

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)

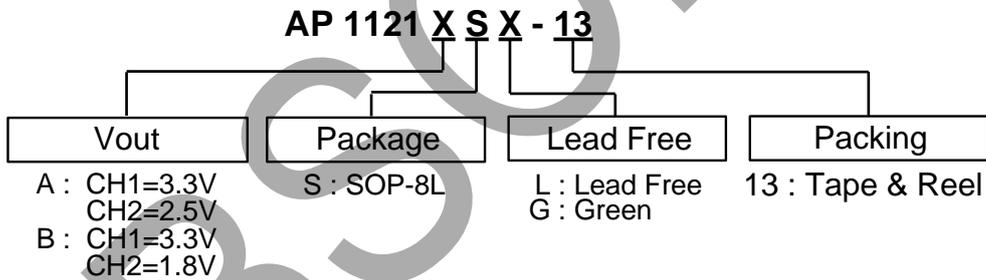
General Description

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

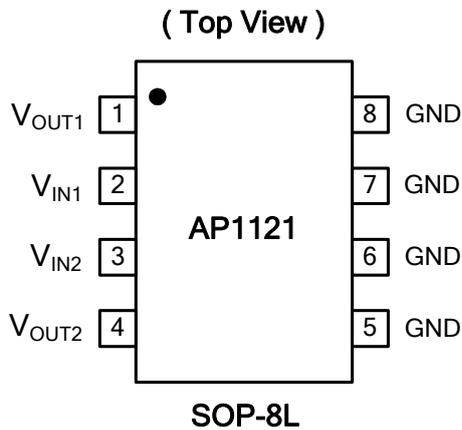
Ordering Information



| 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.
 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>.

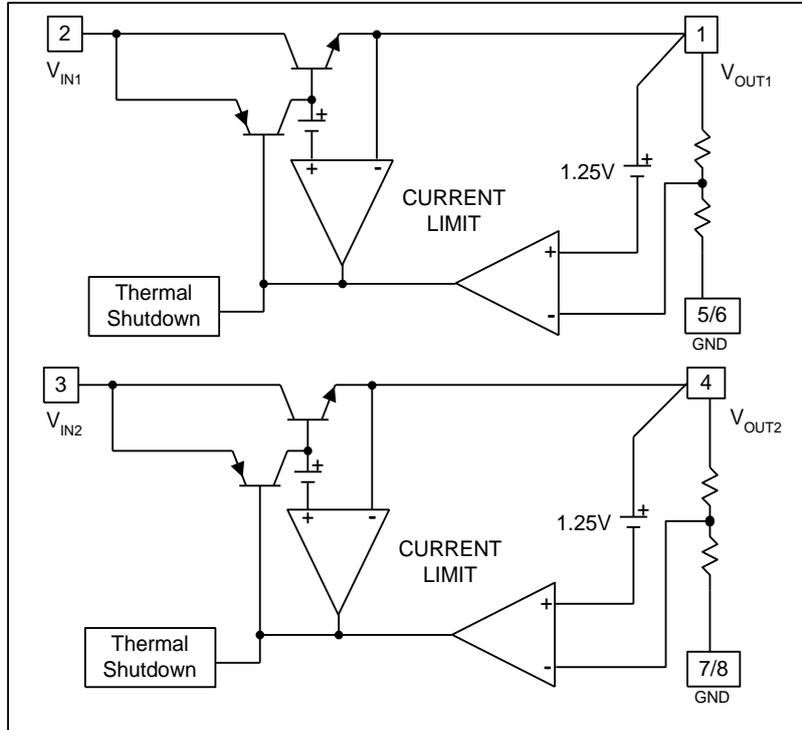
Pin Assignments



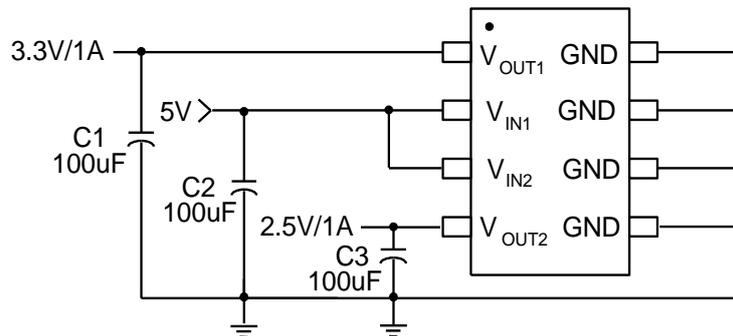
Pin Descriptions

| Pin Name | Descriptions |
|---|---|
| GND | Ground |
| 3.3V(V_{OUT1}) 2.5V/1.8V (V_{OUT2}) | 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. |
| 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



