

### Features

- 1.3V maximum dropout at full load current
- Fast transient response
- Output current limiting for each channel
- Built-in thermal shutdown for each channel
- Good noise rejection
- Dual output ch1 = 3.3V, ch2 = 2.5V (ch2 = 1.8V for version B)
- SOP-8L: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/ RoHS Compliant for Lead Free and "Green" Products (Note 1)

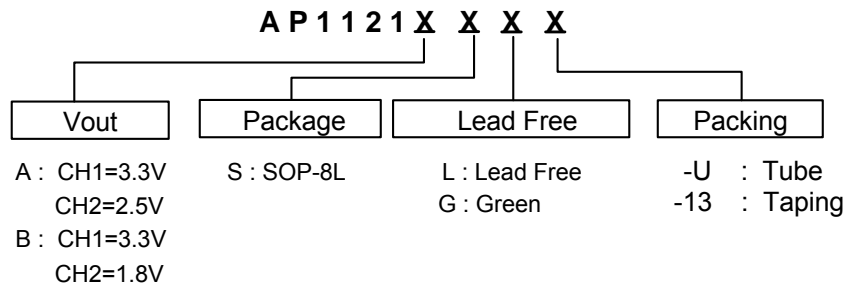
### General Description

AP1121 is a 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. AP1121 is 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

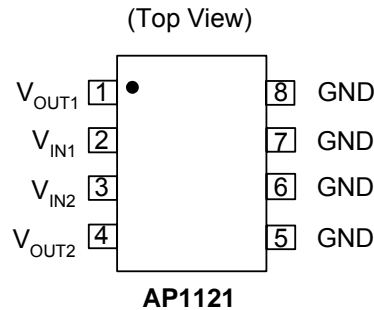


Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

Device (Note 2)	Package Code	Packaging	Tube/Bulk		13" Tape and Reel	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix
AP1121AS	S	SOP-8L	100	-U	2500/Tape & Reel	-13
AP1121BS	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>.

