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## Description

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The DIODES™ AS78XXA series are three-terminal positive voltage regulators designed for a wide variety of applications including local, on-card regulation.

The AS78XXA are complete with internal current limiting, thermal shutdown protection, and safe-area compensation which make them virtually immune from output overload. If adequate heat sinking is provided, these regulators can deliver output currents of up to 1A.

The AS78XXA are available in TO-252-2 (3), TO-252-2 (4), TO-252-2 (5), TO-220-3, TO-220-3 (2), and TO-220F-3 packages.

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## Applications

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- High-efficiency linear regulators
- Post regulation for switching supplies
- Microprocessor power supplies
- Motherboards

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## Features

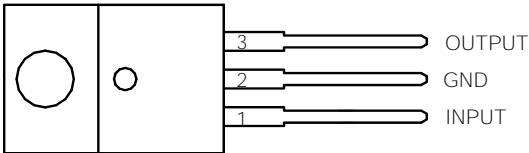
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- Output Current up to 1A
- Fixed Output Voltages of 5V, 6V, 8V, 9V, 12V, 15V, and 18V
- Output Voltage Accuracy of  $\pm 4\%$  over the Full Temperature Range
- Internal Short-Circuit Current Limiting
- Internal Thermal Overload Protection
- Output Transistor Safe-area Protection
- Low Load Regulation
- Stable Performance in High Temperature
- TO-220-3, TO-220-3 (2) and TO-220F-3
  - **Lead-Free Finish; RoHS Compliant (Notes 1 & 3)**
- Lead-Free Packages: TO-252-2 (3), TO-252-2 (4), TO-252-2 (5)
  - **Totally Lead-Free; RoHS Compliant (Notes 2 & 3)**
- Available in “Green” Packages: TO-220-3, TO-220-3 (2) and TO-220F-3
  - **Lead-Free Finish; RoHS Compliant (Notes 1 & 3)**
  - **Halogen and Antimony Free. “Green” Device (Note 4)**
- Lead-Free Packages, Available in “Green” Molding Compound: TO-252-2 (3), TO-252-2 (4), TO-252-2 (5)
  - **Totally Lead-Free & Fully RoHS Compliant (Notes 2 & 3)**
  - **Halogen and Antimony Free. “Green” Device (Note 4)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  3. 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.
  4. Halogen- and Antimony-free “Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

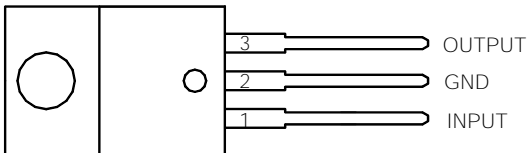
**Pin Assignments**

(Front View)



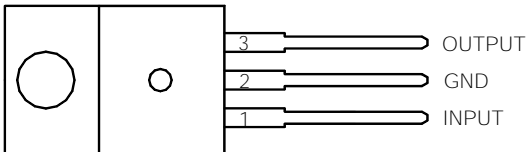
**TO-220-3 (Option 1)**

(Front View)



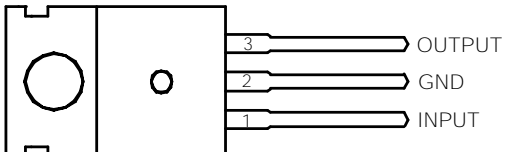
**TO-220-3 (Option 2)**

(Front View)



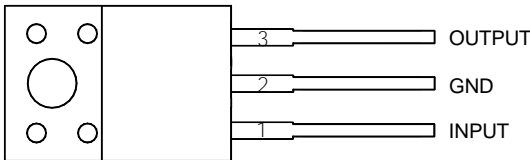
**TO-220-3 (Option 3)**

(Front View)



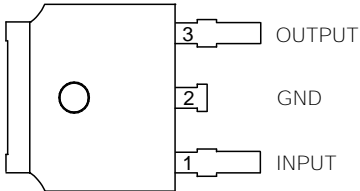
**TO-220-3 (2)**

(Front View)



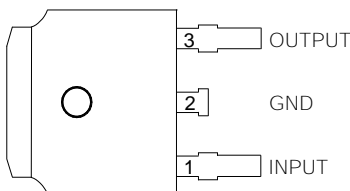
**TO-220F-3**

(Top View)



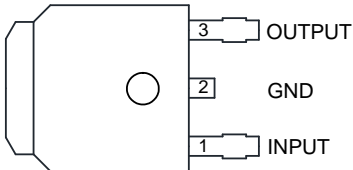
**TO-252-2 (3) (Option 1)**

(Top View)



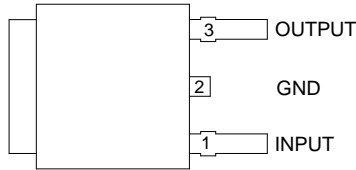
**TO-252-2 (3) (Option 2) / TO252 (Type CJ)**

(Top View)



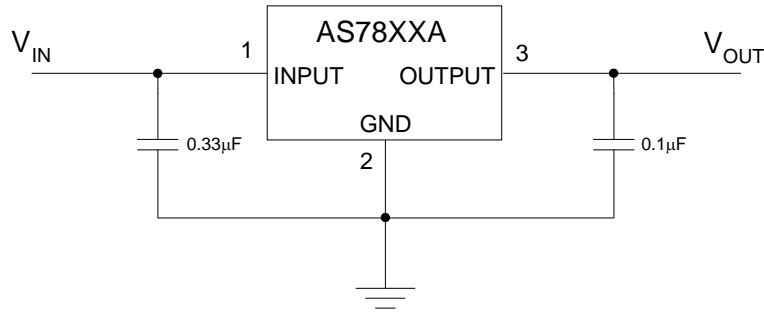
**TO-252-2 (4)**

(Top View)



**TO-252-2 (5)**

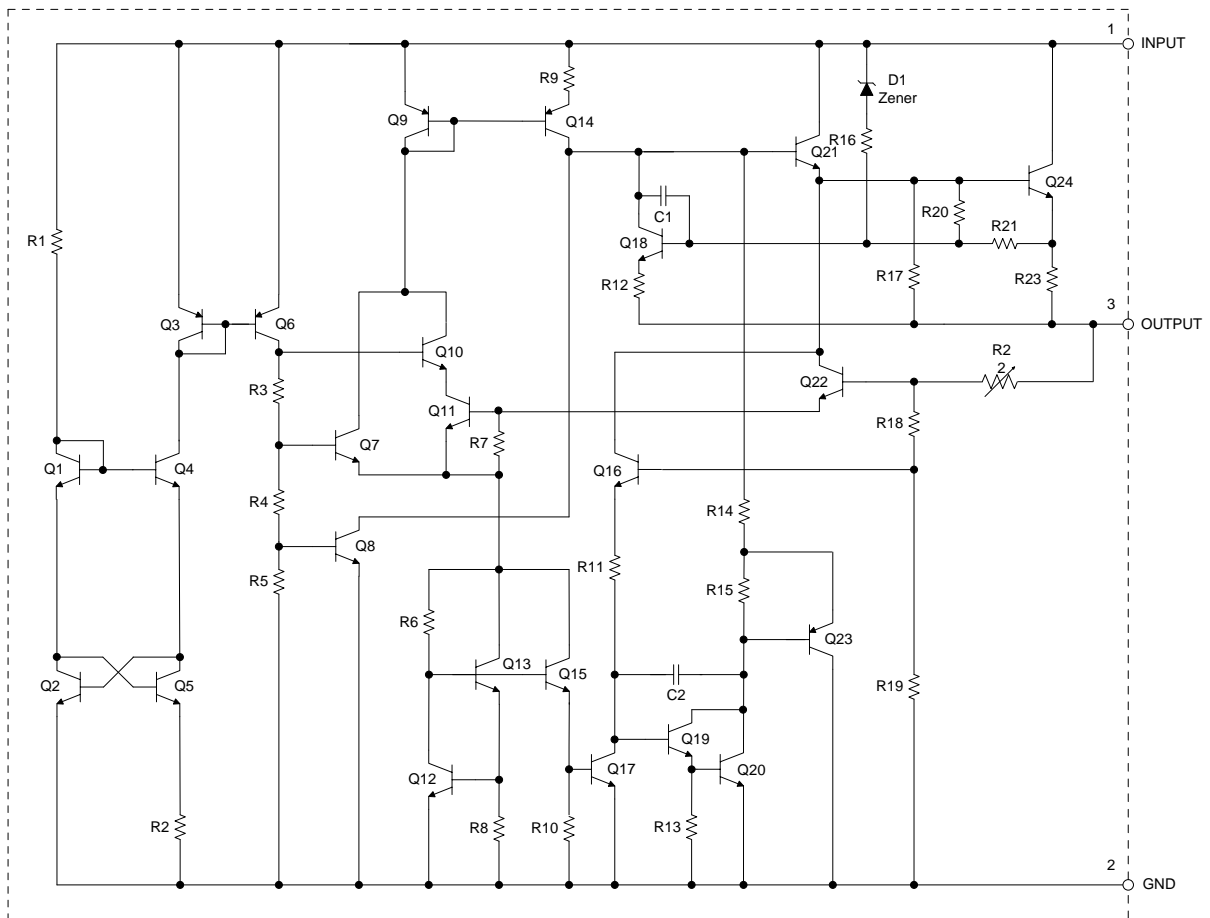
**Typical Applications Circuit**



**Pin Descriptions**

Pin Number	Pin Name	Function
1	INPUT	Voltage Input
2	GND	Ground
3	OUTPUT	Voltage Output

**Functional Block Diagram**



**Absolute Maximum Ratings** (Note 5)

Symbol	Parameter	Rating	Unit
$V_{IN}$	Input Voltage	36	V
$T_{LEAD}$	Lead Temperature (Soldering, 10sec)	+260	°C
$P_D$	Power Dissipation	Internally Limited	W
$T_J$	Operating Junction Temperature	+150	°C
$T_{STG}$	Storage Temperature Range	-65 to +150	°C
$\theta_{JA}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	60
		TO-252-2 (3)/TO-252-2 (4)/TO-252-2 (5)	100
		TO-220F-3	60
ESD	ESD (Human Body Model)	6000	V
ESD	ESD (Machine Model)	500	V

Note: 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.