(3.3V/2.5V Dual output)

Absolute Maximum Ratings

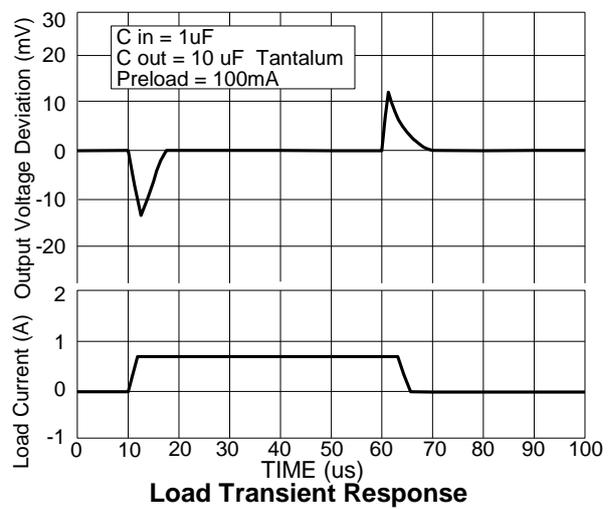
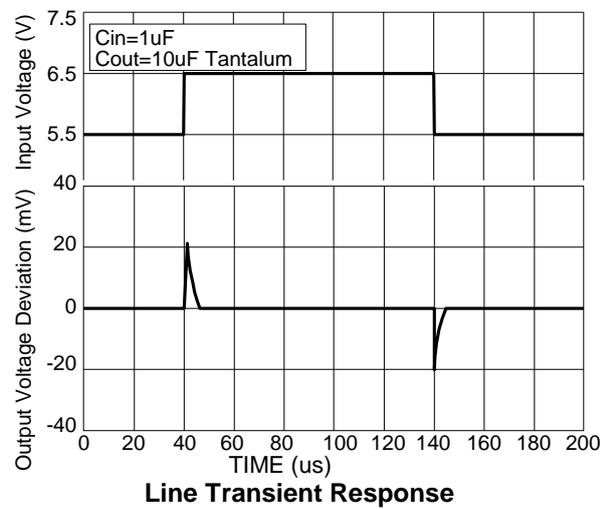
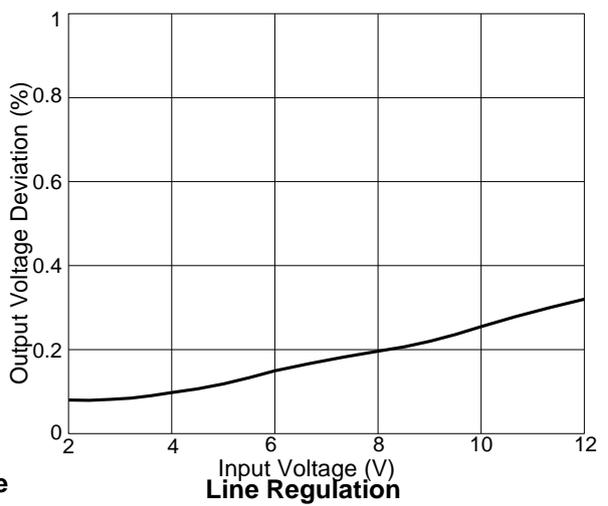
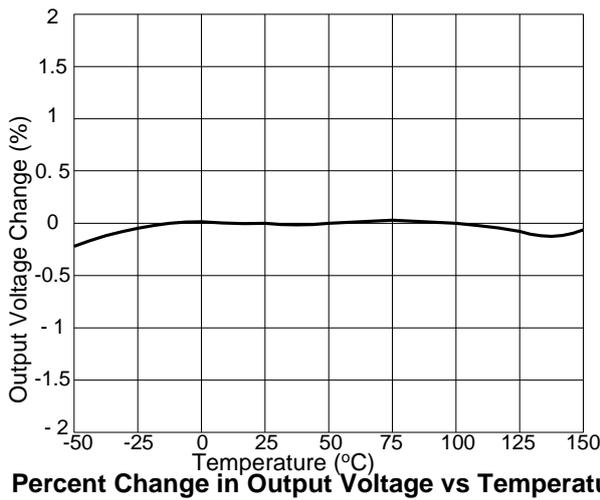
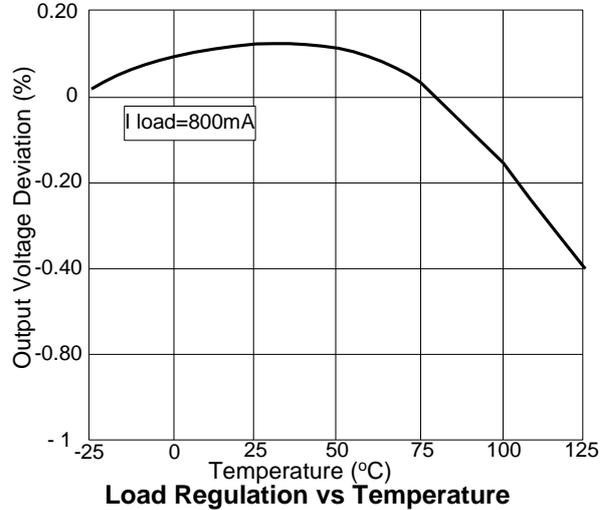
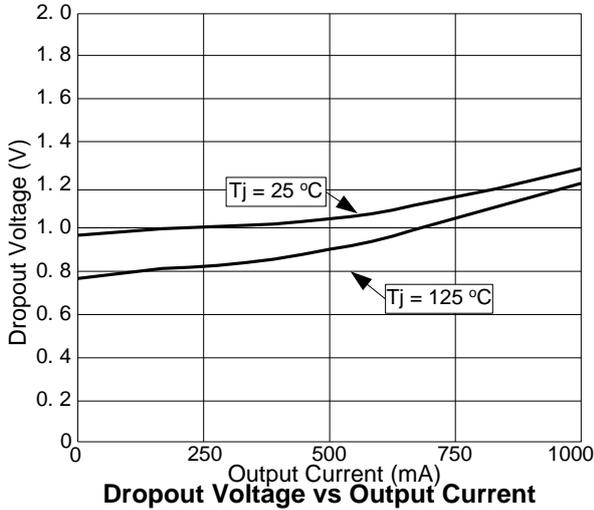
| Symbol | Parameter | Rating | Unit |
|----------|--------------------------------------|--------------|------|
| V_{IN} | DC Supply Voltage | -0.3 to 18 V | V |
| T_{ST} | Storage Temperature | -65 to +150 | °C |
| T_{OP} | Operating Junction Temperature Range | 0 to +125 | °C |
| T_M | Maximum Junction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

