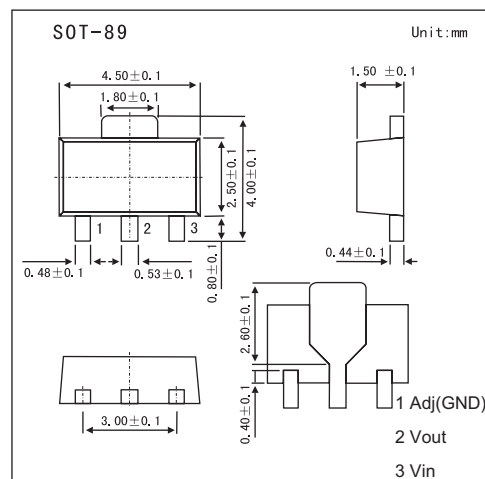


## 1A Low Dropout Positive Adjustable or Fixed-Mode Regulator

## 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

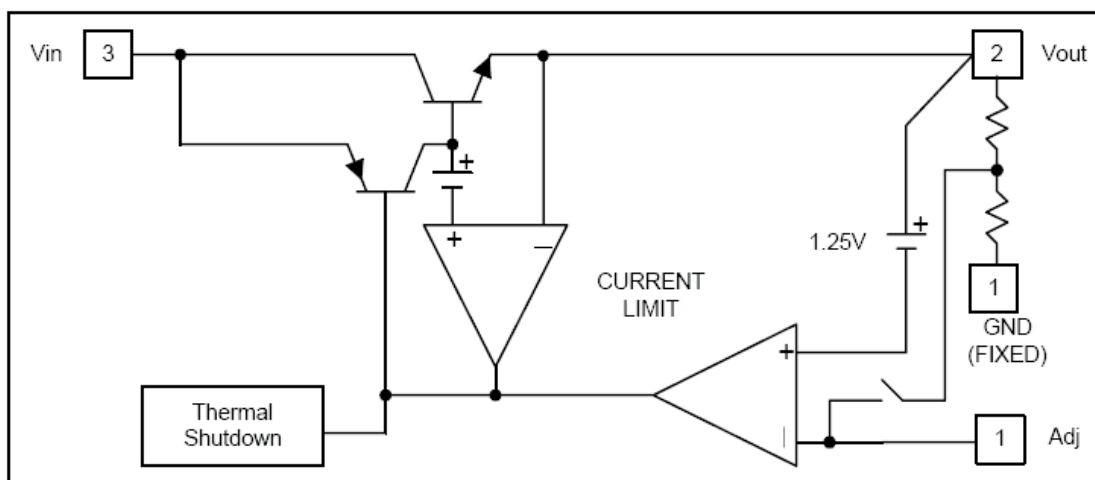


Absolute Maximum Ratings  $T_a = 25^{\circ}\text{C}$

| Parameter                              | Symbol          | Rating             | Unit |
|----------------------------------------|-----------------|--------------------|------|
| DC Supply Voltage                      | V <sub>in</sub> | -0.3 to 12         | V    |
| Power Dissipation                      | P <sub>D</sub>  | Internally Limited |      |
| Thermal Resistance Junction-to-Ambient | θ <sub>JA</sub> | 300                | °C/W |
| Thermal Resistance Junction-to-Case *  | θ <sub>JC</sub> | 100                | °C/W |
| Operating Junction Temperature Range   | T <sub>OP</sub> | 0 to +150          | °C   |
| Storage Temperature                    | T <sub>ST</sub> | -65 to +150        | °C   |

