# TPTLV1117 Series

## 1A LOW DROPOUT LINEAR REGULATOR



### Features

- Output Current of 1A Maximum
- Three-Terminal Adjustable or Fixed Outputs
- Maximum Input Voltage: 18V
- Fast Transient Response
- Current Limit, Safe Operating and Thermal Shutdown Protection
- Line Regulation: 0.2%
- Load Regulation: 0.4%
- Environment Temperature: -50°C~+140°C
- Available in SOT223-3

### Application

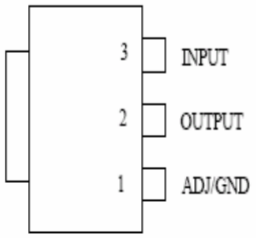
- High Efficiency Linear Regulators
- Post Regulator for Switching DC/DC Converter
- Power Management for M/B and Graphic Card
- 2.85V Model for SCSI-2 Active Termination
- Battery Charger
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem

### Ordering Information

**TPTLV1117-33IDCYR**

- SOT223-3 Package
- Output voltage:
  - 1.8=1.8V
  - 3.3=3.3V
  - 5.0=5.0V
  - ADJ=fixed output

### Package and Pin Configuration



## Absolute Maximum Ratings

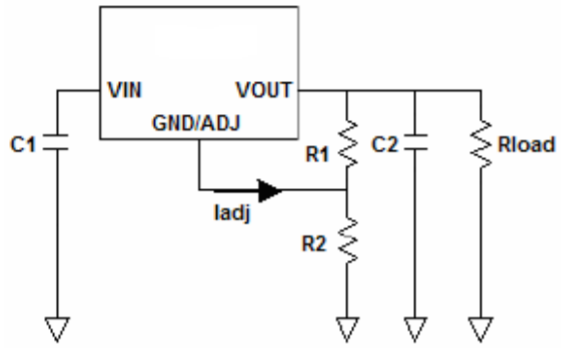
| | |
|---|---|
| Maximum Input Voltage | 18V |
| Operating Junction Temperature ($T_J$) | 150 °C |
| Environment Temperature ($T_A$) | 140 °C |
| Storage Temperature Range (Ts) | -65 °C to 150 °C |
| Lead Temperature (soldiering, 10 seconds) | 260 °C |

## Electrical Characteristics

$V_{IN}$ = $V_{OUT}$ +2V, $I_O$ =10mA, and $T_J$ = 25 C, unless otherwise specified.

