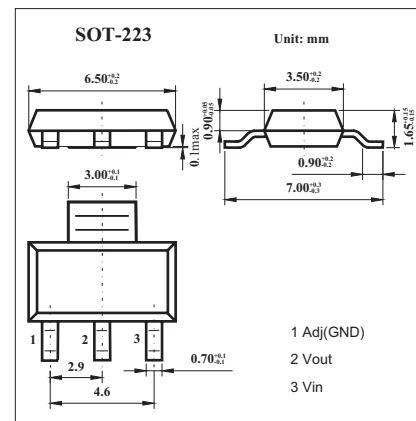


1A Low Dropout Positive Adjustable or Fixed-Mode Regulator AMS1117

■ Features

- 1.4V maximum dropout at full load current
- Fast transient response
- Output current limiting
- Built-in thermal shutdown
- Good noise rejection
- 3-Terminal Adjustable or Fixed 1.5V, 1.8V, 1.9V, 2.5V, 3.3V, 5.0V

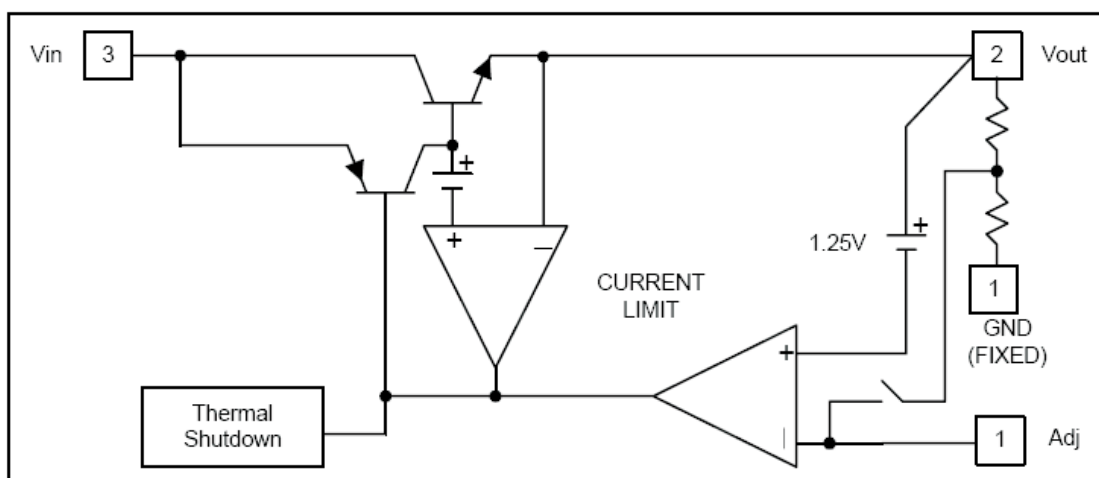


■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|--|---------------|--------------------|---------------------------|
| Maximum Input Voltage | V_{in} | 18 | V |
| Power Dissipation | P_D | Internally Limited | |
| Thermal Resistance Junction-to-Ambient | θ_{JA} | 117 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction-to-Case * | θ_{JC} | 15 | $^\circ\text{C}/\text{W}$ |
| Operating Junction Temperature Range | T_{OP} | 0 to +150 | $^\circ\text{C}$ |
| Storage Temperature | T_{ST} | -65 to +150 | $^\circ\text{C}$ |

* Control Circuitry/Power Transistor

■ Block Diagram



1A Low Dropout Positive Adjustable or Fixed-Mode Regulator AMS1117

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Parameter | | Testconditions | Min | Typ | Max | Unit |
|--|---|---|-------|-------|-------|------|
| Reference Voltage | AMS1117-ADJ | $T_J = 25^\circ\text{C}, (V_{IN} - V_{OUT}) = 1.5\text{V}, I_O = 10\text{mA}$ | 1.225 | 1.250 | 1.275 | V |
| Output Voltage | AMS1117-1.5 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.470 | 1.500 | 1.530 | V |
| | AMS1117-1.8 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3.3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.764 | 1.800 | 1.836 | V |
| | AMS1117-1.9 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3.3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.862 | 1.900 | 1.938 | V |
| | AMS1117-2.5 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 4\text{V} \leq V_{IN} \leq 12\text{V}$ | 2.450 | 2.500 | 2.550 | V |
| | AMS1117-3.3 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 4.8\text{V} \leq V_{IN} \leq 12\text{V}$ | 3.235 | 3.300 | 3.365 | V |
| | AMS1117-5.0 | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 6.5\text{V} \leq V_{IN} \leq 12\text{V}$ | 4.900 | 5.000 | 5.100 | V |
| Line Regulation | AMS1117-XXX | $I_O = 10\text{mA}, V_{OUT} + 1.5\text{V} < V_{IN} < 12\text{V}, T_J = 25^\circ\text{C}$ | | | 0.2 | % |
| Load Regulation | AMS1117-ADJ | $V_{IN} = 3.3\text{V}, V_{adj} = 0, 0\text{mA} < I_O < 1\text{A}, T_J = 25^\circ\text{C}$ | | | 1 | % |
| | AMS1117-1.5 | $V_{IN} = 3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J = 25^\circ\text{C}$ | | 12 | 15 | mV |
| | AMS1117-1.8 | $V_{IN} = 3.3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J = 25^\circ\text{C}$ | | 15 | 18 | mV |
| | AMS1117-1.9 | $V_{IN} = 3.3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J = 25^\circ\text{C}$ | | 16 | 19 | mV |
| | AMS1117-2.5 | $V_{IN} = 4\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J = 25^\circ\text{C}$ | | 20 | 25 | mV |
| | AMS1117-3.3 | $V_{IN} = 5\text{V}, 0\text{mA} \leq I_O \leq 1\text{A}, T_J = 25^\circ\text{C}$ | | 26 | 33 | mV |
| | AMS1117-5.0 | $V_{IN} = 8\text{V}, 0\text{mA} \leq I_O \leq 1\text{A}, T_J = 25^\circ\text{C}$ | | 40 | 50 | mV |
| Dropout Voltage ($V_{IN} - V_{OUT}$) | AMS1117-XXX | $I_{OUT} = 1\text{A}, \Delta V_{OUT} = 0.1\% V_{OUT}$ | | 1.3 | 1.4 | V |
| Current Limit | AMS1117-XXX | $(V_{IN} - V_{OUT}) = 5\text{V}$ | 1.1 | | | A |
| Minimum Load Current | AMS1117-XXX | $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$ | | 5 | 10 | mA |
| Thermal Regulation | | $T_A = 25^\circ\text{C}, 30\text{ms pulse}$ | | 0.008 | 0.04 | %/W |
| Ripple Rejection | $F = 120\text{Hz}, C_{OUT} = 25\mu\text{F Tantalum}, I_{OUT} = 1\text{A}$ | | | | | |
| | AMS1117-XXX | $V_{IN} = V_{OUT} + 3\text{V}$ | | 60 | 70 | dB |
| Temperature Stability | | $I_O = 10\text{mA}$ | | 0.5 | | % |

Typical Applications