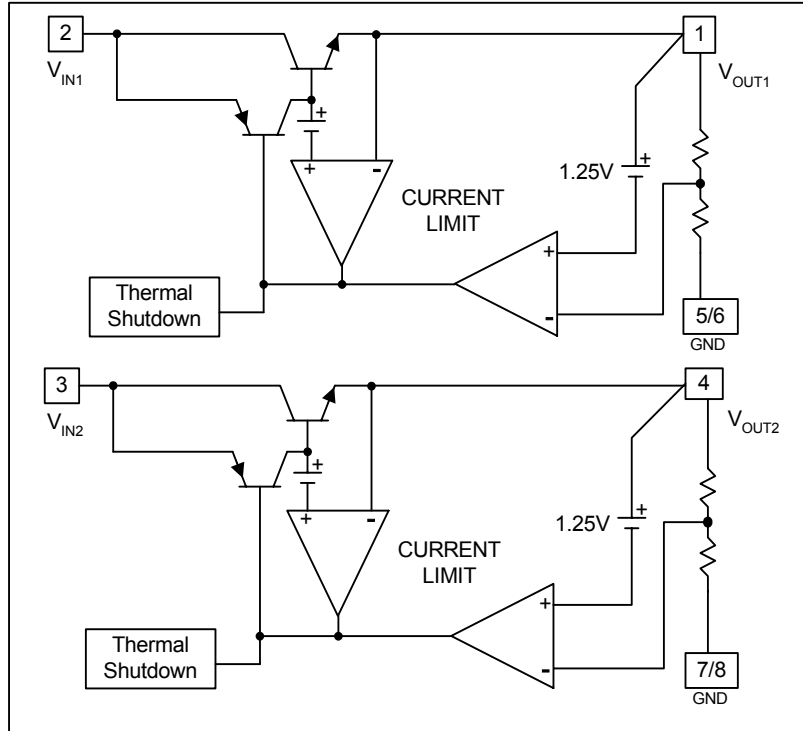
**Pin Assignments**



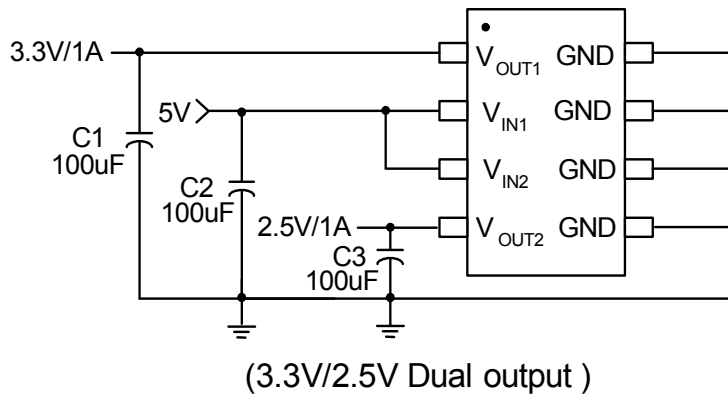
**Pin Descriptions**

NAME	Descriptions
GND	Ground
3.3V( $V_{OUT1}$ )	The output of the regulator. A minimum of 10uF capacitor ( $0.15\Omega \leq ESR \leq 20\Omega$ ) 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 ( $0.15\Omega \leq ESR \leq 20\Omega$ ) is connected from this pin to ground.

**Block Diagram**



**Typical Application Circuit**



## Absolute Maximum Ratings

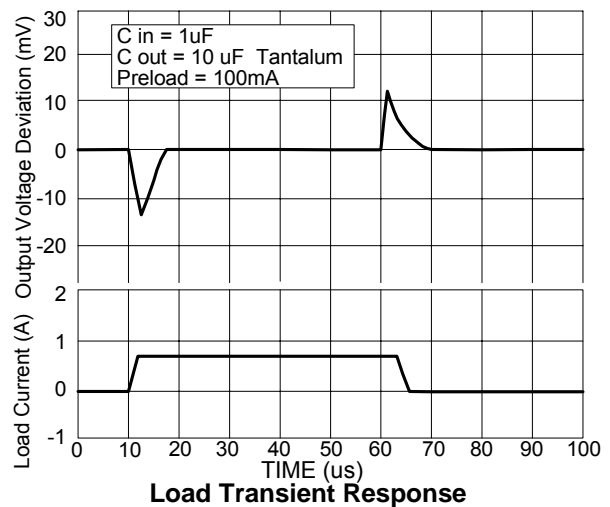
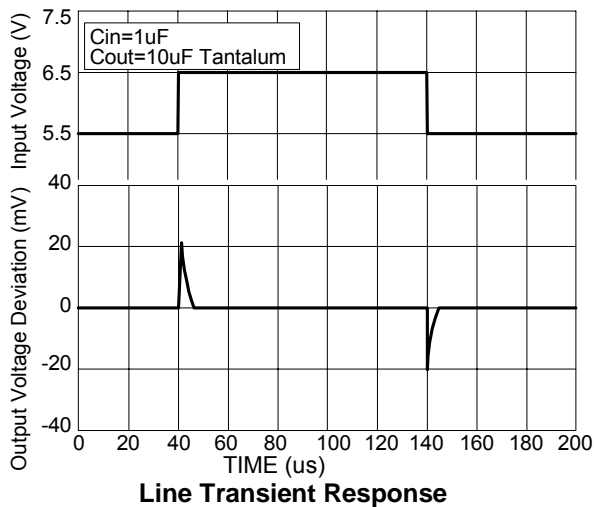
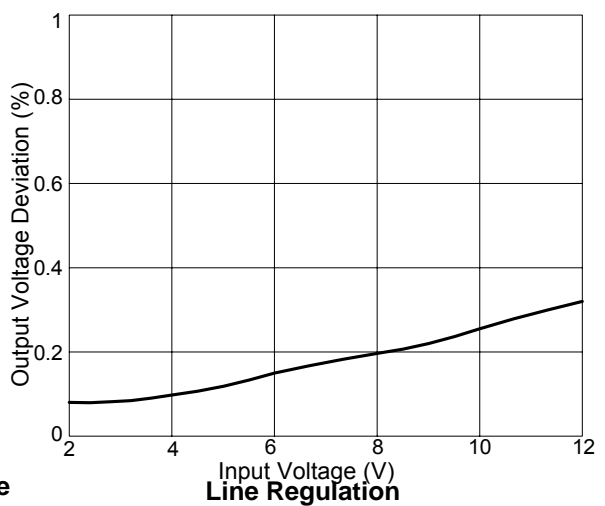
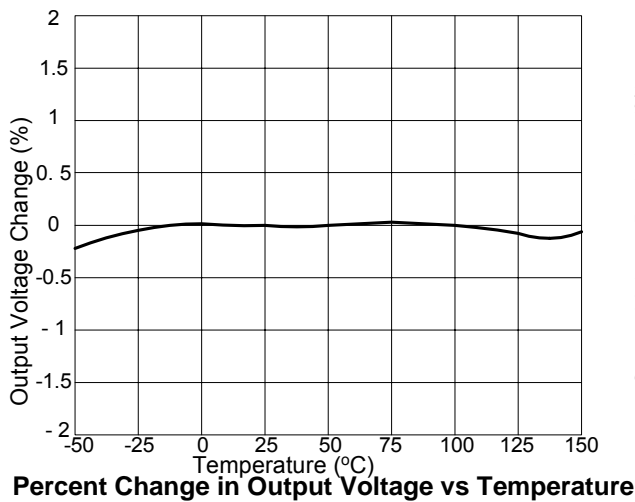
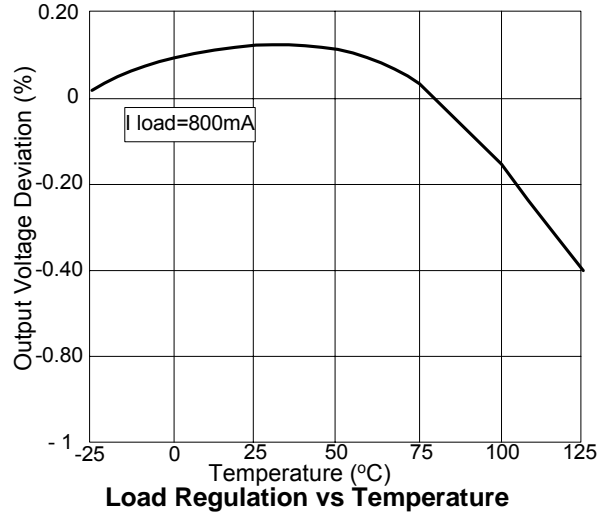
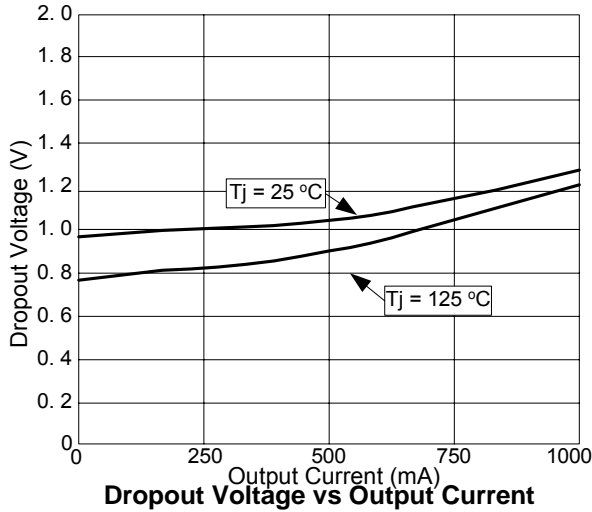
Symbol	Parameter	Rating	Unit
$V_{IN}$	DC Supply Voltage	-0.3 to 18 V	V
$T_{ST}$	Storage Temperature	-65 to +150	°C
$T_{OP}$	Operating Junction Temperature Range	0 to +125	°C
$T_M$	Maximum Junction Temperature	150	°C

