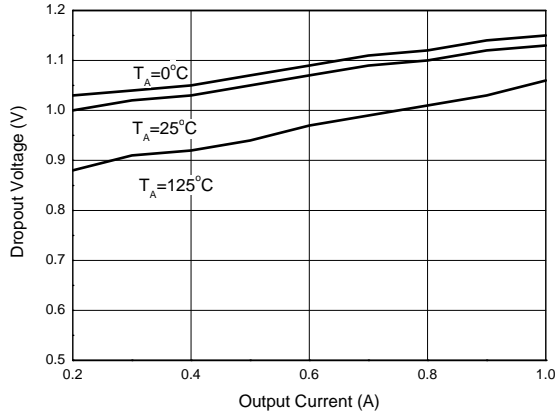
Electrical Characteristics (Cont.)

AZ1117-5.0 Electrical Characteristics (Operating Conditions: $V_{IN} \leq 10V$, $T_J = +25^\circ C$, unless otherwise specified.)

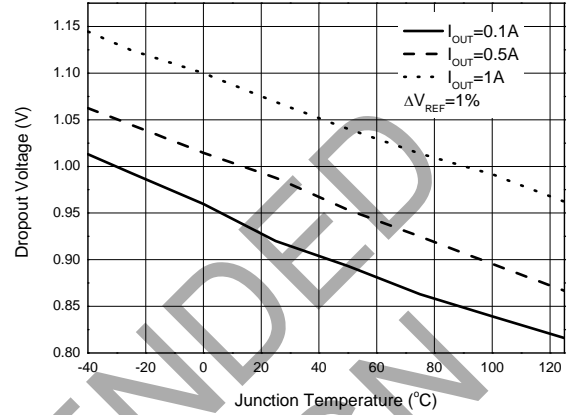
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$I_{OUT} = 10mA$, $V_{IN} = 7.0V$ $10mA \leq I_{OUT} \leq 1A$, $6.5V \leq V_{IN} \leq 12V$	4.950 4.900	5.0 5.0	5.050 5.100	V
Line Regulation	ΔV_{OUT}	$I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10V$	—	1	10	mV
Load Regulation	ΔV_{OUT}	$V_{IN} - V_{OUT} = 2V$, $10mA \leq I_{OUT} \leq 1A$	—	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	—	$^\circ C$
Thermal Resistance	θ_{JC}	SOT223	—	25	—	$^\circ C/W$
		SOT89	—	30	—	
		TO220-3	—	10	—	
		TO252-2 (3)/TO252-2 (4)/TO252-2 (5)	—	17	—	
		TO263	—	10	—	

Performance Characteristics

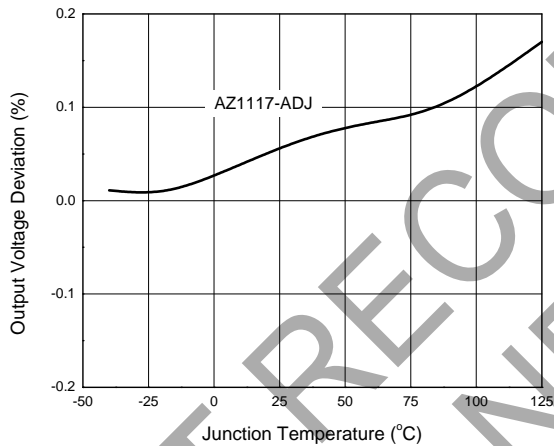
Dropout Voltage vs. Output Current



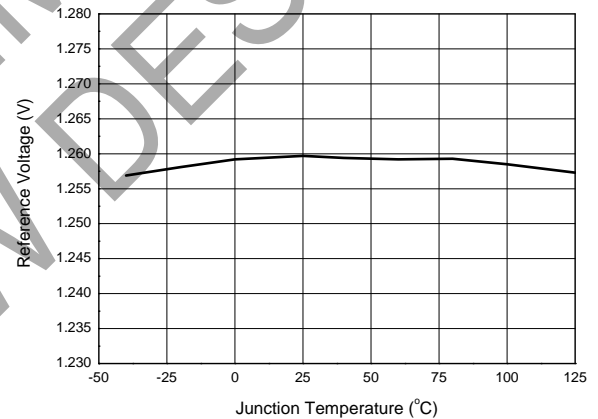
Dropout Voltage vs. Junction Temperature



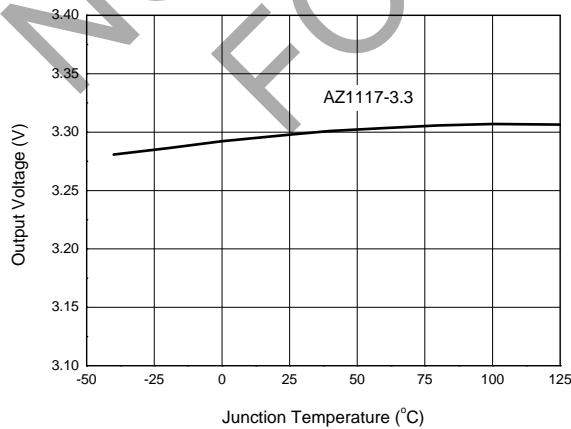
Load Regulation vs. Junction Temperature



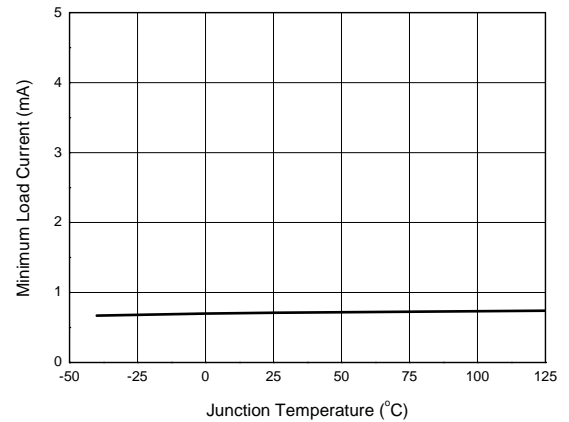
Reference Voltage vs. Junction Temperature



Output Voltage vs. Junction Temperature

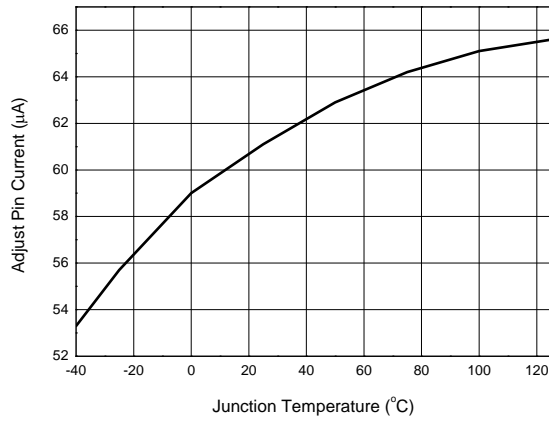


Minimum Load Current vs. Junction Temperature

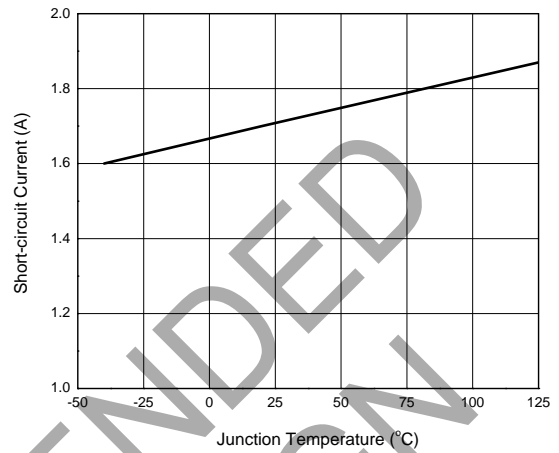


Performance Characteristics (Cont.)

