芯伯乐®
XINBOLE

# Product Specification

## XBLW L78XX

1.5A Three-Terminal Positive Regulators

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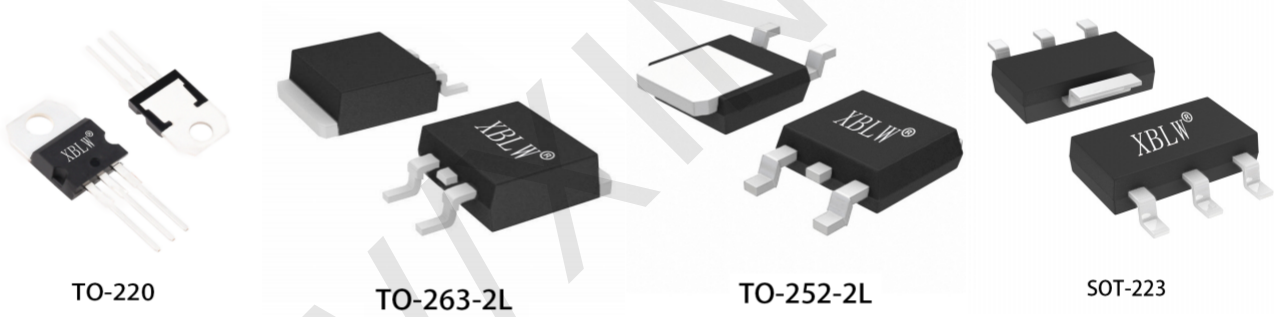
## Descriptions

The L78XX Family monolithic 3-terminal positive voltage regulators employ internal current limiting, thermal shutdown and safe-area compensation, making them essentially indestructible.If adequate heat sinking is provided, they can deliverover 1.5A output current. They are intended as fixed voltage regulators in a wide range of applications including local (on-card) regulation for elimination ofnoise and distribution problems associated with single-point regulation. In addition to use as fixed voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents.

The chips are available in TO-220,TO-263-2L, TO-252-2L and SOT-223 package.




TO-220 TO-263-2L TO-252-2L SOT-223

## Features

- Output Current up to 1.5A
- Output Voltages of 5,6,8,9,12,15,18,24V
- Thermal Overload Protection Short Circuit Protection
- Output Transistor Safe Operating area (SOA)Protection

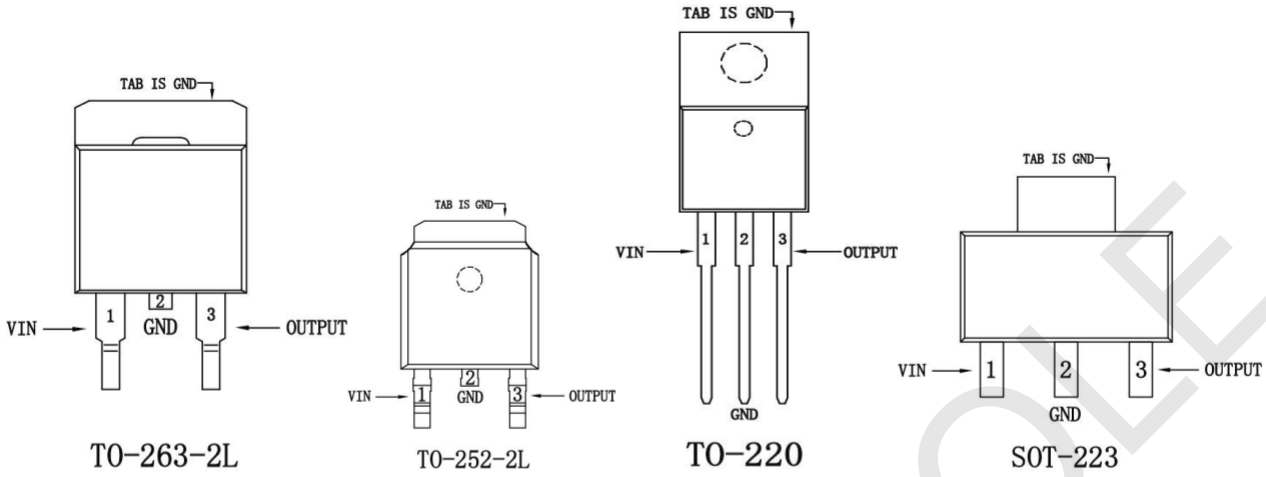
## Application

- Industrial Power Supplies
- SMPS Post Regulation
- HVAC Systems
- AC Inventors
- Test and Measurement Equipment
- Brushed and Brushless DC Motor Drivers
- Solar Energy String Invertors