## Electrical Characteristics ( Under Operating Conditions )

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	AP1121_ - $V_{OUT1}$	$I_{OUT} = 10mA, T_A = 25^{\circ}C, 4.8V \leq V_{IN} \leq 12V$	3.235	3.300	3.365	V
	AP1121A - $V_{OUT2}$	$I_{OUT} = 10mA, T_A = 25^{\circ}C, 4V \leq V_{IN} \leq 12V$	2.450	2.500	2.550	V
	AP1121B - $V_{OUT2}$	$I_{OUT} = 10mA, T_A = 25^{\circ}C, 4V \leq V_{IN} \leq 12V$	1.764	1.800	1.836	V
Line Regulation	$I_O = 10mA, V_{OUT} + 1.5V < V_{IN} < 12V, T_A = 25^{\circ}C$				0.2	%
Load Regulation	AP1121 series $V_{OUT1}$	$V_{IN} = 5V, 0 \leq I_{OUT} \leq 1A, T_A = 25^{\circ}C$ (Note 3, 4)		26	33	mV
	AP1121 series $V_{OUT2}$	$V_{IN} = 4V, 0mA < I_O < 1A, T_A = 25^{\circ}C$ (Note 4, 5)		20	25	mV
Dropout Voltage ( $V_{IN} - V_{OUT}$ )	$I_{OUT} = 1A, \Delta V_{OUT} = 0.1\% V_{OUT}$			1.3	1.4	V
Current Limit	$(V_{IN} - V_{OUT}) = 5V$		1.1			A
Minimum Load Current	$0^{\circ}C \leq T_J \leq 125^{\circ}C$ (Note 5)			5	10	mA
Thermal Regulation	$T_A = 25^{\circ}C, 30ms$ pulse			0.008	0.04	%/W
Ripple Rejection	$F = 120Hz, C_{OUT} = 25\mu F$ Tantalum, $I_{OUT} = 1A$			60	70	dB
Temperature Stability	$I_O = 10mA$			0.5		%
$\theta_{JA}$ Thermal Resistance Junction-to-Ambient (No heat sink; No air flow)	SOP8: Control Circuitry/Power Transistor (Note 6) CH1 or CH2 only CH1 & CH2 and PD1 = PD2			177 158		°C/W
$\theta_{JC}$ Thermal Resistance Junction-to-Case	SOP8: Control Circuitry/Power Transistor (Note 6) CH1 or CH2 only CH1 & CH2 and PD1 = PD2			29 19		°C/W

