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AP1120

DUAL 1A LOW DROPOUT POSITIVE REGULATOR

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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 (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

Ordering Information

AP 1120 S X L - 13

Package	Vout	Lead Free	Packing
S : SOP-8L	Blank : CH1=3.3V CH2=2.5V B : CH1=3.3V CH2=1.8V	L : Lead Free	13 : Tape & Reel

Device	Package Code	Packaging (Note 2)	13” Tape and Reel	
			Quantity	Part Number Suffix
AP1120SXL-13	S	SOP-8L	2500/Tape & Reel	-13

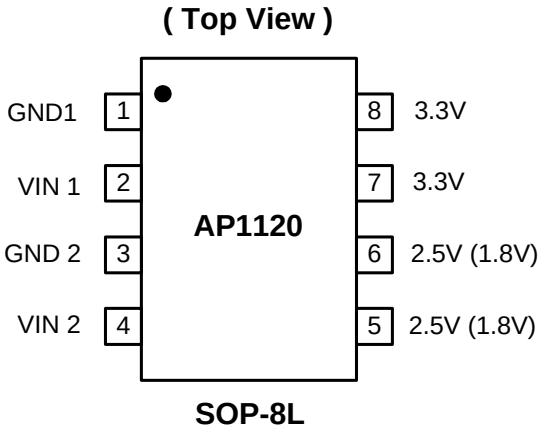
Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.
2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be on found our website at http://www.diodes.com/datasheets/ap02001.pdf.

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Pin Assignments



Pin Descriptions

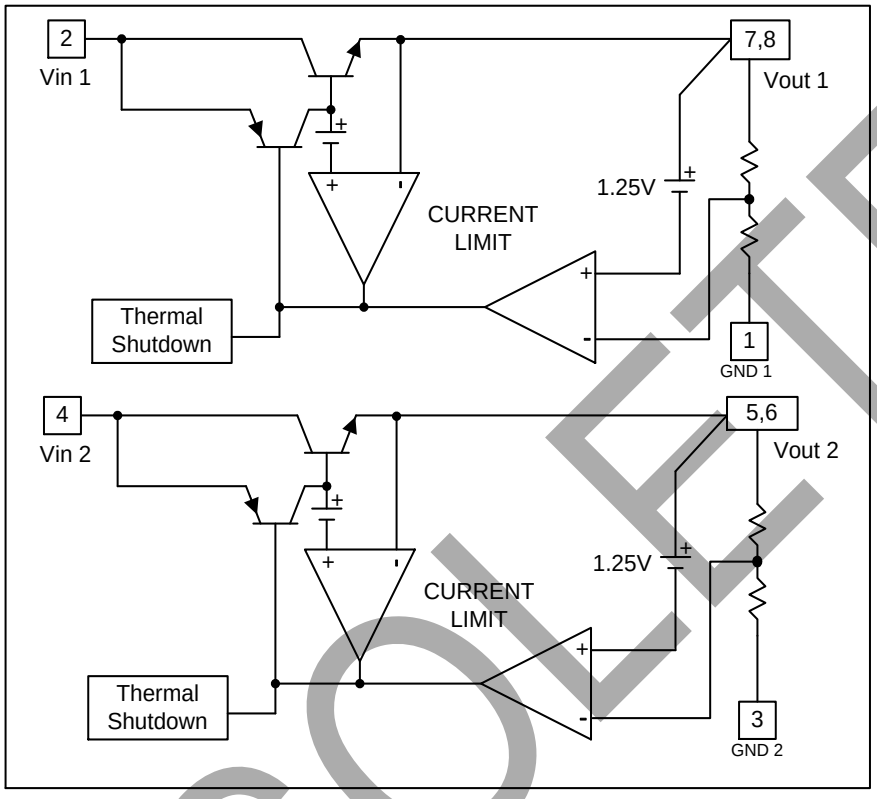
Pin Name	Description
GND1/2	Ground
3.3V (Vout1)	The output of the regulator. A minimum of 10uF capacitor (0.15Ω ≤ ESR ≤ 20Ω) must be connected from this pin to ground to insure stability.
2.5V/1.8V (Vout2)	
VIN1/2	The input pin of regulator. Typically a large storage capacitor (0.15Ω ≤ ESR ≤ 20Ω) is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

