

1.2V Output - 1A Low Dropout Linear Regulator

■ Features

- Fixed 1.2V \pm 2% output voltage
- 1.4V maximum dropout at full load current
- Fast transient response
- Output current limiting
- Built-in thermal shutdown
- Good noise rejection
- Pb-Free Packages: SOT223, TO252,

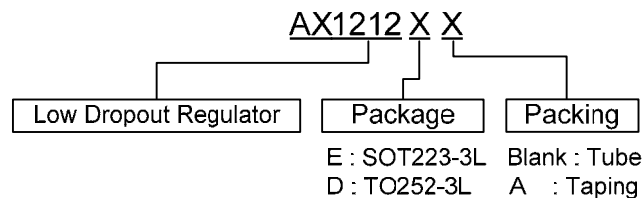
■ Applications

- PC peripheral
- Communication

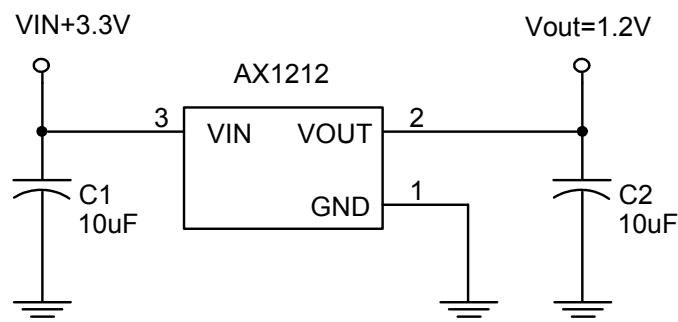
■ General Description

AX1212 is a low dropout positive 1.2V output regulator with minimum of 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications. AX1212 is also well suited for other applications such as VGA cards. AX1212 is guaranteed to have lower than 1.4V dropout at full load current making it ideal to provide well-regulated outputs of 1.2V with 2.6V to 12V input supply.