**Recommended Operating Conditions**

Symbol	Parameter	Min	Max	Unit	
$V_{IN}$	Input Voltage	AS7805A	—	25	V
		AS7806A	—	26	
		AS7808A	—	28	
		AS7809A	—	29	
		AS7812A	—	32	
		AS7815A	—	32	
		AS7818A	—	32	
$T_J$	Operating Junction Temperature Range	-40	+125	°C	

## Electrical Characteristics

**AS7805A** (@  $V_{IN} = 10V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{OUT}$	Output Voltage	$T_J = +25^\circ C$	4.9	5	5.1	V
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 7.5V$ to $20V$ , $P_D \leq 15W$	4.8	—	5.2	
$V_{RLINE}$	Line Regulation	$V_{IN} = 7.5V$ to $20V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	25	50	mV
$V_{RLOAD}$	Load Regulation	$V_{IN} = 10V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	20	50	mV
$I_Q$	Quiescent Current	$V_{IN} = 10V$ , $I_{OUT} = 0$	—	3.2	6	mA
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 8V$ to $25V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	0.3	0.8	mA
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	0.08	0.5	
PSRR	Ripple Rejection	$V_{IN} = 8V$ to $18V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	70	—	dB
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^\circ C$	—	2	—	V
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^\circ C$	—	10	—	$\mu V/V_O$
$R_O$	Output Resistance	$f = 1kHz$	—	10	—	$m\Omega$
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^\circ C$	—	0.05	—	A
$I_{PK}$	Peak Output Current	$V_{IN} = 10V$ , $T_J = +25^\circ C$	—	2.2	—	A
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	0.4	—	$mV/^\circ C$
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	$ppm/^\circ C$
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^\circ C/W$
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—	
		TO-220F-3	—	9	—	
		—	—	—	—	

**Electrical Characteristics** (continued)

**AS7806A** (@  $V_{IN} = 11V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{OUT}$	Output Voltage	$T_J = +25^\circ C$	5.88	6	6.12	V
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 8.6V$ to $21V$ , $P_D \leq 15W$	5.76	—	6.24	
$V_{RLINE}$	Line Regulation	$V_{IN} = 8.6V$ to $21V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	25	60	mV
$V_{RLOAD}$	Load Regulation	$V_{IN} = 11V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	20	60	mV
$I_Q$	Quiescent Current	$V_{IN} = 11V$ , $I_{OUT} = 0$	—	3.2	6	mA
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 8.6V$ to $21V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	0.3	0.8	mA
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	0.08	0.5	
PSRR	Ripple Rejection	$V_{IN} = 9.5V$ to $19.5V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	65	—	dB
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^\circ C$	—	2	—	V
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = 25^\circ C$	—	10	—	$\mu V/V_O$
$R_O$	Output Resistance	$f = 1kHz$	—	10	—	m $\Omega$
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^\circ C$	—	0.2	—	A
$I_{PK}$	Peak Output Current	$V_{IN} = 11V$ , $T_J = +25^\circ C$	—	2.2	—	A
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	0.5	—	mV/ $^\circ C$
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^\circ C$
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^\circ C/W$
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—	
		TO-220F-3	—	9	—	
		—	—	—	—	

**Electrical Characteristics** (continued)

**AS7808A** (@  $V_{IN} = 14V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^{\circ}C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{OUT}$	Output Voltage	$T_J = +25^{\circ}C$	7.84	8	8.16	V
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 10.6V$ to $23V$ , $P_D \leq 15W$	7.7	—	8.3	
$V_{RLINE}$	Line Regulation	$V_{IN} = 10.6V$ to $23V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	25	75	mV
$V_{RLOAD}$	Load Regulation	$V_{IN} = 14V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	25	75	mV
$I_Q$	Quiescent Current	$V_{IN} = 14V$ , $I_{OUT} = 0$	—	3.2	6	mA
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 10.6V$ to $23V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	0.3	0.8	mA
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	0.08	0.5	
PSRR	Ripple Rejection	$V_{IN} = 11.5V$ to $21.5V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	62	—	dB
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^{\circ}C$	—	2	—	V
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^{\circ}C$	—	10	—	$\mu V/V_O$
$R_O$	Output Resistance	$f = 1kHz$	—	10	—	m $\Omega$
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^{\circ}C$	—	0.2	—	A
$I_{PK}$	Peak Output Current	$V_{IN} = 14V$ , $T_J = +25^{\circ}C$	—	2.2	—	A
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	0.64	—	mV/ $^{\circ}C$
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^{\circ}C$
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^{\circ}C/W$
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—	
		TO-220F-3	—	9	—	
		—	—	—	—	

**Electrical Characteristics** (continued)

**AS7809A** (@  $V_{IN} = 15V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^{\circ}C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_{OUT}$	Output Voltage	$T_J = +25^{\circ}C$	8.82	9	9.18	V	
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 11.5V$ to $23V$ , $P_D \leq 15W$	8.65	—	9.35		
$V_{RLINE}$	Line Regulation	$V_{IN} = 11.5V$ to $23V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	25	90	mV	
$V_{RLOAD}$	Load Regulation	$V_{IN} = 14V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	25	100	mV	
$I_Q$	Quiescent Current	$V_{IN} = 15V$ , $I_{OUT} = 0$	—	3.2	6	mA	
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 11.5V$ to $23V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	0.3	0.8	mA	
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	0.08	0.5		
PSRR	Ripple Rejection	$V_{IN} = 11.5V$ to $21.5V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	61	—	dB	
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^{\circ}C$	—	2	—	V	
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^{\circ}C$	—	10	—	$\mu V/V_O$	
$R_O$	Output Resistance	$f = 1kHz$	—	10	—	m $\Omega$	
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^{\circ}C$	—	0.2	—	A	
$I_{PK}$	Peak Output Current	$V_{IN} = 15V$ , $T_J = +25^{\circ}C$	—	2.2	—	A	
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	0.72	—	mV/ $^{\circ}C$	
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^{\circ}C$	
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^{\circ}C/W$	
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—		
		TO-220F-3	—	9	—		



**Electrical Characteristics** (continued)

**AS7812A** (@  $V_{IN} = 19V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^{\circ}C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{OUT}$	Output Voltage	$T_J = +25^{\circ}C$	11.75	12	12.25	V
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 14.8V$ to $27V$ , $P_D \leq 15W$	11.5	—	12.5	
$V_{RLINE}$	Line Regulation	$V_{IN} = 14.8V$ to $27V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	25	120	mV
$V_{RLOAD}$	Load Regulation	$V_{IN} = 19V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	40	120	mV
$I_Q$	Quiescent Current	$V_{IN} = 19V$ , $I_{OUT} = 0$	—	3.4	6	mA
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 14.8V$ to $30V$ , $I_{OUT} = 500mA$ , $T_J = +25^{\circ}C$	—	0.3	0.8	mA
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^{\circ}C$	—	0.08	0.5	
PSRR	Ripple Rejection	$V_{IN} = 15V$ to $25V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	60	—	dB
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^{\circ}C$	—	2	—	V
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^{\circ}C$	—	10	—	$\mu V/V_O$
$R_O$	Output Resistance	$f = 1kHz$	—	11	—	m $\Omega$
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^{\circ}C$	—	0.2	—	A
$I_{PK}$	Peak Output Current	$V_{IN} = 18V$ , $T_J = +25^{\circ}C$	—	2.2	—	A
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	0.96	—	mV/ $^{\circ}C$
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^{\circ}C$
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^{\circ}C/W$
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—	
		TO-220F-3	—	9	—	
		—	—	—	—	

**Electrical Characteristics** (continued)

**AS7815A** (@  $V_{IN} = 23V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{OUT}$	Output Voltage	$T_J = +25^\circ C$	14.7	15	15.3	V
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 17.9V$ to $30V$ , $P_D \leq 15W$	14.4	—	15.6	
$V_{RLINE}$	Line Regulation	$V_{IN} = 17.9V$ to $30V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	35	150	mV
$V_{RLOAD}$	Load Regulation	$V_{IN} = 23V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	70	150	mV
$I_Q$	Quiescent Current	$V_{IN} = 23V$ , $I_{OUT} = 0$	—	3.4	6	mA
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 17.9V$ to $30V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	0.3	0.8	mA
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	0.08	0.5	
PSRR	Ripple Rejection	$V_{IN} = 18.5V$ to $28.5V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	58	—	dB
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^\circ C$	—	2	—	V
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^\circ C$	—	10	—	$\mu V/V_O$
$R_O$	Output Resistance	$f = 1kHz$	—	11	—	m $\Omega$
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^\circ C$	—	0.2	—	A
$I_{PK}$	Peak Output Current	$V_{IN} = 21V$ , $T_J = +25^\circ C$	—	2.2	—	A
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	1.2	—	mV/ $^\circ C$
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^\circ C$
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^\circ C/W$
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—	
		TO-220F-3	—	9	—	
		—	—	—	—	