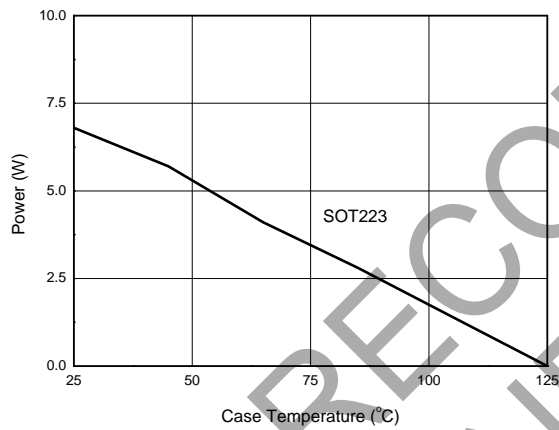
Adjust Pin Current vs. Junction Temperature



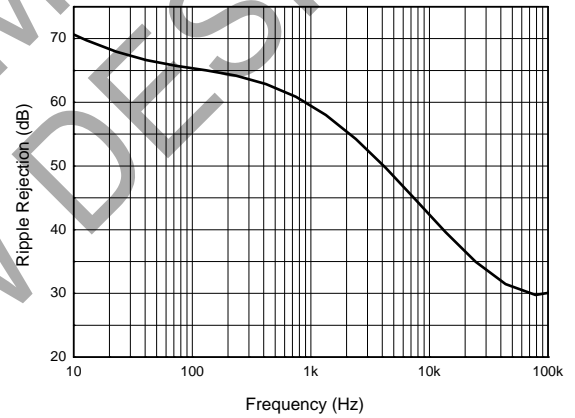
Short-circuit Current vs. Junction Temperature



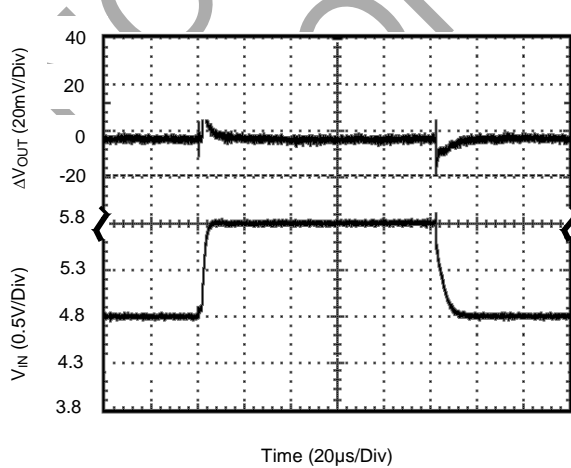
Maximum Power Dissipation



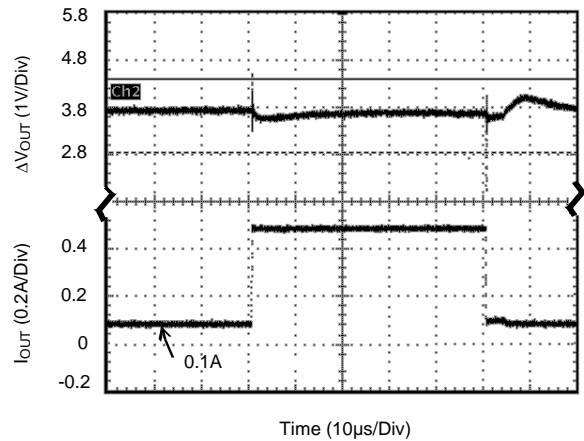
Ripple Rejection vs. Frequency



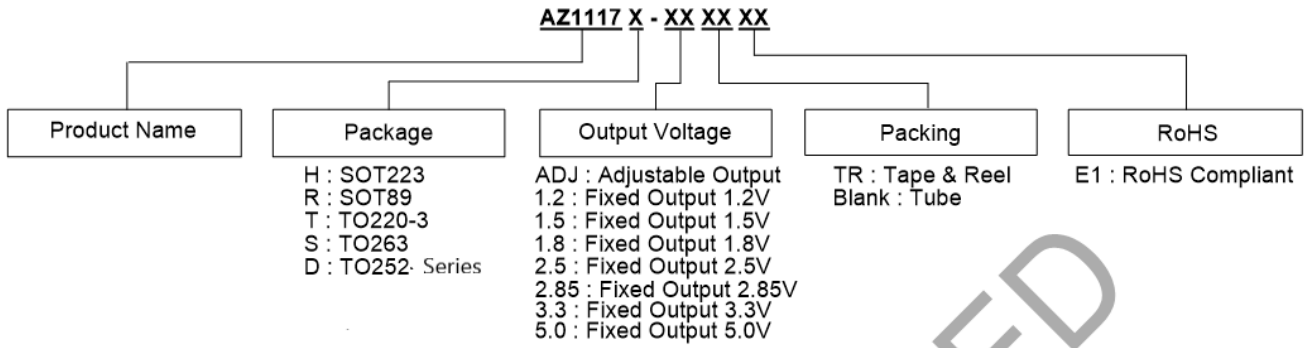
Line Transient Response
(Conditions: $V_{IN} = 4.8$ to $5.8V$, $V_{OUT} = 3.33V$, $I_{OUT} = 0.1A$, $C_{IN} = 1\mu F$, $C_{OUT} = 10\mu F$)



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



Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing
SOT223	-40 to +125°C	AZ1117H-ADJTRE1	EH11A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-1.2TRE1	EH18A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-1.5TRE1	EH12A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-1.8TRE1	EH13A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-2.5TRE1	EH14A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-2.85TRE1 (End of Life)	EH15A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-3.3TRE1	EH16A	4000/Tape & Reel
	-40 to +125°C	AZ1117H-5.0TRE1	EH17A	4000/Tape & Reel
SOT89	-40 to +125°C	AZ1117R-ADJTRE1	E17A	1000/Tape & Reel
	-40 to +125°C	AZ1117R-1.2TRE1	E17G	1000/Tape & Reel
	-40 to +125°C	AZ1117R-1.5TRE1 (End of Life)	E17B	1000/Tape & Reel
	-40 to +125°C	AZ1117R-1.8TRE1	E17C	1000/Tape & Reel
	-40 to +125°C	AZ1117R-2.5TRE1 (End of Life)	E17D	1000/Tape & Reel
	-40 to +125°C	AZ1117R-2.85TRE1 (End of Life)	E17H	1000/Tape & Reel
	-40 to +125°C	AZ1117R-3.3TRE1	E17E	1000/Tape & Reel
	-40 to +125°C	AZ1117R-5.0TRE1	E17F	1000/Tape & Reel
TO220-3	-40 to +125°C	AZ1117T-ADJE1 (End of Life)	AZ1117T-ADJE1	50/Tube
	-40 to +125°C	AZ1117T-1.2E1 (End of Life)	AZ1117T-1.2E1	50/Tube
	-40 to +125°C	AZ1117T-1.5E1 (End of Life)	AZ1117T-1.5E1	50/Tube
	-40 to +125°C	AZ1117T-1.8E1 (End of Life)	AZ1117T-1.8E1	50/Tube
	-40 to +125°C	AZ1117T-2.5E1 (End of Life)	AZ1117T-2.5E1	50/Tube
	-40 to +125°C	AZ1117T-2.85E1 (End of Life)	AZ1117T-2.85E1	50/Tube

	-40 to +125°C	AZ1117T-3.3E1 (End of Life)	AZ1117T-3.3E1	50/Tube
	-40 to +125°C	AZ1117T-5.0E1 (End of Life)	AZ1117T-5.0E1	50/Tube

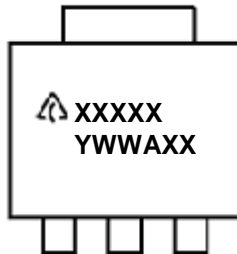
Ordering Information (Cont.)

