AP1120

DUAL 1A LOW DROPOUT POSITIVE REGULATOR

Features

- 1.3V maximum dropout at full load current
- Fast transient response
- Output current limiting for each channel
- Built-in thermal shutdown each channel
- Good noise rejection
- Dual output ch1=3.3V, ch2=2.5V (1.8V for B version)
- Lead-Free Package: SOP-8L
- Lead Free Finish/RoHS Compliant for Lead Free products (Note 1)

General Description

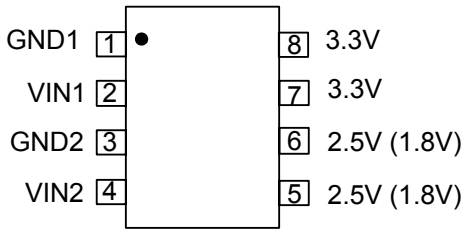
AP1120 series are low dropout positive regulator to provide 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V/2.5V or 3.3V/1.8V logic supply. AP1120 series are guaranteed to have <1.3V dropout at full load current making it ideal to provide well regulated outputs dual channels with up to 18V input supply.

Applications

- PC peripheral
- Communication

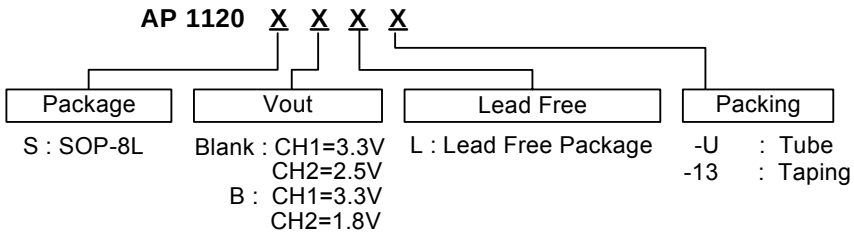
Connection Diagram

(Top View)



AP1120

Ordering Information



Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

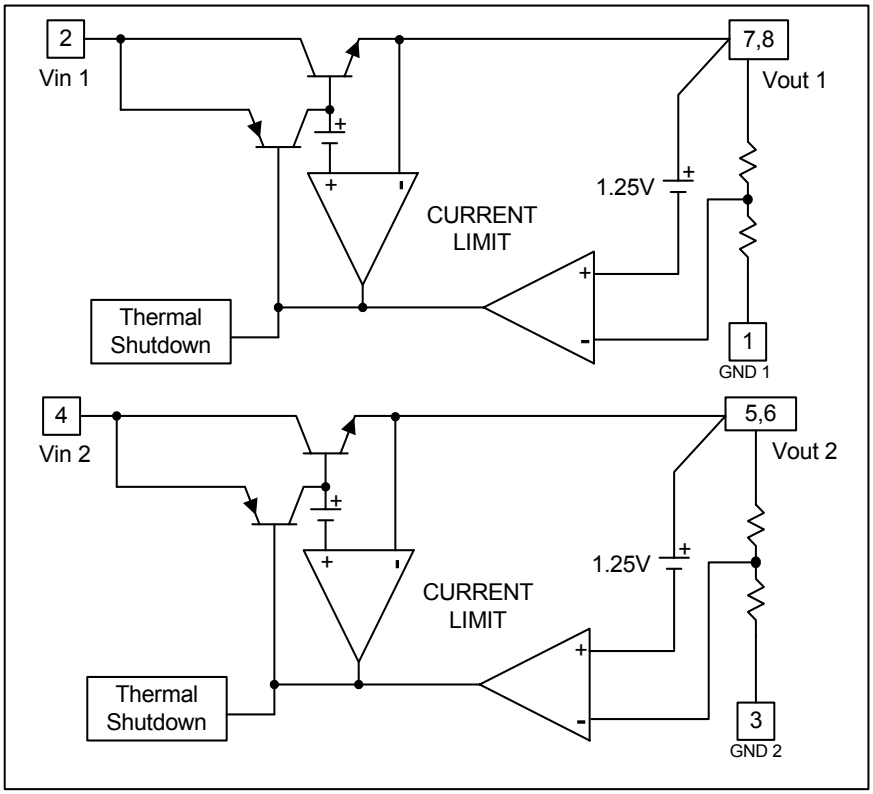
Device	Package Code	Packaging (Note 2)	Tube		13" Tape and Reel	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix
AP1120S	S	SOP-8L	100	-U	2500/Tape & Reel	-13