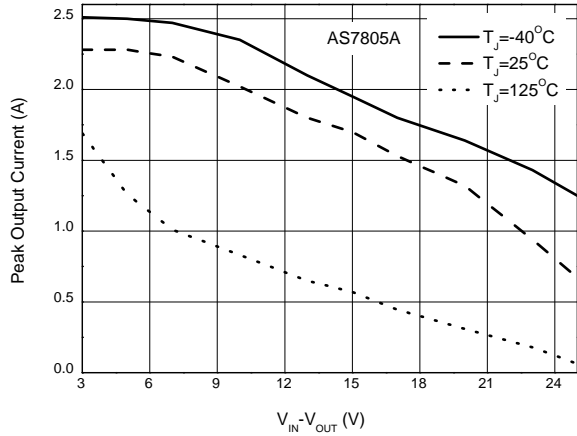
**Electrical Characteristics** (continued)

**AS7818A** (@  $V_{IN} = 27V$ ,  $I_{OUT} = 1A$ ,  $T_J = -40$  to  $+125^\circ C$ , unless otherwise specified.)

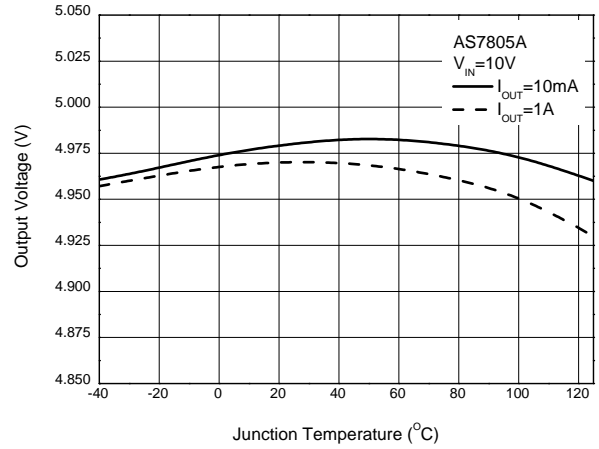
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_{OUT}$	Output Voltage	$T_J = +25^\circ C$	17.64	18	18.36	V	
		$I_{OUT} = 5mA$ to $1A$ , $V_{IN} = 21V$ to $33V$ , $P_D \leq 15W$	17.3	—	18.7		
$V_{RLINE}$	Line Regulation	$V_{IN} = 21V$ to $33V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	45	180	mV	
$V_{RLOAD}$	Load Regulation	$V_{IN} = 27V$ , $I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	85	180	mV	
$I_Q$	Quiescent Current	$V_{IN} = 27V$ , $I_{OUT} = 0$	—	3.6	6	mA	
$\Delta I_Q$	Quiescent Current Change	$V_{IN} = 21V$ to $33V$ , $I_{OUT} = 500mA$ , $T_J = +25^\circ C$	—	0.3	0.8	mA	
		$I_{OUT} = 5mA$ to $1A$ , $T_J = +25^\circ C$	—	0.08	0.5		
PSRR	Ripple Rejection	$V_{IN} = 22V$ to $32V$ , $f = 120Hz$ , $I_{OUT} = 500mA$	—	57	—	dB	
$V_{DROP}$	Dropout Voltage	$\Delta V_{OUT} = 1\%$ , $I_{OUT} = 1A$ , $T_J = +25^\circ C$	—	2	—	V	
$N_O$	Output Noise Voltage	$f = 10Hz$ to $100kHz$ , $T_A = +25^\circ C$	—	10	—	$\mu V/V_O$	
$R_O$	Output Resistance	$f = 1kHz$	—	11	—	m $\Omega$	
$I_{SC}$	Short Circuit Current	$V_{IN} = 35V$ , $T_A = +25^\circ C$	—	0.2	—	A	
$I_{PK}$	Peak Output Current	$V_{IN} = 24V$ , $T_J = +25^\circ C$	—	2.2	—	A	
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	—	—	1.44	—	mV/ $^\circ C$	
$(\Delta V_{OUT}/V_{OUT})/\Delta T$		—	—	80	—	ppm/ $^\circ C$	
$\theta_{JC}$	Thermal Resistance	TO-220-3/TO-220-3 (2)	—	9	—	$^\circ C/W$	
		TO-252-2 (3)/ TO-252-2 (4)/ TO-252-2 (5)/ TO252 (Type CJ)	—	16	—		
		TO-220F-3	—	9	—		

## Performance Characteristics

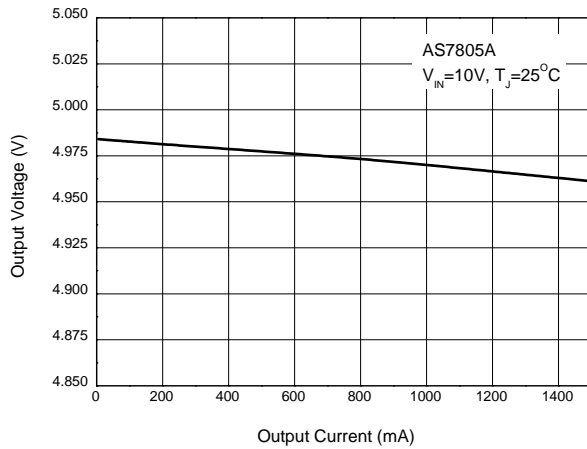
**Peak Output Current vs. Input/Output Differential Voltage**



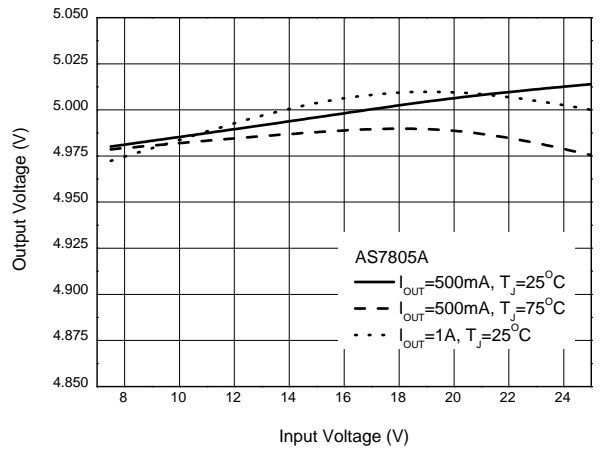
**Output Voltage vs. Junction Temperature**



