

## 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)
- **Pb-Free** Packages: SOP-8L

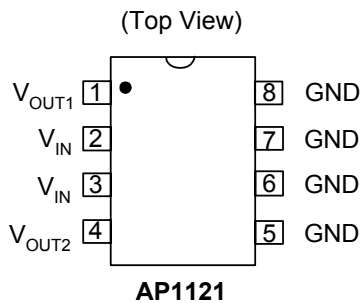
### ■ Applications

- PC peripheral
- Communication

### ■ General Description

AP1121 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. AP1121 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.

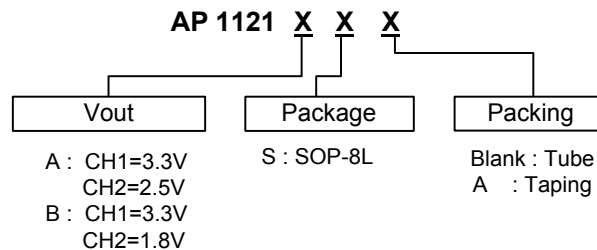
### ■ Connection Diagram



### ■ Pin Descriptions

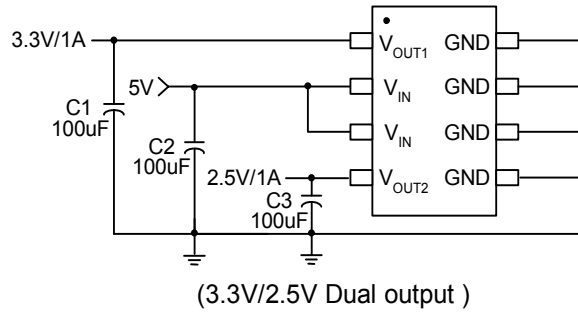
NAME	FUNCTION
GND	Ground
3.3V( $V_{OUT1}$ )	The output of the regulator. A minimum of 10uF capacitor must be connected from this pin to ground to insure stability.
2.5V/1.8V ( $V_{OUT2}$ )	
$V_{IN}$	The input pin of regulator. Typically a large storage capacitor is connected from this pin to ground.

