# 3-Terminal 1.5A Positive Adjustable Regulator

## DESCRIPTION

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V.It employs internal current limiting , thermal shut-down and safe area compensation.

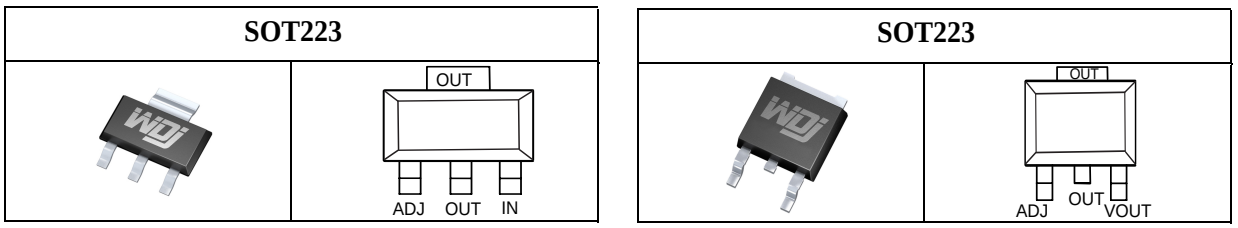
## FEATURE

- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe operating area compensation

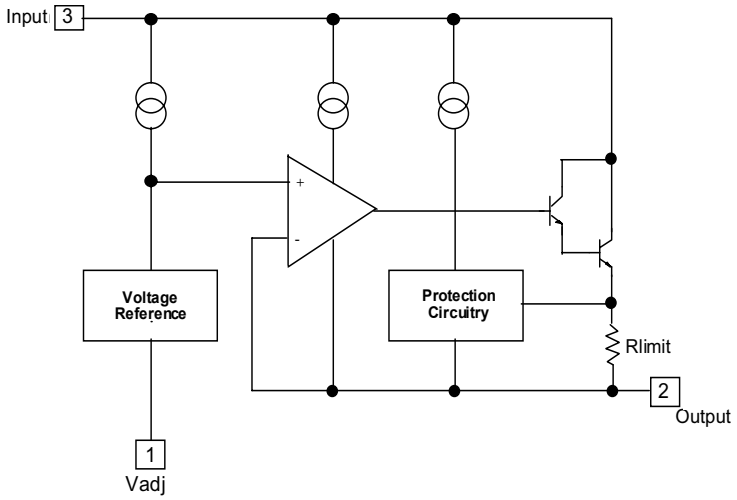
## ORDERING INFORMATION

| Device | Package |
|---|---|
| WDJ LM317MDT | TO-252 |
| WDJ LM317DCYR | SOT-223 |

## PIN CONFIGURATION




## INTERNAI
## Internal Block Diagram



## Absolute Maximum Ratings

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_I$-$V_O$ | Input-Output Voltage Differential | 40 | V |
| $T_{LEAD}$ | Lead Temperature | 230 | ℃ |
| $P_D$ | Power Dissipation | Internally limited | W |
| $T_J$ | Operating Junction Temperature Range | 0~125 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -55~125 | |
| $\Delta V_O$ /$\Delta T$ | Temperature Coefficient of Output Voltage | ±0.02 | %/℃ |

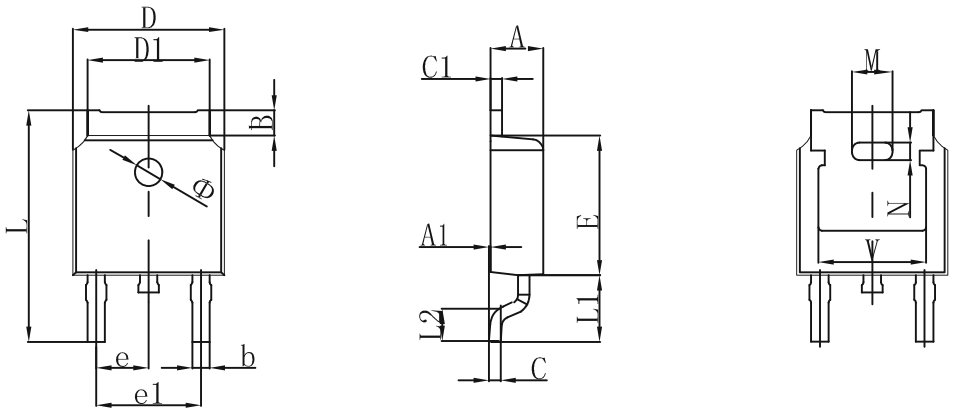
## ELECTRICAL CHARACTERISTICS

($V_O$-$V_I$=5V,$I_O$=0.5A,0℃≤$T_J$≤+125℃,$I_{MAX}$=1.5A,$P_{DMAX}$=20W,unless otherwise specified)

