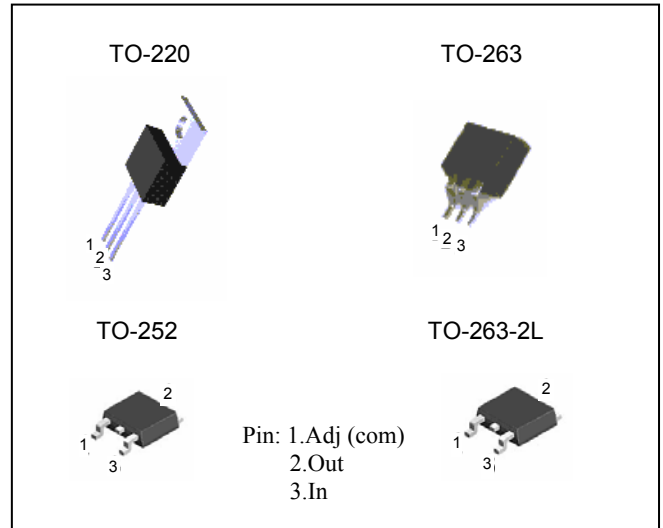


5 Amp Low Dropout Positive Voltage Regulator

The PJ1084 Series are high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current, Additionally, the PJ1084 Series provides excellent regulation over variations due to changes in line, load and temperature. Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The PJ1084 Series are three terminal regulators with fixed and adjustable voltage options available in popular packages.



FEATURES

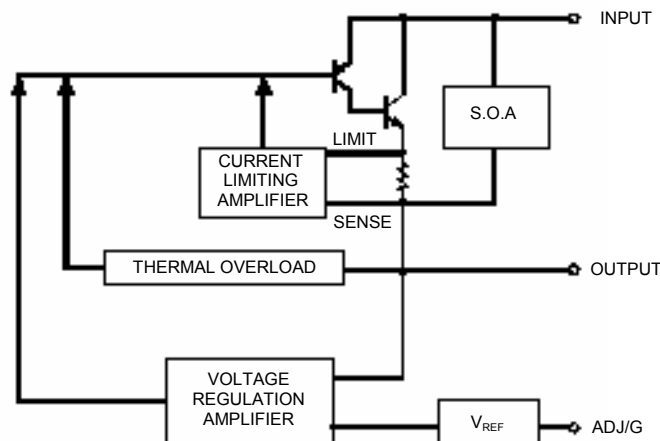
- Low dropout performance 1.3V max.
- Full current rating over line and temperature
- Fast transient response
- Total output regulation $\pm 2\%$ over line, load and temperature
- Adjust pin current max $120 \mu A$ over temperature
- Line regulation typical 0.015%.
- Load regulation typical 0.05%.
- Fixed/adjustable output voltage
- TO-220 & TO-263 & TO-263-2L & TO-252 package

ORDERING INFORMATION

| Device | Operating Temperature (Ambient) | Package |
|--|---------------------------------|-----------|
| PJ1084CZ PJ1084CZ-2.5 PJ1084CZ-3.3 | -20°C to +85°C | TO-220 |
| PJ1084CM PJ1084CM-2.5 PJ1084CM-3.3 | | TO-263 |
| PJ1084CF PJ1084CF-2.5 PJ1084CF-3.3 | | TO-263-2L |
| PJ1084CP PJ1084CP-2.5 PJ1084CP-3.3 | | TO-252 |

NOTE: Contact factory for additional voltage option.

BLOCK



5 Amp Low Dropout Positive Voltage Regulator

ABSOLUTE MAXIMUM RATING

| Parameter | Symbol | Maximum | Units |
|--|---------------|--------------------|-------|
| Input Voltage | V_{IN} | 12 | V |
| Power Dissipation | P_D | Internally Limited | W |
| Thermal Resistance Junction to Case | θ_{JC} | 2.5 | °C/W |
| Thermal Resistance Junction to Ambient | θ_{JA} | 50 | |
| Operating Junction Temperature Range | T_J | 0 to +125 | °C |
| Operating Ambient Temperature Range | T_A | -20 to +85 | |
| Storage Temperature Range | T_{STG} | -25 to 150 | |
| Lead Temperature (Soldering) 10 Sec. | T_{LEAD} | 260 | |

