

AX78XX Series

3-Terminal Positive Voltage Regulators

Description

The AX78XX series can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each employs internal current limiting, thermal shut-down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

Features

- Output Current In Excess of 1A
- Output Voltages of 5V, 6V, 8V, 9V, 12V
- Internal Short-Circuit Current Limiting & Thermal Overload Protection
- Guaranteed In Extended Temperature Range

Absolute Maximum Ratings (T_A=25°C)

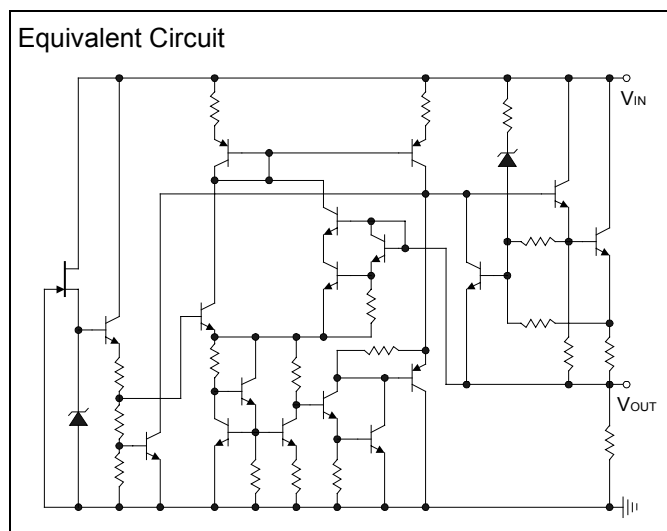
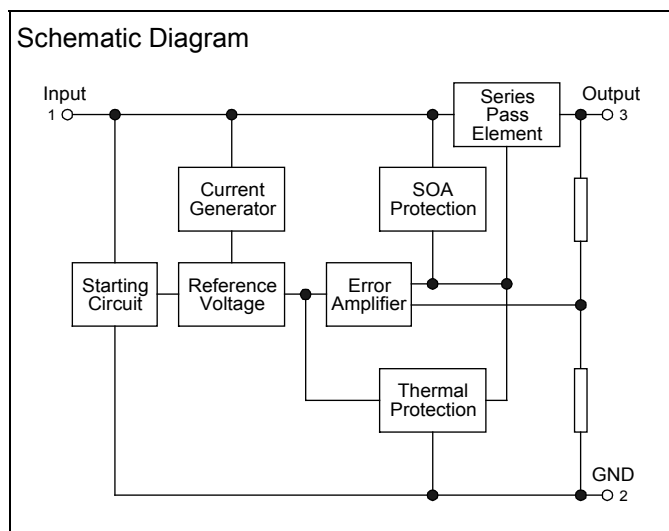
Characteristic	Symbol	Rating	Unit
Input Voltage	V _{IN}	40	V
Power Dissipation	P _D	Internally limited (Note)	
Operating Temperature	T _{opr}	-30 to 85	°C
Storage Temperature	T _{stg}	-55 to 150	°C
Junction Temperature	T _j	150	°C

Note: (1)T_A=25°C, TO-251: 1W, TO-252: 1W, SOT-82: 2.1W, TO-220AB: 2.7W
 (2)T_C=25°C, All package: 10W

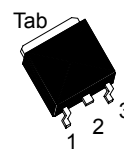
Thermal Data

Characteristic	Symbol	TO-252	TO-251	SOT-82	TO-220AB	Unit
Thermal Resistance Junction-Case	R _{th(j-c)}	12.5	12.5	12.5	12.5	°C/W
Thermal Resistance Junction-Ambient	R _{th(j-a)}	125	125	60	47	°C/W

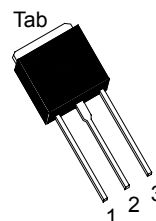
Schematic Diagram & Equivalent Circuit



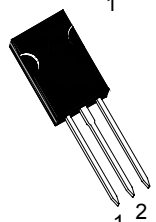
AX78XX Series Pin Assignment



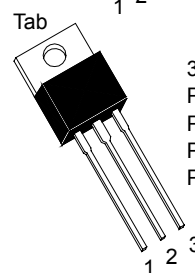
3-Lead Plastic **TO-252**
 Package Code: J
 Pin 1: V_{IN}
 Pin 2 & Tab: GND
 Pin 3: V_{OUT}



3-Lead Plastic **TO-251**
 Package Code: I
 Pin 1: V_{IN}
 Pin 2 & Tab: GND
 Pin 3: V_{OUT}



3-Lead Plastic **SOT-82**
 Package Code: NE
 Pin 1: V_{IN}
 Pin 2: GND
 Pin 3: V_{OUT}



3-Lead Plastic **TO-220AB**
 Package Code: E
 Pin 1: V_{IN}
 Pin 2 & Tab: GND
 Pin 3: V_{OUT}

