



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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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 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 (Note 1)

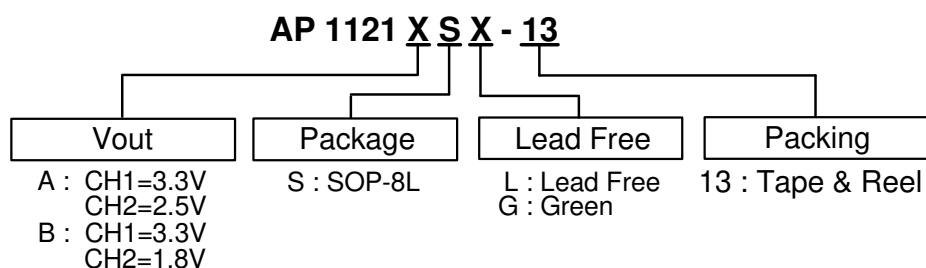
### General Description

AP1121 is a low dropout positive regulator which provides 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

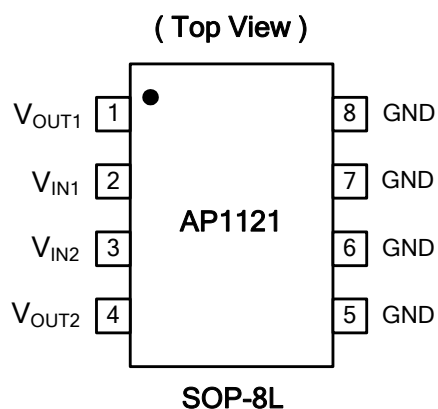
### Ordering Information



Device	Package Code	Packaging (Note 2)	13" Tape and Reel	
			Quantity	Part Number Suffix
AP1121XSL-13	S	SOP-8L	2500/Tape & Reel	-13
AP1121XSG-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](http://www.diodes.com/products/lead_free.html).  
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>.

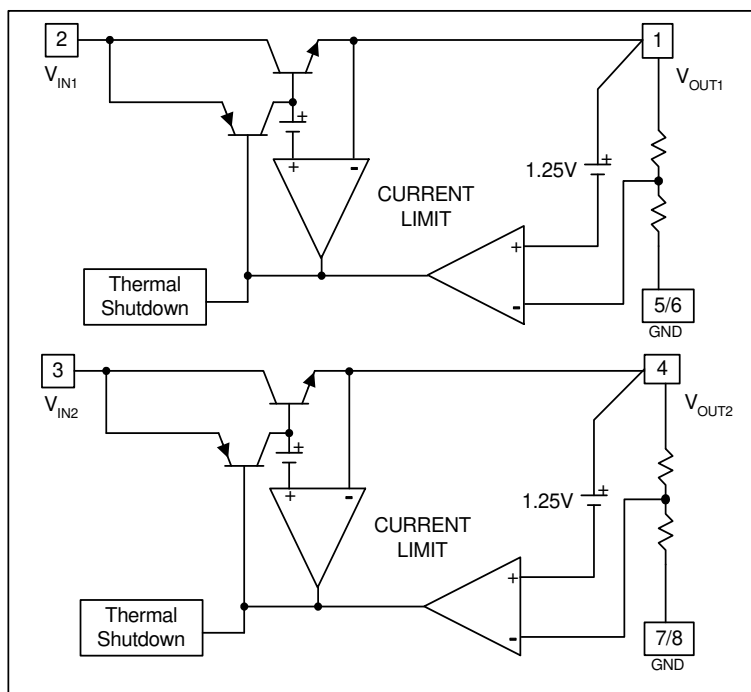
## Pin Assignments



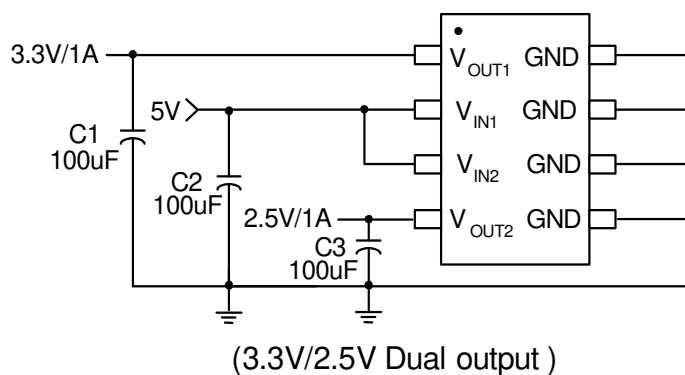
## Pin Descriptions

Pin Name	Descriptions
GND	Ground
3.3V(V <sub>OUT1</sub> )	The output of the regulator. A minimum of 10uF capacitor ( $0.15\Omega \leq \text{ESR} \leq 20\Omega$ ) must be connected from this pin to ground to insure stability.
2.5V/1.8V (V <sub>OUT2</sub> )	
V <sub>IN</sub>	The input pin of regulator. Typically a large storage capacitor ( $0.15\Omega \leq \text{ESR} \leq 20\Omega$ ) is connected from this pin to ground.