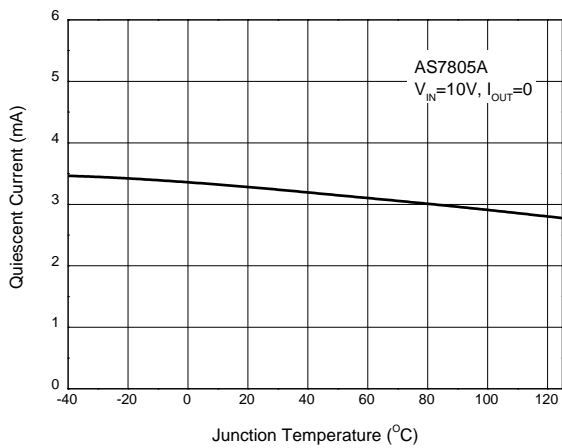
**Output Voltage vs. Output Current**



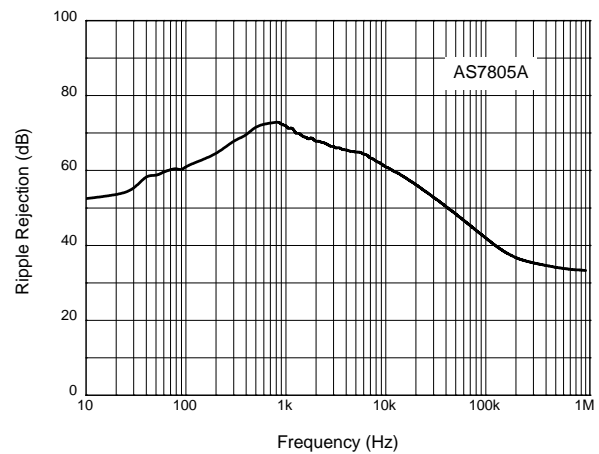
**Output Voltage vs. Input Voltage**



**Quiescent Current vs. Junction Temperature**

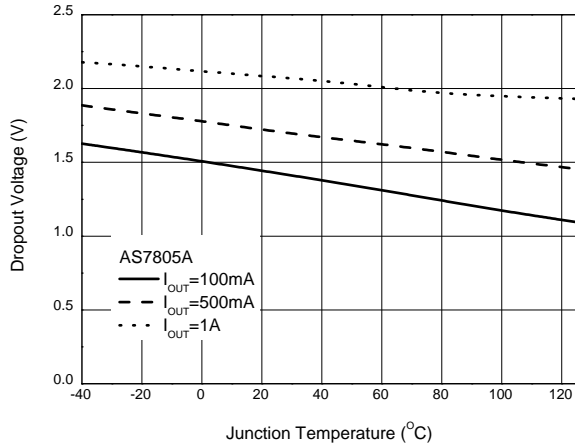


**Ripple Rejection vs. Frequency**

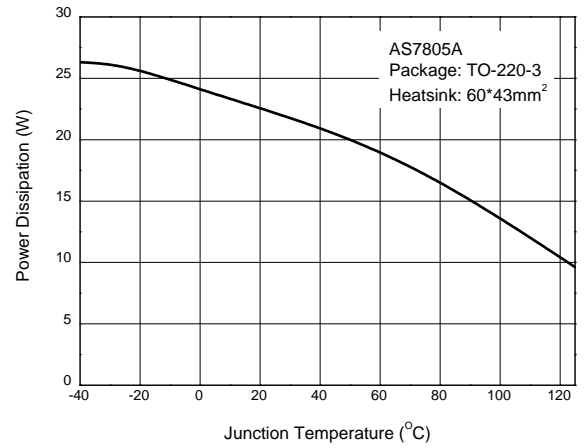


**Performance Characteristics** (continued)

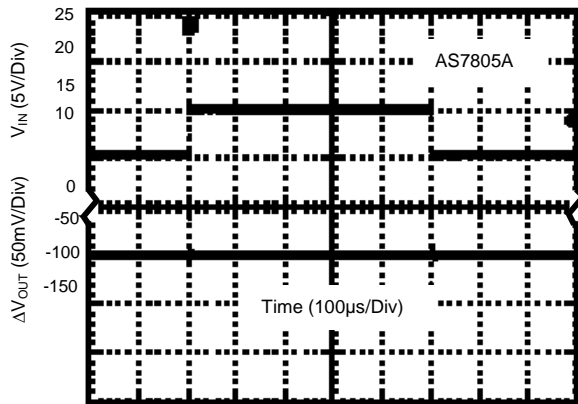
**Dropout Voltage vs. Junction Temperature**



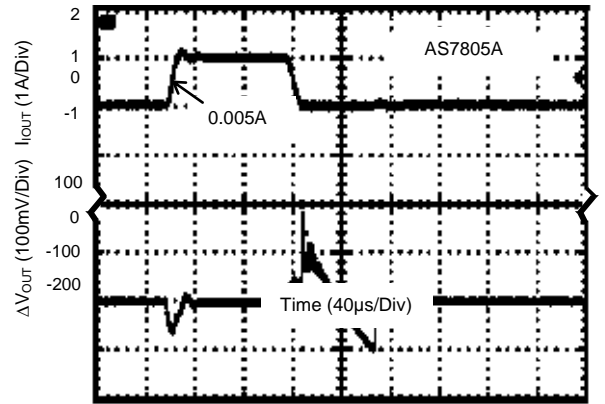
**Power Dissipation vs. Junction Temperature**

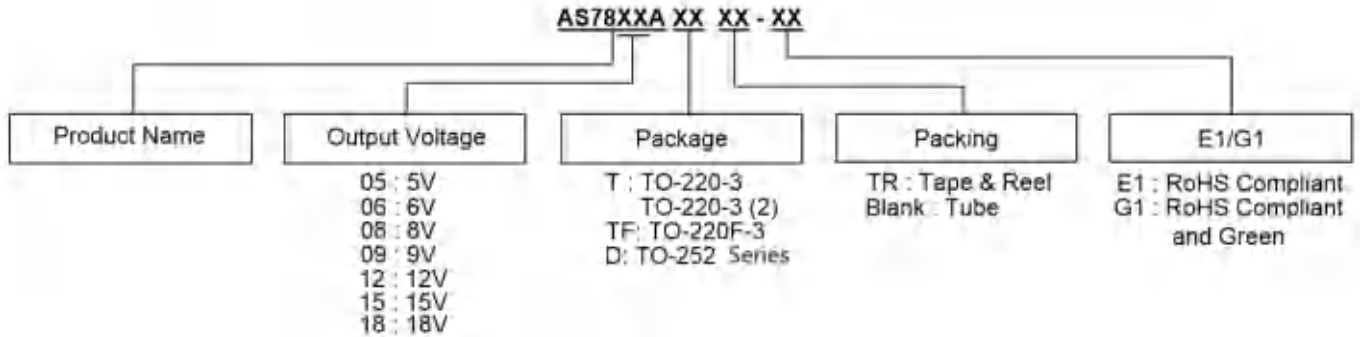


**Line Transient**  
 (Conditions:  $I_{OUT} = 500\text{mA}$ ,  $C_{OUT} = 0.1\mu\text{F}$ )





















**Load Transient**  
 (Conditions:  $V_{IN} = 10\text{V}$ ,  $C_{IN} = 0.33\mu\text{F}$ ,  $C_{OUT} = 0.1\mu\text{F}$ )



**Ordering Information**


Part Number	Package (Note 7)	Output Voltage (V)	RoHS Compliant Lead Free/ Green	Marking ID	Packing	Quantity	Status (Note 6)	Alternative
AS7805ADTR-E1	TO-252-2 (3)/(4)/(5)	5	Lead Free	AS7805AD-E1	Tape & Reel	2500	NRND	AS7805ADTR-G1
AS7805ADTR-G1	TO252 (Type CJ)	5	Green	AS7805AD-G1	Tape & Reel	2500	In Production	—
AS7805AT-E1	TO-220-3/ (2)	5	Lead Free	AS7805AT-E1	Tube	1000	In Production	—
AS7805AT-G1		5	Green	AS7805AT-G1	Tube	1000	In Production	—
AS7805ATF-E1	TO-220F-3	5	Lead Free	AS7805ATF-E1	Tube	1000	End of Life	—
AS7805ATF-G1		5	Green	AS7805ATF-G1	Tube	1000	End of Life	
AS7806ADTR-E1	TO-252-2 (3)/(4)/(5)	6	Lead Free	AS7806AD-E1	Tape & Reel	2500	NRND	AS7806ADTR-G1
AS7806ADTR-G1	TO252 (Type CJ)	6	Green	AS7806AD-G1	Tape & Reel	2500	In Production	—
AS7806AT-E1	TO-220-3/ (2)	6	Lead Free	AS7806AT-E1	Tube	1000	In Production	—
AS7806AT-G1		6	Green	AS7806AT-G1	Tube	1000	End of Life	AS7806AT-E1
AS7806ATF-E1	TO-220F-3	6	Lead Free	AS7806ATF-E1	Tube	1000	End of Life	None
AS7806ATF-G1		6	Green	AS7806ATF-G1	Tube	1000	End of Life	None
AS7808ADTR-E1	TO-252-2 (3)/(4)/(5)	8	Lead Free	AS7808AD-E1	Tape & Reel	2500	End of Life	None
AS7808ADTR-G1	TO252 (Type CJ)	8	Green	AS7808AD-G1	Tape & Reel	2500	In Production	—
AS7808AT-E1	TO-220-3/ (2)	8	Lead Free	AS7808AT-E1	Tube	1000	In Production	—
AS7808AT-G1		8	Green	AS7808AT-G1	Tube	1000	End of Life	AS7808AT-E1
AS7808ATF-E1	TO-220F-3	8	Lead Free	AS7808ATF-E1	Tube	1000	End of Life	—
AS7808ATF-G1		8	Green	AS7808ATF-G1	Tube	1000	End of Life	None
AS7809ADTR-E1	TO-252-2 (3)/(4)/(5)	9	Lead Free	AS7809AD-E1	Tape & Reel	2500	End of Life	AS78L05ZTR-G1
AS7809ADTR-G1	TO252 (Type CJ)	9	Green	AS7809AD-G1	Tape & Reel	2500	In Production	—
AS7809AT-E1	TO-220-3/ (2)	9	Lead Free	AS7809AT-E1	Tube	1000	In Production	—
AS7809AT-G1		9	Green	AS7809AT-G1	Tube	1000	End of Life	AS7809AT-E1
AS7809ATF-E1	TO-220F-3	9	Lead Free	AS7809ATF-E1	Tube	1000	End of Life	—
AS7809ATF-G1		9	Green	AS7809ATF-G1	Tube	1000	End of Life	

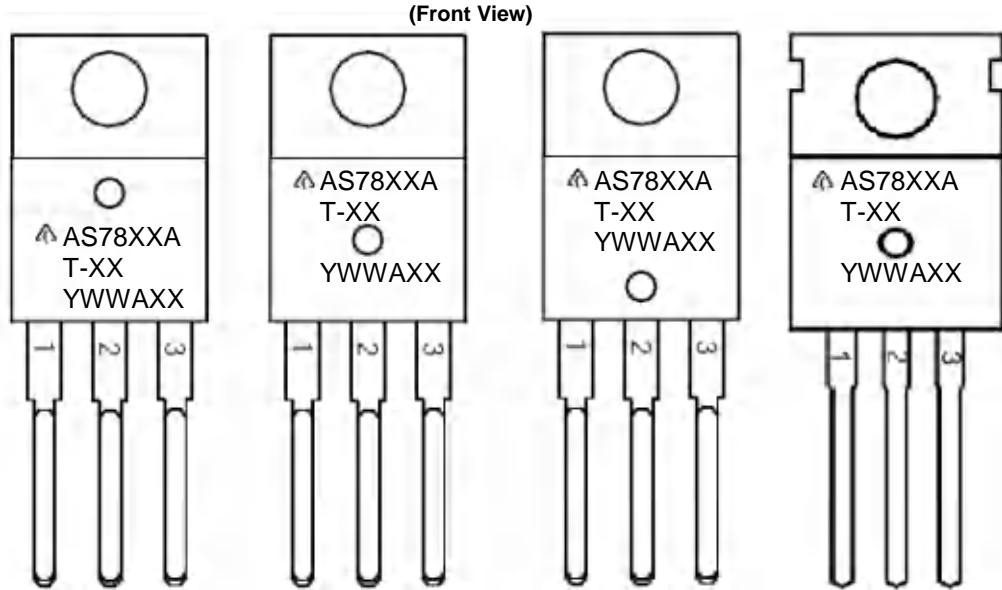
**Ordering Information** (continued)

