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)
- Packages: SOP-8L

■ Applications

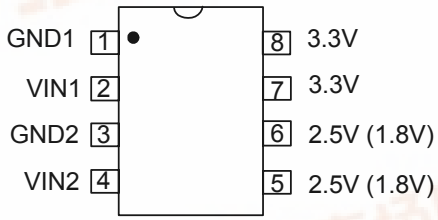
- PC peripheral
- Communication

■ General Description

AP1120 series are low dropout positive regulator with minimum of 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.

■ Connection Diagram

(Top View)



AP1120

■ 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.

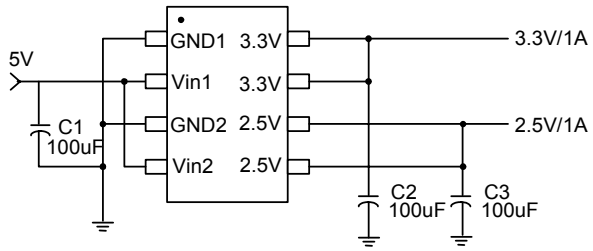
■ Ordering Information

AP 1120 X X X X

Package	Vout	Lead Free	Packing
S : SOP-8L	Blank : CH1=3.3V CH2=2.5V B : CH1=3.3V CH2=1.8V	Blank : Normal L : Lead Free Package	Blank : Tube A : Taping

Dual 1A Low Dropout Positive Regulator

■ Typical Circuit

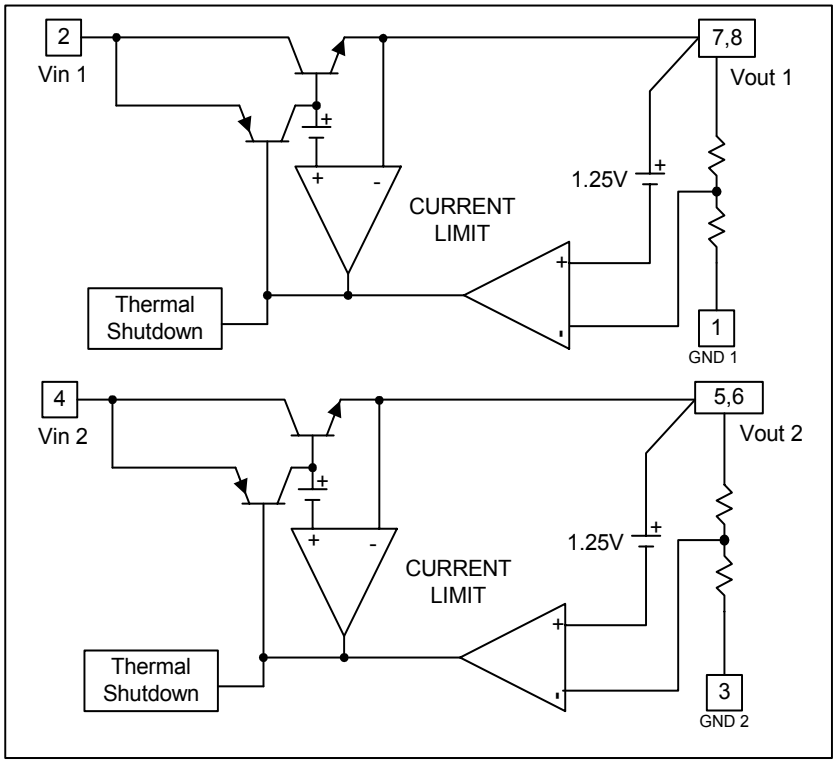


(3.3V/2.5V Dual output)

■ 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

■ Block Diagram



■ Electrical Characteristics (Under Operating Conditions)

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	AP1120(B) - V_{OUT1}	I_{OUT} = 10mA, T_J = 25°C, 4.8V≦V_{IN}≦12V	3.235	3.300	3.365	V
	AP1120 - V_{OUT2}	I_{OUT} = 10mA, T_J = 25°C, 4V≦V_{IN}≦12V	2.450	2.500	2.550	V
	AP1120B - V_{OUT2}	I_{OUT} = 10mA, T_J = 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_J=25°C				0.2	%
Load Regulation	AP1120 series V_{OUT1}	V_{IN} = 5V, 0≦I_{OUT}≦1A, T_J=25°C (Note 1,2)		26	33	mV
	AP1120 series V_{OUT2}	V_{IN}=4V, 0mA<Io<1A, T_J=25°C (Note 1,2)		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 3)			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)	SOP8: Control Circuitry/Power Transistor (Note4) CH1 or CH2 only CH1 & CH2 and PD1=PD2			50 45		°C/W
θ_{JC} Thermal Resistance Junction-to-Case	SOP8: Control Circuitry/Power Transistor (Note 4) CH1 or CH2 only CH1 & CH2 and PD1=PD2			20 12		°C/W