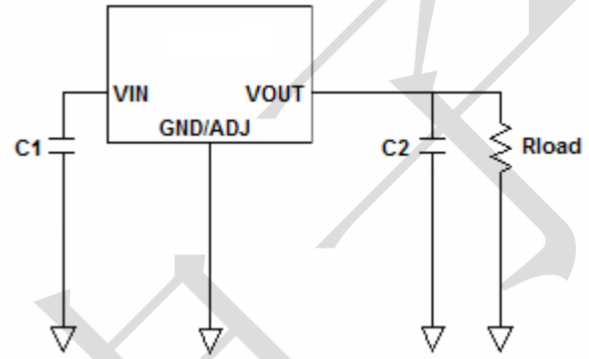
| Symbol | Parameter | | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{REF}$ | Reference Voltage | | $I_{OUT}$ = 10mA, $V_{IN}$ – $V_{OUT}$ = 2V | 1.238 | 1.250 | 1.262 | V |
| | | | 10mA≦$I_{OUT}$≦1A, 1.5V≦$V_{IN}$–$V_{OUT}$≦12V | 1.225 | 1.250 | 1.275 | |
| $V_{OUT}$ | Output Voltage | 1.8V | $I_{OUT}$ = 10mA, $V_{IN}$ = 3.8V, $T_J$ = 25°C | 1.782 | 1.80 | 1.818 | V |
| | | | 0≦$I_{OUT}$≦1A, 3.2V≦$V_{IN}$≦12V | 1.764 | 1.80 | 1.836 | |
| | | 2.5V | $I_{OUT}$ = 10mA, $V_{IN}$ = 4.5V, $T_J$ = 25°C | 2.475 | 2.50 | 2.525 | |
| | | | 0≦$I_{OUT}$≦1A, 3.9V≦$V_{IN}$≦12V | 2.450 | 2.50 | 2.550 | |
| | | 3.3V | $I_{OUT}$ = 10mA, $V_{IN}$ = 5V, $T_J$ = 25°C | 3.267 | 3.30 | 3.333 | |
| | | | 0≦$I_{OUT}$≦1A, 4.75V≦$V_{IN}$≦12V | 3.234 | 3.30 | 3.366 | |
| | | 5.0V | $I_{OUT}$ = 10mA, $V_{IN}$ = 7V, $T_J$ = 25°C | 4.95 | 5.00 | 5.05 | |
| | | | 0≦$I_{OUT}$≦1A, 6.5V≦$V_{IN}$≦12V | 4.90 | 5.00 | 5.10 | |
| $\Delta V_{OUT}$ | Line Regulation | ADJ | $I_{OUT}$=10mA, 1.5V≦$V_{IN}$–$V_{OUT}$≦13.775V | | 0.035 | 0.2 | % |
| | | Fixed | $I_{OUT}$=10mA, $V_{OUT}$ +1.5V≦$V_{IN}$≦15V | | 9 | 12 | mV |
| $\Delta V_{OUT}$ | Load Regulation | ADJ | $V_{IN}$ – $V_{OUT}$ = 3V, 10mA≦$I_{OUT}$≦1A | | 0.2 | 0.4 | % |
| | | Fixed | $V_{IN}$ = $V_{OUT}$ +1.5V,10mA≦$I_{OUT}$≦1A | | 3 | 10 | mV |
| $V_{IN}$–$V_{OUT}$ | Dropout Voltage | $\Delta V_{OUT}$, $\Delta V_{REF}$ = 1%, $I_{OUT}$ = 100mA | | | 1.11 | 1.20 | V |
| | | $\Delta V_{OUT}$, $\Delta V_{REF}$ = 1%, $I_{OUT}$ = 500mA | | | 1.18 | 1.25 | V |
| | | $\Delta V_{OUT}$, $\Delta V_{REF}$ = 1%, $I_{OUT}$ = 1A | | | 1.26 | 1.30 | V |
| $I_{CL}$ | Current Limit | $V_{IN}$ – $V_{OUT}$ = 2V, $T_J$ = 25°C | | 1.25 | 1.4 | 1.6 | A |
| Minimum Load Current (Note 1) | | Adjustable Version | | | 5 | 10 | mA |
| Iq | Quiescent Current | Fixed | $V_{IN}$ – $V_{OUT}$ = 1.25V | | 4 | 8 | mA |
| $I_{ADJ}$ | ADJ Pin Current | | | | 55 | 120 | uA |
| Temperature Stability | | | | | | 0.5 | % |
| $\theta_{JC}$ | Thermal Resistor | SOT-223 | | | 20 | | °C/ |