Package	Temperature Range	Part Number	Marking ID	Packing
TO252-2 (3)/(4)/(5) TO252 (Type CJ)	-40 to +125°C	AZ1117D-ADJTRE1	AZ1117D-ADJE1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-1.2TRE1	AZ1117D-1.2E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-1.5TRE1	AZ1117D-1.5E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-1.8TRE1	AZ1117D-1.8E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-2.5TRE1	AZ1117D-2.5E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-2.85TRE1 (End of Life)	AZ1117D-2.85E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-3.3TRE1	AZ1117D-3.3E1	2500/Tape & Reel
	-40 to +125°C	AZ1117D-5.0TRE1	AZ1117D-5.0E1	2500/Tape & Reel
TO263	-40 to +125°C	AZ1117S-ADJTRE1	AZ1117S-ADJE1	800/Tape & Reel
	-40 to +125°C	AZ1117S-1.2TRE1 (End of Life)	AZ1117S-1.2E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-1.5TRE1	AZ1117S-1.5E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-1.8TRE1 (End of Life)	AZ1117S-1.8E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-2.5TRE1 (End of Life)	AZ1117S-2.5E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-2.85TRE1 (End of Life)	AZ1117S-2.85E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-3.3TRE1	AZ1117S-3.3E1	800/Tape & Reel
	-40 to +125°C	AZ1117S-5.0TRE1	AZ1117S-5.0E1	800/Tape & Reel

Marking Information

(1) SOT223 Series

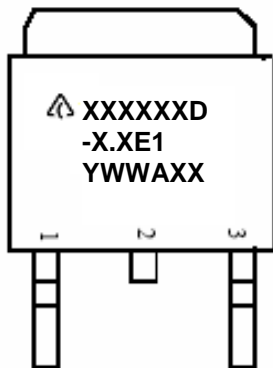
(Top View)



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 / TO252 (Type CJ)

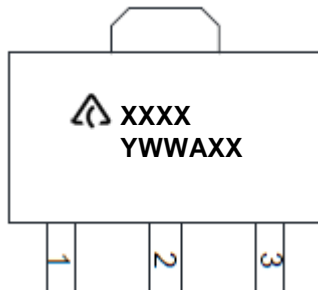
(Top View)



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

(3) SOT89

(Top View)

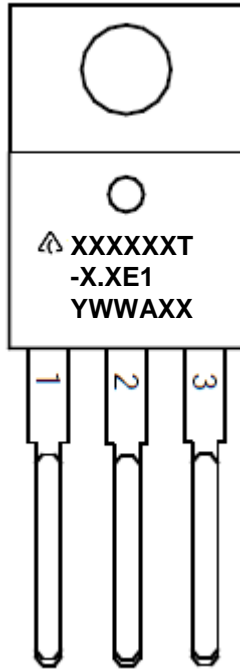


First Line: Logo and Marking ID
(See Ordering Information)
Second Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

Marking Information (Cont.)

(4) TO220-3

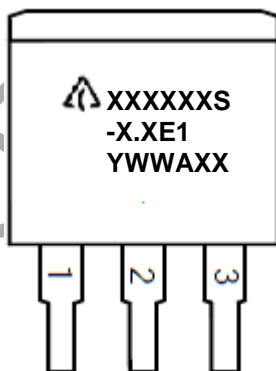
(Top View)



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

(5) TO263

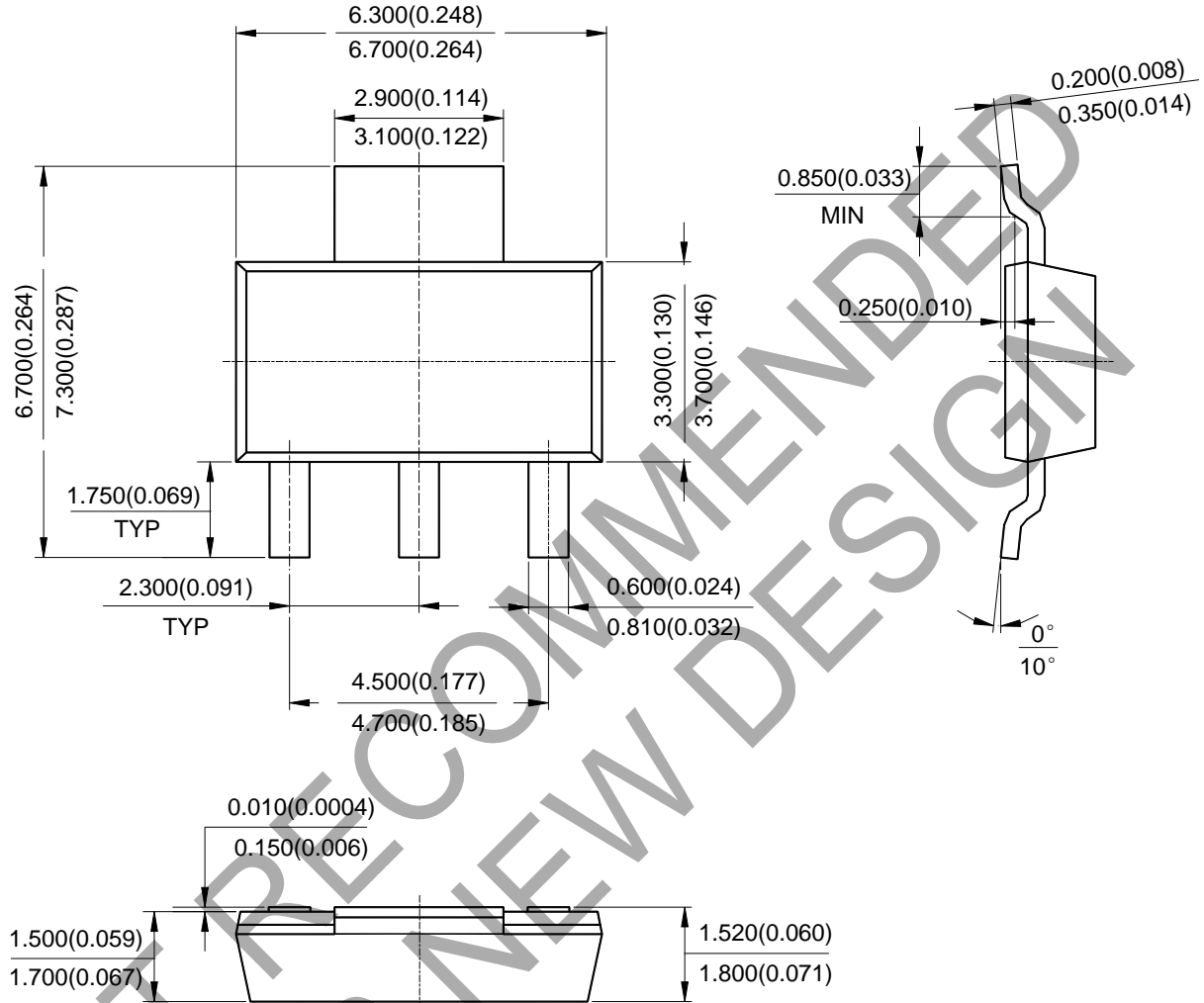
(Top View)