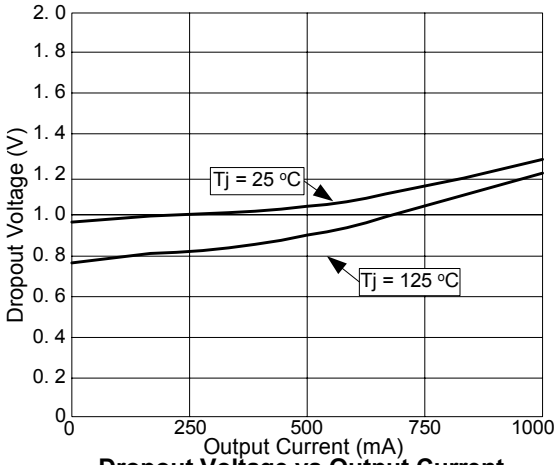
Note1: See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.

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

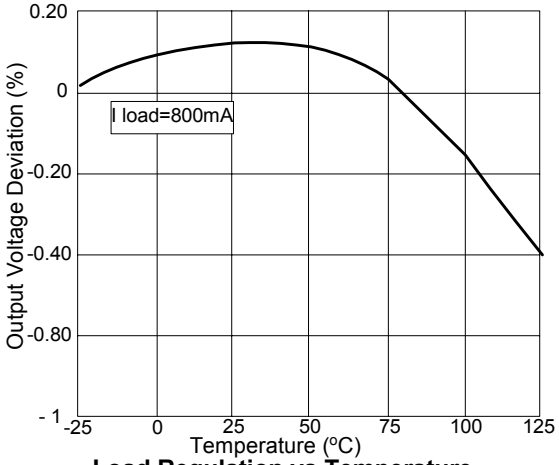
Note3: Quiescent current is defined as the minimum output current that requires maintaining regulation. At 12V input/output differential the device is guaranteed to regulate if the output current is greater than 10mA.

Note4: Vout1 and Vout2 are connected to the PCB cupper area 5.5mm*5.5mm separately. If you need large PD or lower Tc & Tj, please connect to the large cupper area >> 5.5mm*5.5mm (like 10mm*10mm).