Part Number	Package (Note 7)	Output Voltage (V)	RoHS Compliant Lead Free/ Green	Marking ID	Packing	Quantity	Status (Note 6)	Alternative
 AS7812ADTR-E1	TO-252-2 (3)/(4)/(5) TO252 (Type CJ)	12	Lead Free	AS7812AD-E1	Tape & Reel	2500	End of Life	AS7812ADTR-G1
 AS7812ADTR-G1		12	Green	AS7812AD-G1	Tape & Reel	2500	In Production	—
 AS7812AT-E1	TO-220-3/ (2)	12	Lead Free	AS7812AT-E1	Tube	1000	In Production	—
 AS7812AT-G1		12	Green	AS7812AT-G1	Tube	1000	End of Life	AS7812AT-E1
 AS7812ATF-E1	TO-220F-3	12	Lead Free	AS7812ATF-E1	Tube	1000	End of Life	None
 AS7812ATF-G1		12	Green	AS7812ATF-G1	Tube	1000	End of Life	None
 AS7815ADTR-E1	TO-252-2 (3)/(4)/(5) TO252 (Type CJ)	15	Lead Free	AS7815AD-E1	Tape & Reel	2500	End of Life	AS7815ADTR-G1
 AS7815ADTR-G1		15	Green	AS7815AD-G1	Tape & Reel	2500	In Production	—
 AS7815AT-E1	TO-220-3/ (2)	15	Lead Free	AS7815AT-E1	Tube	1000	In Production	—
 AS7815AT-G1		15	Green	AS7815AT-G1	Tube	1000	In Production	—
 AS7815ATF-E1	TO-220F-3	15	Lead Free	AS7815ATF-E1	Tube	1000	End of Life	—
 AS7815ATF-G1		15	Green	AS7815ATF-G1	Tube	1000	End of Life	—
 AS7818ADTR-E1	TO-252-2 (3)/(4)/(5) TO252 (Type CJ)	18	Lead Free	AS7818AD-E1	Tape & Reel	2500	End of Life	AS7818ADTR-G1
 AS7818ADTR-G1		18	Green	AS7818AD-G1	Tape & Reel	2500	In Production	—
 AS7818AT-E1	TO-220-3/ (2)	18	Lead Free	AS7818AT-E1	Tube	1000	End of Life	None
 AS7818AT-G1		18	Green	AS7818AT-G1	Tube	1000	End of Life	None
 AS7818ATF-E1	TO-220F-3	18	Lead Free	AS7818ATF-E1	Tube	1000	End of Life	—
 AS7818ATF-G1		18	Green	AS7818ATF-G1	Tube	1000	End of Life	—

Notes: 6. NRND: Not Recommended for New Design.  
7. For packaging details, go to our website at: <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

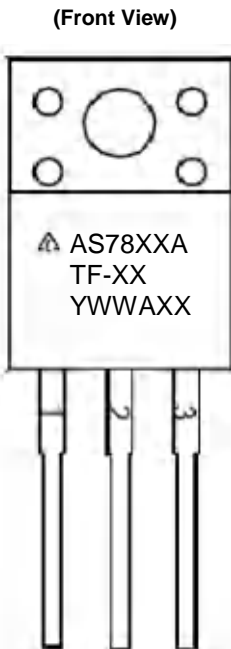
**Marking Information**

(1) TO-220-3/TO-220-3 (2)



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: Internal Code

(2) TO-220F-3



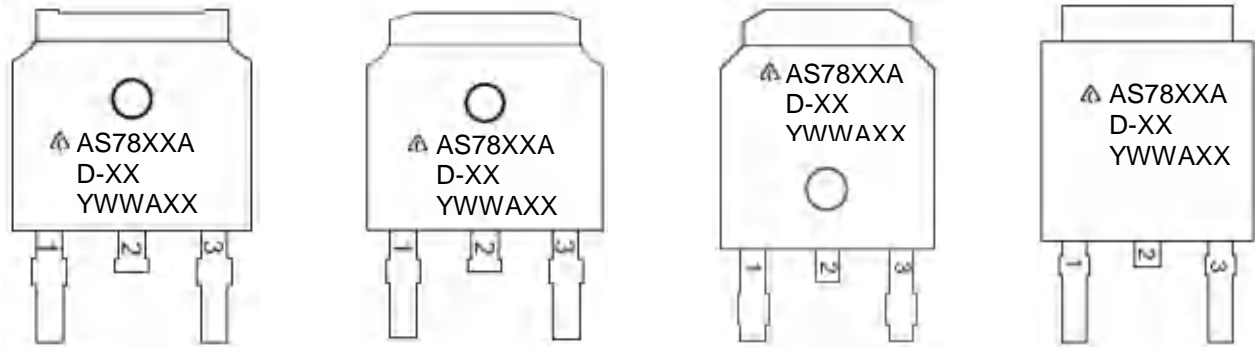
First and Second Lines: Logo and Marking ID  
 (See Ordering Information)  
 Third Line: Date Code  
 Y: Year  
 WW: Work Week of Molding  
 A: Assembly House Code  
 XX: Internal Code



**Marking Information** (continued)

(3) TO-252-2 (3)/(4)/(5) / TO252 (Type CJ)

(Top View)

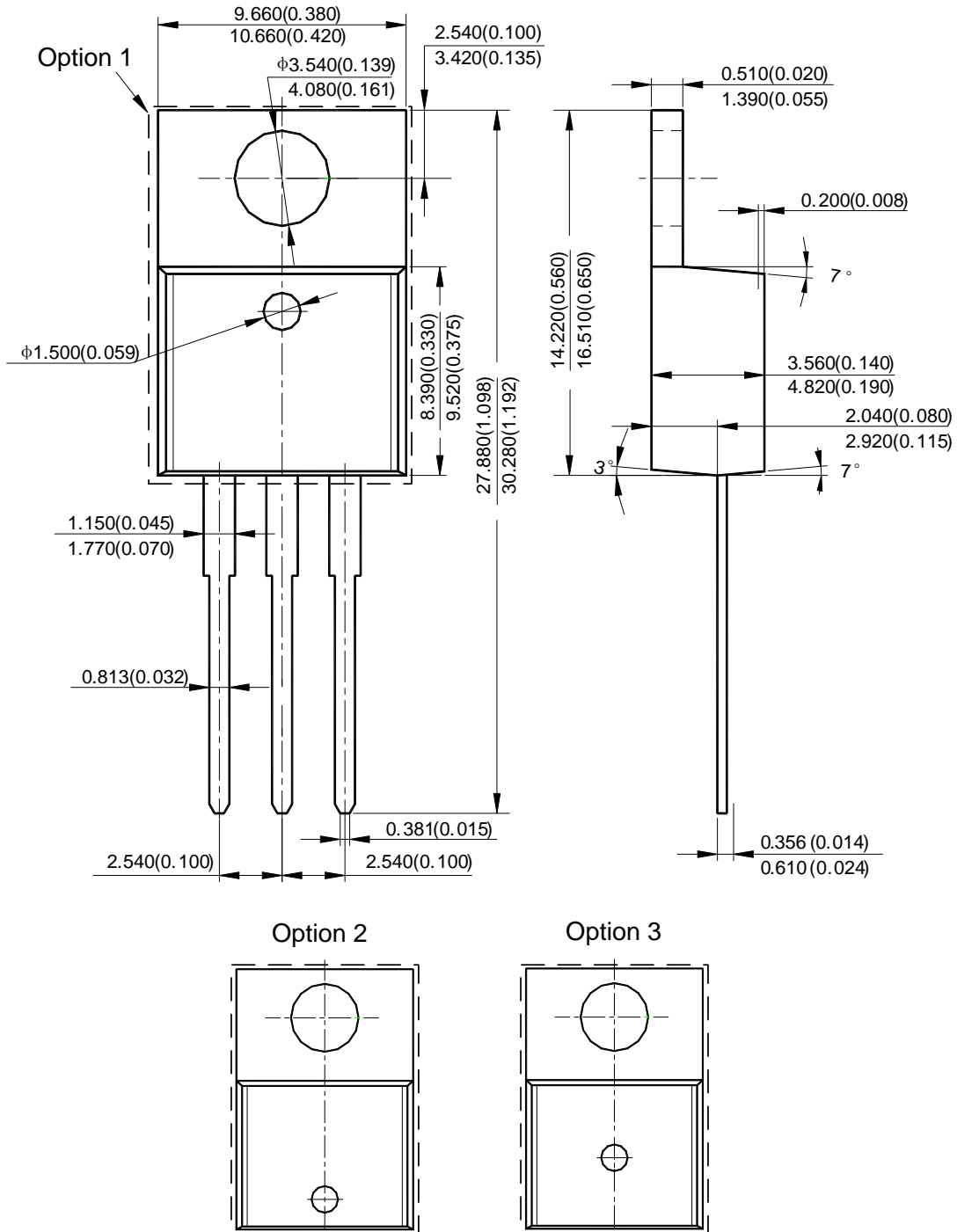


First and Second Lines: Logo and Marking ID  
 (See Ordering Information)  
 Third Line: Date Code  
 Y: Year  
 WW: Work Week of Molding  
 A: Assembly House Code  
 XX: Internal Code