\* Control Circuitry/Power Transistor

### Block Diagram



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

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

| Parameter                            |                                                                     | Testconditions                                                                           | Min   | Typ   | Max   | Unit |
|--------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------|-------|-------|------|
| Reference Voltage                    | FS1117-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                       | FS1117-1.5                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3\text{V} \leq V_{IN} \leq 12\text{V}$   | 1.470 | 1.500 | 1.530 | V    |
|                                      | FS1117-1.8                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3.3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.764 | 1.800 | 1.836 | V    |
|                                      | FS1117-1.9                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 3.3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.862 | 1.900 | 1.938 | V    |
|                                      | FS1117-2.5                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 4\text{V} \leq V_{IN} \leq 12\text{V}$   | 2.450 | 2.500 | 2.550 | V    |
|                                      | FS1117-3.3                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 4.8\text{V} \leq V_{IN} \leq 12\text{V}$ | 3.235 | 3.300 | 3.365 | V    |
|                                      | FS1117-5.0                                                          | $I_{OUT} = 10\text{mA}, T_J = 25^\circ\text{C}, 6.5\text{V} \leq V_{IN} \leq 12\text{V}$ | 4.900 | 5.000 | 5.100 | V    |
| Line Regulation                      | FS1117-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                      | FS1117-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     | %    |
|                                      | FS1117-1.5                                                          | $V_{IN}=3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                   |       | 12    | 15    | mV   |
|                                      | FS1117-1.8                                                          | $V_{IN}=3.3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                 |       | 15    | 18    | mV   |
|                                      | FS1117-1.9                                                          | $V_{IN}=3.3\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                 |       | 16    | 19    | mV   |
|                                      | FS1117-2.5                                                          | $V_{IN}=4\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                   |       | 20    | 25    | mV   |
|                                      | FS1117-3.3                                                          | $V_{IN}=5\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                   |       | 26    | 33    | mV   |
|                                      | FS1117-5.0                                                          | $V_{IN}=8\text{V}, 0\text{mA} < I_O < 1\text{A}, T_J=25^\circ\text{C}$                   |       | 40    | 50    | mV   |
| Dropout Voltage ( $V_{IN}-V_{OUT}$ ) | FS1117-XXX                                                          | $I_{OUT} = 1\text{A}, \Delta V_{OUT}=0.1\%V_{OUT}$                                       |       | 1.3   | 1.4   | V    |
| Current Limit                        | FS1117-XXX                                                          | $(V_{IN}-V_{OUT}) = 5\text{V}$                                                           | 1.1   |       |       | A    |
| Minimum Load Current                 | FS1117-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                     | $F=120\text{Hz}, C_{OUT}=25\mu\text{F Tantalum}, I_{OUT}=1\text{A}$ |                                                                                          |       |       |       |      |
|                                      | FS1117-XXX                                                          | $V_{IN}=V_{OUT}+3\text{V}$                                                               |       | 60    | 70    | dB   |
| Temperature Stability                |                                                                     | $I_O=10\text{mA}$                                                                        |       | 0.5   |       | %    |