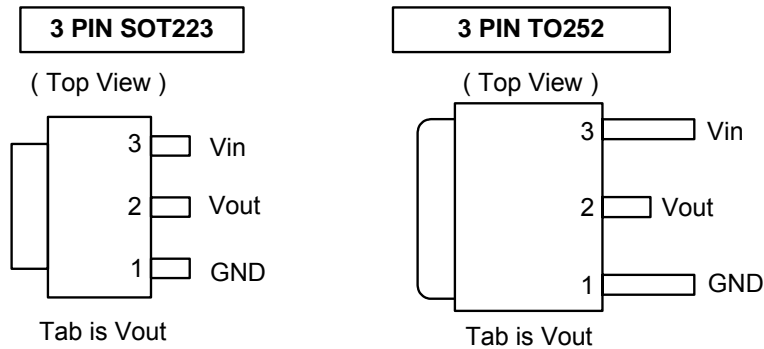
■ Ordering Information



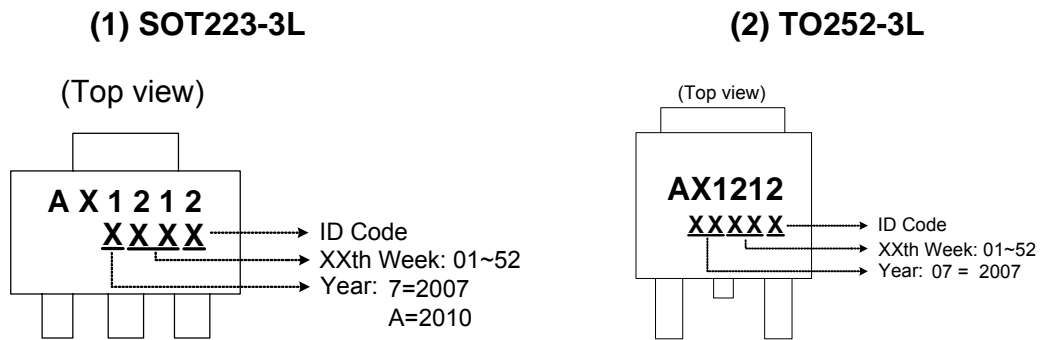
■ Typical Circuit



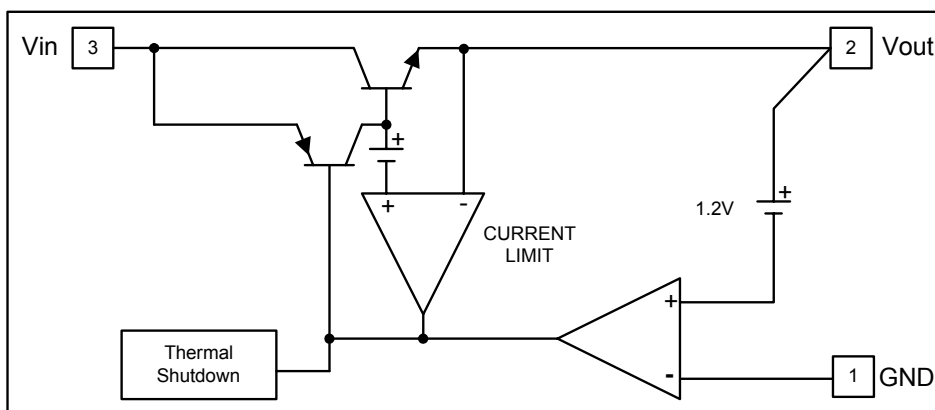
■ Connection Diagram



■ Marking Information



■ Block Diagram



■ Pin Descriptions

NAME	I/O	PIN #	FUNCTION
GND	I	1	A resistor divider from this pin to the Vout pin and ground sets the output voltage. (Ground only for Fixed-Mode)
Vout	O	2	The output of the regulator. A minimum of 10uF capacitor ($0.1\Omega \leq \text{ESR} \leq 20\Omega$) must be connected from this pin to ground to insure stability.
Vin	I	3	The input pin of regulator. Typically a large storage capacitor ($0.10\Omega \leq \text{ESR} \leq 20\Omega$) is connected from this pin to ground to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response. This pin must always be 1.4V higher than Vout in order for the device to regulate properly.

■ Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Vin	DC Supply Voltage	-0.3 to 12	V
T _{OP}	Operating Junction Temperature Range	0 to +125	°C
T _{MJ}	Maximum junction Temperature	150	°C
P _D	Power Dissipation(No heat sink ;No air flow) $T_A=25^\circ\text{C}$, $T_J=125^\circ\text{C}$ SOT-223 TO-252	850 1050	mW
T _{ST}	Storage Temperature	-65 to +150	°C

■ Electrical Characteristics (Under Operating Conditions)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Operation Input Voltage		2.6	-	12	V
Output Voltage	$I_{OUT} = 10\text{mA}$, $2.6\text{V} \leq V_{IN} \leq 12\text{V}$, $T_J = 25^\circ\text{C}$	1.175	1.20	1.225	V
Line Regulation	$I_{OUT} = 10\text{mA}$, $2.6\text{V} \leq V_{IN} \leq 7\text{V}$, $T_J = 25^\circ\text{C}$ (Note 1,2)		1.2	3.6	mV
	$I_{OUT} = 10\text{mA}$, $2.6\text{V} \leq V_{IN} \leq 12\text{V}$, $T_J = 25^\circ\text{C}$ (Note 1,2)		1.8	6	mV
Load Regulation	$V_{IN} = 2.6\text{V}$, $10\text{mA} < I_O < 1\text{A}$, $T_J = 25^\circ\text{C}$ (Note 1,2)			12	mV
Dropout Voltage ($V_{IN} - V_{OUT}$)	$I_{OUT} = 1\text{A}$, $\Delta V_{OUT} = 1\% V_{OUT}$		1.3	1.4	V
Current Limit	$(V_{IN} - V_{OUT}) = 3\text{V}$	1.1			A
Minimum Load Current	$0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$		5	10	mA
Ripple Rejection	$F = 120\text{Hz}$, $C_{OUT} = 25\mu\text{F}$ Tantalum, $I_{OUT} = 1\text{A}$, $V_{IN} = 5\text{V}$		60	70	dB
Temperature Stability	$I_O = 10\text{mA}$		0.5		%
θ_{JA} Thermal Resistance Junction-to-Ambient(No heat sink ;No air flow)	SOT-223 TO-252		117 92		$^\circ\text{C/W}$
θ_{JA} Thermal Resistance Junction-to-Ambient (Note 4)	SOT-223 TO-252		75 55		$^\circ\text{C/W}$
θ_{JC} Thermal Resistance Junction-to-Case	SOT-223 TO-252		15 10		$^\circ\text{C/W}$

Note1: See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.