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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

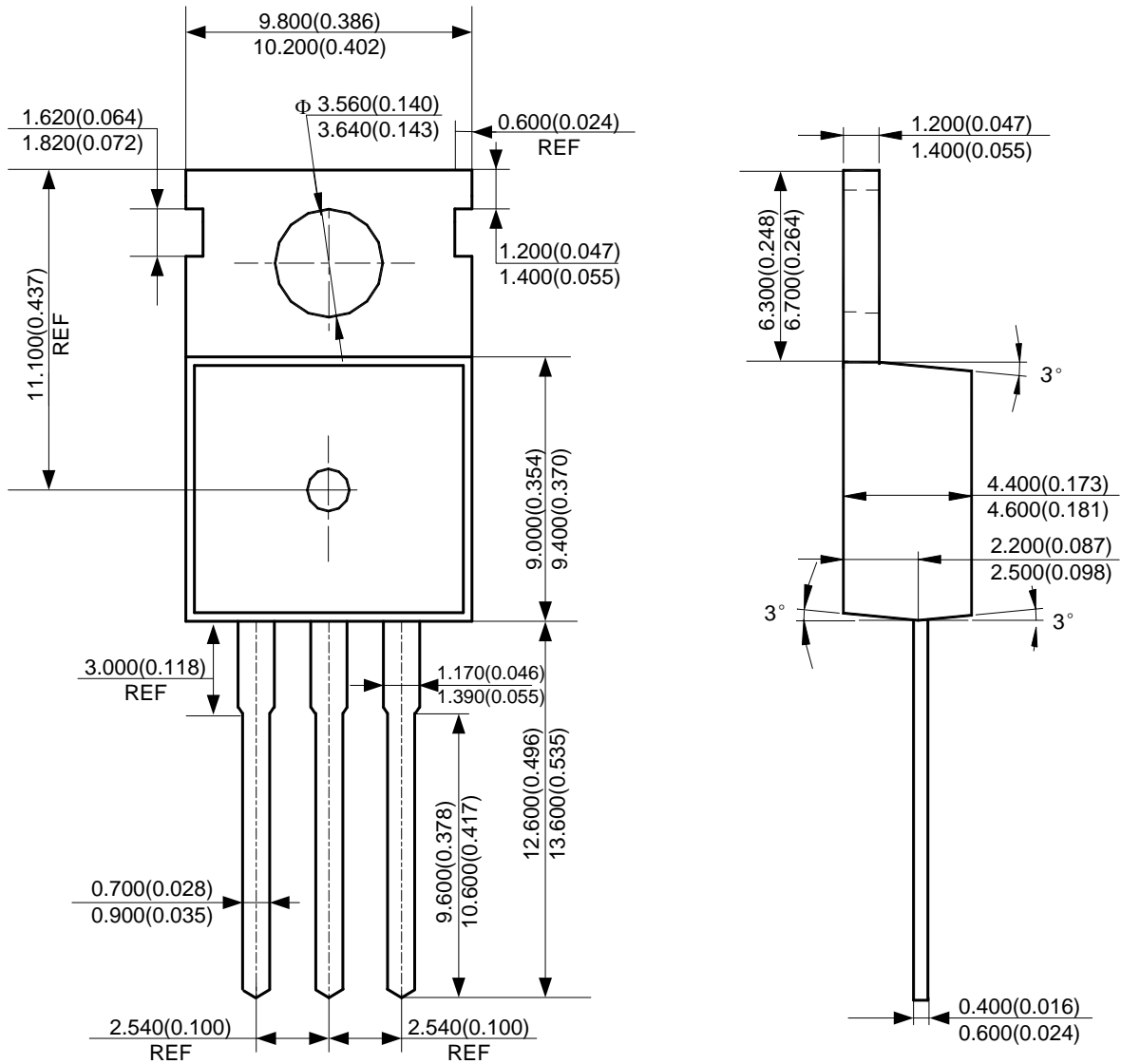
(1) Package Type: TO-220-3



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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

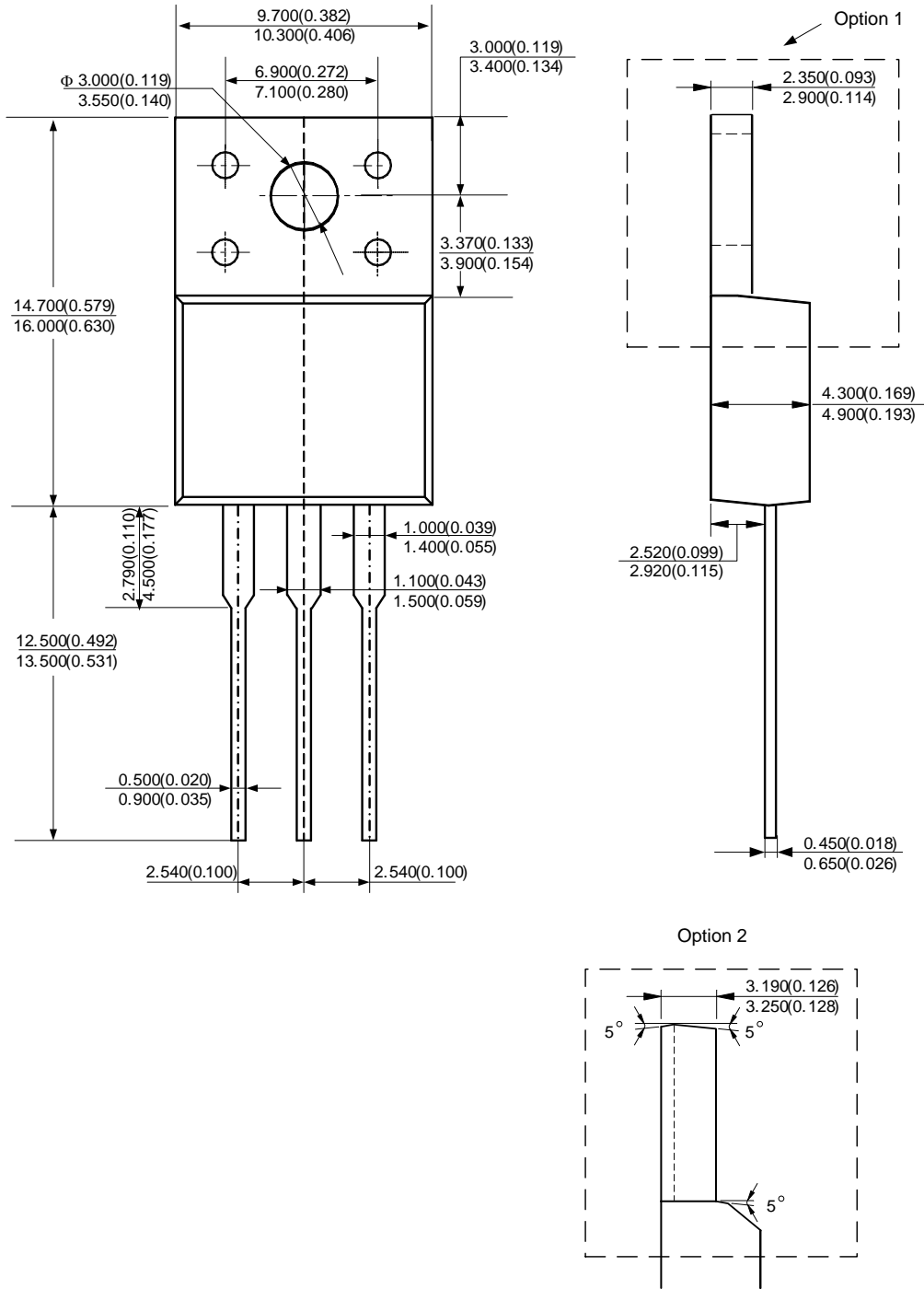
**(2) Package Type: TO-220-3 (2)**



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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