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

### Typical Characteristics

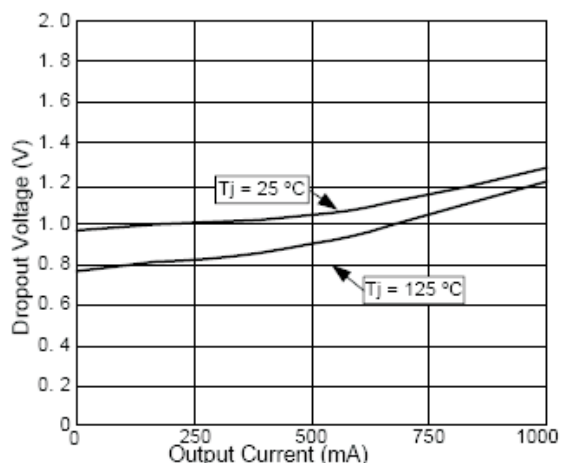


Fig.1 Dropout Voltage vs Output Current

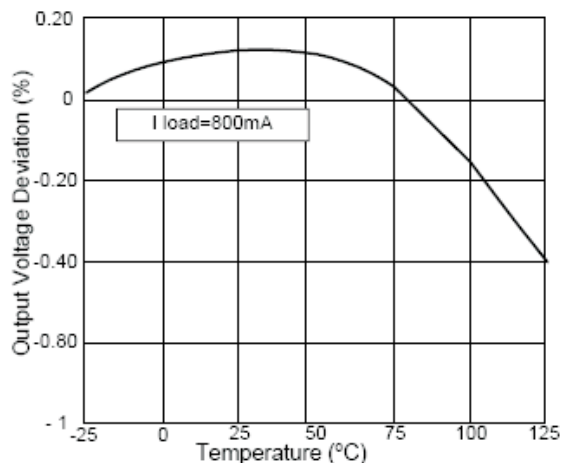


Fig.2 Load Regulation vs Temperature

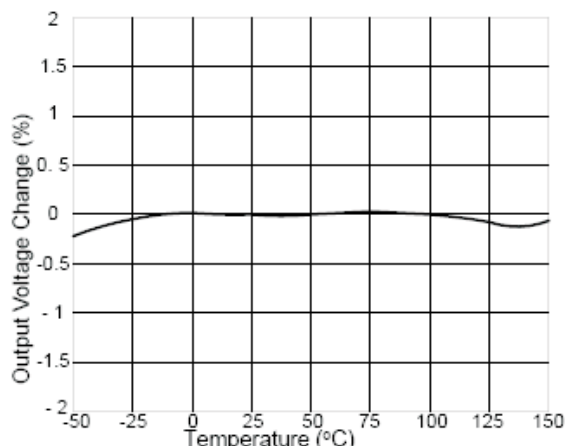


Fig.3 Percent Change in Output Voltage vs Temperature

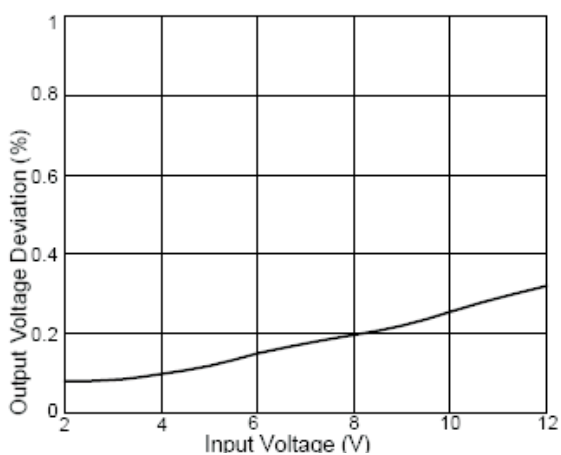


Fig.4 Line Regulation

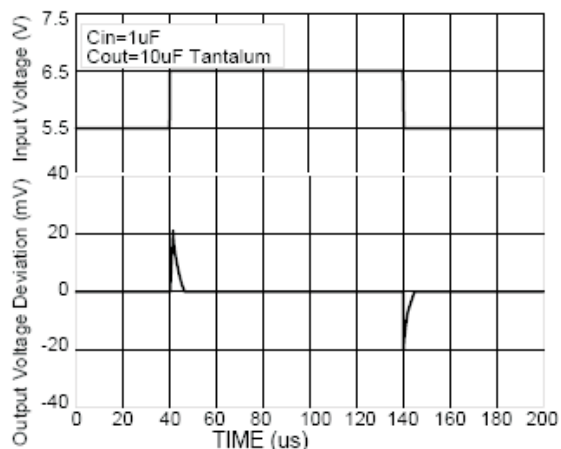


Fig.5 Line Transient Response

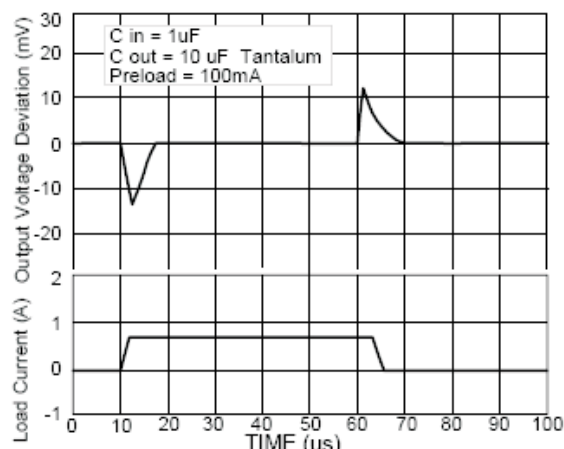


Fig.6 Load Transient Response