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

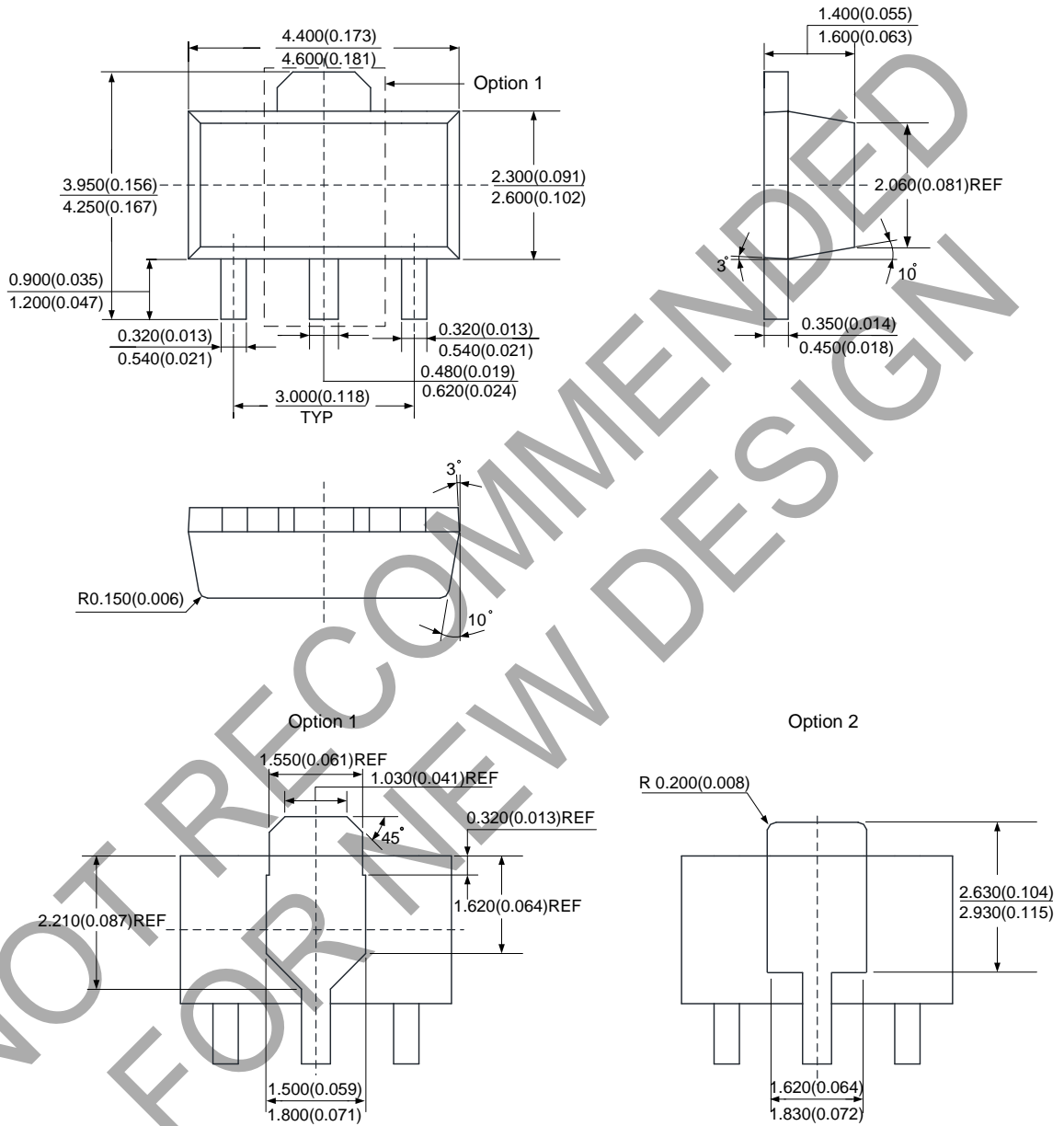
Package Outline Dimensions (All dimensions in mm(inch).)

(1) Package Type: SOT223



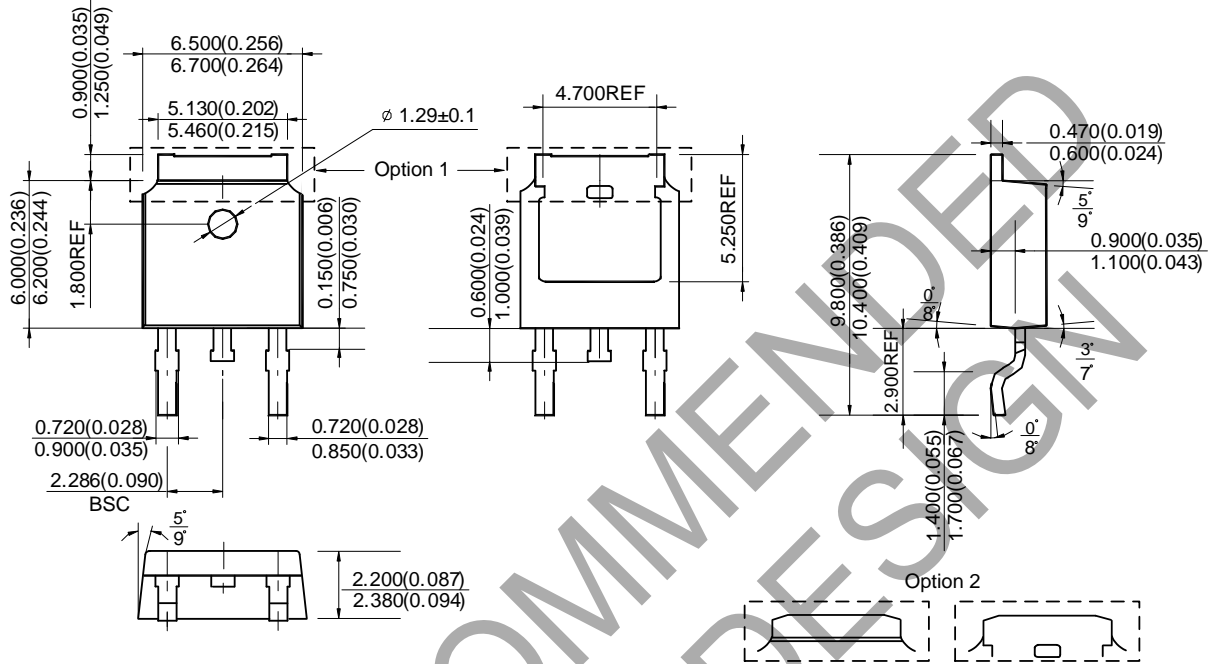
Package Outline Dimensions (Cont. All dimensions in mm(inch).)