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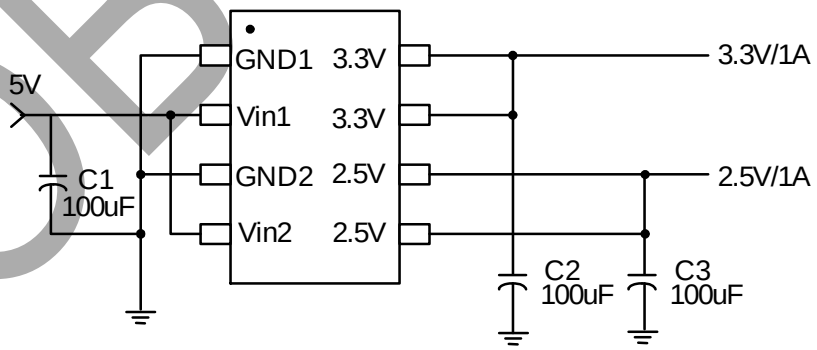
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Block Diagram



Typical Circuit



(3.3V/2.5V Dual output)

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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

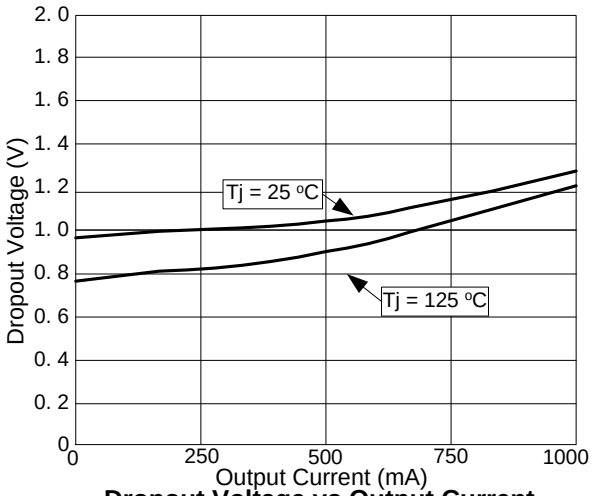
Notes:
3. See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.
4. Line and load regulation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

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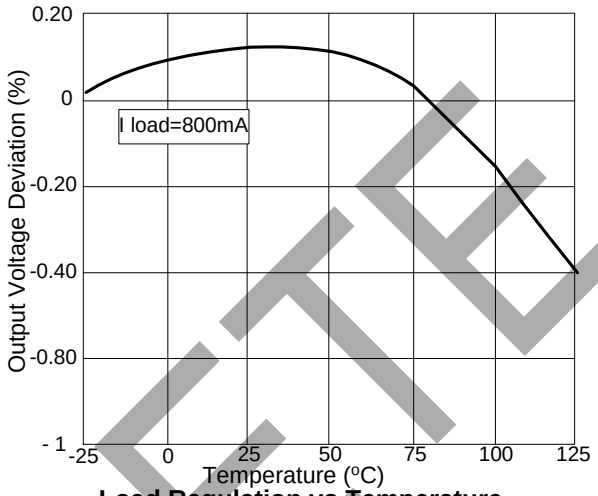
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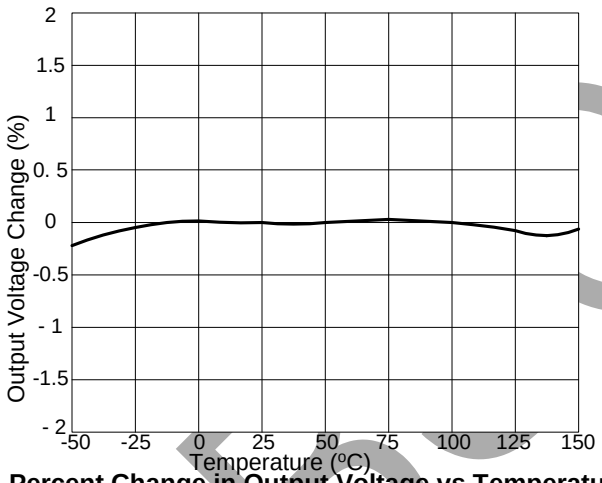
Typical Performance Characteristics