AX7805 Series Electrical Characteristics

$V_{IN}=10V$, $I_{OUT}=500mA$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Conditions	AX7805AJ/AI/ANE/AE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	4.85	5	5.15	V
		$5mA \leq I_{OUT} \leq 1A$	4.85	5	5.15	
		$7V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $7V \leq V_{IN} \leq 25V$	-	3	50	mV
		$T_J=25^{\circ}C$, $8V \leq V_{IN} \leq 12V$	-	1	25	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	50	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $7V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=10V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	50	-	$\mu V/V_O$
RR	Ripple Rejection	$10V \leq V_{IN} \leq 18V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	57	73	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	0.6	$mV/^{\circ}C$

Symbol	Parameter	Conditions	AX7805BJ/BI/BNE/BE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	4.75	5	5.25	V
		$5mA \leq I_{OUT} \leq 1A$	4.75	5	5.25	
		$7V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $7V \leq V_{IN} \leq 25V$	-	3	100	mV
		$T_J=25^{\circ}C$, $8V \leq V_{IN} \leq 12V$	-	1	50	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	50	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $7V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=10V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	50	-	$\mu V/V_O$
RR	Ripple Rejection	$10V \leq V_{IN} \leq 18V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	57	73	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	0.6	$mV/^{\circ}C$

AX7806 Series Electrical Characteristics

$V_{IN}=11V$, $I_{OUT}=500mA$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Conditions	AX7806AJ/AI/ANE/AE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	5.82	6	6.18	V
		$5mA \leq I_{OUT} \leq 1A$	5.82	6	6.18	
		$8V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $8V \leq V_{IN} \leq 25V$	-	3	60	mV
		$T_J=25^{\circ}C$, $9V \leq V_{IN} \leq 13V$	-	1	25	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	50	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $9V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=11V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	55	$\mu V/V_O$
RR	Ripple Rejection	$11V \leq V_{IN} \leq 19V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	56	72	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$V_{IN}=45V$, $T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	0.7	$mV/^{\circ}C$

Symbol	Parameter	Conditions	AX7806BJ/BI/BNE/BE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	5.7	6	6.3	V
		$5mA \leq I_{OUT} \leq 1A$	5.7	6	6.3	
		$8V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $8V \leq V_{IN} \leq 25V$	-	3	120	mV
		$T_J=25^{\circ}C$, $9V \leq V_{IN} \leq 13V$	-	1	60	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	120	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	60	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $9V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=11V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	55	$\mu V/V_O$
RR	Ripple Rejection	$11V \leq V_{IN} \leq 19V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	56	72	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$V_{IN}=45V$, $T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	0.7	$mV/^{\circ}C$

AX7808 Series Electrical Characteristics

$V_{IN}=14V$, $I_{OUT}=500mA$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Conditions	AX7808AJ/AI/ANE/AE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	7.76	8	8.24	V
		$5mA \leq I_{OUT} \leq 1A$	7.76	8	8.24	
		$10V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $10.5V \leq V_{IN} \leq 25V$	-	3	80	mV
		$T_J=25^{\circ}C$, $11V \leq V_{IN} \leq 17V$	-	1	40	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	50	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $10.5V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=14V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	70	$\mu V/V_O$
RR	Ripple Rejection	$14V \leq V_{IN} \leq 21.5V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	53	69	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1	$mV/^{\circ}C$

Symbol	Parameter	Conditions	AX7808BJ/BI/BNE/BE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	7.6	8	8.4	V
		$5mA \leq I_{OUT} \leq 1A$	7.6	8	8.4	
		$10V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $10.5V \leq V_{IN} \leq 25V$	-	3	160	mV
		$T_J=25^{\circ}C$, $11V \leq V_{IN} \leq 17V$	-	1	80	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	160	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	80	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $10.5V \leq V_{IN} \leq 25V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=14V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	70	$\mu V/V_O$
RR	Ripple Rejection	$14V \leq V_{IN} \leq 21.5V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	53	69	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1	$mV/^{\circ}C$

AX7809 Series Electrical Characteristics

$V_{IN}=15V$, $I_{OUT}=500mA$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Conditions	AX7809AJ/AI/ANE/AE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	8.73	9	9.27	V
		$5mA \leq I_{OUT} \leq 1A$	8.73	9	9.27	
		$11V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $11.5V \leq V_{IN} \leq 25V$	-	3	90	mV
		$T_J=25^{\circ}C$, $13V \leq V_{IN} \leq 19V$	-	1	45	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	50	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $11.5V \leq V_{IN} \leq 26V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=15V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	75	$\mu V/V_O$
RR	Ripple Rejection	$15V \leq V_{IN} \leq 22.5V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	51	67	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1.1	$mV/^{\circ}C$

Symbol	Parameter	Conditions	AX7809BJ/BI/BNE/BE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	8.55	9	9.45	V
		$5mA \leq I_{OUT} \leq 1A$	8.55	9	9.45	
		$11V \leq V_{IN} \leq 25V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $11.5V \leq V_{IN} \leq 25V$	-	3	180	mV
		$T_J=25^{\circ}C$, $13V \leq V_{IN} \leq 19V$	-	1	90	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	15	180	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	5	90	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $11.5V \leq V_{IN} \leq 26V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=15V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	75	$\mu V/V_O$
RR	Ripple Rejection	$15V \leq V_{IN} \leq 22.5V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	51	67	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	17	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1.1	$mV/^{\circ}C$