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Adjust $V_{IN} = 2.75V$ to $12V$ and Adjust $I_o = 10mA$ to $5.0A$

Fixed $V_{IN} = 4.75V$ to $12V$ and Fixed $I_o = 10mA$ to $5.0A$

| Parameter | Symbol | Test Conditions | | | Test Limits | | | Units | |
|---|------------------|--------------------|-------|-------------|-------------|-------|------------|-------|---------|
| | | $V_{IN} - V_{OUT}$ | I_o | $T_J^{(4)}$ | Min | Typ | Max | | |
| Output Voltage ⁽¹⁾ Fixed Voltage | V_o | 5V | 10mA | 25 | 0.99 Vol | V_o | 1.01 Vol | V | |
| | | | | Over Temp. | 0.98 Vol | | 1.02 Vol | | |
| Reference Voltage ⁽¹⁾ Adj Voltage | V_{REF} | 5V | 10mA | 25 | 1.238 | 1.250 | 1.262 | V | |
| | | | | Over Temp. | 1.225 | | 1.275 | | |
| Line Regulation ⁽¹⁾ ($V_{in} - V_{out} = 3V$) | $REG_{(LINE)}$ | | 10mA | 25 | | | 0.015 | 0.2 | % |
| | | | | Over Temp. | | | 0.035 | | |
| Load Regulation ⁽¹⁾ ($V_{in} - V_{out} = 3V$) | $REG_{(LOAD)}$ | | | 25 | | | 0.05 | 0.3 | % |
| | | | | Over Temp. | | | 0.2 | | |
| Dropout Voltage $\Delta V_{REF} = 1\%$ | V_D | | | 25 | | | 1 | 1.3 | V |
| | | | | Over Temp. | | | 1.1 | | |
| Current Limit ($V_{in} - V_{out} = 5V$) | I_{cL} | | | | | | 5.5 | 6.5 | A |
| | | | | | | | Over Temp. | | |
| Quiescent Current Fixed Model | I_Q | 5V | | | | | 12 | 14 | mA |
| Temperature Coefficient | T_c | | | | | | 0.005 | | %/°C |
| Adjust Pin Current | I_{ADJ} | | | 25 | | | 55 | | μA |
| | | | | | | | | 120 | |
| Adjust Pin Current Change | ΔI_{ADJ} | | | | | | 0.2 | 5 | |
| Temperature Stability | T_s | 5V | 500mA | Over Temp. | | | 0.5 | | % |
| Minimum Load Current Adjust Model | I_o | 5V | | | | | 5 | 10 | mA |
| RMS Output Noise ⁽²⁾ | V_N | | | 25 | | | 0.003 | | % V_o |
| Ripple Rejection Ratio ⁽³⁾ | R_A | 5V | 5.0A | Over Temp. | 60 | | 72 | | dB |

(1) Low duty cycle pulse testing with Kelvin connections required.

(2) Bandwidth of 10Hz to 10KHz.

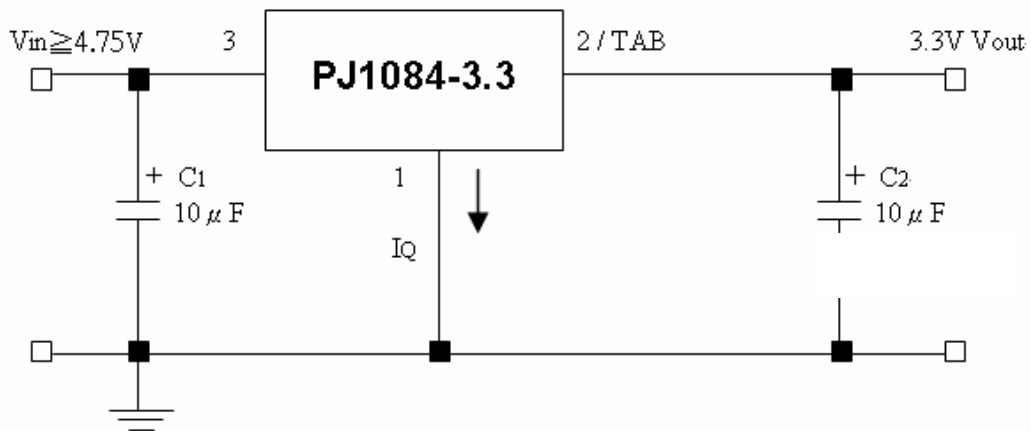
(3) 120Hz input ripple (C_{ADJ} for ADJ) = 25 μF .