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Line Regulation(note1) | $R_{line}$ | $T_A$=25℃<br>3V≤$V_I$-$V_O$≤40V | | 0.01 | 0.04 | %/V |
| | | 3V≤$V_I$-$V_O$≤40V | | 0.02 | 0.07 | |
| Load Regulation(note1) | $R_{load}$ | $T_A$=25℃, 10mA≤$I_O$≤$I_{MAX}$<br>$V_O$<5V<br>$V_O$≥5V | | 18<br>0.4 | 25<br>0.5 | mV |
| | | 10mA≤$I_O$≤$I_{MAX}$<br>$V_O$<5V<br>$V_O$≥5V | | 40<br>0.8 | 70<br>1.5 | %$V_O$ |
| Adjustable Pin Current | $I_{ADJ}$ | - | | 46 | 100 | μA |
| Adjustable Pin Current Change | $\Delta I_{ADJ}$ | 3V≤$V_I$-$V_O$≤40V<br>10mA≤$I_O$≤$I_{MAX}$, $P_D$≤$P_{MAX}$ | | 2.0 | 5 | |
| Reference Voltage | $V_{REF}$ | 3V≤$V_{IN}$-$V_O$≤40V<br>10mA≤$I_O$≤$I_{MAX}$, $P_D$≤$P_{MAX}$ | 1.20 | 1.25 | 1.30 | V |
| Temperature Stability | $ST_T$ | - | | 0.7 | | %/ $V_O$ |
| Minimum Load Current to Maintain Regulation | $I_{L(MIN)}$ | $V_I$-$V_O$=40V | | 3.5 | 12 | mA |
| Maximum Output Current | $I_{O(MAX)}$ | $V_I$-$V_O$≤15V, $P_D$≤$P_{MAX}$<br>$V_I$-$V_O$≤40V, $P_D$≤$P_{MAX}$<br>$T_A$=25℃ | 1.0 | 2.2<br>0.3 | | A |
| RMS Noise,% of $V_{OUT}$ | $e_N$ | $T_A$=25℃,10Hz≤f≤10KHz | | 0.003 | 0.01 | %/ $V_O$ |
| Ripple Rejection | RR | $V_O$=10V, f =120Hz<br>without $C_{ADJ}$<br>$C_{ADJ}$=10μF(note2) | 66 | 60<br>75 | | dB |
| Long-Term Stability,$T_J$=$T_{HIGH}$ | ST | $T_A$=25℃ for end point mesasurements,1000HR | | 0.3 | 1 | % |
| Thermal Resistance Junction to case | $R_{\theta JC}$ | - | | 5 | | ℃/W |