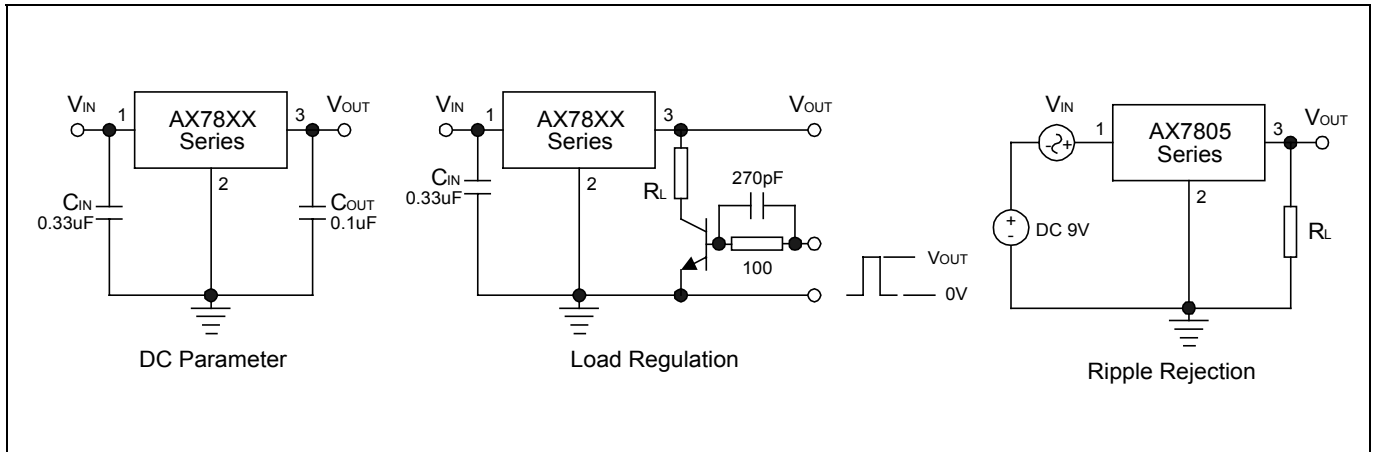
AX7812 Series Electrical Characteristics

$V_{IN}=19V$, $I_{OUT}=500mA$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$ (unless otherwise specified)