Note2: Line and load regulation are guaranteed up to the maximum power dissipation of 15W. Power dissipation is determined by the difference between input and output differential and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.

Note3: Quiescent current is defined as the minimum output current required in maintaining regulation. At 12V input/output differential the device is guaranteed to regulate if the output current is greater than 10mA.

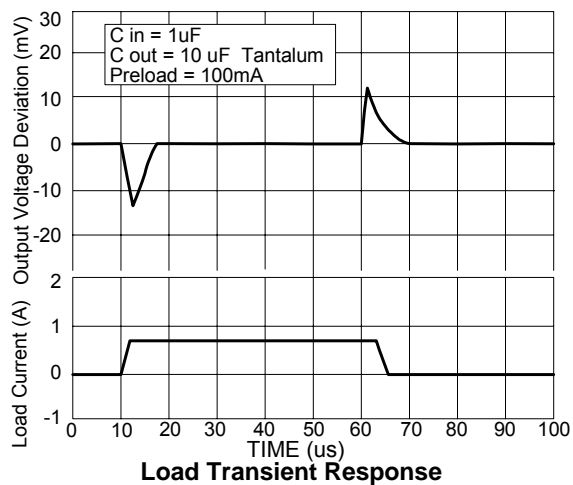
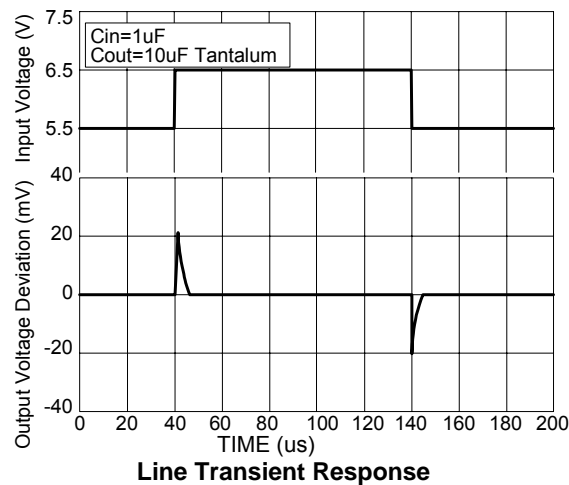
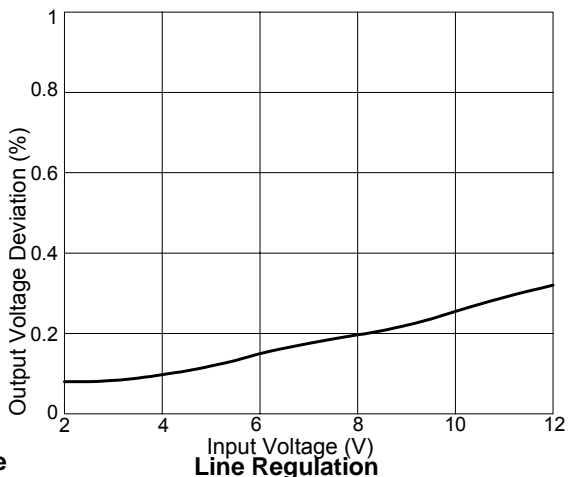
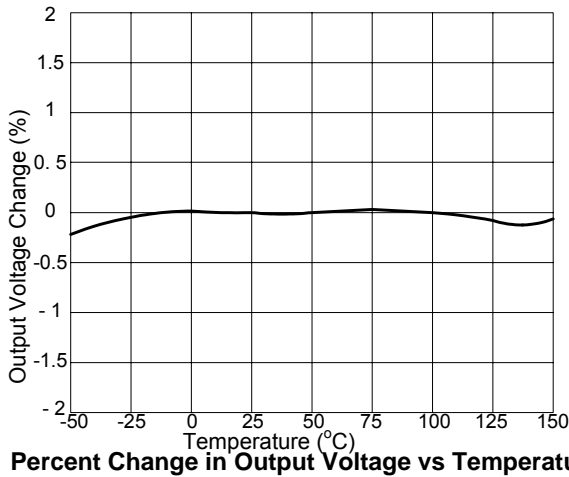
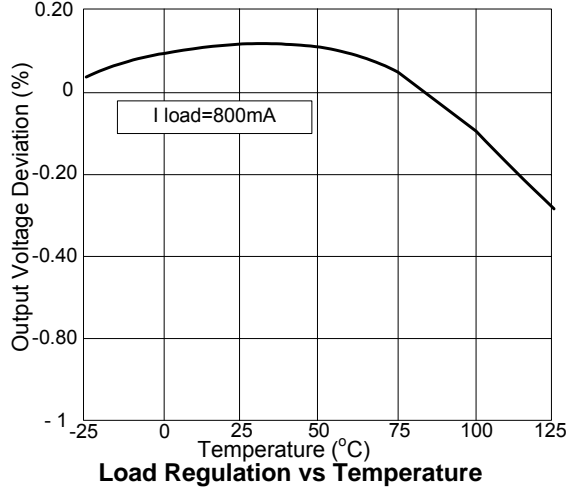
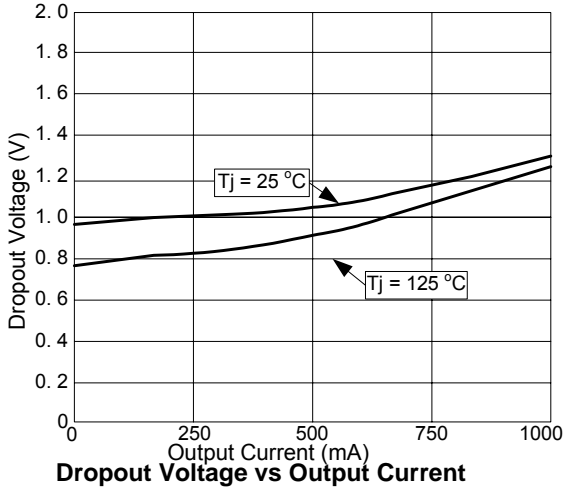
Note4: Output is connected to the multi-layer PCB copper area 10mm*10mm separately. If you need large PD or lower T_c & T_j , please connect to the large copper area >>10mm*10mm.