### ■ Ordering Information



## Dual 1A Low Dropout Positive Regulator

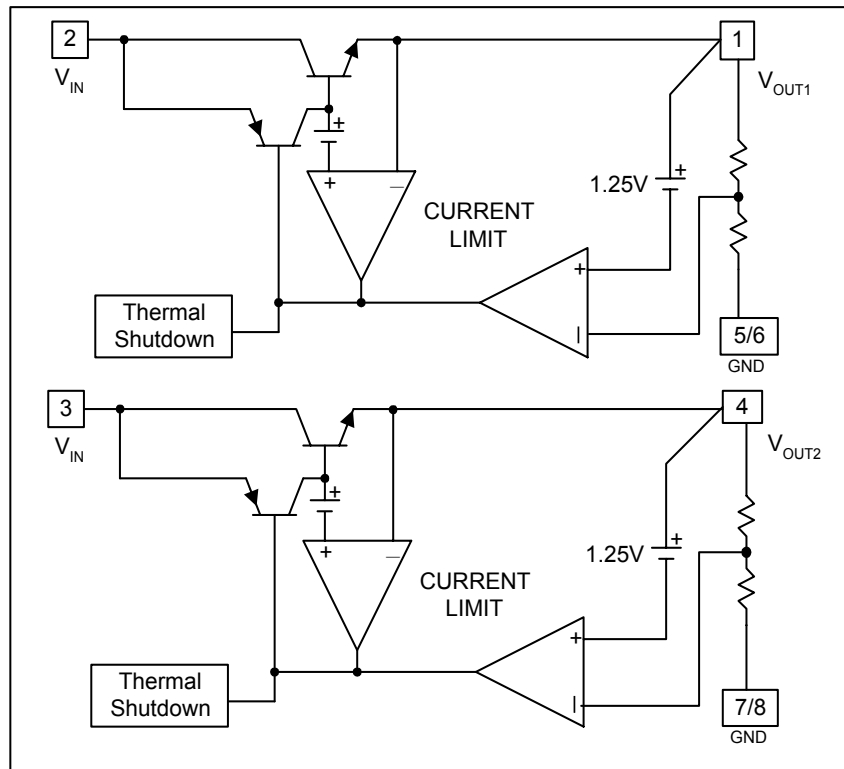
### ■ Typical Circuit



### ■ 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





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### ■ Electrical Characteristics (Under Operating Conditions)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT	
Output Voltage	AP1121_ - V <sub>OUT1</sub>	I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25°C, 4.8V ≤ V <sub>IN</sub> ≤ 12V	3.235	3.300	3.365	V
	AP1121A - V <sub>OUT2</sub>	I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25°C, 4V ≤ V <sub>IN</sub> ≤ 12V	2.450	2.500	2.550	V
	AP1121B - V <sub>OUT2</sub>	I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25°C, 4V ≤ V <sub>IN</sub> ≤ 12V	1.764	1.800	1.836	V
Line Regulation	I <sub>O</sub> =10mA, V <sub>OUT</sub> +1.5V<V <sub>IN</sub> <12V, T <sub>J</sub> =25°C			0.2	%	
Load Regulation	AP1121 series V <sub>OUT1</sub>	V <sub>IN</sub> = 5V, 0 ≤ I <sub>OUT</sub> ≤ 1A, T <sub>J</sub> =25°C (Note 1,2)		26	33	mV
	AP1121 series V <sub>OUT2</sub>	V <sub>IN</sub> =4V, 0mA<I <sub>O</sub> <1A, T <sub>J</sub> =25°C (Note 1,2)		20	25	mV
Dropout Voltage (V <sub>IN</sub> -V <sub>OUT</sub> )	I <sub>OUT</sub> = 1A, ΔV <sub>OUT</sub> =0.1%V <sub>OUT</sub>		1.3	1.4	V	
Current Limit	(V <sub>IN</sub> -V <sub>OUT</sub> ) = 5V	1.1			A	
Minimum Load Current	0°C ≤ T <sub>J</sub> ≤ 125°C (Note 3)		5	10	mA	
Thermal Regulation	T <sub>A</sub> =25°C, 30ms pulse		0.008	0.04	%/W	
Ripple Rejection	F=120Hz, C <sub>OUT</sub> =25uF Tantalum, I <sub>OUT</sub> =1A		60	70	dB	
Temperature Stability	I <sub>O</sub> =10mA		0.5		%	
θ <sub>JA</sub> 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 <sub>JC</sub> 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.

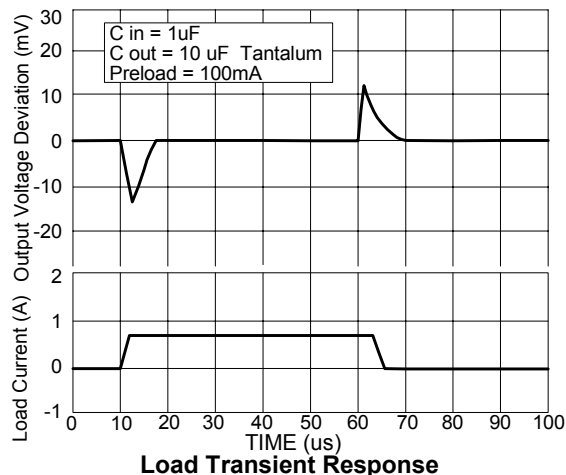
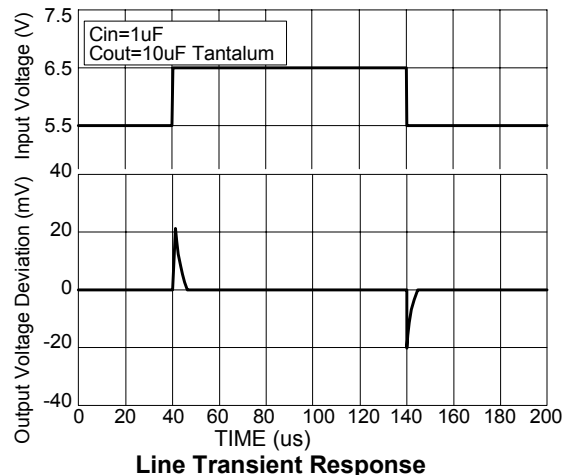
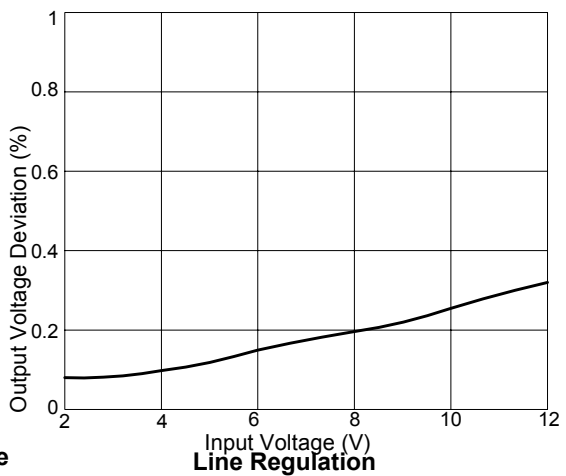
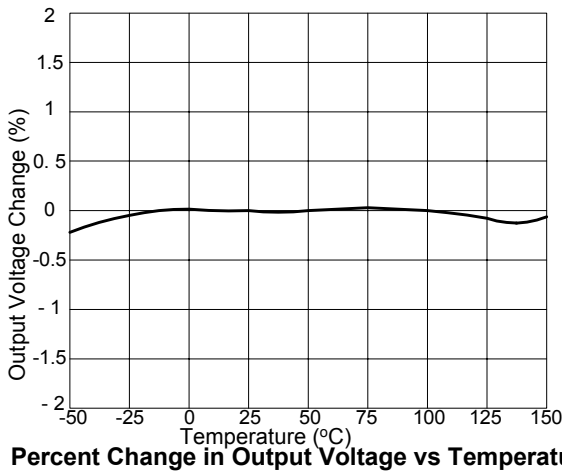
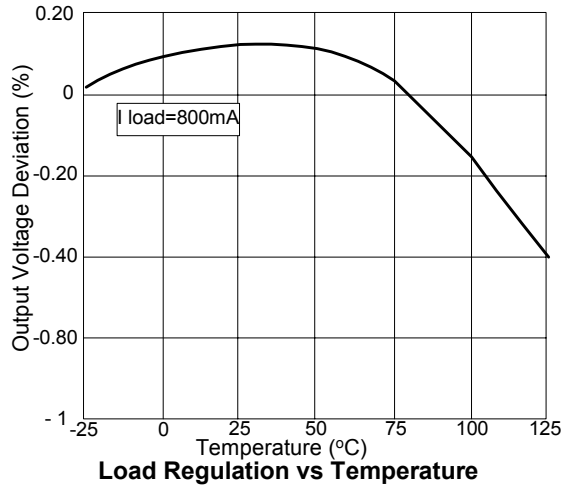
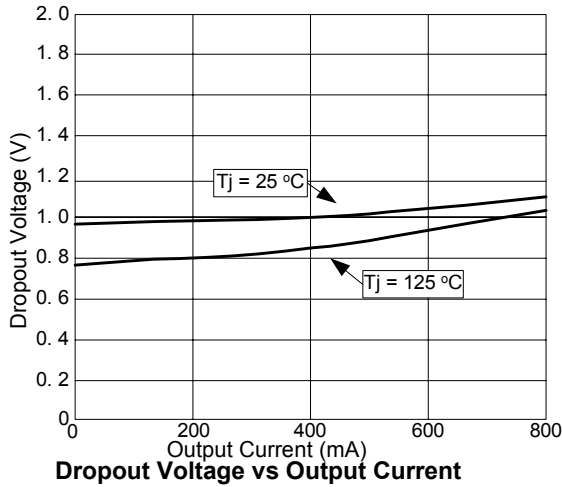
**Note2:** Line and load regulation are guaranteed up to the maximum power dissipation of 15W. Power dissipation is determined by the input/output differentially and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.