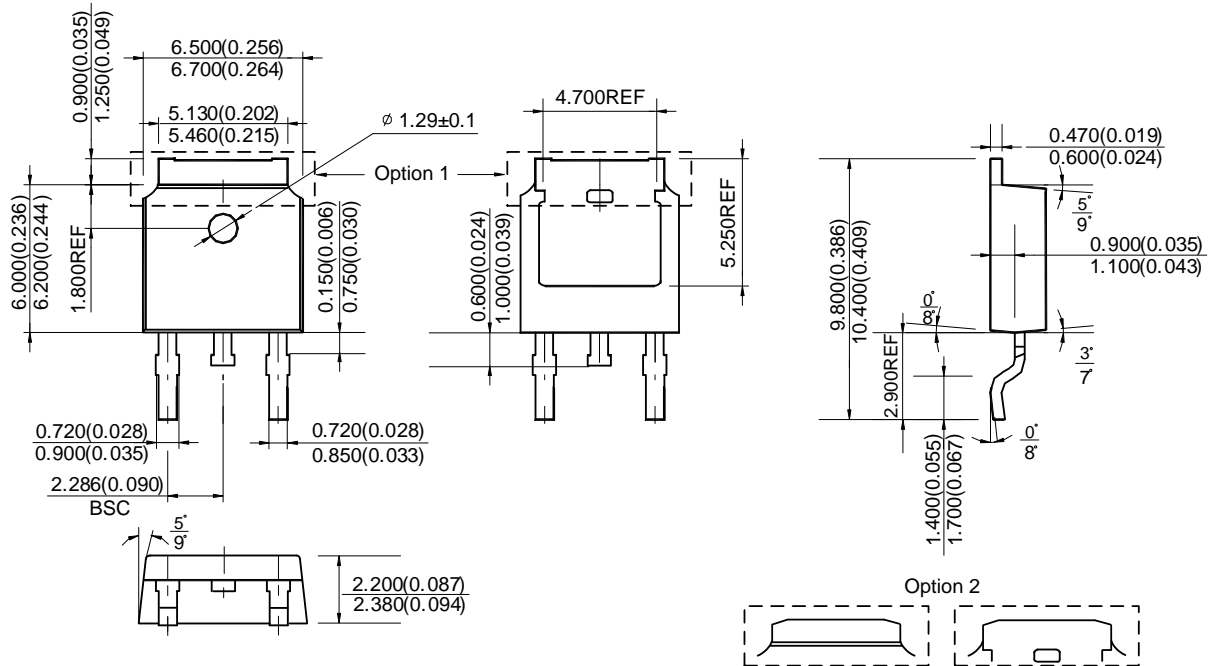
**(3) Package Type: TO-220F-3**



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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

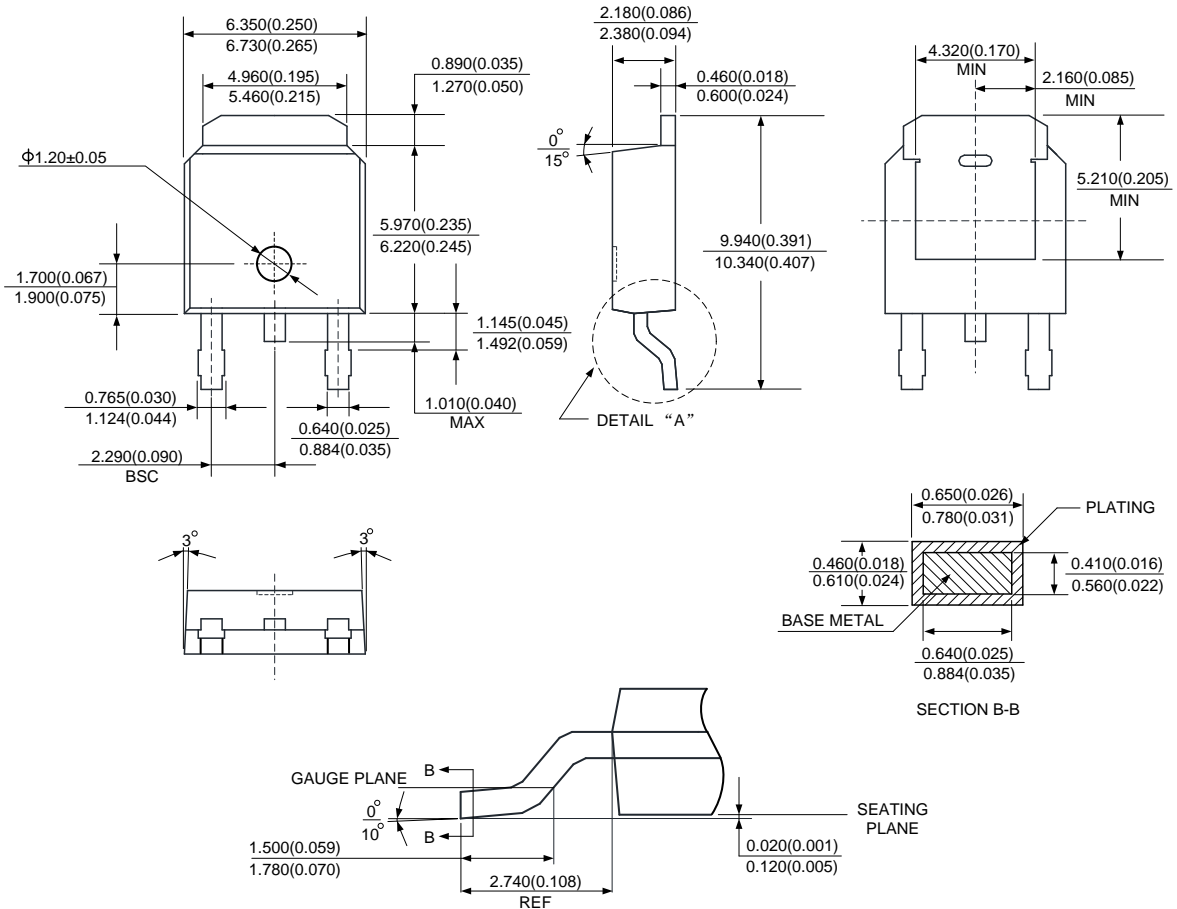
**(4) Package Type: TO-252-2 (3)**



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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