(2) Package Type: SOT89



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

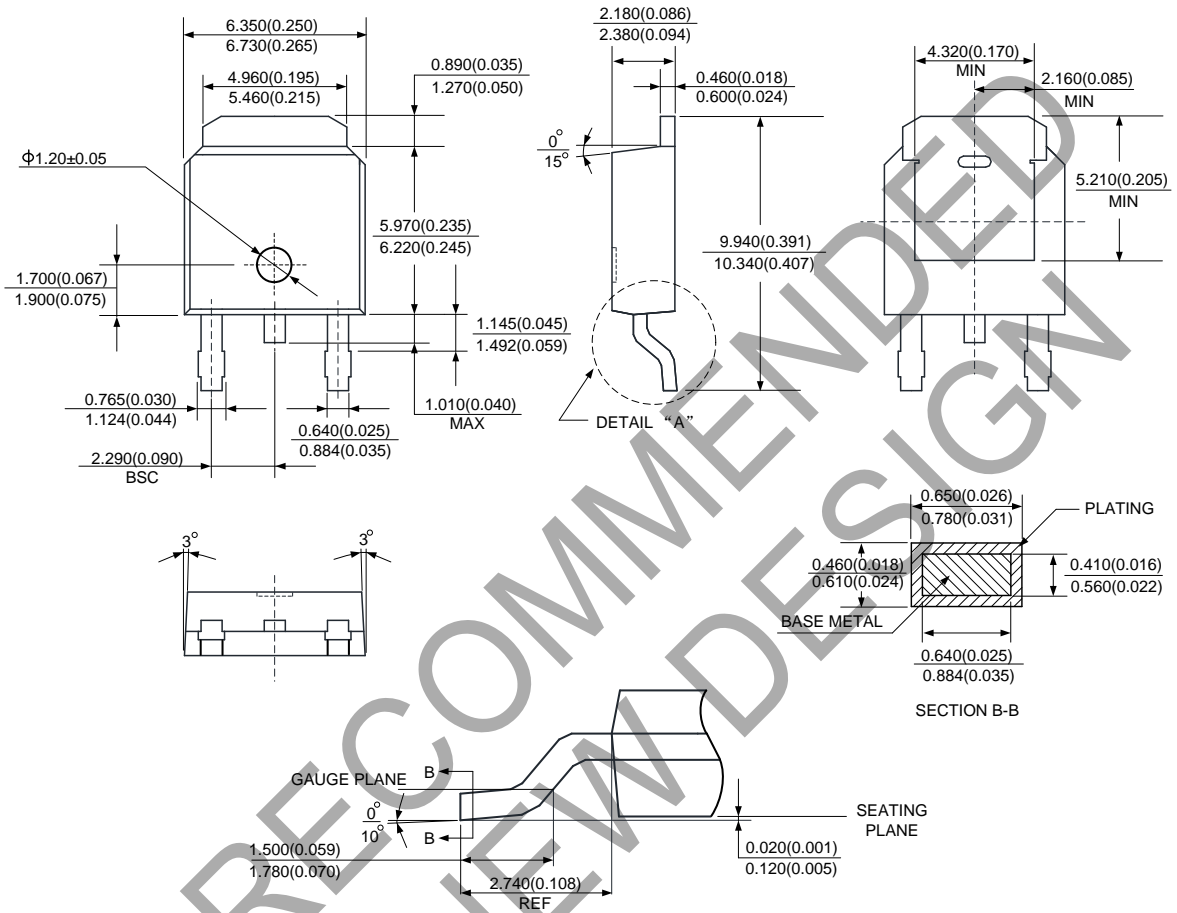
(3) Package Type: TO252-2 (3)



NOT RECOMMENDED FOR NEW DESIGN

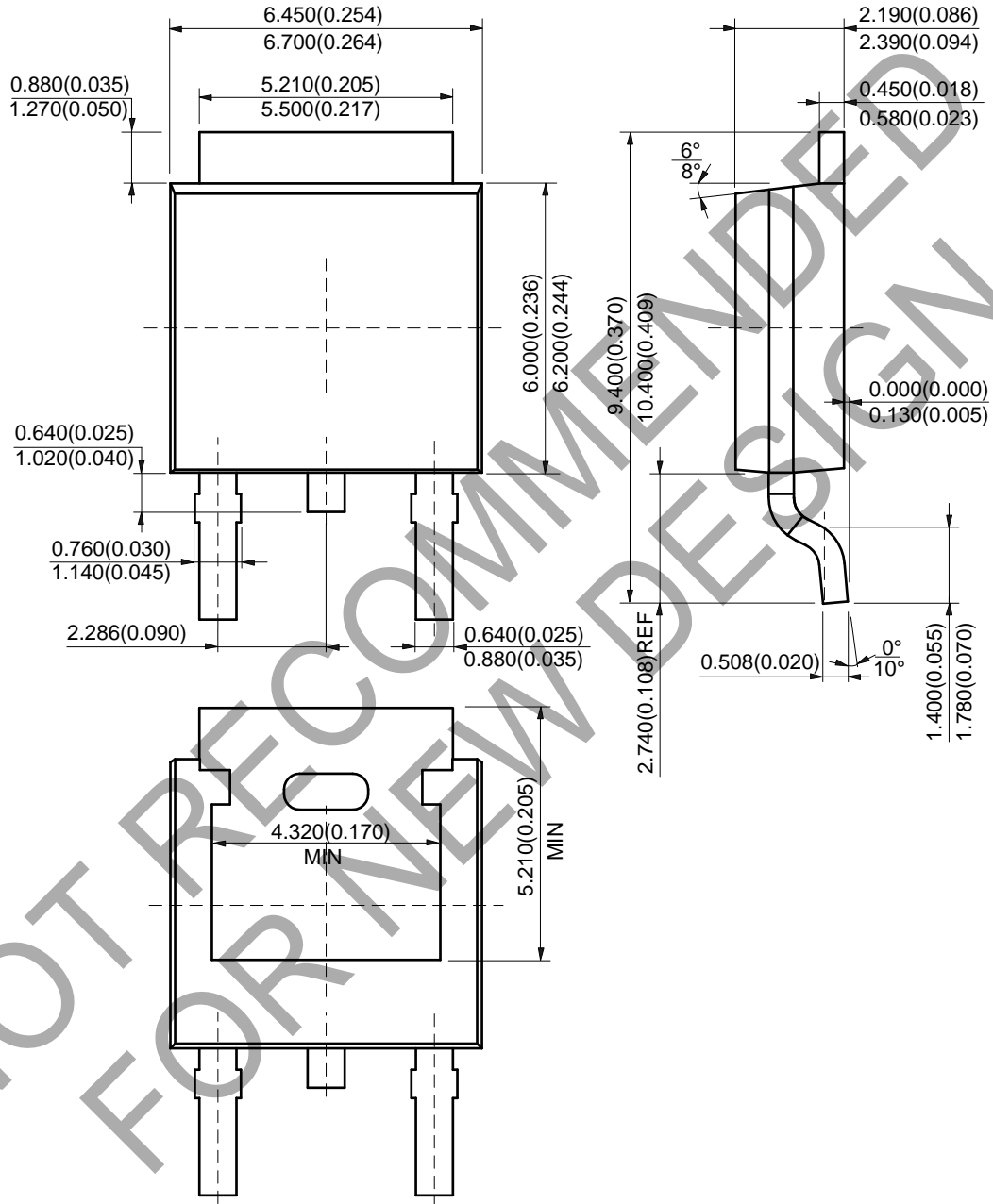
Package Outline Dimensions (Cont. All dimensions in mm(inch).)