Note: 2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

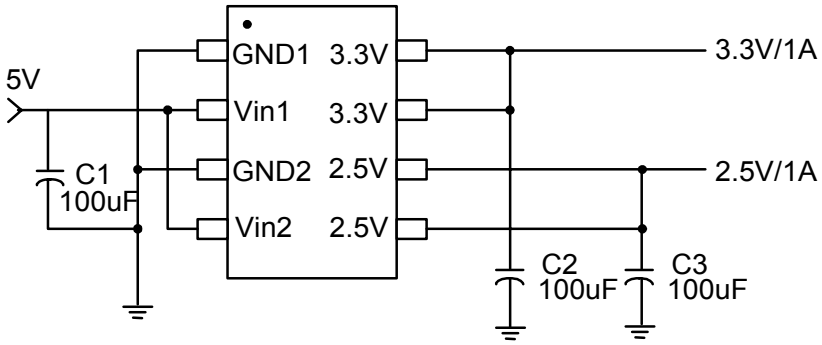
Pin Descriptions

NAME	FUNCTION
GND1/2	Ground
3.3V(Vout1)	The output of the regulator. A minimum of 10uF capacitor (0.15Ω ≤ ESR ≤ 20Ω) must be connected from this pin to ground to insure stability.
2.5V/1.8V (Vout2)	
VIN1/2	The input pin of regulator. Typically a large storage capacitor (0.15Ω ≤ ESR ≤ 20Ω) is connected from this pin to ground.

Block Diagram



Typical Circuit



(3.3V/2.5V Dual output)

Absolute Maximum Ratings

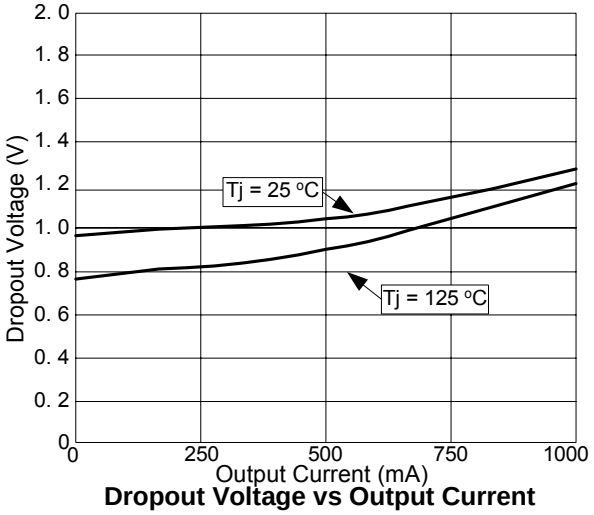
Symbol	Parameter	Rating	Unit
V_{IN}	DC Supply Voltage	-0.3 to 18 V	V
P_D	Power Dissipation	Internally Limited	
T_{ST}	Storage Temperature	-65 to +150	°C
T_{OP}	Operating Junction Temperature Range	0 to +150	°C

Electrical Characteristics (Under Operating Conditions)

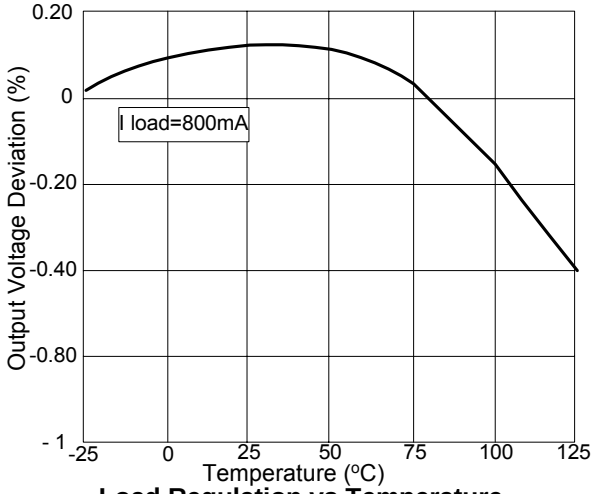
PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	AP1120(B) - V_{OUT1}	I_{OUT} = 10mA, T_A = 25°C, 4.8V≦V_{IN}≦12V	3.235	3.300	3.365	V
	AP1120 - V_{OUT2}	I_{OUT} = 10mA, T_A = 25°C, 4V≦V_{IN}≦12V	2.450	2.500	2.550	V
	AP1120B - V_{OUT2}	I_{OUT} = 10mA, T_A = 25°C, 4V≦V_{IN}≦12V	1.764	1.800	1.836	V
Line Regulation	I_O=10mA,V_{OUT}+1.5V<V_{IN}<12V, T_A =25°C				0.2	%
Load Regulation	AP1120 series V_{OUT1}	V_{IN} = 5V, 0≦I_{OUT}≦1A, T_A =25°C (Note 3, 4)		26	33	mV
	AP1120 series V_{OUT2}	V_{IN}=4V, 0mA<Io<1A, T_A =25°C (Note 3, 4)		20	25	mV
Dropout Voltage (V_{IN}-V_{OUT})	I_{OUT} = 1A,ΔV_{OUT}=0.1%V_{OUT}			1.3	1.4	V
Current Limit	(V_{IN}-V_{OUT}) = 5V		1. 1			A
Minimum Load Current	0°C≦Tj≦125°C (Note 5)			5	10	mA
Thermal Regulation	T_A=25 °C, 30ms pulse			0.008	0.04	%/W
Ripple Rejection	F=120Hz,C_{OUT}=25uF Tantalum, I_{OUT}=1A			60	70	dB
Temperature Stability	I_O=10mA			0.5		%
θ_{JA} Thermal Resistance Junction-to-Ambient (No heat sink; No air flow)	SOP-8L: Control Circuitry/Power Transistor (Note 6) CH1 or CH2 only CH1 & CH2 and PD1=PD2			 50 45		°C/W
θ_{JC} Thermal Resistance Junction-to-Case	SOP-8L: Control Circuitry/Power Transistor (Note 6) CH1 or CH2 only CH1 & CH2 and PD1=PD2			 20 12		°C/W