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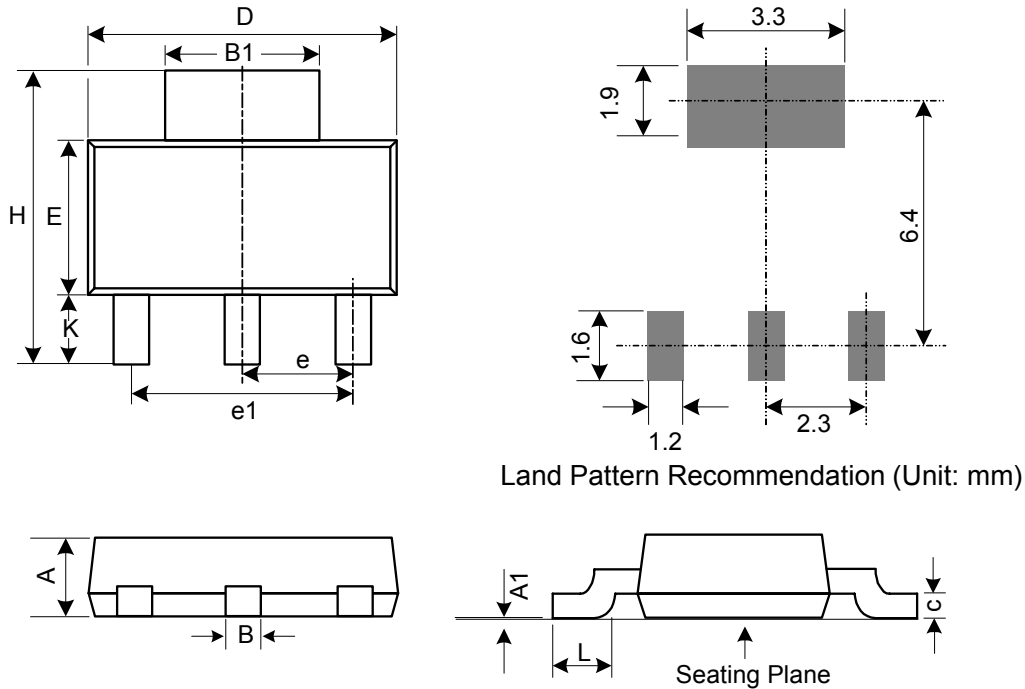
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Typical Performance Characteristics