## Typical Application




TP1117 adjustable output voltage

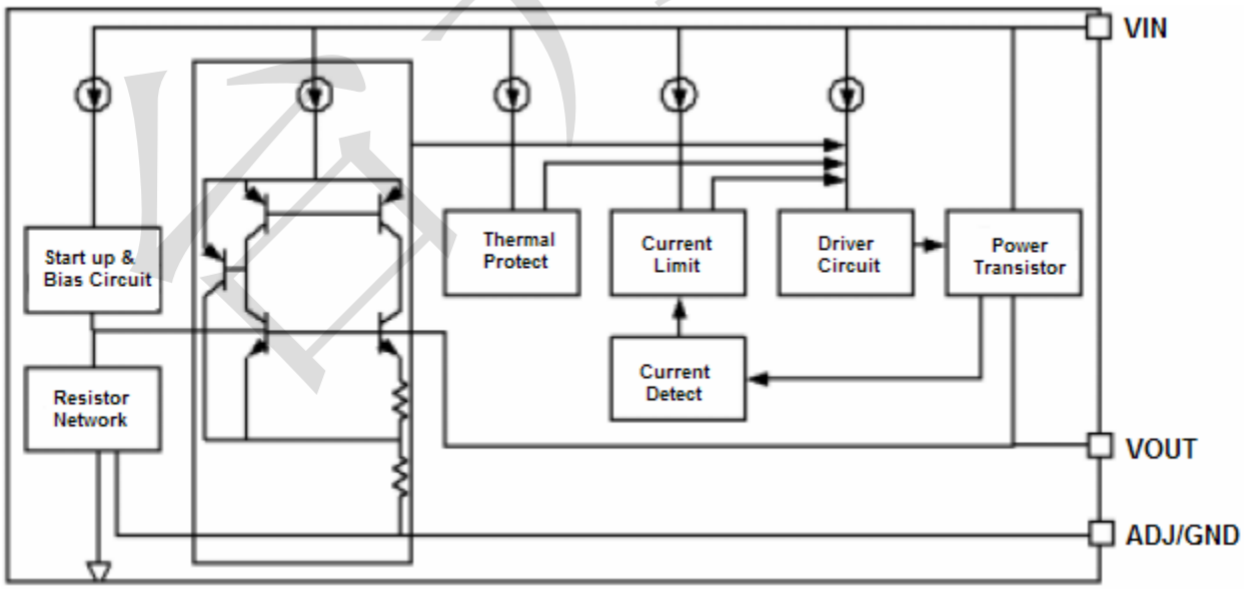
$V_{OUT}$=1.25V(1+R2/R1)




TP1117 fixed output

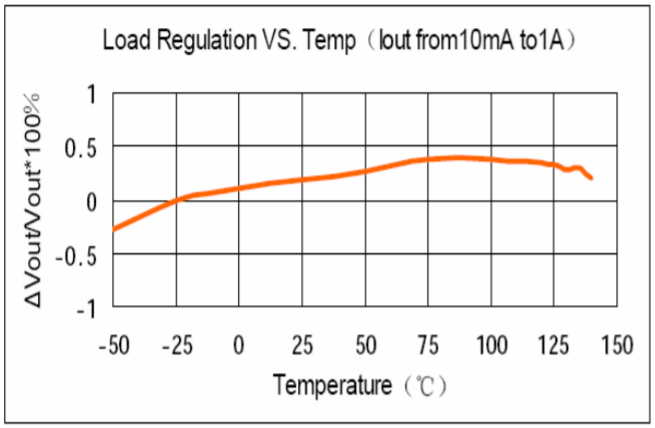
The TP1117 adjustable regulator provide 1.25V reference voltage. Any output voltage between 1.25V~13.8V can be available by choosing two external resistors.

