

G1116

0.6A Low Dropout Positive Adjustable or Fixed-Mode Regulator

Description

The G1116 is a low dropout at positive adjustable or fixed-mode regulator with minimum of 0.6A 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 logic supply. G1116 is also well suited for other applications such as VGA cards. G1116 is guaranteed to have lower than 1.3V dropout at full load current making it ideal to provide well regulated outputs of 1.25V to 5.0V with up to 12V input supply.

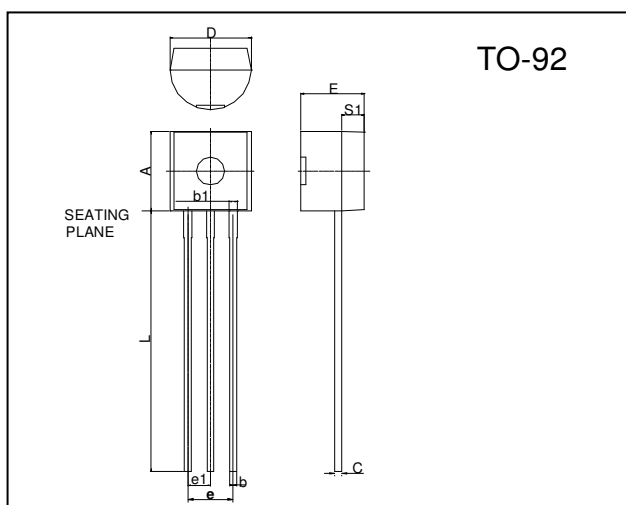
Features

- 1.3V maximum dropout 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, 2.5V, 3.3V, 5.0V

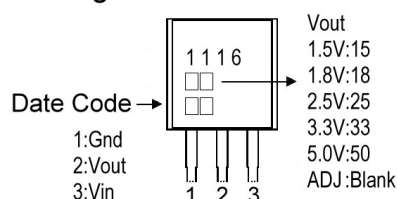
Applications

- PC peripheral
- Communication

Package Dimensions

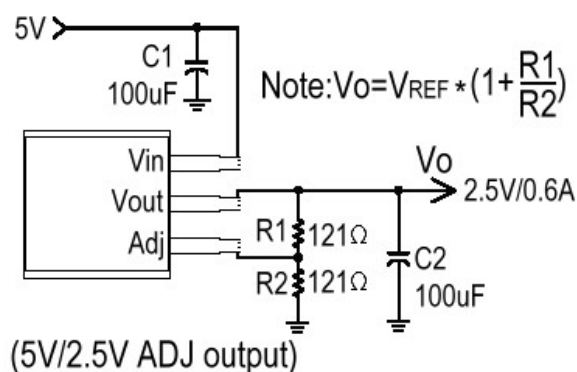
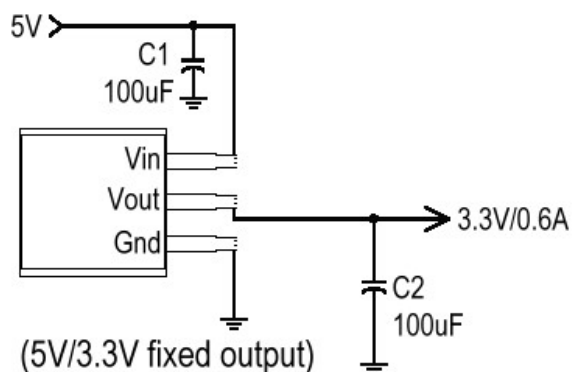


Marking :

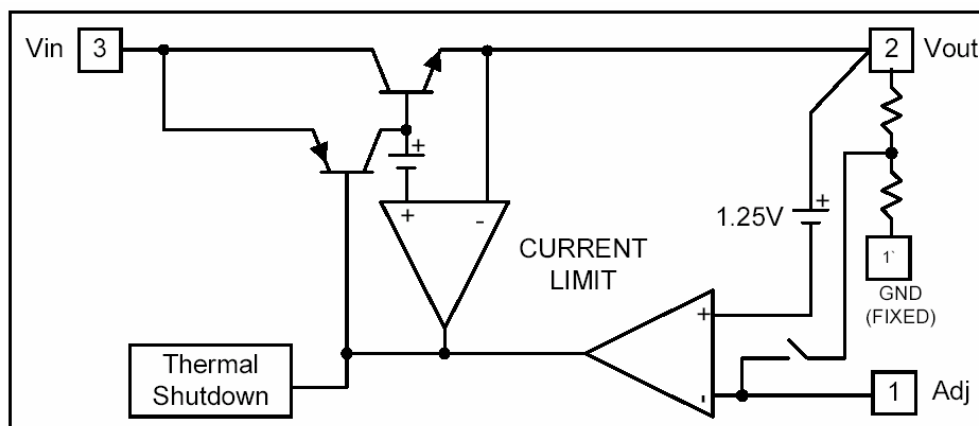


| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|-------|
| | Min. | Max. | | Min. | Max. |
| A | 4.45 | 4.7 | D | 4.44 | 4.7 |
| S1 | 1.02 | - | E | 3.30 | 3.81 |
| b | 0.36 | 0.51 | L | 12.70 | - |
| b1 | 0.36 | 0.76 | e1 | 1.150 | 1.390 |
| C | 0.36 | 0.51 | e | 2.42 | 2.66 |