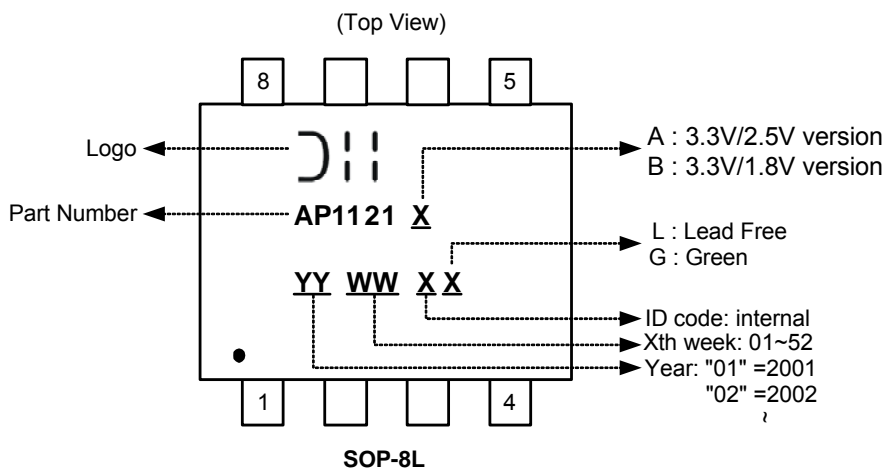
- Note:
- See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.
  - Line and load regulation 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.
  - 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.
  - $V_{out1}$  and  $V_{out2}$  are connected to the PCB copper area 5.5mm\*5.5mm separately. If you need large PD or lower  $T_c$  &  $T_j$ , please connect to the large copper area >> 5.5mm\*5.5mm (like 10mm\*10mm).

**Typical Performance Characteristics**



**Marking Information**

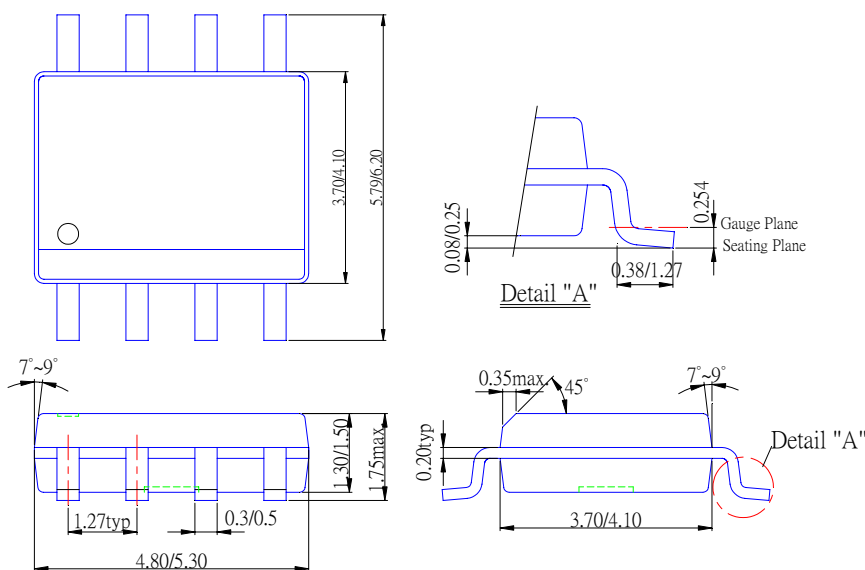
**SOP-8L**



Device	Package	Identification Code
AP1121AS	SOP-8L	AP1121
AP1121BS	SOP-8L	AP1121

**Package Information**

**Package Type: SOP-8L**



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