## Ordering Information

| Product Model | Package Type | Marking | Packing | Packing Qty |
|---|---|---|---|---|
| XBLW L7805CV | TO-220 | L7805CV | Tube | 1000Pcs/Box |
| XBLW L7806CV | TO-220 | L7806CV | Tube | 1000Pcs/Box |
| XBLW L7808V | TO-220 | L7808CV | Tube | 1000Pcs/Box |
| XBLW L7809CV | TO-220 | L7809CV | Tube | 1000Pcs/Box |
| XBLW L7812CV | TO-220 | L7812CV | Tube | 1000Pcs/Box |
| XBLW L7815CV | TO-220 | L7815CV | Tube | 1000Pcs/Box |
| XBLW L7818CV | TO-220 | L7818CV | Tube | 1000Pcs/Box |
| XBLW L7824CV | TO-220 | L7824CV | Tube | 1000Pcs/Box |
| XBLW L7805MDTR | TO-252-2L | L7805M | Tape | 2500Pcs/Reel |
| XBLW L7806MDTR | TO-252-2L | L7806M | Tape | 2500Pcs/Reel |
| XBLW L7808MDTR | TO-252-2L | L7808M | Tape | 2500Pcs/Reel |
| XBLW L7809MDTR | TO-252-2L | L7809M | Tape | 2500Pcs/Reel |
| XBLW L7812MDTR | TO-252-2L | L7812M | Tape | 2500Pcs/Reel |
| XBLW L7815MDTR | TO-252-2L | L7815M | Tape | 2500Pcs/Reel |
| XBLW L7818MDTR | TO-252-2L | L7818M | Tape | 2500Pcs/Reel |
| XBLW L7824MDTR | TO-252-2L | L7824M | Tape | 2500Pcs/Reel |
| XBLW L7805SDTR | SOT-223 | L7805S | Tape | 2500Pcs/Reel |
| XBLW L7806SDTR | SOT-223 | L7806S | Tape | 2500Pcs/Reel |
| XBLW L7808SDTR | SOT-223 | L7808S | Tape | 2500Pcs/Reel |
| XBLW L7809SDTR | SOT-223 | L7809S | Tape | 2500Pcs/Reel |
| XBLW L7812SDTR | SOT-223 | L7812S | Tape | 2500Pcs/Reel |
| XBLW L7815SDTR | SOT-223 | L7815S | Tape | 2500Pcs/Reel |
| XBLW L7818SDTR | SOT-223 | L7818S | Tape | 2500Pcs/Reel |
| XBLW L7824SDTR | SOT-223 | L7824S | Tape | 2500Pcs/Reel |
| XBLW L7805CDTR | TO-263-2L | L7805 | Tape | 800Pcs/Reel |
| XBLW L7806CDTR | TO-263-2L | L7806 | Tape | 800Pcs/Reel |
| XBLW L7808CDTR | TO-263-2L | L7808 | Tape | 800Pcs/Reel |
| XBLW L7809CDTR | TO-263-2L | L7809 | Tape | 800Pcs/Reel |
| XBLW L7812CDTR | TO-263-2L | L7812 | Tape | 800Pcs/Reel |
| XBLW L7815CDTR | TO-263-2L | L7815 | Tape | 800Pcs/Reel |
| XBLW L7818CDTR | TO-263-2L | L7818 | Tape | 800Pcs/Reel |
| XBLW L7824CDTR | TO-263-2L | L7824 | Tape | 800Pcs/Reel |

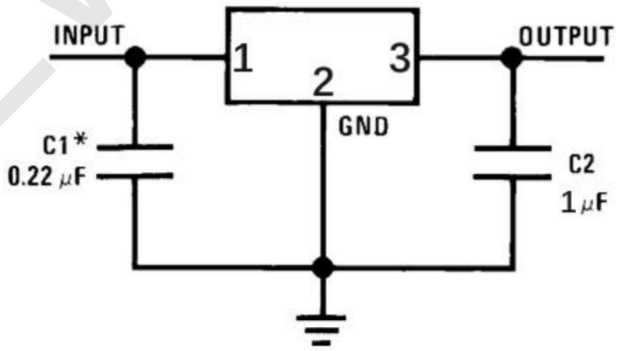
## Pin Configuration




## Pin Descriptions

| PIN NO. | Name | Description |
|---|---|---|
| 1 | VIN | VIN -------Supply Voltage Input |
| 2 | GND | GND -----Ground |
| 3 | Output | Output ---Power Switching Output |
| TAB | GND | TAB------Cooling rib |

## Block Digram



## Absolute Maximum Ratings

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Input Voltage | | $V_{IN}$ | 40 | V |
| Output Current | | $I_{OUT}$ | 1.8 | A |
| Power Dissipation ($T_C$=25°C) | SOT-223 | $P_O$ | 1 | W |
| | TO-252-2L | | 2 | |
| | TO-220/TO-263-2L | | 4 | |
| Operating Junction Temperature | | $T_J$ | -20 ～125 | °C |
| Storage Temperature | | $T_{STG}$ | -55 ～+150 | °C |