Typical Circuit



Block Diagram



Pin Descriptions

| Name | I/O | Pin# | Function |
|-----------|-----|------|---|
| Adj (GND) | | 1 | A resistor divider from this pin to the Vout pin and ground sets the output voltage (Ground only for fixed mode) |
| Vout | O | 2 | 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. |
| Vin | I | 3 | 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 to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response. This pin must always be 1.3V higher than Vout in order for the device to regulate properly. |

Absolute Maximum Ratings

| Symbol | Parameter | Ratings | Unit |
|-----------------|--------------------------------------|--------------------|------|
| V _{IN} | DC Supply Voltage | -0.3 to 12 | V |
| P _D | Power Dissipation | Internally Limited | |
| T _{ST} | Storage Temperature | -65 ~ + 150 | °C |
| T _{OP} | Operating Junction Temperature Range | 0 ~ + 150 | °C |

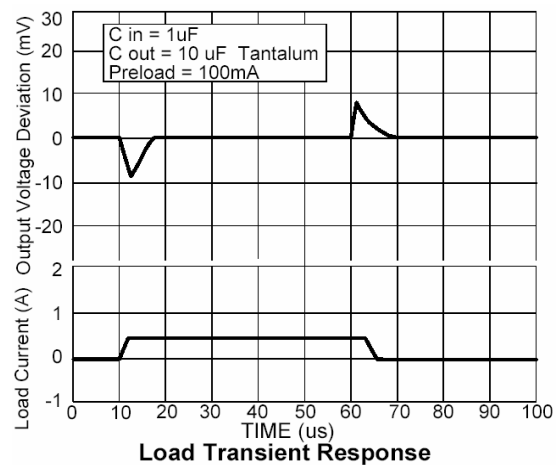
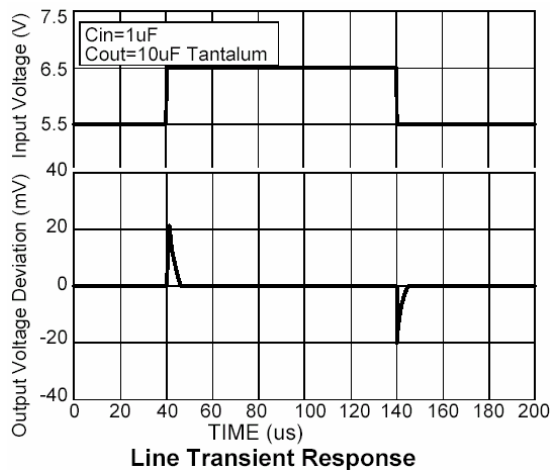
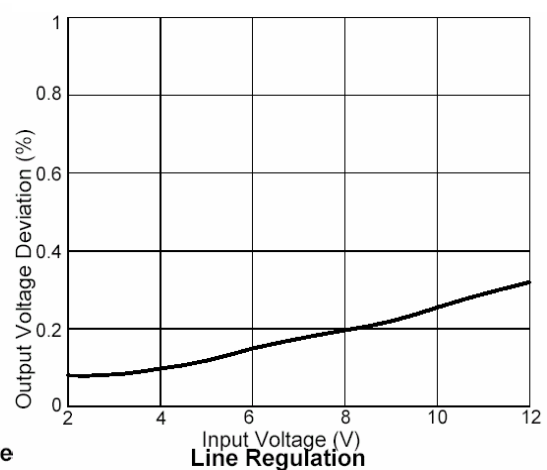
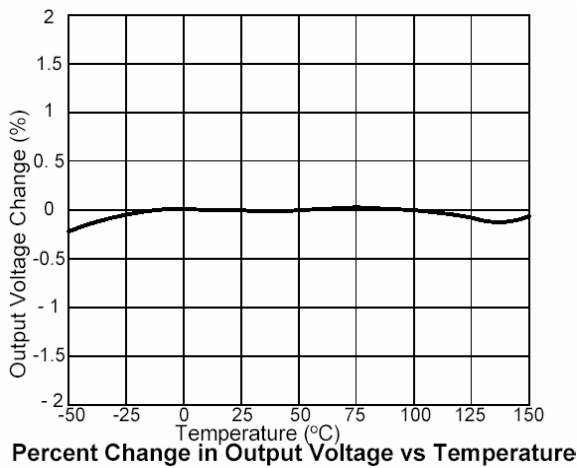
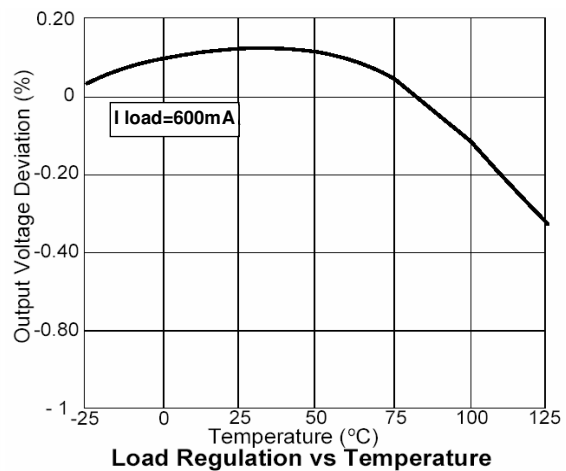
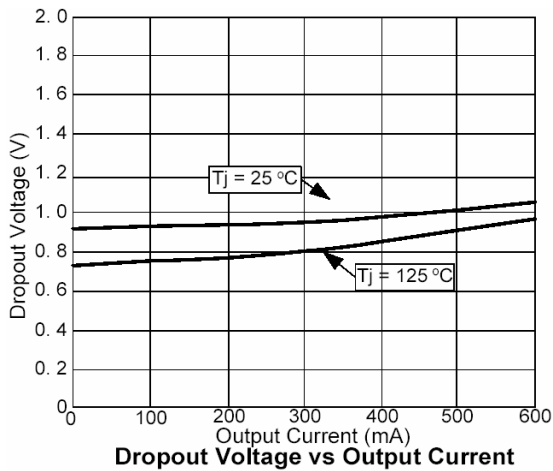
Electrical Characteristics