Electrical Characteristics (Under Operating Conditions)

| Parameter | Conditions | Min | Typ. | Max | Unit |
|--|---|-------|------------|-------|------|
| Output Voltage | AP1121_ - V_{OUT1} $I_{OUT} = 10\text{mA}$, $T_A = 25^\circ\text{C}$, $4.8\text{V} \leq V_{IN} \leq 12\text{V}$ | 3.235 | 3.300 | 3.365 | V |
| | AP1121A - V_{OUT2} $I_{OUT} = 10\text{mA}$, $T_A = 25^\circ\text{C}$, $4\text{V} \leq V_{IN} \leq 12\text{V}$ | 2.450 | 2.500 | 2.550 | V |
| | AP1121B - V_{OUT2} $I_{OUT} = 10\text{mA}$, $T_A = 25^\circ\text{C}$, $4\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.764 | 1.800 | 1.836 | V |
| Line Regulation | $I_O = 10\text{mA}$, $V_{OUT} + 1.5\text{V} < V_{IN} < 12\text{V}$, $T_A = 25^\circ\text{C}$ | | | 0.2 | % |
| Load Regulation | AP1121 series V_{OUT1} $V_{IN} = 5\text{V}$, $0 \leq I_{OUT} \leq 1\text{A}$, $T_A = 25^\circ\text{C}$ (Note 3, 4) | | 26 | 33 | mV |
| | AP1121 series V_{OUT2} $V_{IN} = 4\text{V}$, $0\text{mA} < I_O < 1\text{A}$, $T_A = 25^\circ\text{C}$ (Note 4, 5) | | 20 | 25 | mV |
| Dropout Voltage ($V_{IN} - V_{OUT}$) | $I_{OUT} = 1\text{A}$, $\Delta V_{OUT} = 0.1\% V_{OUT}$ | | 1.3 | 1.4 | V |
| Current Limit | ($V_{IN} - V_{OUT}$) = 5V | 1.1 | | | A |
| Minimum Load Current | $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$ (Note 5) | | 5 | 10 | mA |
| Thermal Regulation | $T_A = 25^\circ\text{C}$, 30ms pulse | | 0.008 | 0.04 | %/W |
| Ripple Rejection | $F = 120\text{Hz}$, $C_{OUT} = 25\mu\text{F}$ Tantalum, $I_{OUT} = 1\text{A}$ | | 60 | 70 | dB |
| Temperature Stability | $I_O = 10\text{mA}$ | | 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 | | 177 158 | | °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 | | 29 19 | | °C/W |

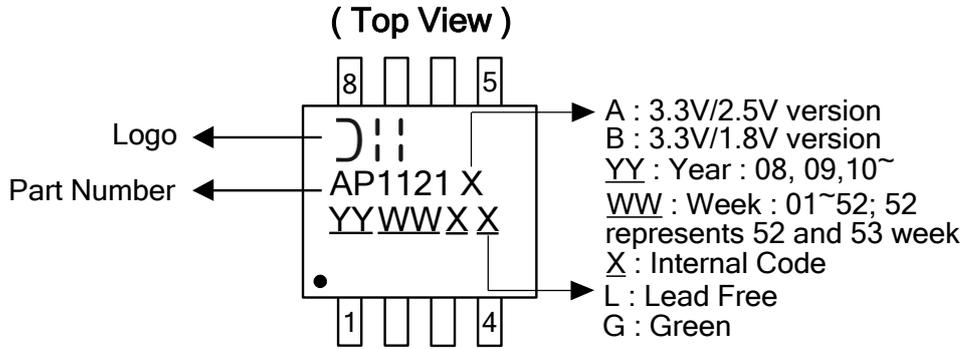
- Notes:
- See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead = 1/18" from the package.
 - Line and load regulation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



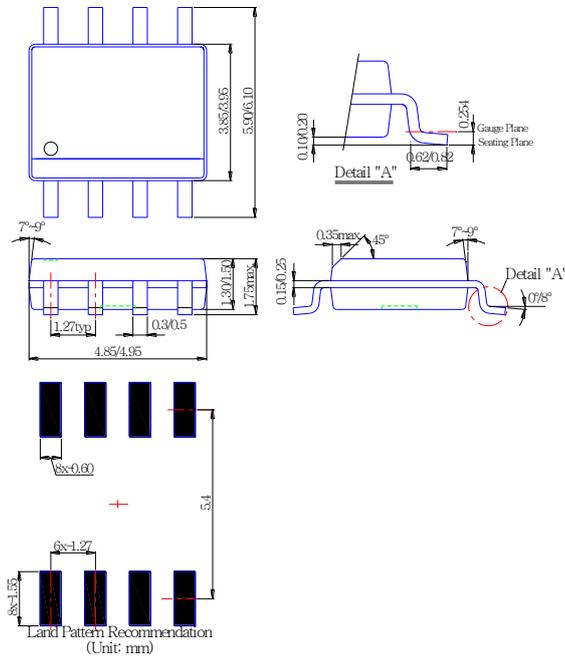
Marking Information

(1) SOP-8L



Package Information

(1) Package type: SOP-8L



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