(4) Over Temp. - over specified operating junction temperature range.

5 Amp Low Dropout Positive Voltage Regulator

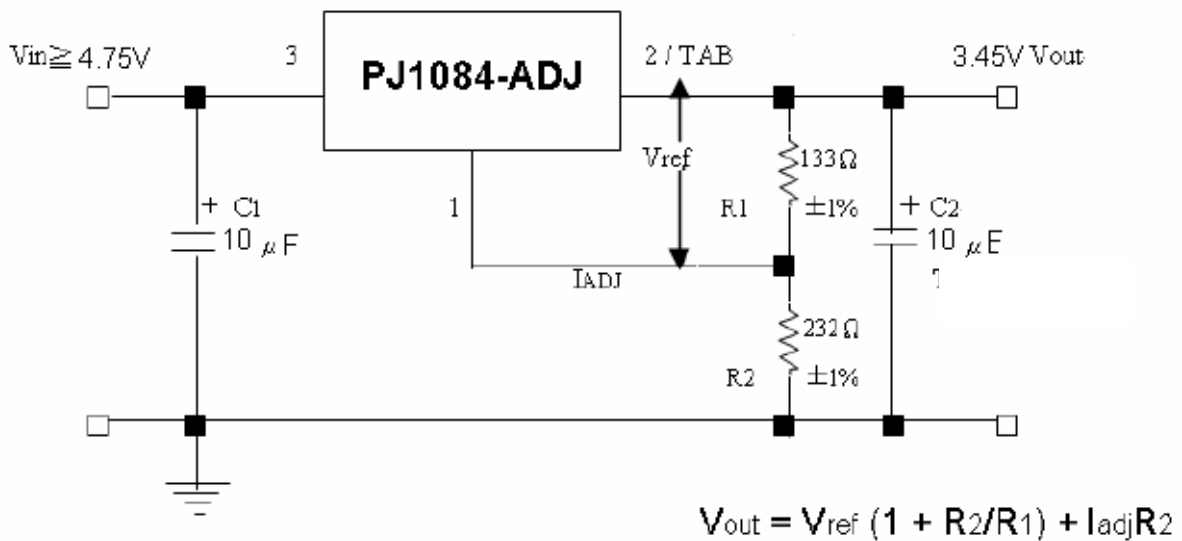
Typical Application Circuit

FIXED VOLTAGE REGULATOR (1)(2)



- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
- (2) C2 REQUIRED FOR STABILITY

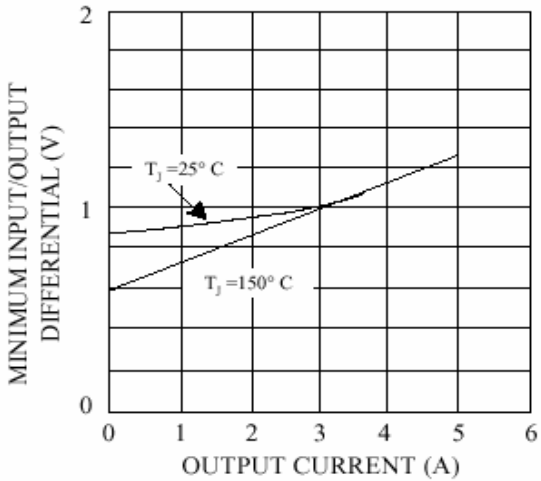
ADJUSTABLE VOLTAGE REGULATOR (1)(2)