## Electrical Characteristics（L7805）

(Refer to the test circuits, 0 < $T_J$ < +125°C, $I_O$=350mA, $V_I$=10V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A,$P_D$≤ 15 W<br>$V_I$=7～20V | | 4.75 | 5 | 5.25 | V |
| Line Regulation | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=7V～25V | | | 50 | mV |
| | | $I_O$ = 1A | $V_I$=8V～20V | | | 100 | |
| Load Regulation | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 100 | mV |
| | | | $I_O$=250mA～750mA | | | 50 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=8～25V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 40 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=8～18V | | | 80 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7806）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=11V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A,$P_D$≤ 15 W<br>$V_I$=8～20V | | 5.7 | 6 | 6.3 | V |
| Line Regulation | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=8V～25V | | | 50 | mV |
| | | $I_O$ = 1A | $V_I$=9V～20V | | | 100 | |
| Load Regulation | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 100 | mV |
| | | | $I_O$=250mA～750mA | | | 50 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=9～25V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 40 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=9～18V | | | 80 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7808）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=14V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A,$P_D$≤ 15 W<br>$V_I$=10～23V | | 7.6 | 8 | 8.4 | V |
| Line Regulation | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=10V～25V | | | 50 | mV |
| | | $I_O$ = 1A | $V_I$=11V～20V | | | 100 | |
| Load Regulation | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 100 | mV |
| | | | $I_O$= 250mA～750mA | | | 50 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=11～25V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 40 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=11～18V | | | 80 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7809）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=15V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A,$P_D$≤ 15 W<br>$V_I$=11～24V | | 8.45 | 9 | 9.55 | V |
| Line Regulation(Note) | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=11V～25V | | | 100 | mV |
| | | $I_O$ = 1A | $V_I$=12V～18V | | | 50 | |
| Load Regulation(Note) | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 180 | mV |
| | | | $I_O$= 250mA～750mA | | | 90 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=11～25V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 52 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=12～23V | | | 80 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7812）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=19V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A,$P_D$≤ 15 W<br>$V_I$=14～27V | | 11.4 | 12 | 12.6 | V |
| Line Regulation(Note) | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=14V～30V | | | 100 | mV |
| | | $I_O$ = 1A | $V_I$=15V～24V | | | 50 | |
| Load Regulation(Note) | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 240 | mV |
| | | | $I_O$= 250mA～750mA | | | 120 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=14.5～30V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 75 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=15～25V | | | 80 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7815）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=23V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A, $P_D$≤ 15 W<br>$V_I$=17～30V | | 14.25 | 15 | 15.75 | V |
| Line Regulation(Note) | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=17V～30V | | | 100 | mV |
| | | $I_O$ = 1A | $V_I$=18V～30V | | | 50 | |
| Load Regulation(Note) | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 300 | mV |
| | | | $I_O$= 250mA～750mA | | | 150 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=17V～30V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 100 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=18～30V | | | 70 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7818）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=26V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A ,$P_D$≤ 15 W<br>$V_I$=20～33V | | 17.1 | 18 | 18.9 | V |
| Line Regulation(Note) | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=20V～33V | | | 100 | mV |
| | | $I_O$ = 1A | $V_I$=21V～30V | | | 50 | |
| Load Regulation(Note) | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1A | | | 360 | mV |
| | | | $I_O$= 250mA～750mA | | | 180 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=21V～33V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 100 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=22～32V | | | 70 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Electrical Characteristics（L7824）

(Refer to the test circuits, $0 < T_J < +125°C$, $I_O$=350mA, $V_I$=33V, unless otherwise specified, $C_I$ = 0.33μF, $C_O$=1μF)

| Parameter | Symbol | Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | |
| Output Voltage | $V_O$ | $I_O$= 5mA～1A<br>$V_I$=27～38V | | 22.8 | 24 | 25.2 | V |
| Line Regulation(Note) | $\Delta V_O$ | $I_O$ = 500mA | $V_I$=27V～38V | | | 100 | mV |
| | | $I_O$ = 1A | $V_I$=28V～38V | | | 50 | |
| Load Regulation(Note) | $\Delta V_O$ | Tj=25°C | $I_O$= 5mA～1.5A | | | 480 | mV |
| | | | $I_O$= 250mA～750mA | | | 240 | |
| Quiescent Current | $I_Q$ | Tj=25°C | | | | 6.0 | mA |
| Quiescent Current Change | $\Delta I_Q$ | $I_O$=5mA～1A | | | | 0.5 | mA |
| | | $I_O$=200mA,$V_I$=27V～38V | | | | 0.8 | |
| Output Noise Voltage | $V_N$ | f=10Hz～100KHz | | | 170 | | μV |
| Ripple Rejection | RR | f=120Hz,$V_I$=28～38V | | | 70 | | dB |
| Dropout Voltage | $V_D$ | Tj=25°C,$I_O$ = 500mA | | | 2 | | V |
| Short Circuit Current | $I_{SC}$ | Tj=25°C ,$V_I$=35V | | | 0.3 | | A |
| Peak Current | $I_{PK}$ | Tj=25°C | | | 1.8 | | A |