## Block Diagram



## Typical Application Circuit





### Absolute Maximum Ratings

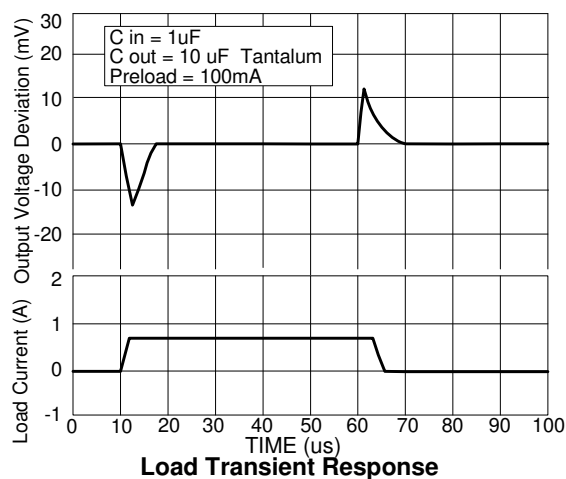
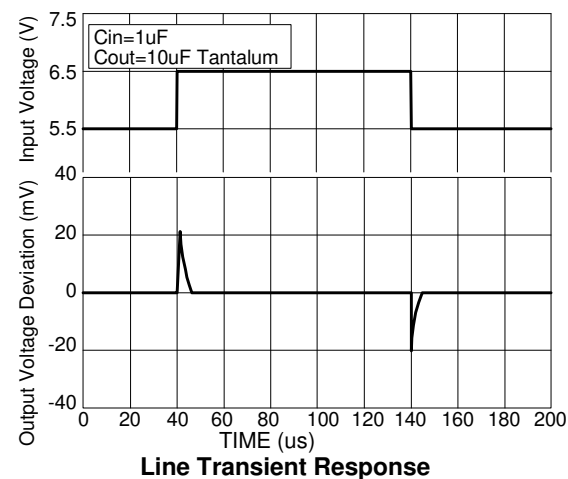
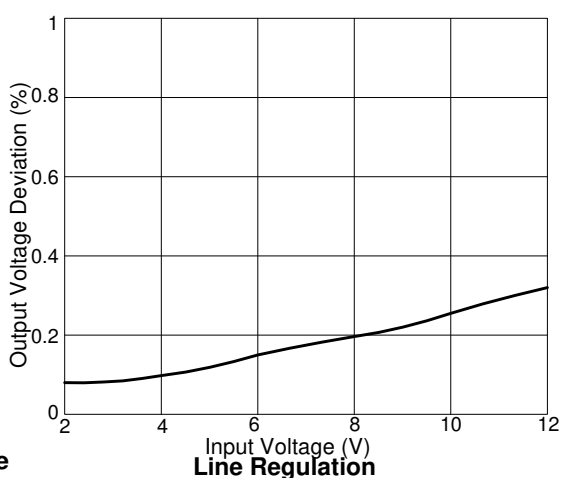
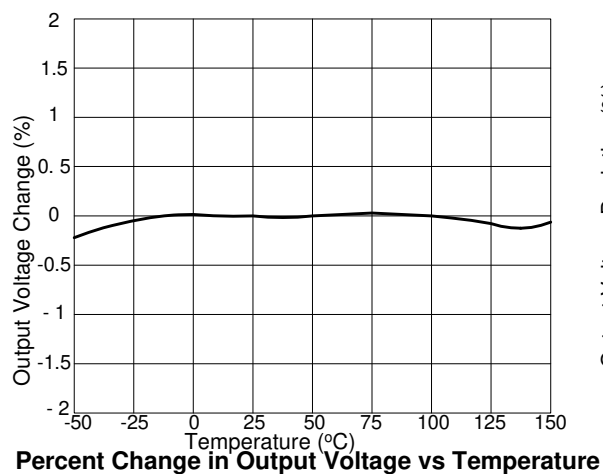
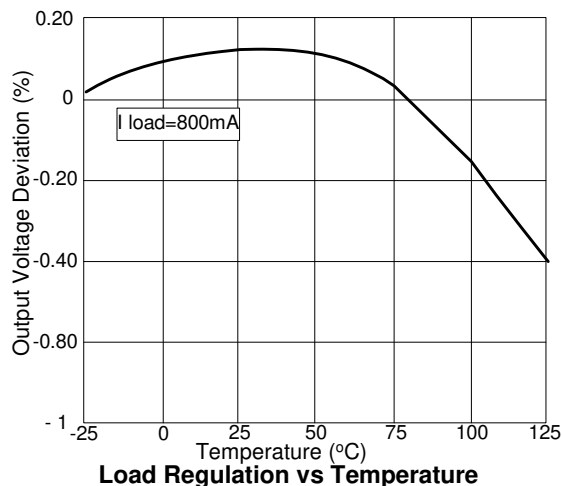
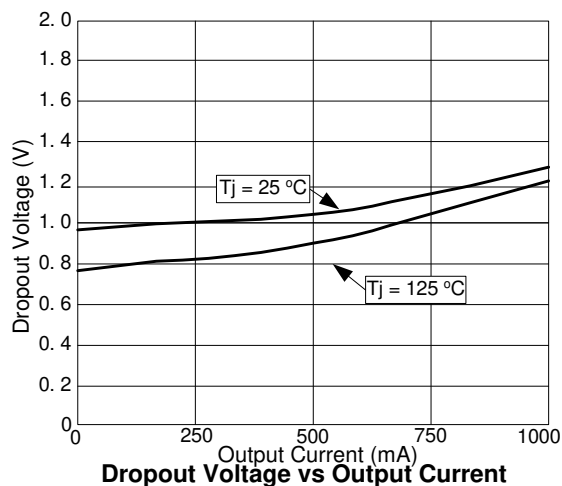
Symbol	Parameter	Rating	Unit
$V_{IN}$	DC Supply Voltage	-0.3 to 18 V	V
$T_{ST}$	Storage Temperature	-65 to +150	°C
$T_{OP}$	Operating Junction Temperature Range	0 to +125	°C
$T_M$	Maximum Junction Temperature	150	°C