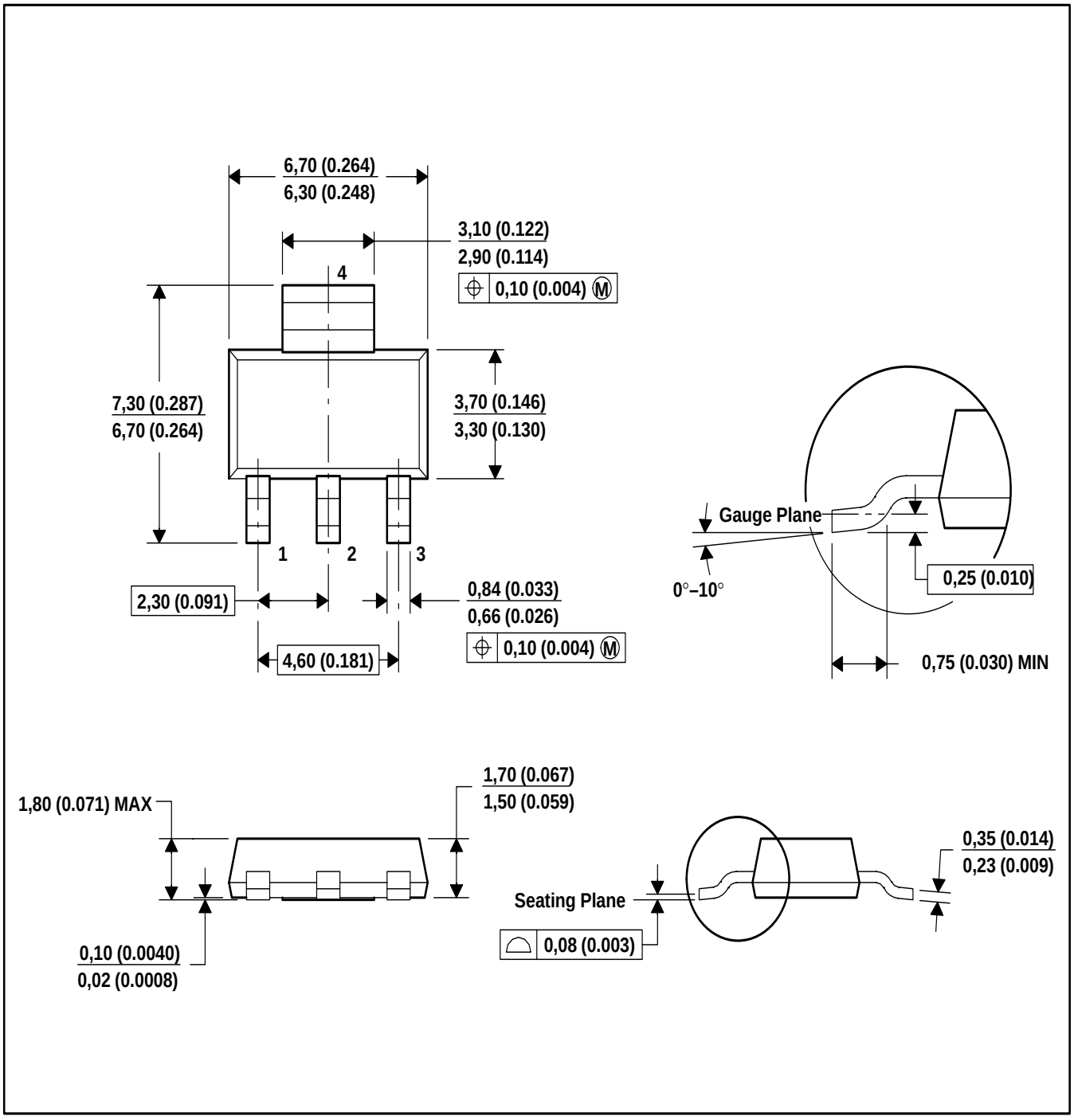
## TRANSISTOR OUTLINE

### TO-252




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max |
| A | 2.200 | 2.380 | 0.087 | 0.094 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| B | 0.800 | 1.400 | 0.031 | 0.055 |
| b | 0.710 | 0.810 | 0.028 | 0.032 |
| c | 0.460 | 0.560 | 0.018 | 0.022 |
| c1 | 0.460 | 0.560 | 0.018 | 0.022 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.130 | 5.460 | 0.202 | 0.215 |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.286 TYP. | | 0.090 TYP. | |
| e1 | 4.327 | 4.727 | 0.170 | 0.186 |
| M | 1.778REF. | | 0.070REF. | |
| N | 0.762REF. | | 0.018REF. | |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.9REF. | | 0.114REF. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| V | 4.830 REF. | | 0.190 REF. | |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |

## SOT-223


6,70 (0.264)
6,30 (0.248)
3,10 (0.122)
2,90 (0.114)
0,10 (0.004) M
4
7,30 (0.287)
6,70 (0.264)
3,70 (0.146)
3,30 (0.130)
1
2
3
2,30 (0.091)
0,84 (0.033)
0,66 (0.026)
0,10 (0.004) M
4,60 (0.181)
Gauge Plane
0°–10°
0,25 (0.010)
0,75 (0.030) MIN
1,80 (0.071) MAX
1,70 (0.067)
1,50 (0.059)
0,10 (0.0040)
0,02 (0.0008)
Seating Plane
0,08 (0.003)
0,35 (0.014)
0,23 (0.009)


CAUTION:
These devices are sensitive to electrostatic discharge;
follow proper IC Handling Procedures.
For additional product infomation, or full datasheet,
please contact with our Sales Department or Representatives.