## Typical Characteristics

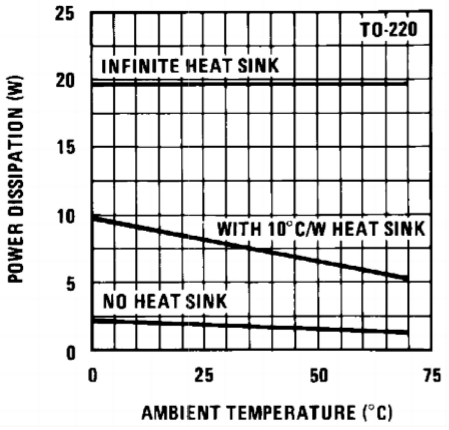



Figure 1 . Maximum Average Power Dissipation

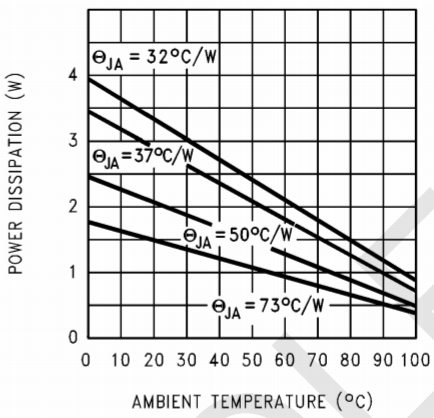
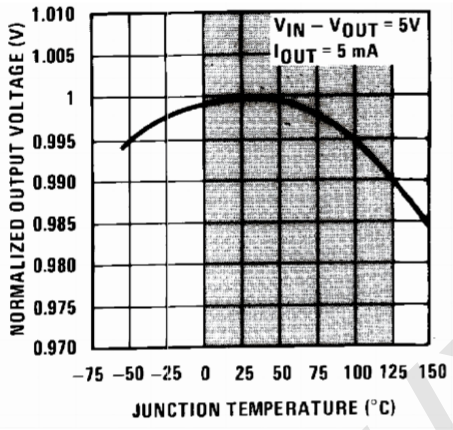



Figure 2 . Maximum Power Dissipation (TO-263)




Shaded area refers to L7805, L7812 and L7815.

Figure 3 . Output Voltage (Normalized to 1 V at $T_J$ = 25°C)

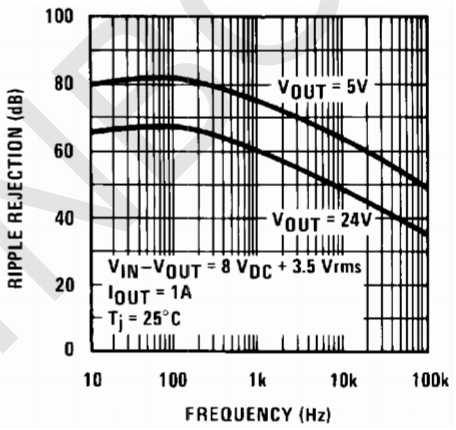



Figure 4 . Ripple Rejection

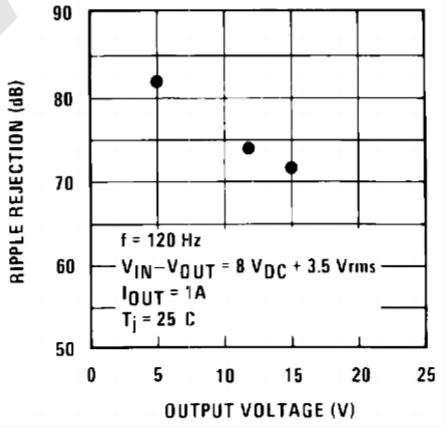



Figure 5 . Ripple Rejection

## Typical Characteristics (continued)

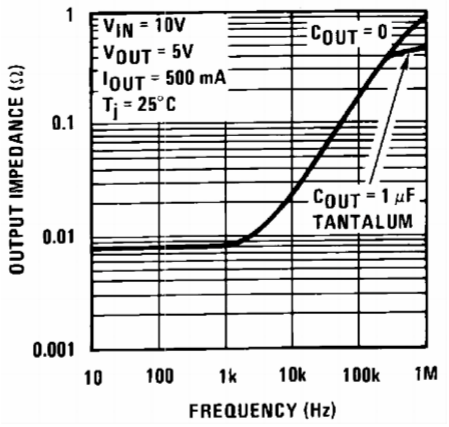
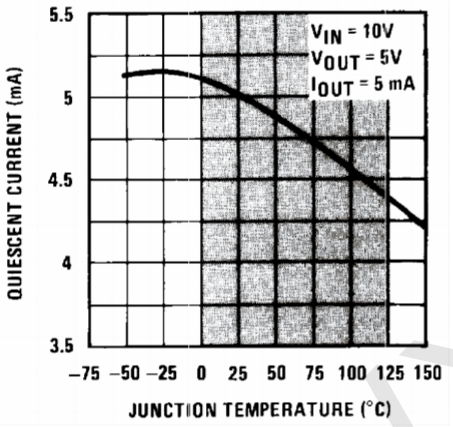



Figure 6 . Output Impedance




Shaded area refers to L7805, L7812 and L7815.