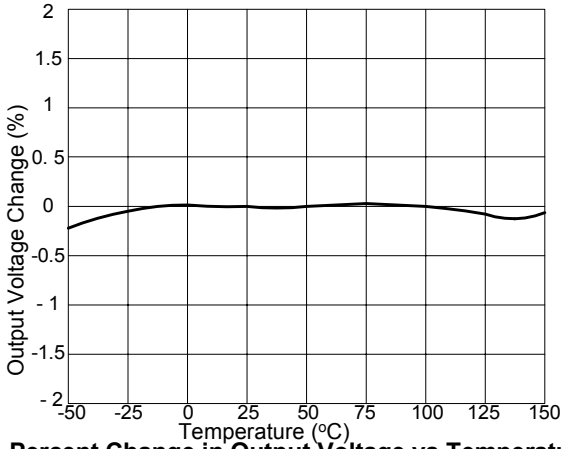
■ Typical Performance Characteristics



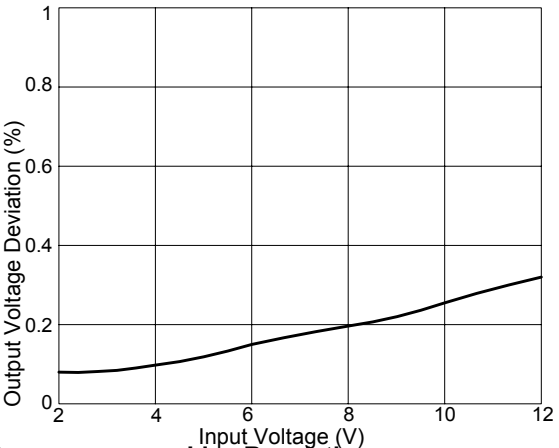
Dropout Voltage vs Output Current



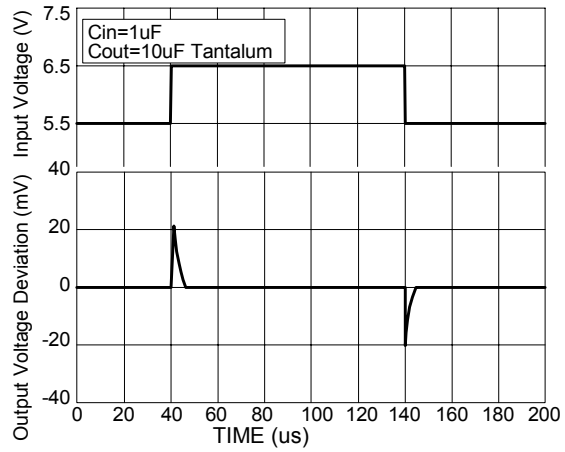
Load Regulation vs Temperature



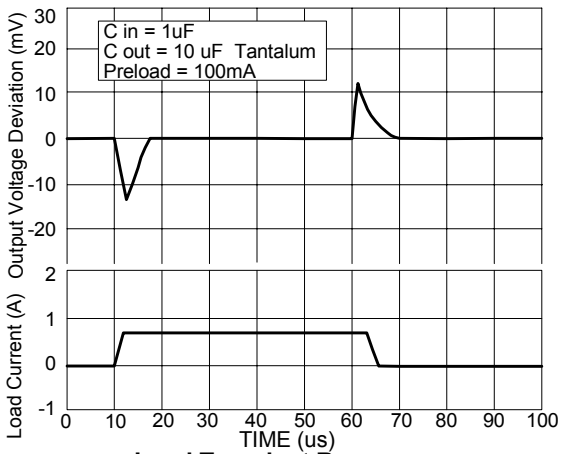
Percent Change in Output Voltage vs Temperature



Line Regulation

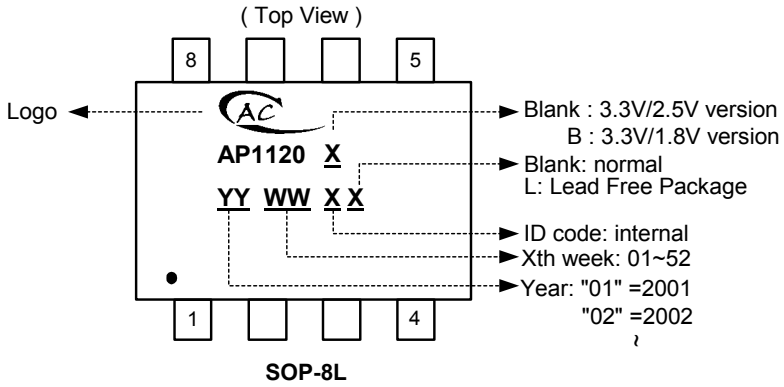


Line Transient Response

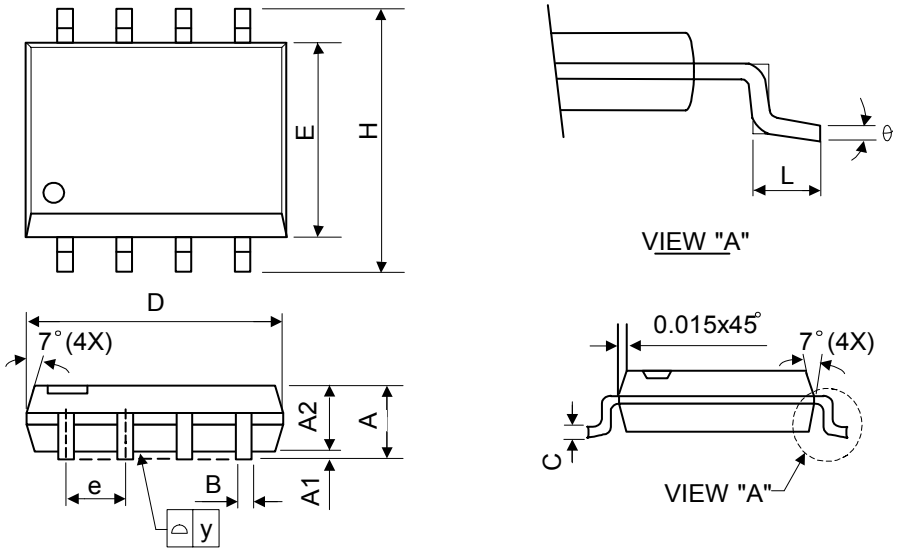


Load Transient Response

■ Marking Information



■ Package Information



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.40	1.60	1.75	0.055	0.063	0.069
A1	0.10	-	0.25	0.040	-	0.100
A2	1.30	1.45	1.50	0.051	0.057	0.059
B	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.010
D	4.80	5.05	5.30	0.189	0.199	0.209
E	3.70	3.90	4.10	0.146	0.154	0.161
e	-	1.27	-	-	0.050	-
H	5.79	5.99	6.20	0.228	0.236	0.244
L	0.38	0.71	1.27	0.015	0.028	0.050
y	-	-	0.10	-	-	0.004
θ	0^{O}	-	8^{O}	0^{O}	-	8^{O}