■ Package Dimension

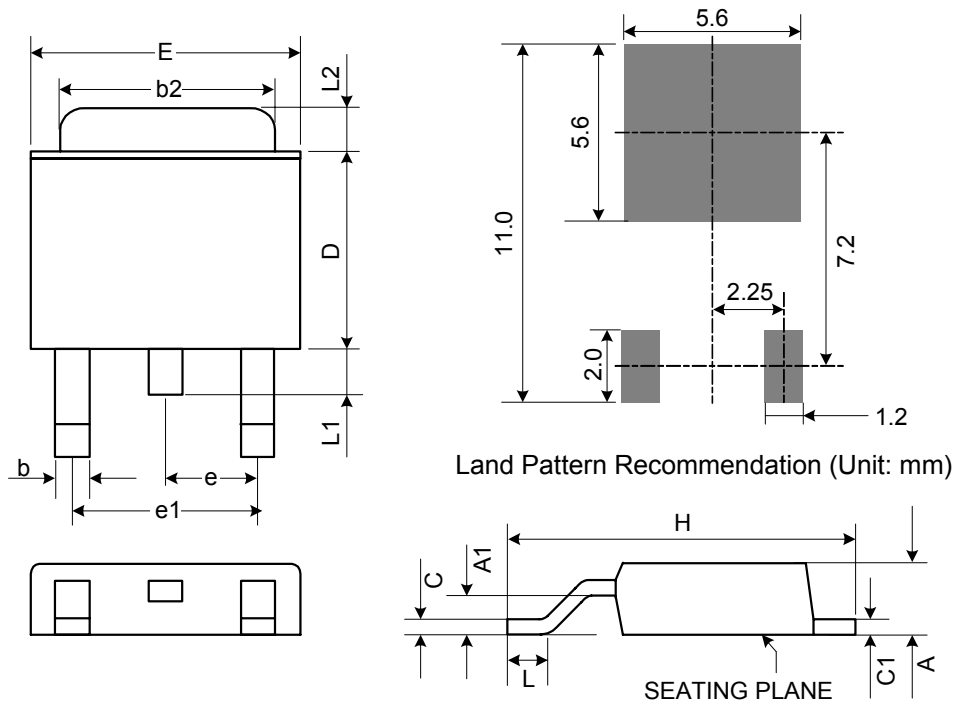
(1) SOT223



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.50	1.65	1.80	0.059	0.065	0.071
A1	0.02	0.05	0.08	0.001	0.002	0.003
B	0.60	0.70	0.80	0.024	0.028	0.031
B1	2.90	-	3.15	0.114	-	0.124
C	0.28	0.30	0.32	0.011	0.012	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
E	3.30	3.50	3.70	0.130	0.138	0.146
H	6.70	7.00	7.30	0.264	0.276	0.287
L	0.91	1.00	1.10	0.036	0.039	0.043
K	1.50	1.75	2.00	0.059	0.069	0.079
e	2.3 Basic			0.091 Basic		
e1	4.6 Basic			0.181 Basic		

■ Package Dimension (Continued)

(2) TO252



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.18	2.29	2.40	0.086	0.090	0.094
A1	0.89	-	1.14	0.035	-	0.045
b	0.61 TYP.			0.024 TYP.		
b2	5.20	5.35	5.50	0.205	0.211	0.217
C	0.45	0.52	0.58	0.018	0.020	0.023
C1	0.45	0.52	0.58	0.018	0.020	0.023
D	5.40	5.57	6.20	0.213	0.219	0.244
E	6.35	6.58	6.80	0.250	0.259	0.268
e	2.28 BSC.			0.090 BSC.		
e1	4.57 BSC.			0.180 BSC.		
H	9.00	9.70	10.40	0.354	0.382	0.409
L	0.51	-	-	0.020	-	-
L1	0.64	0.83	1.02	0.025	0.033	0.040
L2	0.88	-	1.27	0.035	-	0.050