Figure 7 . Quiescent Current

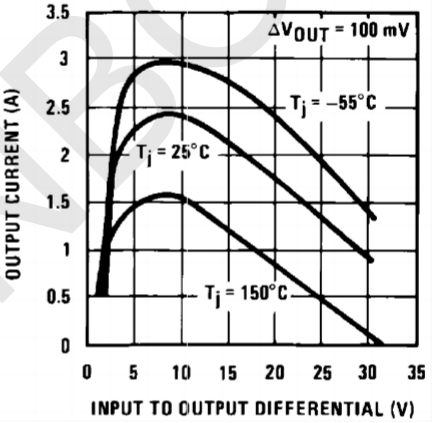
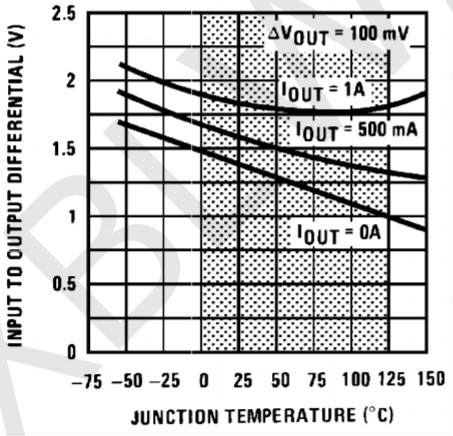



Figure 8 . Peak Output Current




Shaded area refers to L7805, L7812 and L7815.

Figure 9 . Dropout Voltage

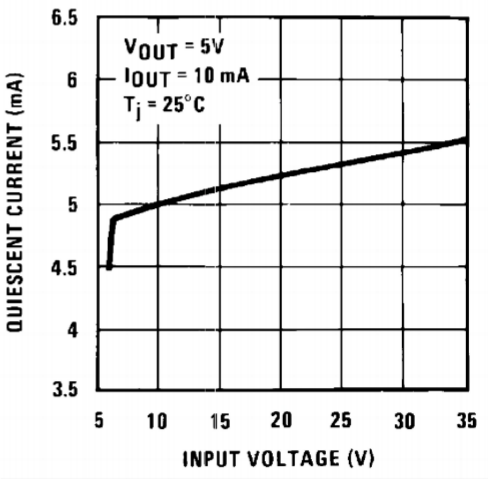
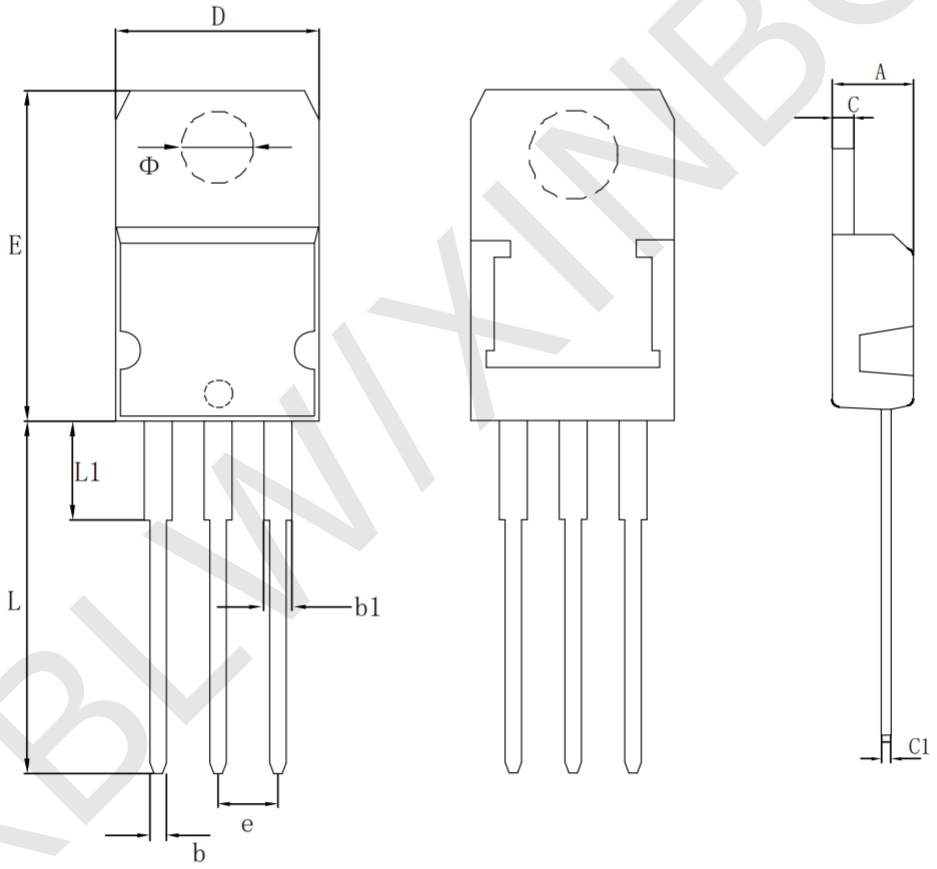