**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 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).

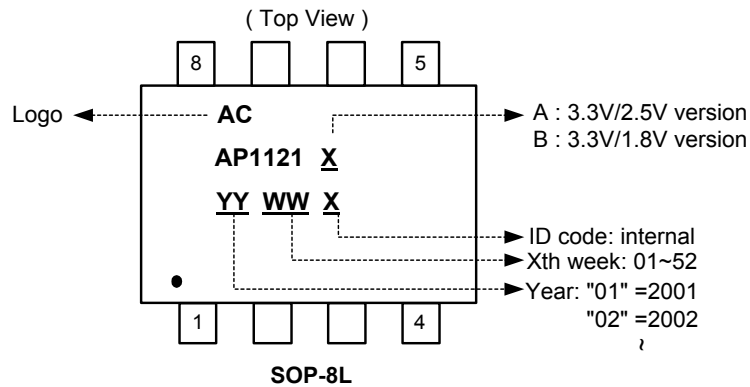
## Dual 1A Low Dropout Positive Regulator

### ■ Typical Performance Characteristics

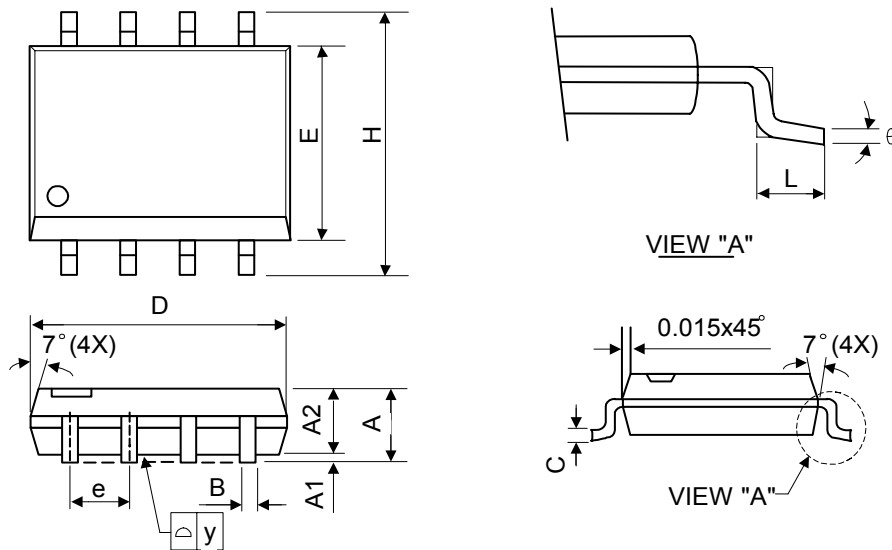


## Dual 1A Low Dropout Positive Regulator

### ■ 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°	-	8°	0°	-	8°