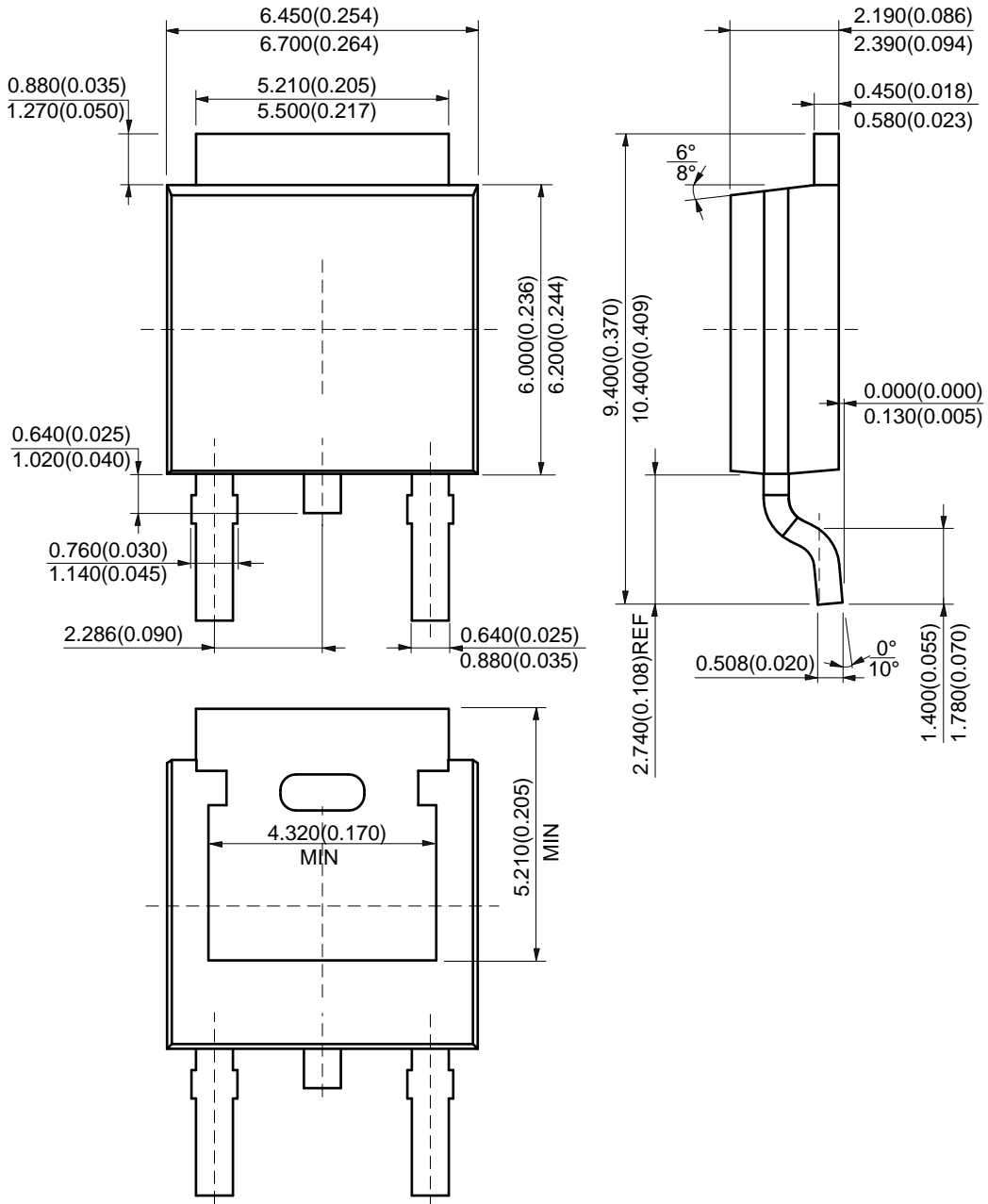
**(5) Package Type: TO-252-2 (4)**



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

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

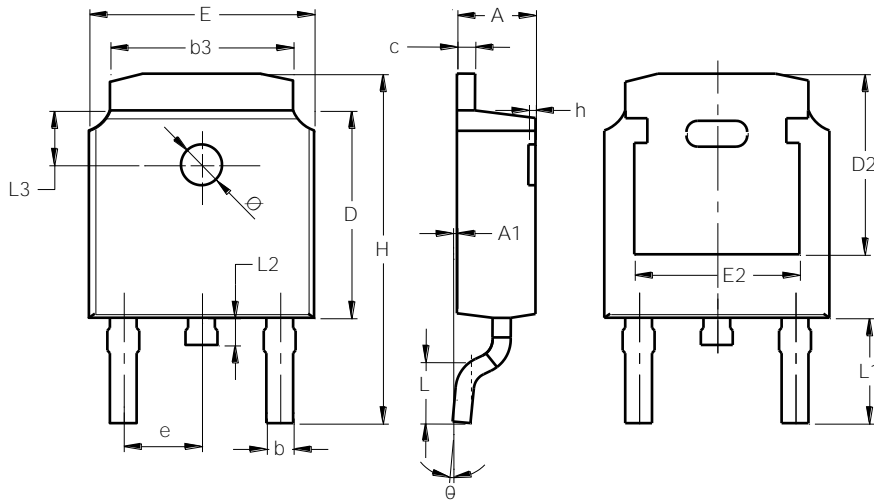
**(6) Package Type: TO-252-2 (5)**



**Package Outline Dimensions** (continued)

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

Package Type : TO252 (Type CJ)



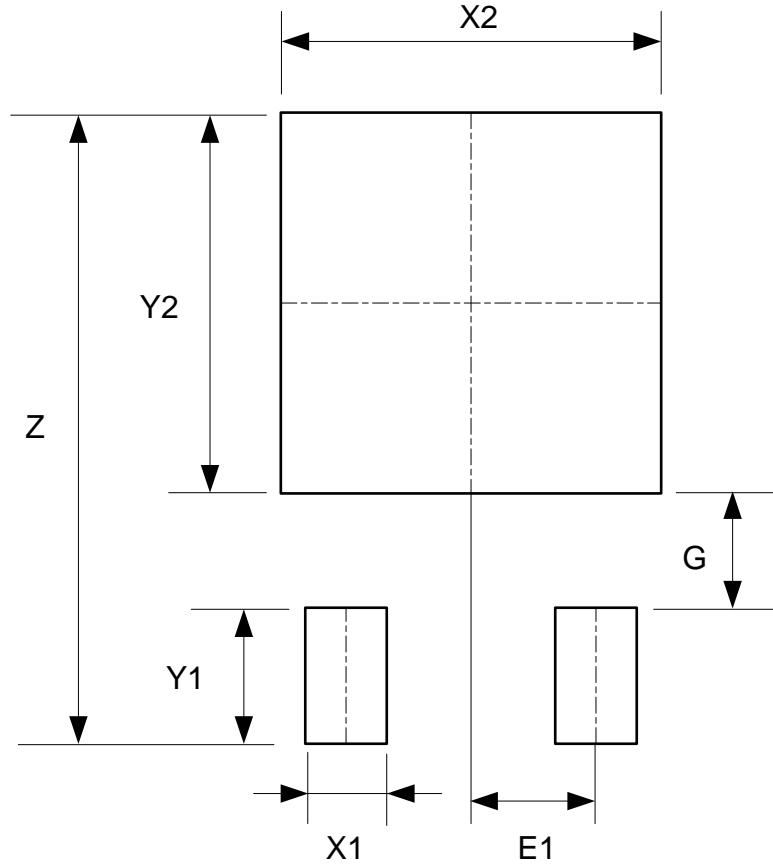
TO252 (Type CJ)			
Dim	Min	Max	Typ
A	2.200	2.400	--
A1	0.000	0.127	--
b	0.635	0.770	--
b3	5.100	5.460	--
c	0.460	0.580	--
D	6.000	6.200	--
D2	5.250 REF		
E	6.500	6.700	--
E2	4.830 REF		
e	2.186	2.386	--
h	0.000	0.300	--
H	9.712	10.312	--
L	1.400	1.700	--
L1	2.900 REF		
L2	0.600	1.000	--
L3	1.600 REF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



## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

Package Type: TO-252-2 (3) / TO252 (Type CJ)

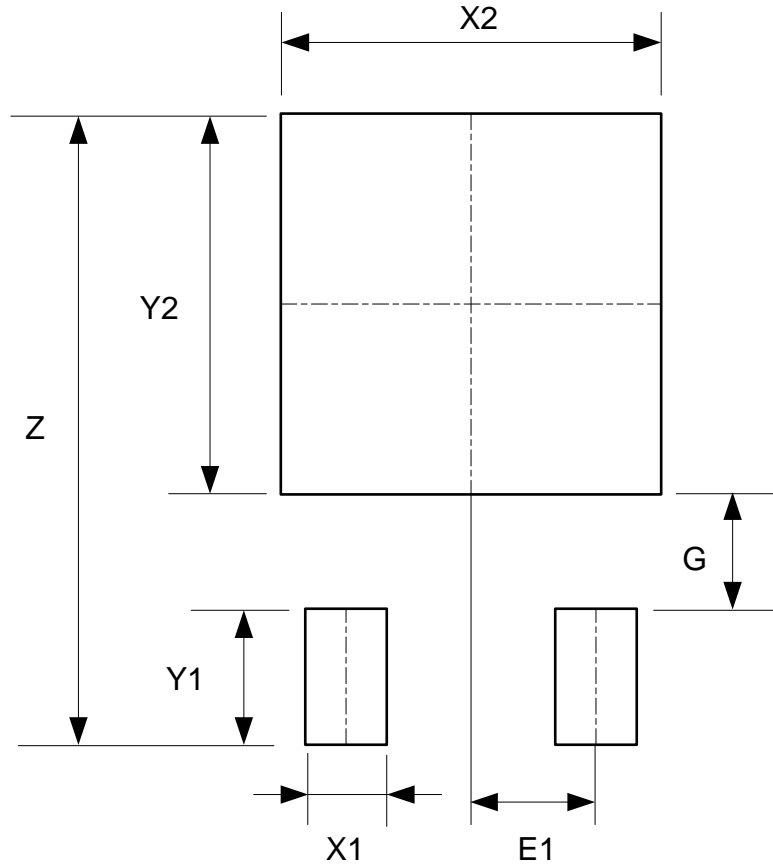


Dimensions	Z (mm)/(inch)	X1 (mm)/(inch)	X2 = Y2 (mm)/(inch)	Y1 (mm)/(inch)	G (mm)/(inch)	E1 (mm)/(inch)
Value	11.600/0.457	1.500/0.059	7.000/0.276	2.500/0.098	2.100/0.083	2.300/0.091

**Suggested Pad Layout** (continued)

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

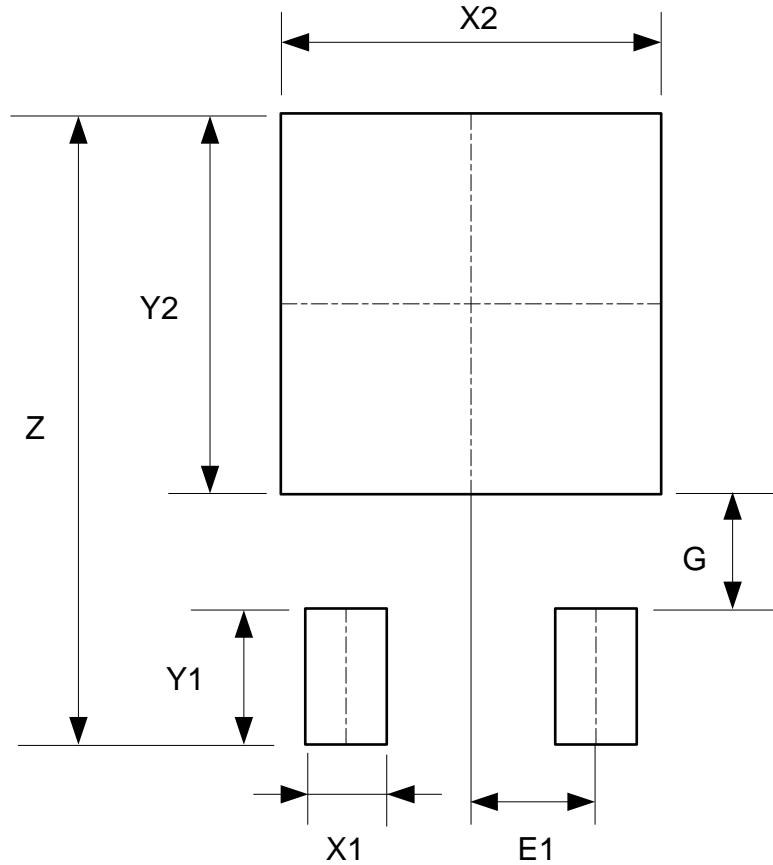
Package Type: TO-252-2 (4)



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** (continued)

 Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(1) Package Type: TO-252-2 (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

**Mechanical Data**

- Moisture Sensitivity: Level 3 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight:
  - TO252-2: 0.312 grams (Approximate)
  - TO220: 1.925 grams (Approximate)

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