Figure 10. Quiescent Current

## Package Information

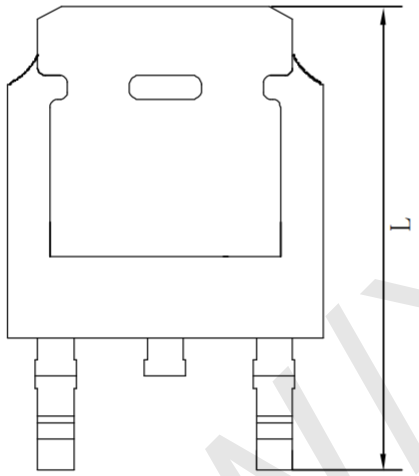
· TO-220

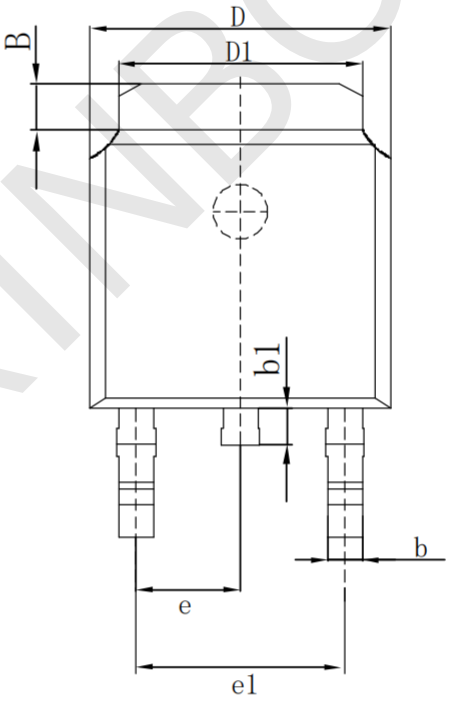
| Size / Symbol | Dimensions In Millimeters | | Size / Symbol | Dimensions In Inches | |
|---|---|---|---|---|---|
| | Min(mm) | Max(mm) | | Min(in) | Max(in) |
| A | 4.150 | 4.250 | A | 0.163 | 0.167 |
| C | 0.985 | 1.015 | C | 0.039 | 0.040 |
| C1 | 0.365 | 0.395 | C1 | 0.014 | 0.016 |
| D | 10.03 | 10.10 | D | 0.395 | 0.398 |
| E | 15.02 | 15.75 | E | 0.591 | 0.620 |
| Φ | 3.700 | 3.900 | Φ | 0.146 | 0.154 |
| e | 2.540(TYP) | | e | 0.100(TYP) | |
| b | 0.770 | 0.830 | b | 0.030 | 0.033 |
| b1 | 1.230 | 1.290 | b1 | 0.048 | 0.051 |
| L | 13.00 | 14.00 | L | 0.512 | 0.551 |
| L1 | 3.500 | 3.900 | L1 | 0.138 | 0.154 |