### 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 $V_{IN} = 5V, 0 \leq I_{OUT} \leq 1A, T_A = 25^\circ C$ (Note 3, 4) $V_{OUT1}$		26	33	mV
	AP1121 series $V_{IN} = 4V, 0mA < I_O < 1A, T_A = 25^\circ C$ (Note 4, 5) $V_{OUT2}$		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)	SOP-8L: 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	SOP-8L: Control Circuitry/Power Transistor (Note 6) CH1 or CH2 only CH1 & CH2 and PD1 = PD2		29 19		°C/W

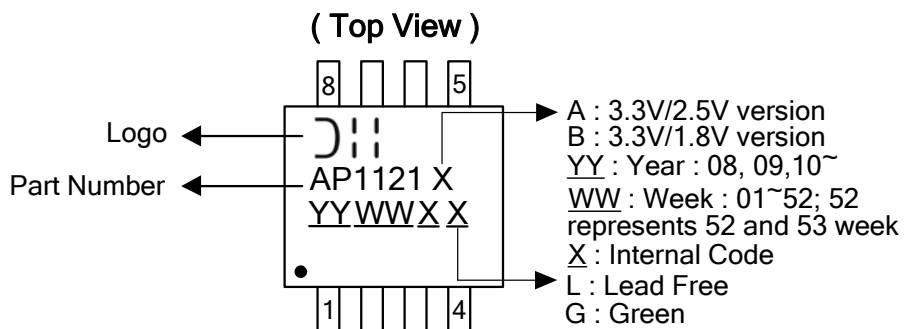
- Notes:
- See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.
  - Line and load regulation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



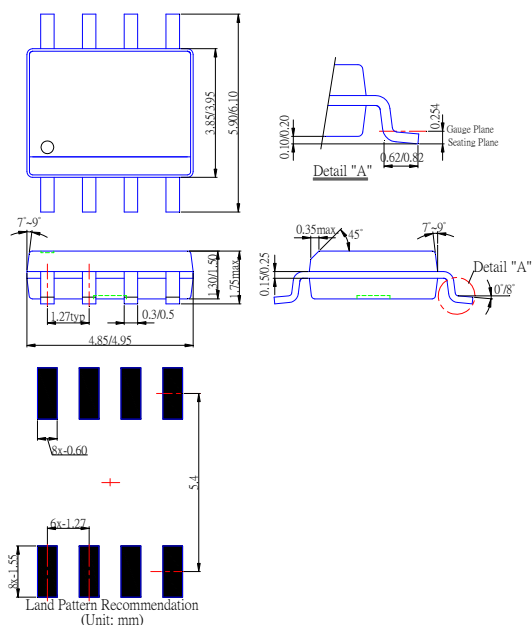
## Marking Information

### (1) SOP-8L



## Package Information

### (1) Package type: SOP-8L



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