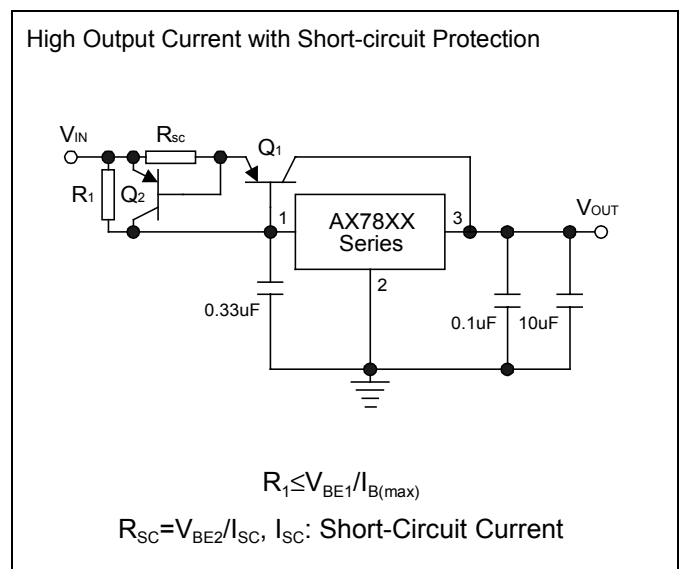
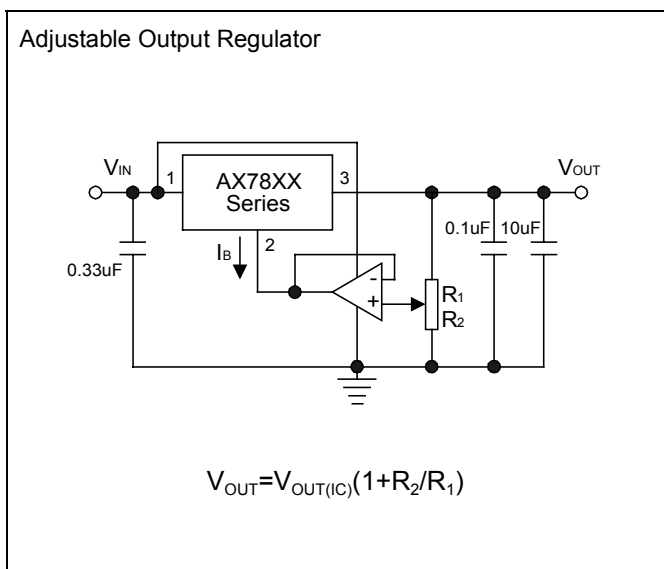
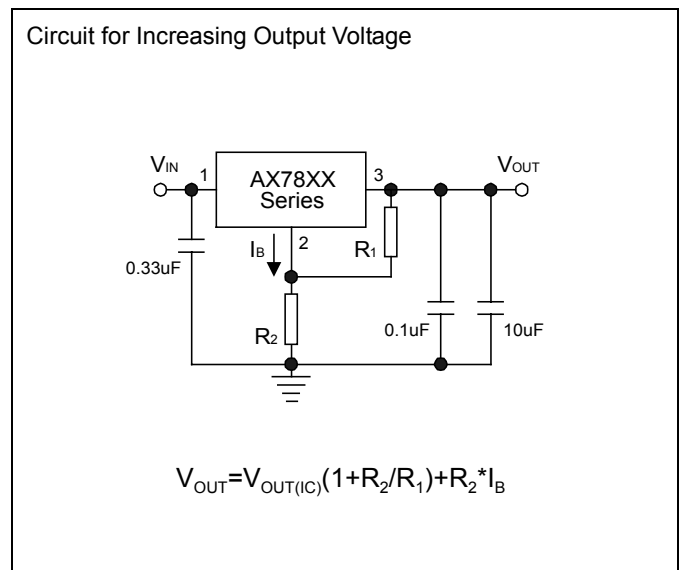
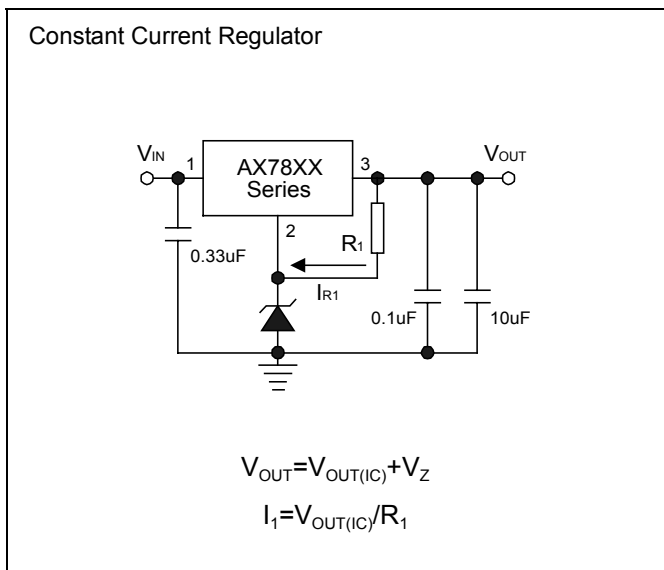
Symbol	Parameter	Conditions	AX7812AJ/AI/ANE/AE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	11.64	12	12.36	V
		$5mA \leq I_{OUT} \leq 1A$	11.64	12	12.36	
		$14V \leq V_{IN} \leq 30V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $14.5V \leq V_{IN} \leq 30V$	-	10	120	mV
		$T_J=25^{\circ}C$, $16V \leq V_{IN} \leq 22V$	-	3	60	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	12	100	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	4	60	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $14.5V \leq V_{IN} \leq 30V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=19V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	90	$\mu V/V_O$
RR	Ripple Rejection	$19V \leq V_{IN} \leq 25V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	50	66	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	18	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1.6	$mV/^{\circ}C$

Symbol	Parameter	Conditions	AX7812BJ/BI/BNE/BE			Units
			Min	Typ	Max	
V_O	Output Voltage	$T_J=25^{\circ}C$, $I_{OUT}=500mA$	11.4	12	12.6	V
		$5mA \leq I_{OUT} \leq 1A$	11.4	12	12.6	
		$14V \leq V_{IN} \leq 30V$, $P_{OUT} \leq 15W$				
ΔV_O	Line Regulation	$T_J=25^{\circ}C$, $14.5V \leq V_{IN} \leq 30V$	-	10	240	mV
		$T_J=25^{\circ}C$, $16V \leq V_{IN} \leq 22V$	-	3	120	
ΔV_O	Load Regulation	$T_J=25^{\circ}C$, $5mA \leq I_{OUT} \leq 1A$	-	12	240	mV
		$T_J=25^{\circ}C$, $250mA \leq I_{OUT} \leq 750mA$	-	4	120	
I_B	Quiescent Current	$I_{OUT}=5mA$, $T_J=25^{\circ}C$	-	3.9	8	mA
ΔI_B	Quiescent Current Change	$I_{OUT}=500mA$, $14.5V \leq V_{IN} \leq 30V$, $T_J=25^{\circ}C$	-	-	1.3	mA
		$5mA \leq I_{OUT} \leq 1A$, $V_{IN}=19V$, $T_J=25^{\circ}C$	-	-	0.5	
eN	Output Noise Voltage	$B=10Hz \sim 100KHz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	-	-	90	$\mu V/V_O$
RR	Ripple Rejection	$19V \leq V_{IN} \leq 25V$, $f=120Hz$, $I_{OUT}=50mA$, $T_J=25^{\circ}C$	50	66	-	dB
V_D	Dropout Voltage	$T_J=25^{\circ}C$, $I_{OUT}=1A$	-	2	2.5	V
R_O	Output Resistance	$f=1KHz$	-	18	-	$m\Omega$
I_{SC}	Short Circuit Current	$T_J=25^{\circ}C$	-	2.3	2.8	A
$\Delta V_O/\Delta T$	Output Voltage Drift	$0^{\circ}C \leq T_J \leq 125^{\circ}C$	-	-	1.6	$mV/^{\circ}C$