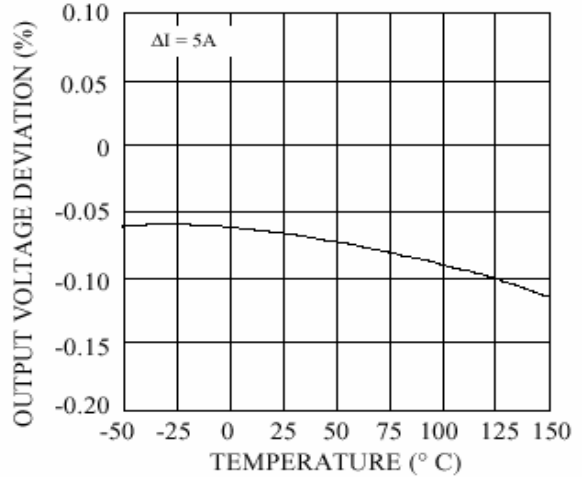
- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
- (2) C2 REQUIRED FOR STABILITY

5 Amp Low Dropout Positive Voltage Regulator

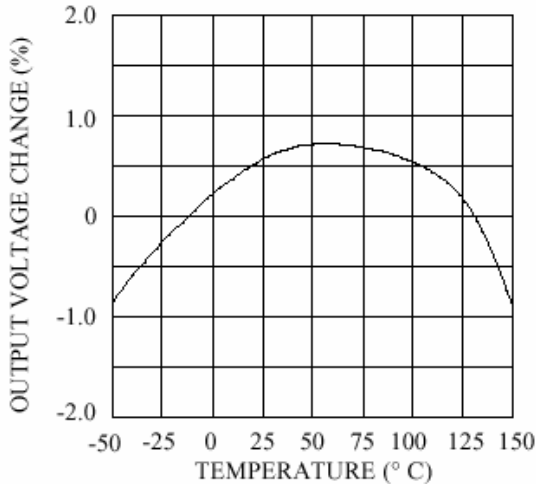
Dropout Voltage



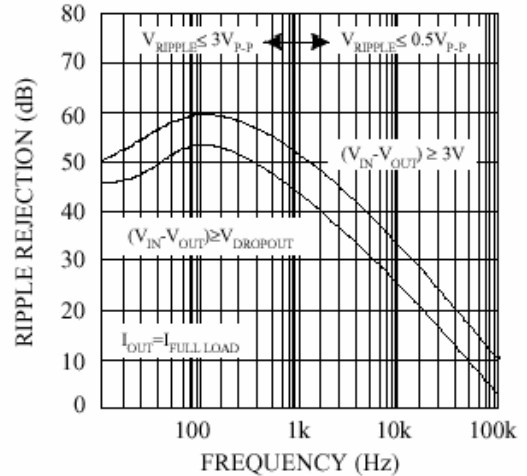
Load Regulation



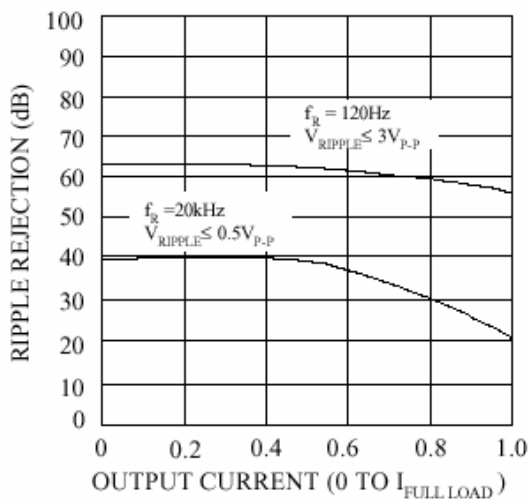
Temperature Stability



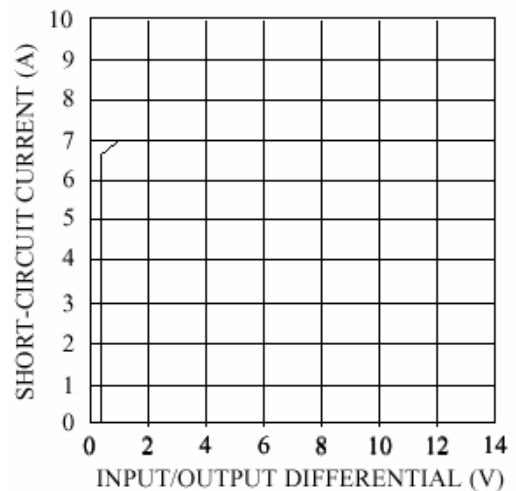
Ripple Rejection



Ripple Rejection vs. Current

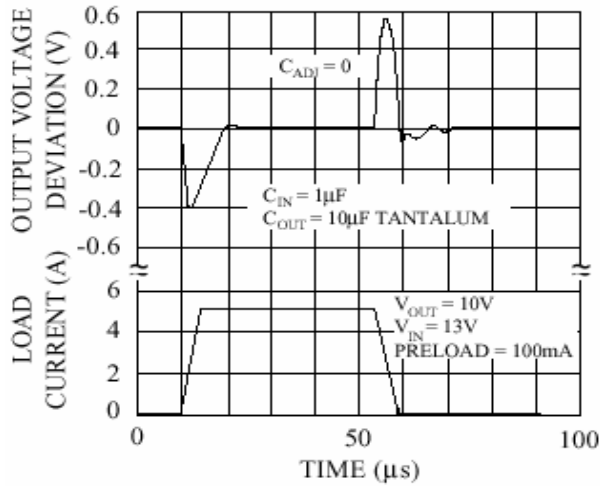


Short-Circuit Current

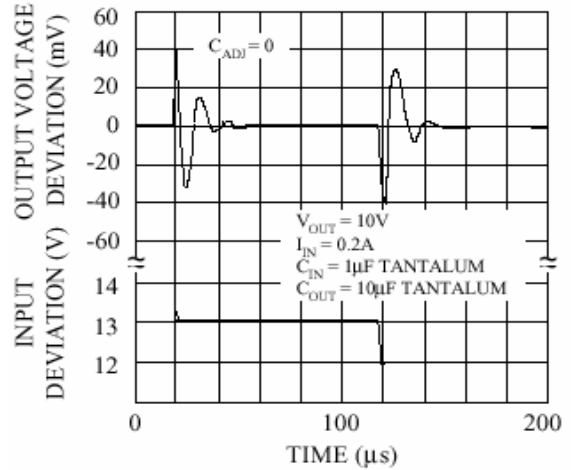


5 Amp Low Dropout Positive Voltage Regulator