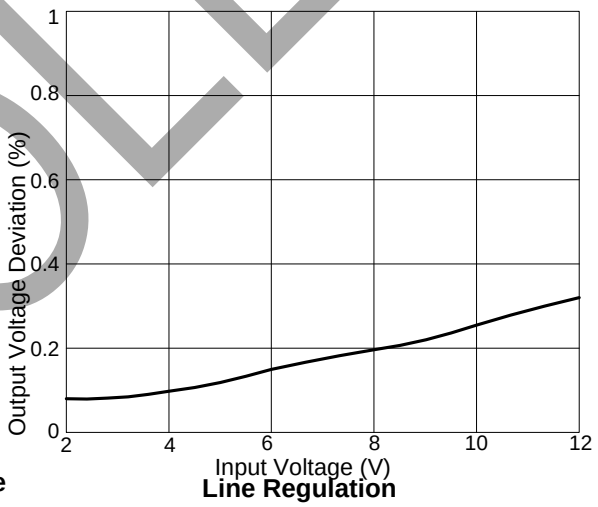
Dropout Voltage vs Output Current



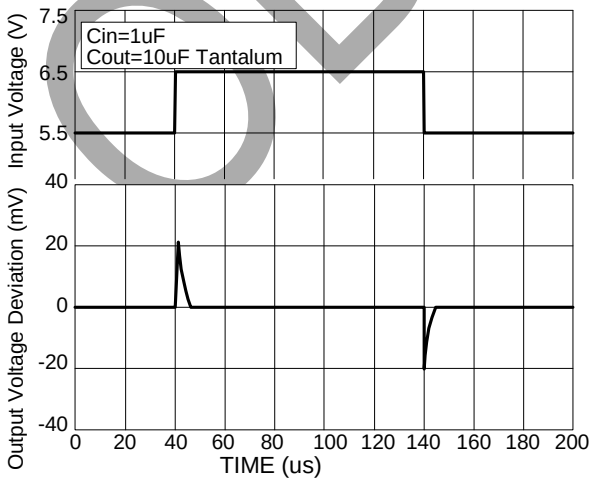
Load Regulation vs Temperature



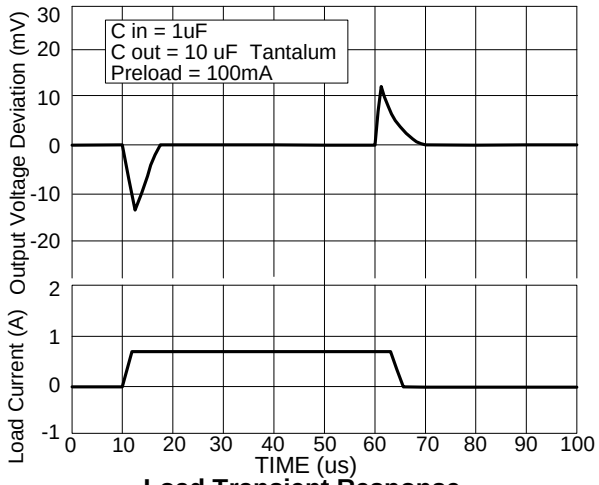
Percent Change in Output Voltage vs Temperature



Line Regulation



Line Transient Response



Load Transient Response

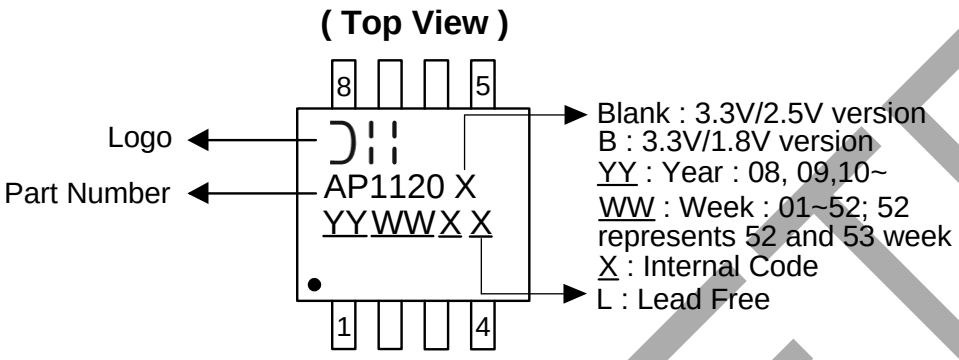
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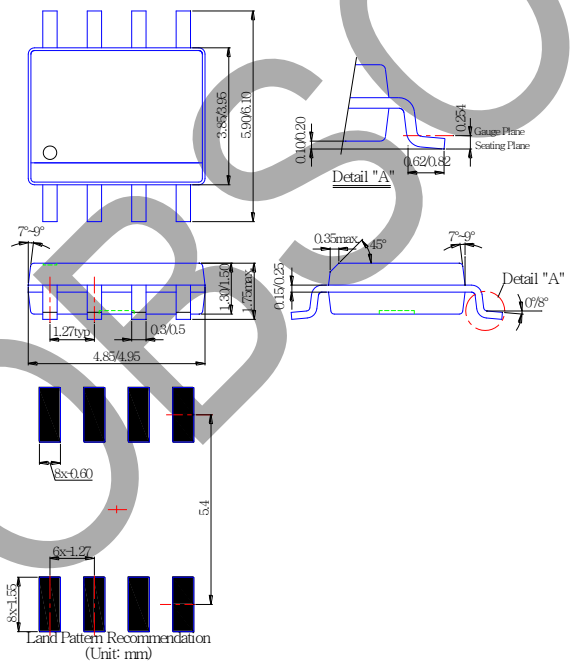
Marking Information

(1) SOP-8L



Package Information (All Dimensions in mm)

(1) Package type: SOP-8L



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