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



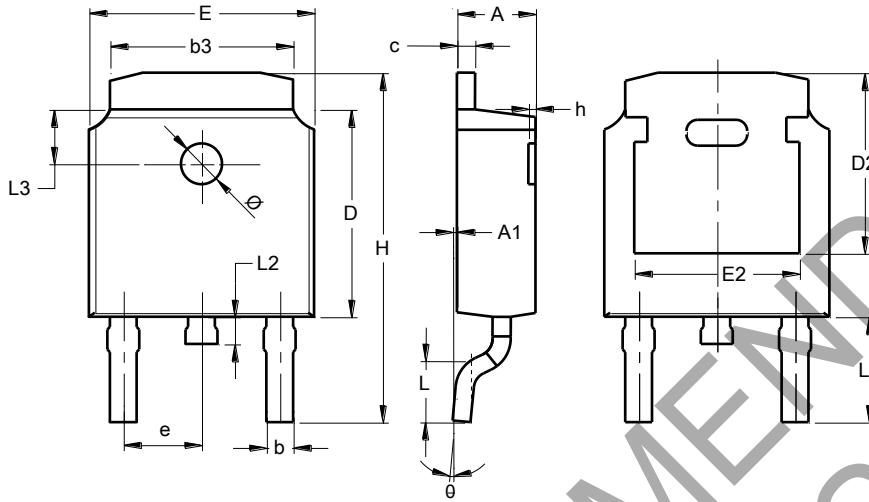
Package Outline Dimensions (Cont. All dimensions in mm(inch).)

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



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

Package Type : TO252 (Type CJ)

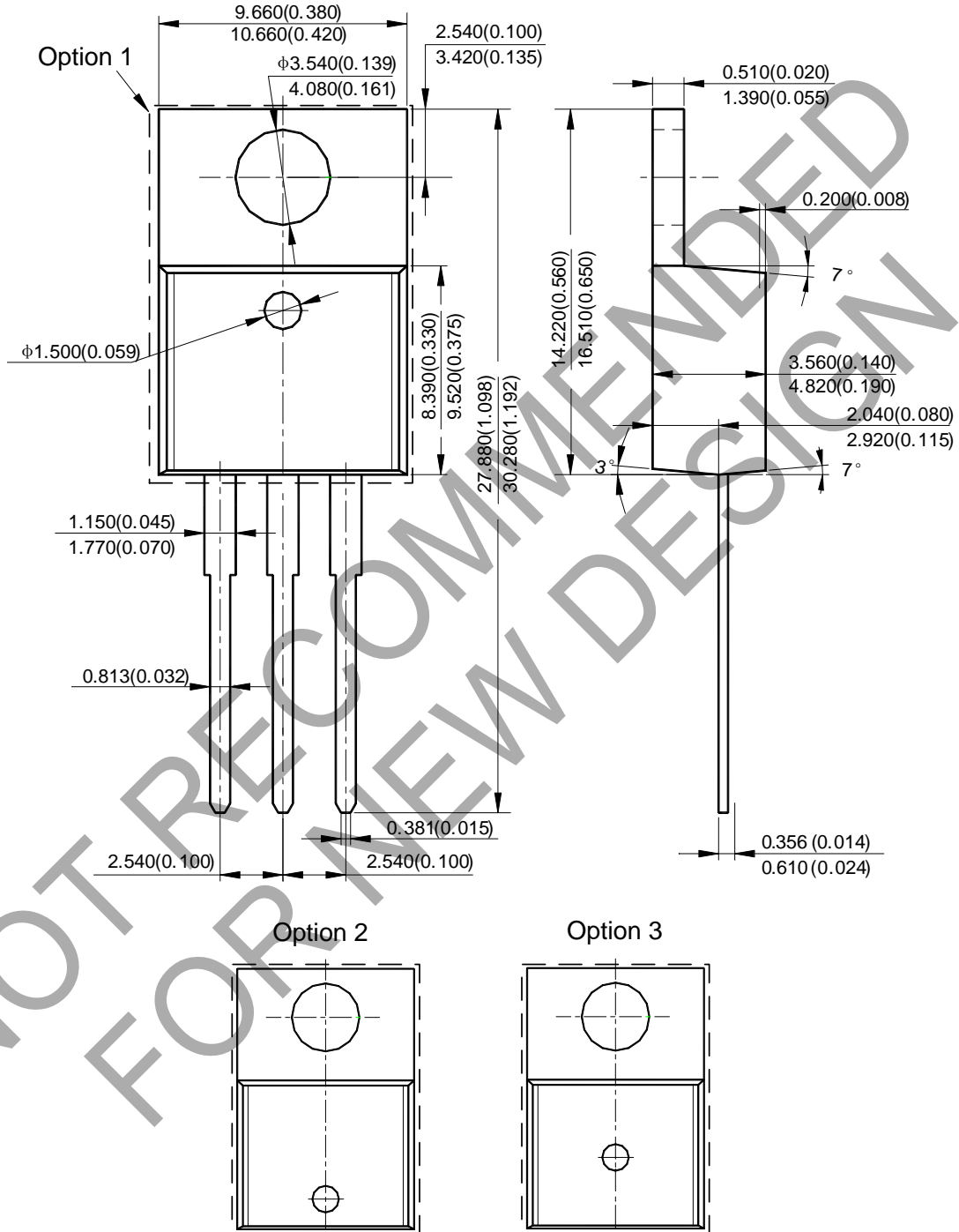


TO252 (Type CJ)			
Dim	Min	Max	Typ
A	2.200	2.400	--
A1	0.000	0.127	--
b	0.635	0.770	--
b3	5.100	5.460	--
c	0.460	0.580	--
D	6.000	6.200	--
D2	5.250 REF		
E	6.500	6.700	--
E2	4.830 REF		
e	2.186	2.386	--
h	0.000	0.300	--
H	9.712	10.312	--
L	1.400	1.700	--
L1	2.900 REF		
L2	0.600	1.000	--
L3	1.600 REF		
Ø	1.100	1.300	--
θ	0°	8°	--
All Dimensions in mm			

NOT RECOMMENDED FOR NEW DESIGN

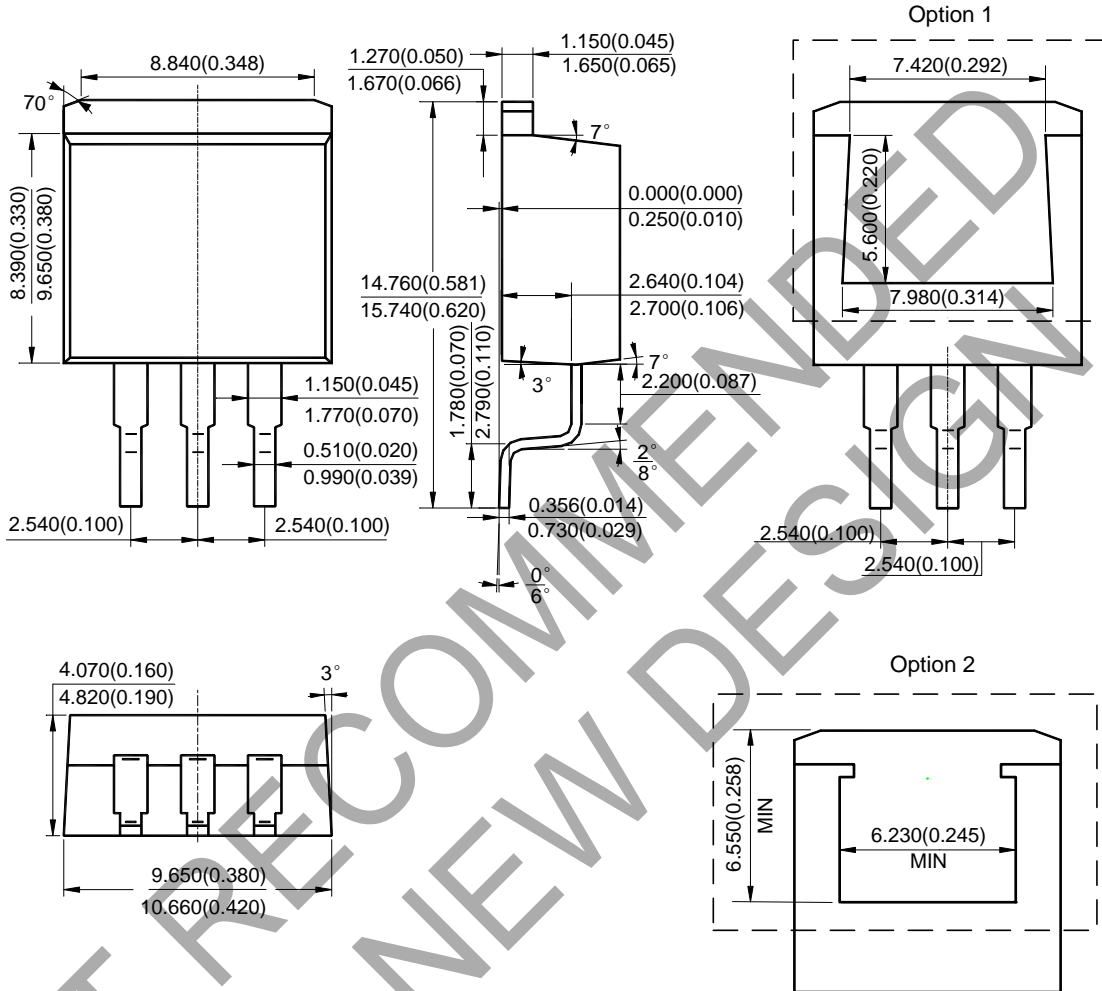
Package Outline Dimensions (Cont. All dimensions in mm(inch).)