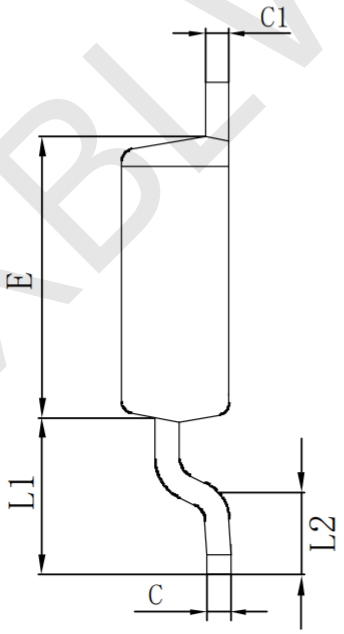


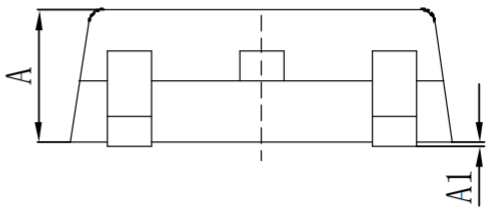
## · TO-252-2L

| Size / Symbol | Dimensions In Millimeters | | Size / Symbol | Dimensions In Inches | |
|---|---|---|---|---|---|
| | Min(mm) | Max(mm) | | Min(mm) | Max(mm) |
| A | 2.200 | 2.400 | A | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | A1 | 0.000 | 0.005 |
| B | 1.350 | 1.650 | B | 0.053 | 0.065 |
| b | 0.500 | 0.700 | b | 0.020 | 0.028 |
| b1 | 0.700 | 0.900 | b1 | 0.028 | 0.035 |
| c | 0.430 | 0.580 | c | 0.017 | 0.023 |
| c1 | 0.430 | 0.580 | c1 | 0.017 | 0.023 |
| D | 6.350 | 6.500 | D | 0.250 | 0.262 |
| D1 | 5.200 | 5.400 | D1 | 0.205 | 0.213 |
| E | 5.400 | 5.700 | E | 0.213 | 0.224 |
| e | 2.300(TYP) | | e | 0.091(TYP) | |
| e1 | 4.500 | 4.700 | e1 | 0.177 | 0.185 |
| L | 9.500 | 9.900 | L | 0.374 | 0.390 |
| L1 | 2.550 | 2.900 | L1 | 0.100 | 0.114 |
| L2 | 1.400 | 1.780 | L2 | 0.055 | 0.070 |