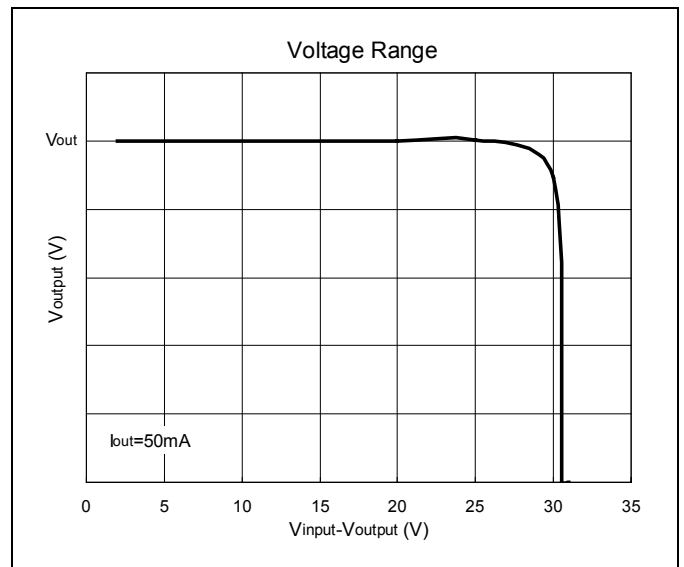
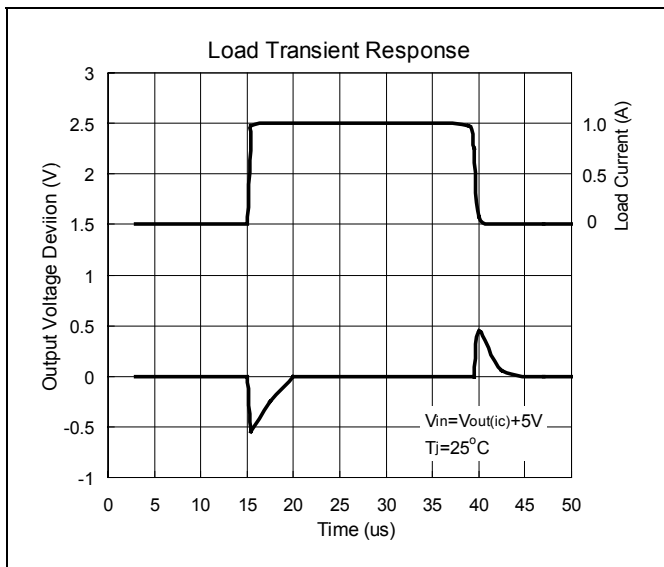
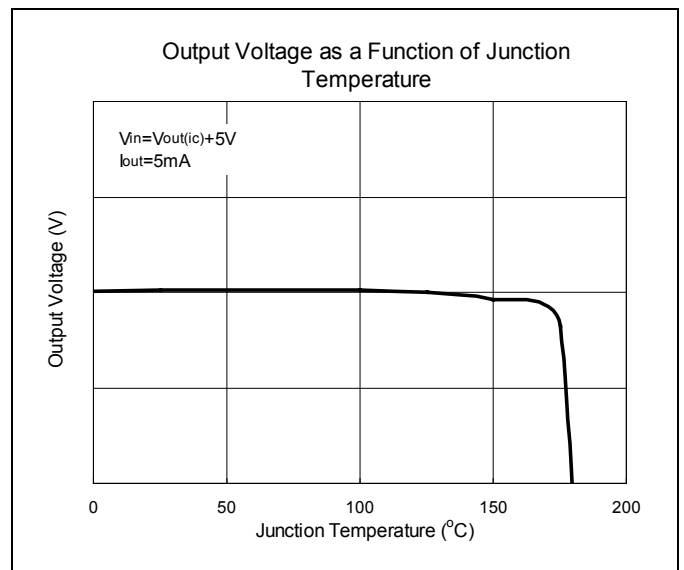
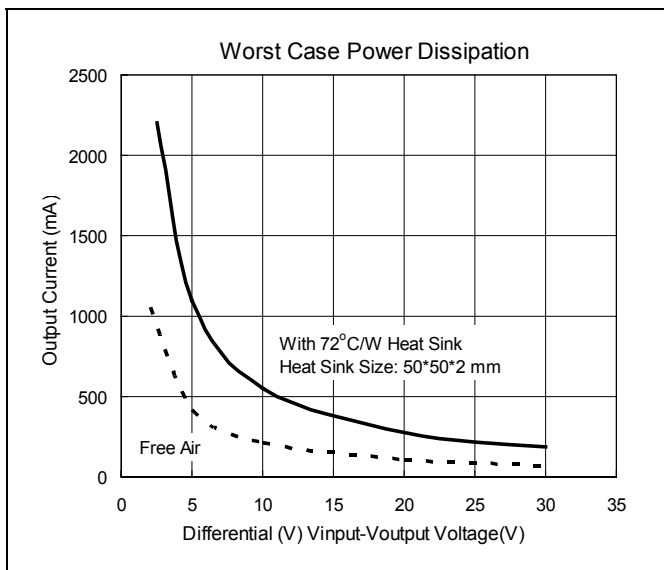
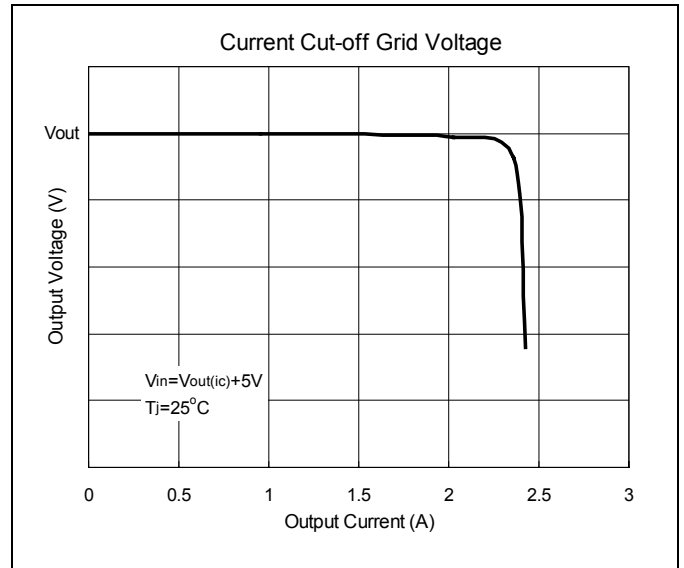
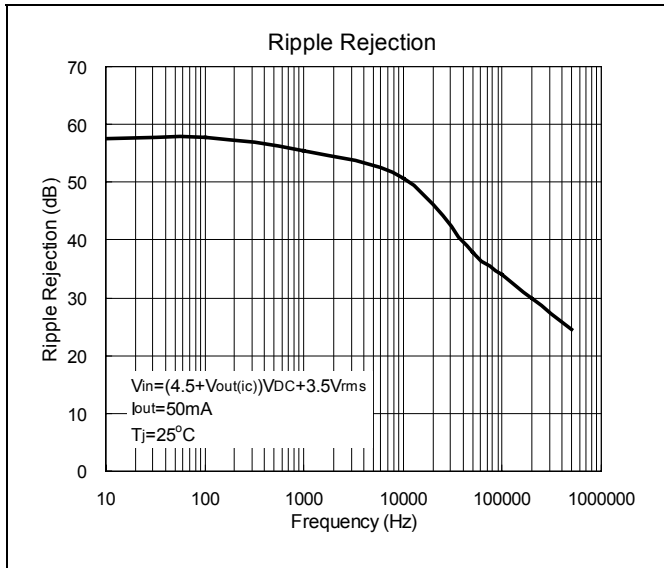
Test Circuits