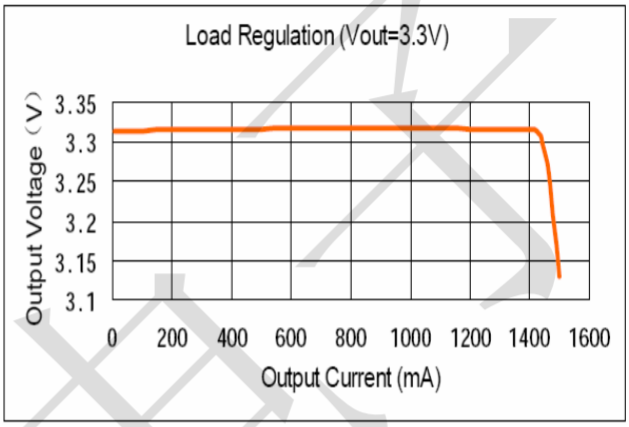
## Block Diagram



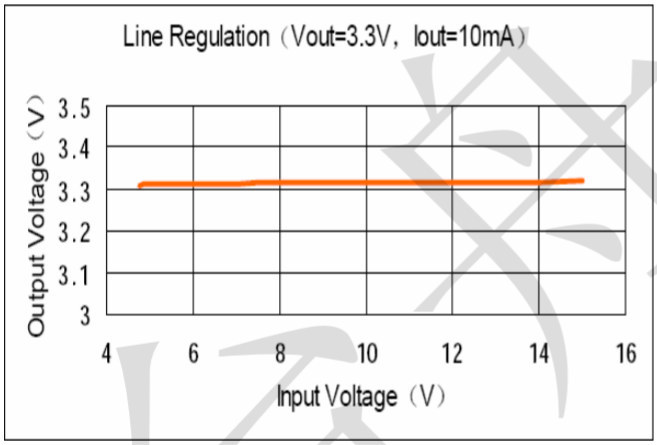
# Typical Characteristics

1. Load Regulation

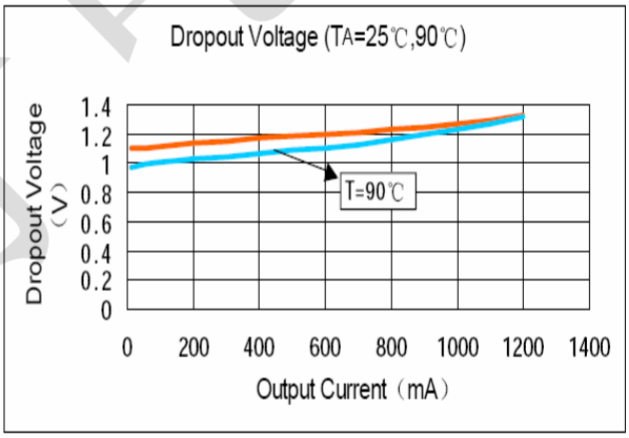


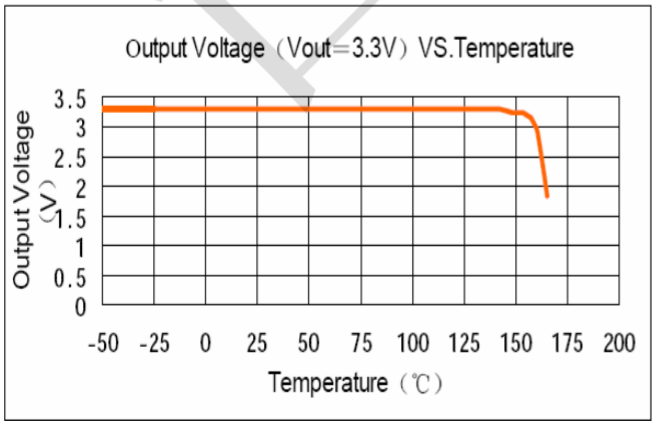

2. Line Regulation

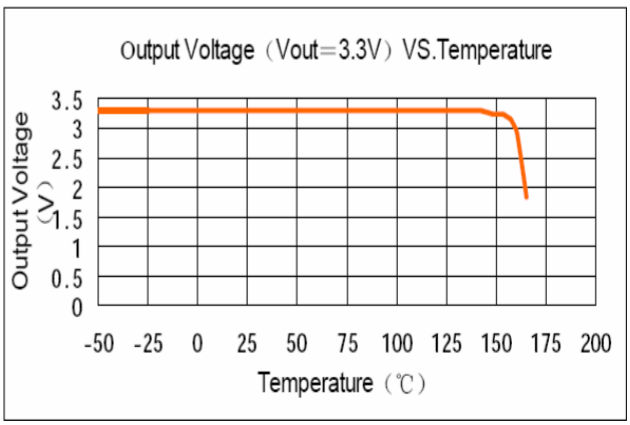



3. Dropout Voltage

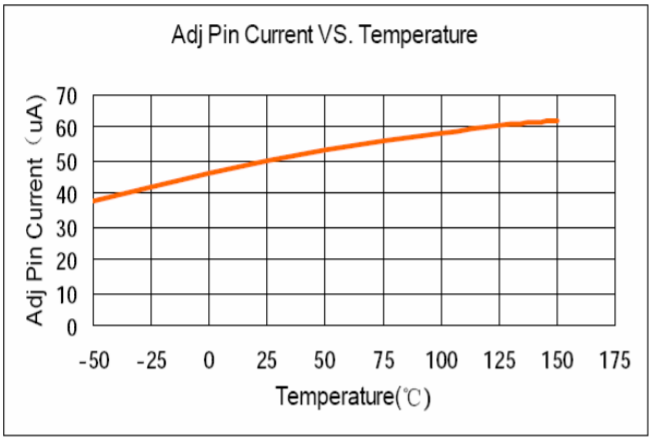



4. Temperature Stability



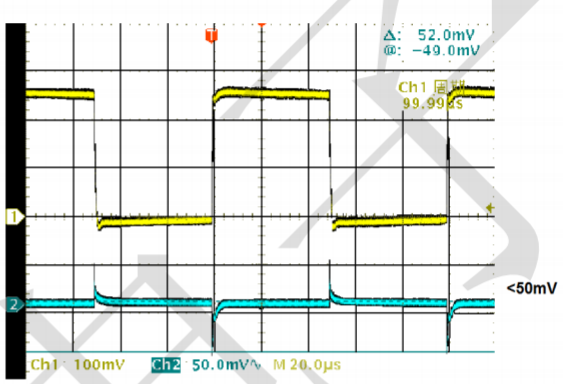



5. ADJ Pin Current vs. Temperture

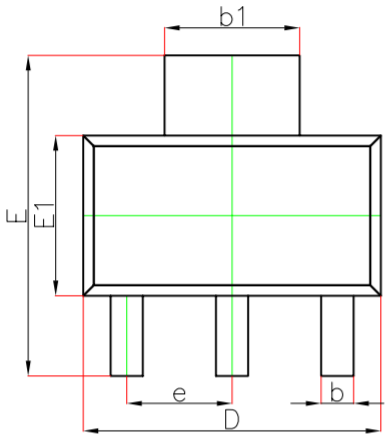


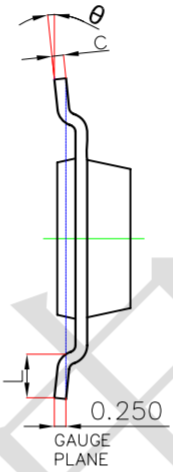

6. Load Transient Response

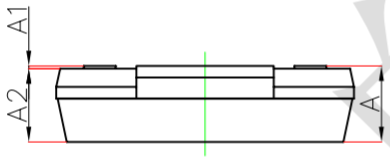
Load Current Change from 2mA to 500mA



## SOT223 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | —— | 1.800 | —— | 0.071 |
| A1 | 0.020 | 0.100 | 0.001 | 0.004 |
| A2 | 1.500 | 1.700 | 0.059 | 0.067 |
| b | 0.660 | 0.840 | 0.026 | 0.033 |
| b1 | 2.900 | 3.100 | 0.114 | 0.122 |
| c | 0.230 | 0.350 | 0.009 | 0.014 |
| D | 6.300 | 6.700 | 0.248 | 0.264 |
| E | 6.700 | 7.300 | 0.264 | 0.287 |
| E1 | 3.300 | 3.700 | 0.130 | 0.146 |
| e | 2.300(BSC) | | 0.091(BSC) | |
| L | 0.750 | —— | 0.030 | —— |
| θ | 0° | 10° | 0° | 10° |