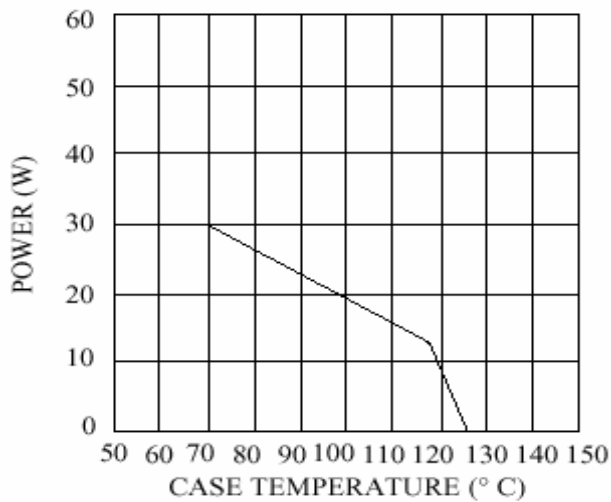
Load Transient Response



Line Transient Response

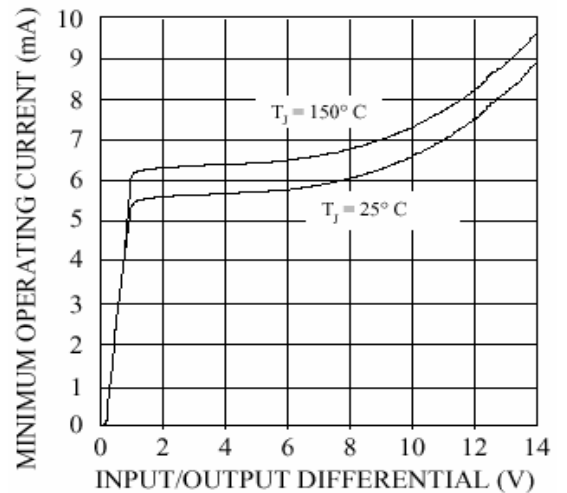


Maximum Power Dissipation*

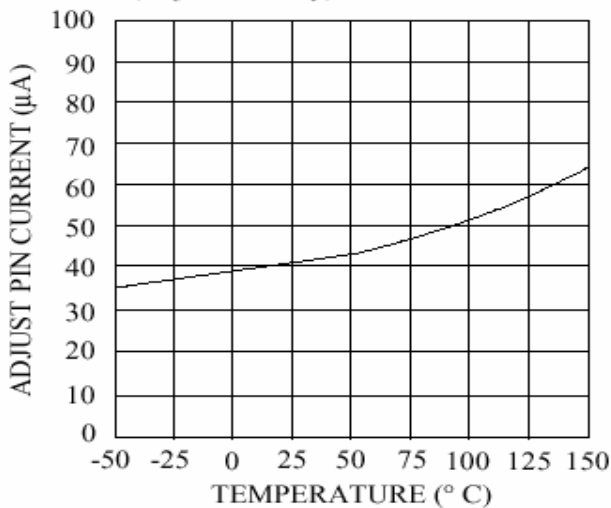


*AS LIMITED BY MAXIMUM JUNCTION TEMPERATURE

Minimum Operating Current (Adjustable only)

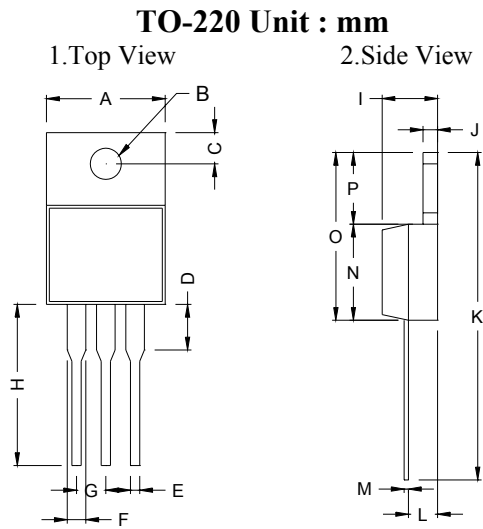


Adjust Pin Current (Adjustable only)



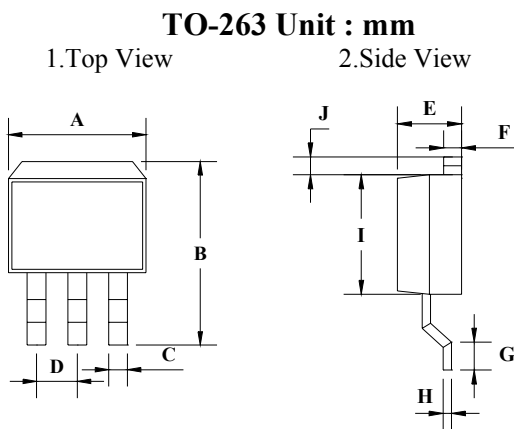
5 Amp Low Dropout Positive Voltage Regulator

TO-220 Mechanical drawing



| DIM | TO-220 DIMENSION | | | |
|-----|------------------|-------|--------|-------|
| | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 10.00 | 10.50 | 0.394 | 0.413 |
| B | 3.24 | 4.44 | 0.128 | 0.175 |
| C | 2.44 | 2.94 | 0.096 | 0.116 |
| D | 3.565 | 4.315 | 0.140 | 0.170 |
| E | 0.68 | 0.92 | 0.027 | 0.036 |
| F | 1.115 | 1.485 | 0.044 | 0.058 |
| G | 2.345 | 2.715 | 0.092 | 0.107 |
| H | 13.49 | 14.31 | 0.531 | 0.563 |
| I | 4.475 | 5.225 | 0.176 | 0.206 |
| J | 1.15 | 1.39 | 0.045 | 0.055 |
| K | 27.78 | 29.62 | 1.094 | 1.166 |
| L | 2.175 | 2.925 | 0.086 | 0.115 |
| M | 0.297 | 0.477 | 0.012 | 0.019 |
| N | 8.28 | 8.80 | 0.326 | 0.346 |
| O | 14.29 | 15.31 | 0.563 | 0.603 |
| P | 6.01 | 6.51 | 0.237 | 0.256 |