Note: 3. 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.
4. Line and load regulation are guaranteed up to the maximum power dissipation of 15W. Power dissipation is determined by the input/output differentially and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.
5. Quiescent current is defined as the minimum output current that requires maintaining regulation. At 12V input/output differential the device is guaranteed to regulate if the output current is greater than 10mA.
6. Vout1 and Vout2 are connected to the PCB copper area 5.5mm*5.5mm separately. If you need large PD or lower Tc & Tj, please connect to the large copper area >> 5.5mm*5.5mm (like 10mm*10mm).

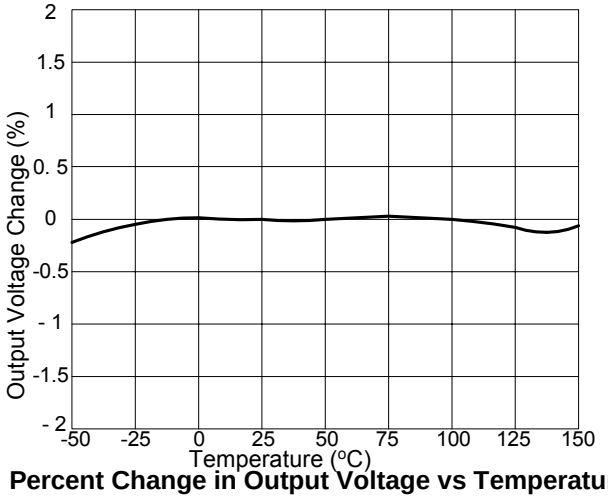
Typical Performance Characteristics



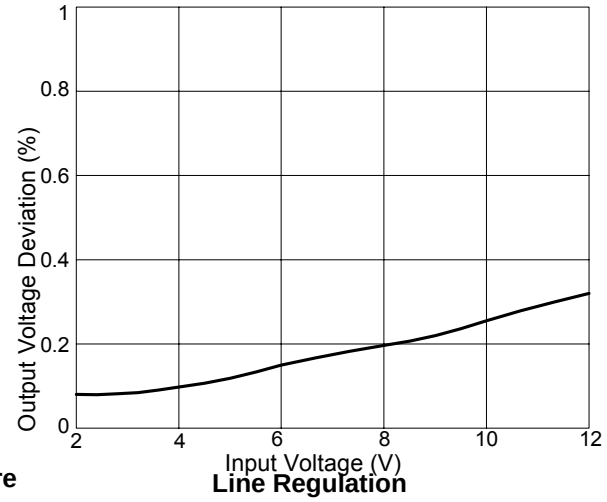
Dropout Voltage vs Output Current



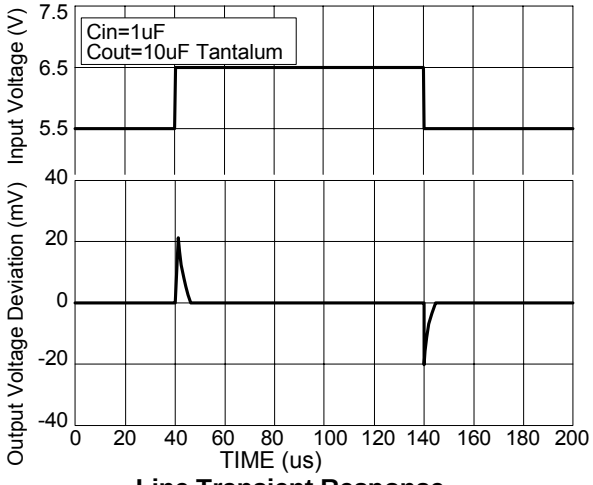
Load Regulation vs Temperature



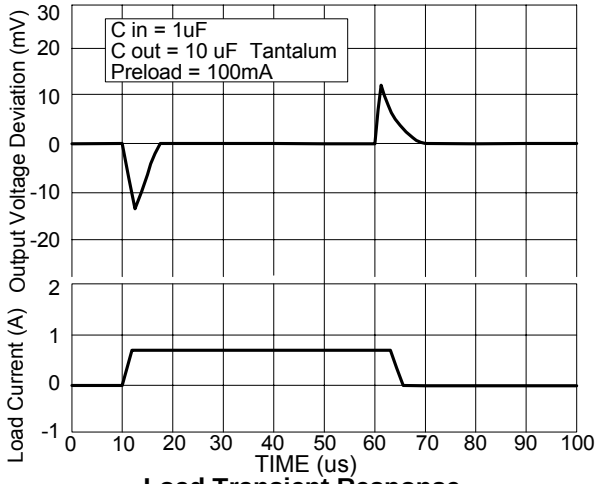
Percent Change in Output Voltage vs Temperature



Line Regulation

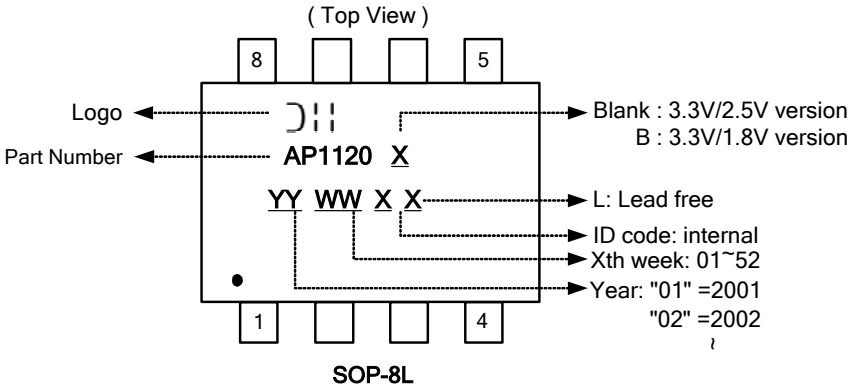


Line Transient Response



Load Transient Response

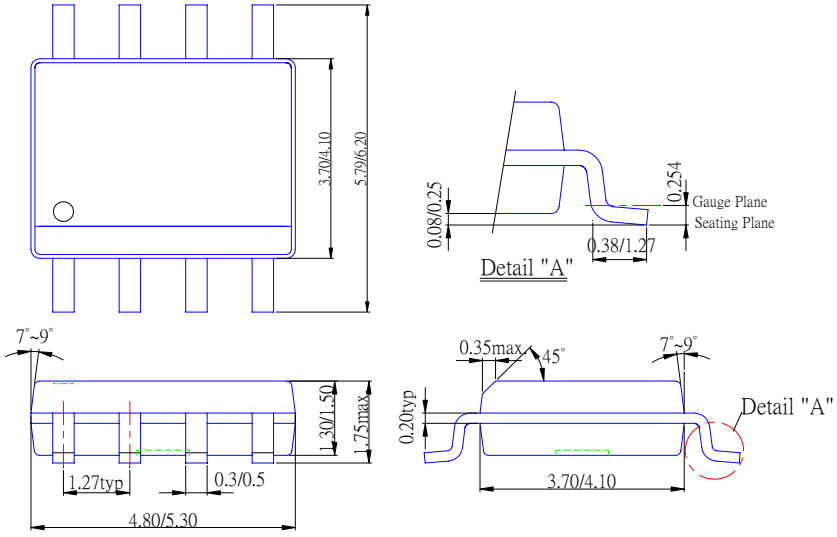
Marking Information



SOP-8L

Package Information

Package Type: SOP-8L



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