(6) Package Type: TO220-3



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

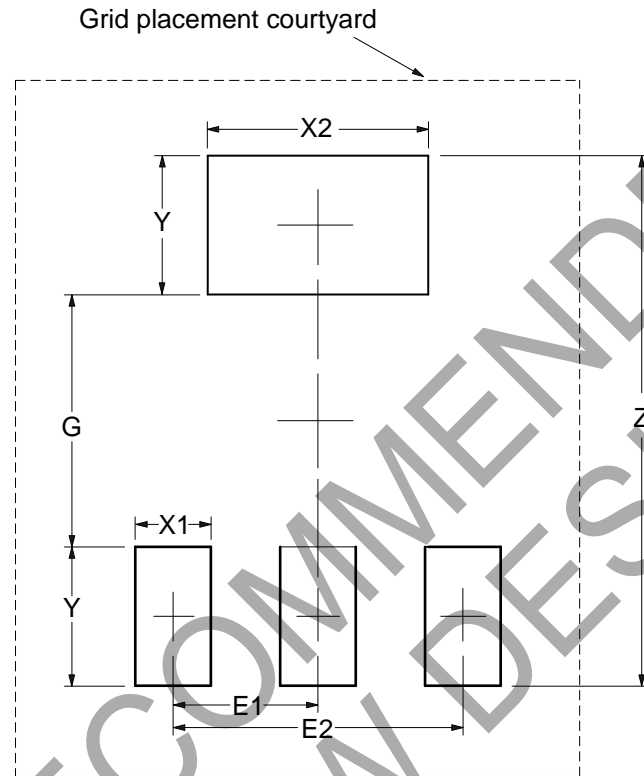
(7) Package Type: TO263



NOT RECOMMENDED FOR NEW DESIGN

Suggested Pad Layout

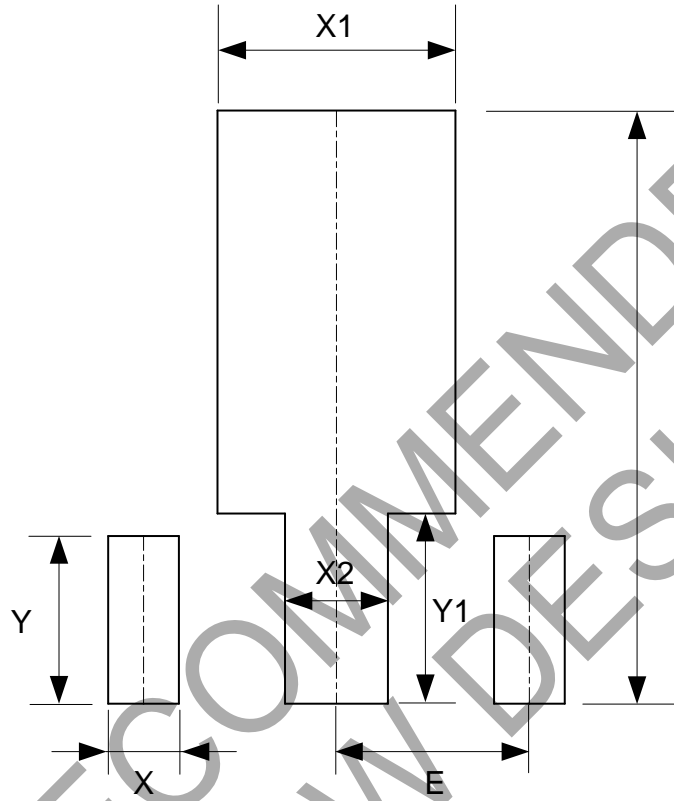
(1) Package Type: SOT223



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.)

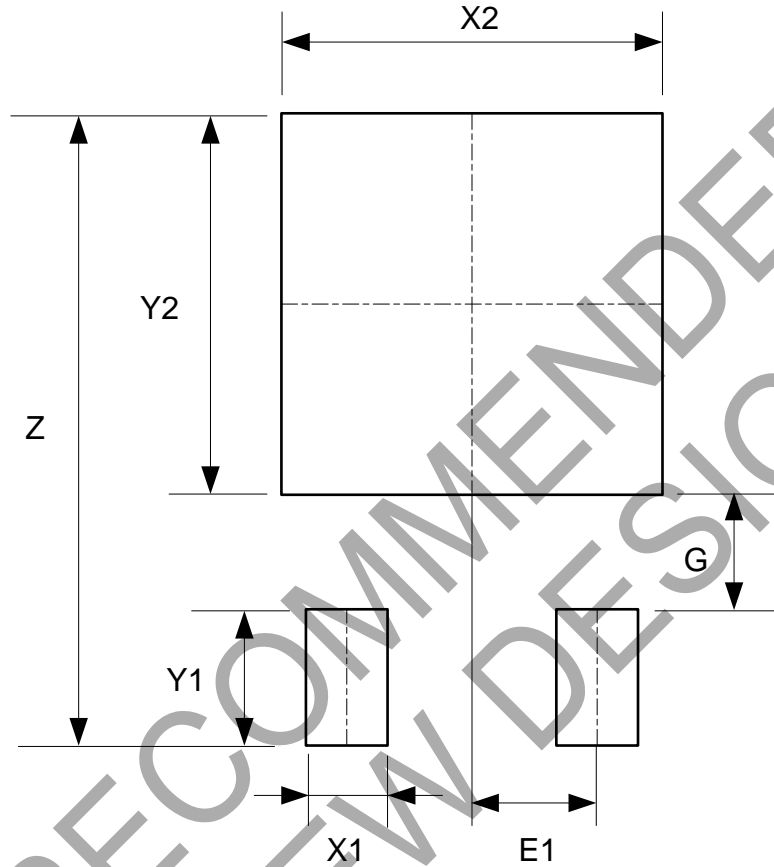
(2) Package Type: SOT89



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.)