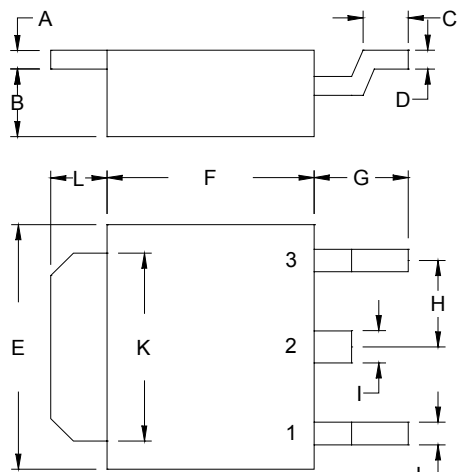
Application Circuits



Characteristics Curve



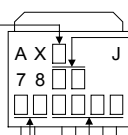
TO-252 Dimension



3-Lead TO-252 Plastic Surface Mount Package
AVANTICS Package Code: J

Marking:

Pb Free Mark
Pb-Free: "●" (Note)
Normal: None



Product Series (05,06,08,09,12)

Date Code Control Code

Note: Green label is used for pb-free packing
Pin Style: 1.Input 2.Ground 3.Output

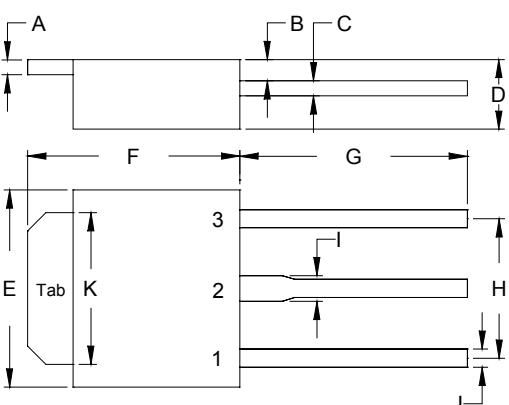
Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	0.45	0.55
B	1.70	1.90
C	0.90	1.50
D	0.45	0.60
E	6.40	6.80
F	5.40	5.80
G	2.20	2.80
H	-	*2.30
I	0.70	0.90
J	-	0.90
K	5.20	5.50
L	1.40	1.60