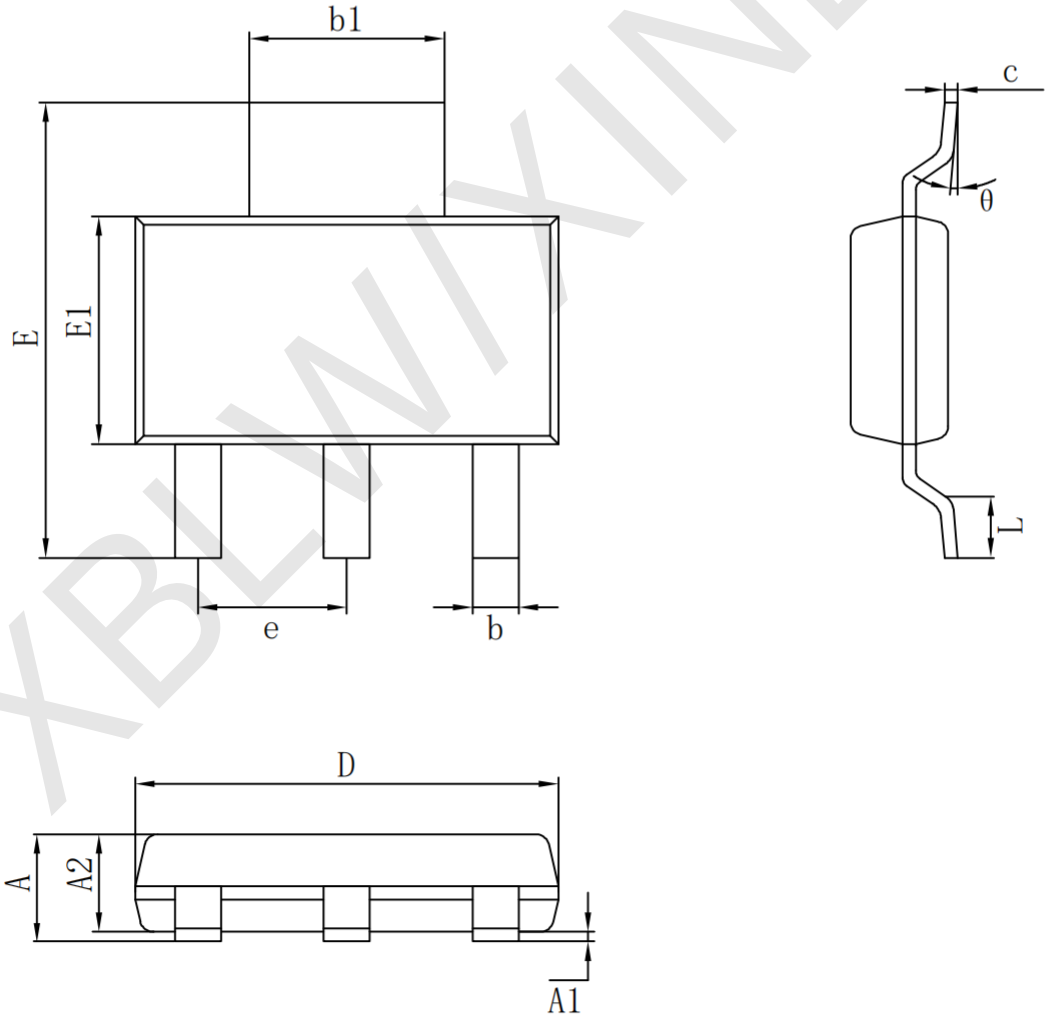



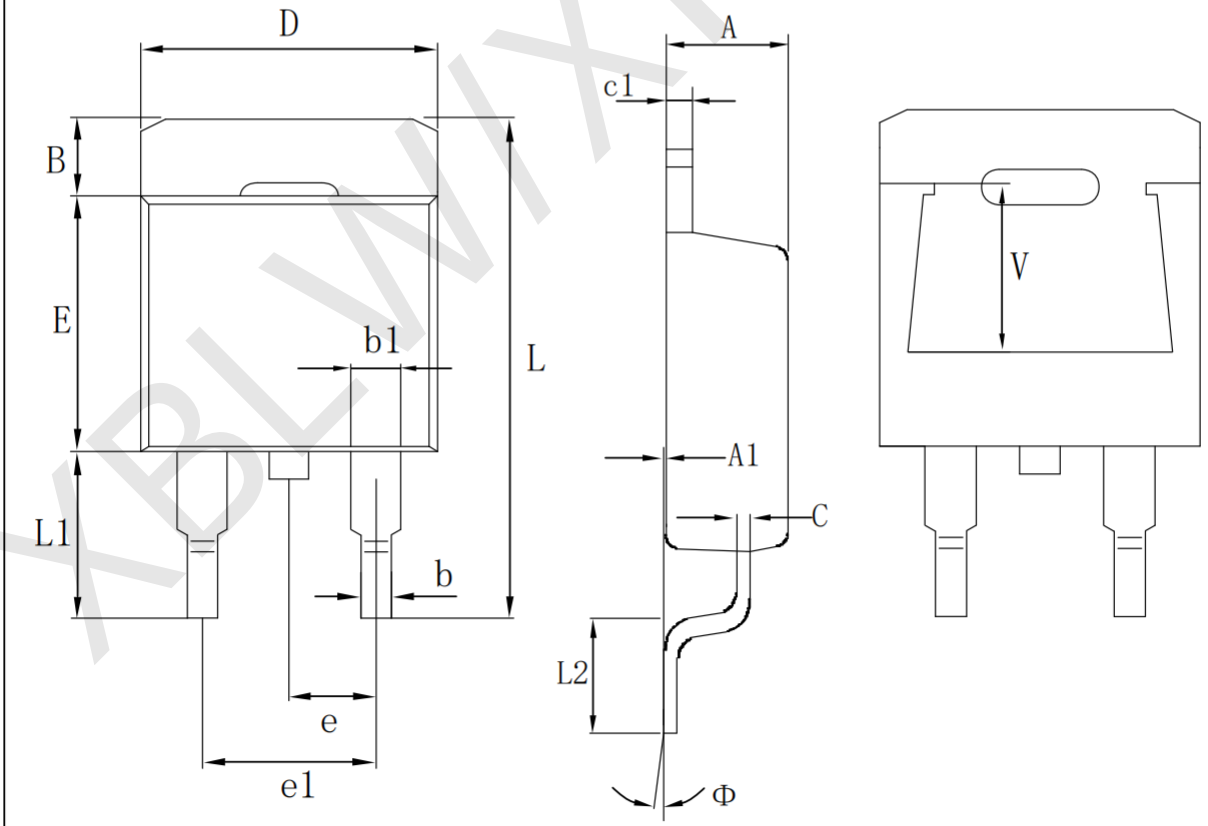
## · SOT-223

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



## · TO-263-2L

| Size / Symbol | Dimensions In Millimeters | | Size / Symbol | Dimensions In Inches | |
|---|---|---|---|---|---|
| | Min(mm) | Max(mm) | | Min(in) | Max(in) |
| A | 4.470 | 4.670 | A | 0.176 | 0.184 |
| A1 | 0.000 | 0.150 | A1 | 0.000 | 0.006 |
| B | 1.120 | 1.420 | B | 0.044 | 0.056 |
| b | 0.710 | 0.910 | b | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | b1 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | c | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | c1 | 0.046 | 0.054 |
| D | 10.01 | 10.31 | D | 0.394 | 0.406 |
| E | 8.700 | 9.400 | E | 0.343 | 0.370 |
| e | 2.540(TYP) | | e | 0.100(TYP) | |
| e1 | 4.980 | 5.180 | e1 | 0.196 | 0.204 |
| L | 14.94 | 15.50 | L | 0.588 | 0.610 |
| L1 | 4.950 | 5.450 | L1 | 0.195 | 0.215 |
| L2 | 2.340 | 2.740 | L2 | 0.092 | 0.860 |
| V | 5.600(REF) | | V | 0.220(REF) | |
| Φ | 0° | 8° | Φ | 0° | 8° |



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