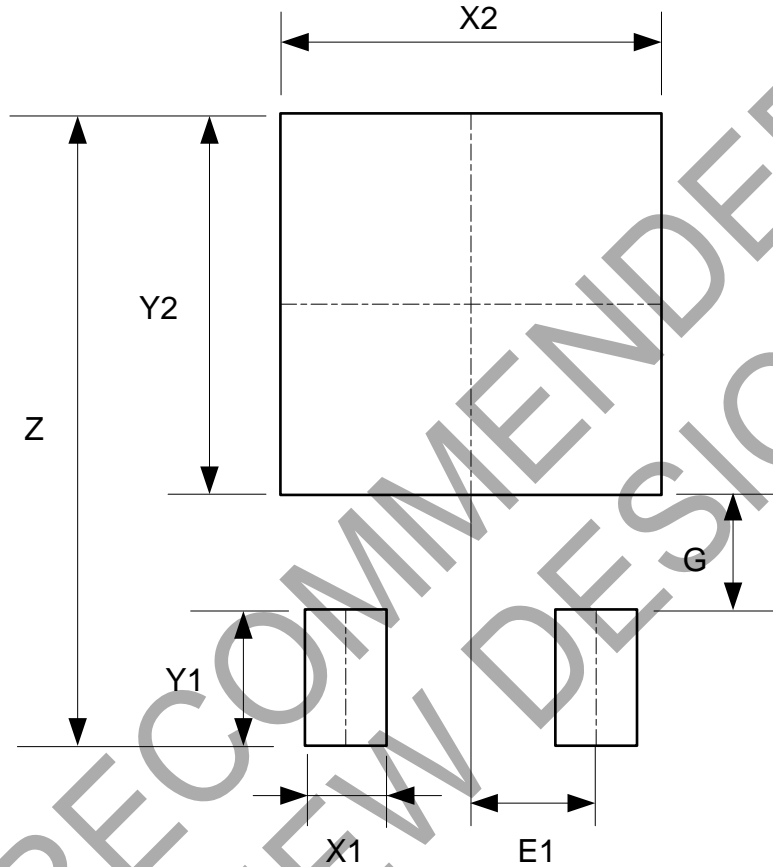
(3) Package Type: TO252-2 (3) / TO252 (Type CJ)



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.)

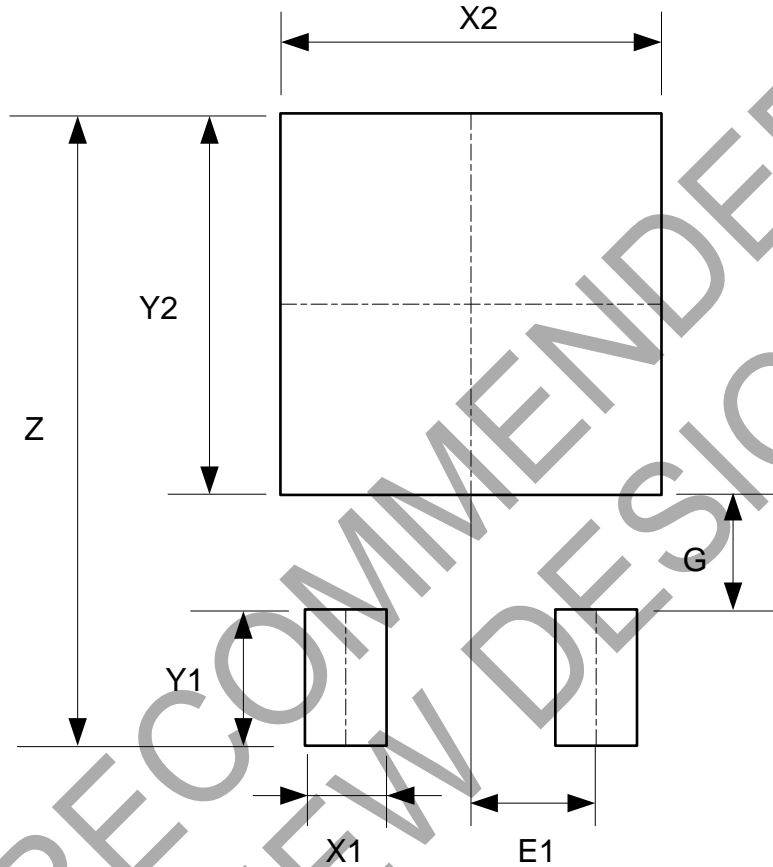
(4) Package Type: TO252-2 (4)



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.)

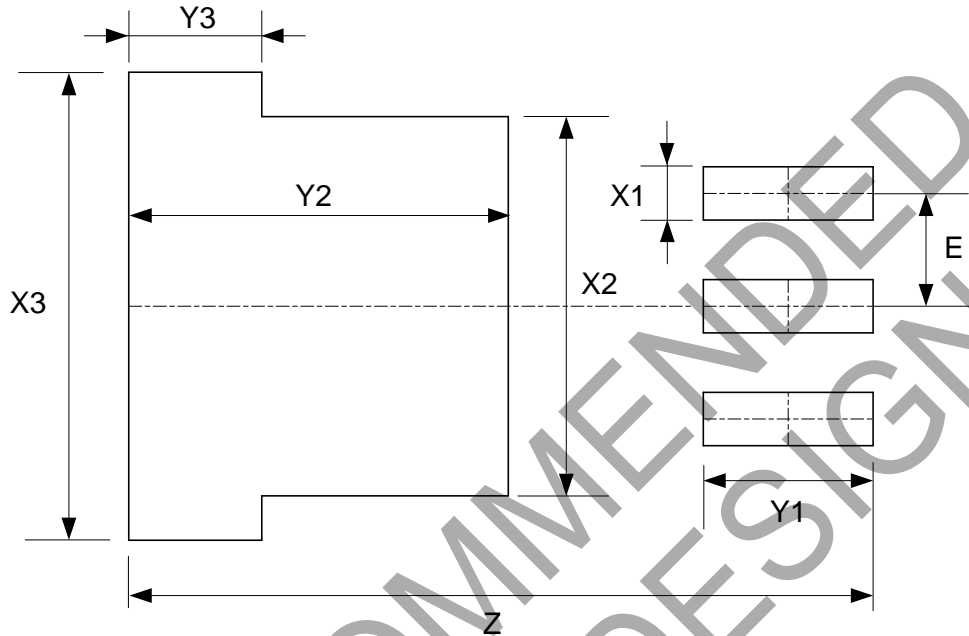
(5) Package Type: TO252-2 (5)



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

Suggested Pad Layout (Cont.)

(6) Package Type: TO263



Dimensions	Z (mm)/(inch)	X1 (mm)/(inch)	X2 (mm)/(inch)	X3 (mm)/(inch)
Value	16.760/0.660	1.200/0.047	8.540/0.336	10.540/0.415
Dimensions	Y1 (mm)/(inch)	Y2 (mm)/(inch)	Y3 (mm)/(inch)	E (mm)/(inch)
Value	3.830/0.151	8.560/0.337	3.000/0.118	2.540/0.100

Mechanical Data

Moisture Sensitivity: Level 3 per J-STD-020

Terminals: Finish— Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 ^(e3)

Weight:

- TO252-2 (3)/(4)/(5) /TO252 (Type CJ): 0.312 grams (Approximate)
- SOT-223: 0.116 grams (Approximate)
- SOT89: 0.055 grams (Approximate)
- TO263 1.448 grams (Approximate)

IMPORTANT NOTICE

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
9. This Notice may be periodically updated with the most recent version available at <https://www.diodes.com/about/company/terms-and-conditions/important-notice>

DIODES is a trademark of Diodes Incorporated in the United States and other countries.
The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.
© 2022 Diodes Incorporated. All Rights Reserved.

www.diodes.com