*: Typical, Unit: mm

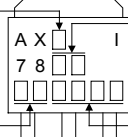
TO-251 Dimension



3-Lead TO-251 Plastic Surface Mount Package
AVANTICS Package Code: I

Marking:

Pb Free Mark
Pb-Free: "●" (Note)
Normal: None



Product Series (05,06,08,09,12)

Date Code Control Code

Note: Green label is used for pb-free packing
Pin Style: 1.Input 2.Ground 3.Output

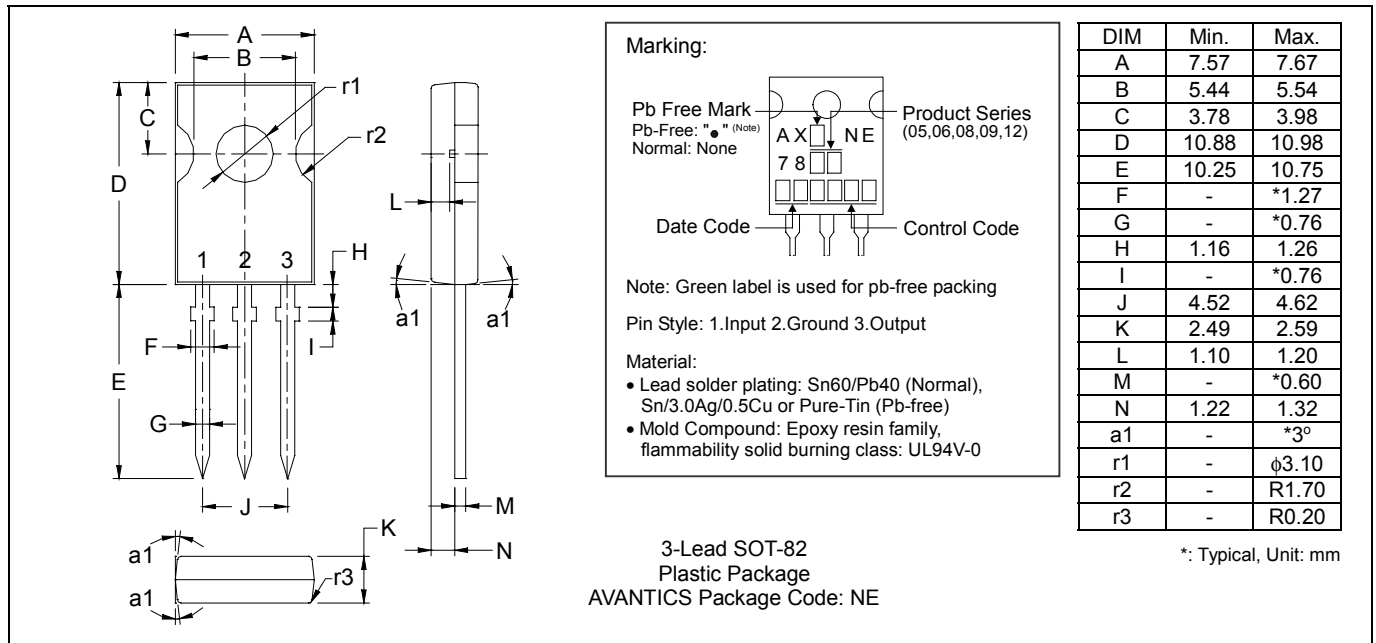
Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