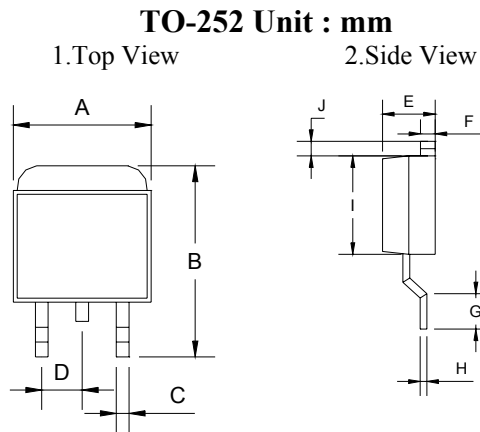
TO-263 Mechanical drawing



| DIM | TO-263 DIMENSION | | | |
|-----|------------------|-------|--------|-------|
| | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 10.00 | 10.50 | 0.394 | 0.413 |
| B | 14.60 | 15.87 | 0.575 | 0.625 |
| C | 0.68 | 0.92 | 0.027 | 0.036 |
| D | 2.42 | 2.66 | 0.095 | 0.105 |
| E | 4.31 | 4.83 | 0.170 | 0.190 |
| F | 1.14 | 1.40 | 0.045 | 0.055 |
| G | 2.28 | 2.79 | 0.090 | 0.110 |
| H | 0.45 | 0.73 | 0.018 | 0.029 |
| I | 8.28 | 8.80 | 0.326 | 0.346 |
| J | 1.14 | 1.4 | 0.045 | 0.055 |

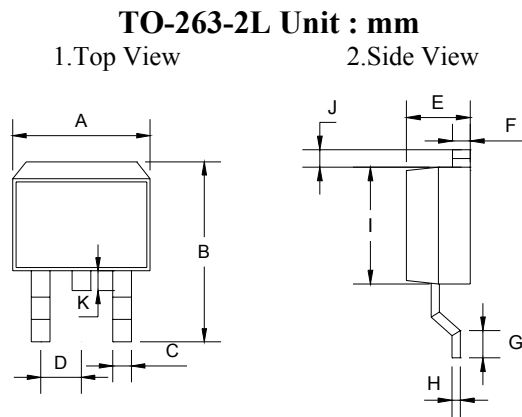
5 Amp Low Dropout Positive Voltage Regulator

TO-252 Mechanical drawing



| TO-252 DIMENSION | | | | |
|------------------|-------------|-------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 6.57 | 6.84 | 0.259 | 0.269 |
| B | 9.25 | 10.40 | 0.364 | 0.409 |
| C | 0.62 | 0.76 | 0.024 | 0.030 |
| D | 2.56 | 2.67 | 0.101 | 0.105 |
| E | 2.30 | 2.39 | 0.090 | 0.094 |
| F | 0.49 | 0.57 | 0.019 | 0.022 |
| G | 1.46 | 1.58 | 0.057 | 0.062 |
| H | 0.52 | 0.57 | 0.020 | 0.022 |
| I | 5.34 | 5.55 | 0.210 | 0.219 |
| J | 1.46 | 1.64 | 0.057 | 0.065 |

TO-263-2L Mechanical drawing



| TO-263-2L DIMENSION | | | | |
|---------------------|-------------|-------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 10.00 | 10.50 | 0.394 | 0.413 |
| B | 14.60 | 15.58 | 0.575 | 0.625 |
| C | 0.68 | 0.92 | 0.027 | 0.036 |
| D | 2.42 | 2.66 | 0.095 | 0.105 |
| E | 4.31 | 4.83 | 0.170 | 0.190 |
| F | 1.14 | 1.40 | 0.045 | 0.055 |
| G | 2.28 | 2.79 | 0.090 | 0.110 |
| H | 0.45 | 0.73 | 0.018 | 0.029 |
| I | 8.28 | 8.80 | 0.326 | 0.346 |
| J | 1.14 | 1.40 | 0.045 | 0.055 |
| K | 1.48 | 1.52 | 0.058 | 0.060 |