| Parameter | Conditions | | Min | Typ | Max | Unit |
|---|--|---|-------|-------|-------|---------------------------|
| Reference Voltage | G1116ADJ | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $(V_{IN}-V_{OUT})=1.5\text{V}$ | 1.225 | 1.250 | 1.275 | V |
| Output Voltage | G1116-1.5 | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $3.0\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.470 | 1.500 | 1.530 | V |
| | G1116-1.8 | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $3.3\text{V} \leq V_{IN} \leq 12\text{V}$ | 1.764 | 1.800 | 1.836 | V |
| | G1116-2.5 | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $4.0\text{V} \leq V_{IN} \leq 12\text{V}$ | 2.450 | 2.500 | 2.550 | V |
| | G1116-3.3 | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $4.8\text{V} \leq V_{IN} \leq 12\text{V}$ | 3.235 | 3.300 | 3.365 | V |
| | G1116-5.0 | $I_o=10\text{mA}$, $T_J=25^\circ\text{C}$, $6.5\text{V} \leq V_{IN} \leq 12\text{V}$ | 4.900 | 5.000 | 5.100 | V |
| Line Regulation | G1116-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 | G1116ADJ | $V_{IN}=3.3\text{V}$, $V_{adj}=0$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | - | 1 | % |
| | G1116-1.5 | $V_{IN}=3.0\text{V}$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | 12 | 15 | mV |
| | G1116-1.8 | $V_{IN}=3.3\text{V}$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | 15 | 18 | mV |
| | G1116-2.5 | $V_{IN}=4.0\text{V}$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | 20 | 25 | mV |
| | G1116-3.3 | $V_{IN}=5.0\text{V}$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | 26 | 33 | mV |
| | G1116-5.0 | $V_{IN}=8.0\text{V}$, $0\text{mA} < I_o < 0.6\text{A}$, $T_J=25^\circ\text{C}$ (Note 1,2) | - | 40 | 50 | mV |
| Dropout Voltage ($V_{IN}-V_{OUT}$) | G1116-XXX | $I_o=0.6\text{A}$ ($\Delta V_{OUT}=0.1\% V_{OUT}$) | - | 1.1 | 1.3 | V |
| Current Limit | G1116-XXX | $V_{IN}-V_{OUT}=5\text{V}$ | 0.7 | - | - | A |
| Minimum Load Current | Adjustable model | $V_{IN}=5\text{V}$ | - | 5 | 10 | mA |
| Adjust Pin Current | Adjustable model | $V_{IN}=12\text{V}$, $I_o=10\text{mA}$ | - | 50 | 100 | μA |
| Quiescent Current | fixed model | $V_{IN}=12\text{V}$, $I_o=0\text{mA}$ | - | - | 12 | 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, $I_{OUT}=0.6\text{A}$ | | | | | |
| | G1116-XXX | $V_{IN}=V_{OUT}+3\text{V}$ | - | 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) | | | - | 160 | - | $^\circ\text{C}/\text{W}$ |

Note 1: 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.

Note 2: Line and load regulation are guaranteed up to the maximum power dissipation of 3W. Power dissipation is determined by the difference between input and output and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.

Characteristics Curve



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