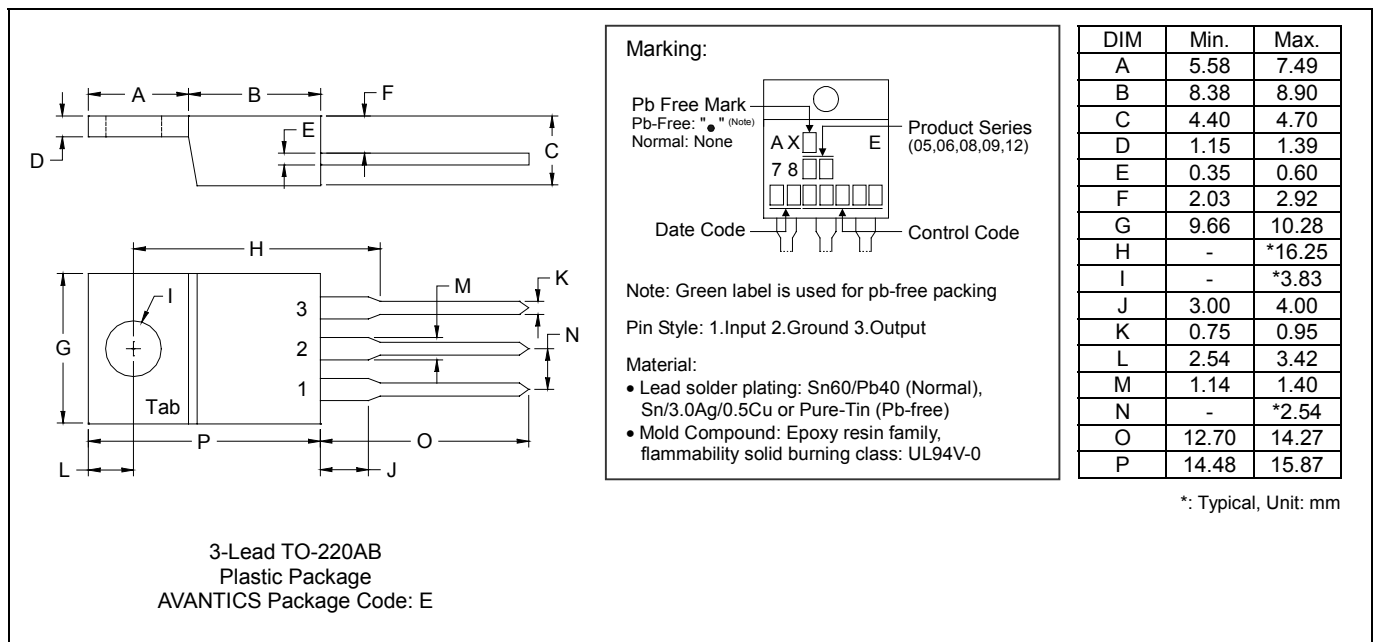
DIM	Min.	Max.
A	0.45	0.55
B	0.90	1.50
C	0.45	0.60
D	2.20	2.40
E	6.40	6.80
F	6.80	7.40
G	7.20	7.80
H	-	*4.60
I	-	0.90
J	-	0.80
K	5.20	5.50

*: Typical, Unit: mm

SOT-82 Dimension



TO-220AB Dimension



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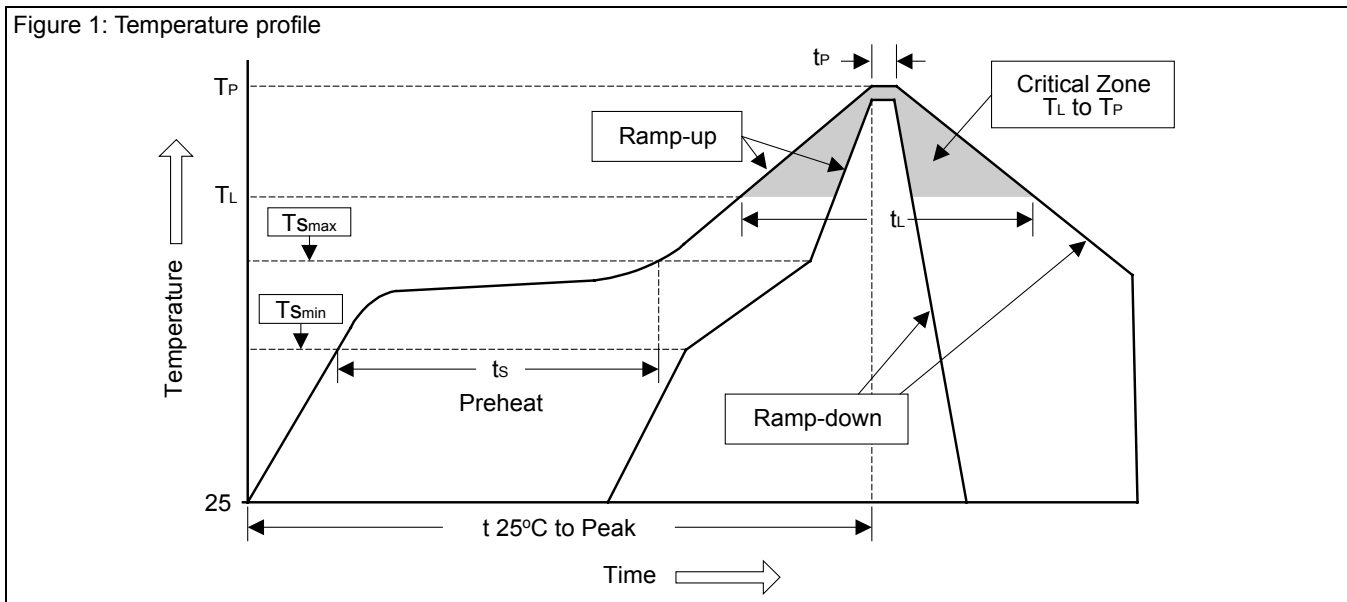
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Tel: 86-021-58955599 Fax: 86-021-58558038

Soldering Methods for AVANTICS's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%

2. Reflow soldering of surface-mount devices



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{smin})	100°C	150°C
- Temperature Max (T_{smax})	150°C	200°C
- Time (min to max) (t_s)	60~120 sec	60~180 sec
T_{smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60~150 sec	60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_p)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec