



# Product Specification

**XBLW L78XX**

1.5A Three-Terminal Positive Regulators

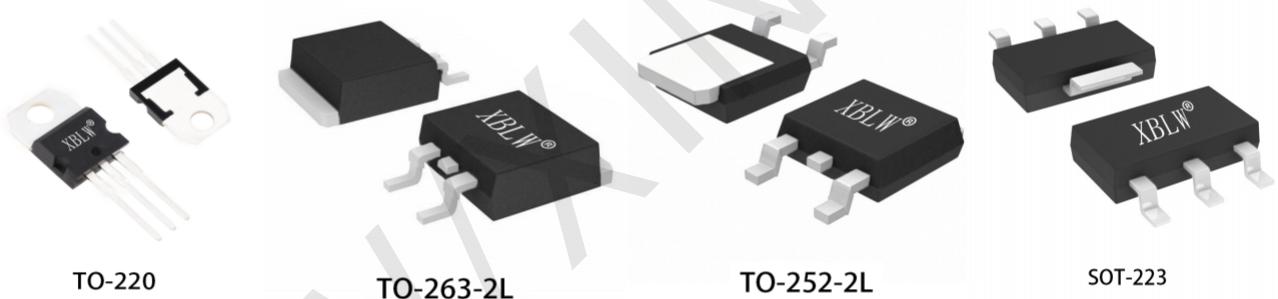
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## Descriptions

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 deliver over 1.5A output current. They are intended as fixed voltage regulators in a wide range of applications including local (on-card) regulation for elimination of noise 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.



## 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

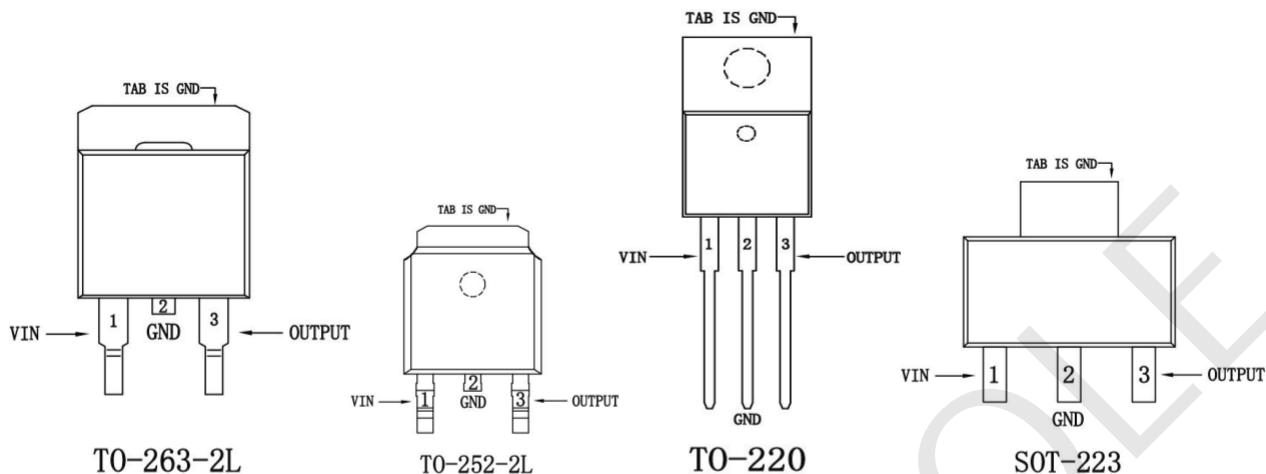
## Application

- Industrial Power Supplies
- SMPS Post Regulation
- HVAC Systems
- AC Invertors
- 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

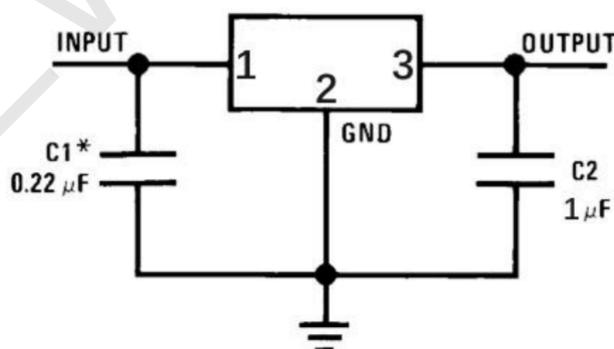
## Pin Configuration



## 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 Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Input Voltage	V <sub>IN</sub>	40	V
Output Current	I <sub>OUT</sub>	1.8	A
Power Dissipation (T <sub>c</sub> =25°C)	SOT-223	1	W
	TO-252-2L	2	
	TO-220/TO-263-2L	4	
Operating Junction Temperature	T <sub>J</sub>	-20 ~ 125	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

## Electrical Characteristics (L7805)

(Refer to the test circuits, 0 < T<sub>J</sub> < +125°C, I<sub>O</sub>=350mA, V<sub>I</sub>=10V, unless otherwise specified, C<sub>I</sub> = 0.33μF, C<sub>O</sub>=1μF)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Output Voltage	V <sub>O</sub>	I <sub>O</sub> = 5mA~1A, P <sub>D</sub> ≤ 15 W V <sub>I</sub> =7~20V	4.75	5	5.25	V
Line Regulation	ΔV <sub>O</sub>	I <sub>O</sub> = 500mA V <sub>I</sub> =7V~25V			50	mV
		I <sub>O</sub> = 1A V <sub>I</sub> =8V~20V			100	
Load Regulation	ΔV <sub>O</sub>	T <sub>J</sub> =25°C	I <sub>O</sub> = 5mA~1.5A		100	mV
			I <sub>O</sub> =250mA~750mA		50	
Quiescent Current	I <sub>Q</sub>	T <sub>J</sub> =25°C			6.0	mA
Quiescent Current Change	ΔI <sub>Q</sub>	I <sub>O</sub> =5mA~1A			0.5	mA
		I <sub>O</sub> =200mA, V <sub>I</sub> =8~25V			0.8	
Output Noise Voltage	V <sub>N</sub>	f=10Hz~100KHz		40		μV
Ripple Rejection	RR	f=120Hz, V <sub>I</sub> =8~18V		80		dB
Dropout Voltage	V <sub>D</sub>	T <sub>J</sub> =25°C, I <sub>O</sub> = 500mA		2		V
Short Circuit Current	I <sub>SC</sub>	T <sub>J</sub> =25°C , V <sub>I</sub> =35V		0.3		A
Peak Current	I <sub>PK</sub>	T <sub>J</sub> =25°C		1.8		A

## Electrical Characteristics (L7806)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=11\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O=1\mu\text{F}$ )

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

## Electrical Characteristics (L7808)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=14\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O=1\mu\text{F}$ )

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

## Electrical Characteristics (L7809)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=15\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O=1\mu\text{F}$ )

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

## Electrical Characteristics (L7812)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=19\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O=1\mu\text{F}$ )

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

## Electrical Characteristics (L7815)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=23\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O = 1\mu\text{F}$ )

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

## Electrical Characteristics (L7818)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=26\text{V}$ , unless otherwise specified,  $C_I = 0.33\mu\text{F}$ ,  $C_O = 1\mu\text{F}$ )

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

## Electrical Characteristics (L7824)

(Refer to the test circuits,  $0 < T_J < +125^\circ\text{C}$ ,  $I_O=350\text{mA}$ ,  $V_I=33\text{V}$ , unless otherwise specified,  $C_1 = 0.33\mu\text{F}$ ,  $C_0=1\mu\text{F}$ )

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

## Typical Characteristics

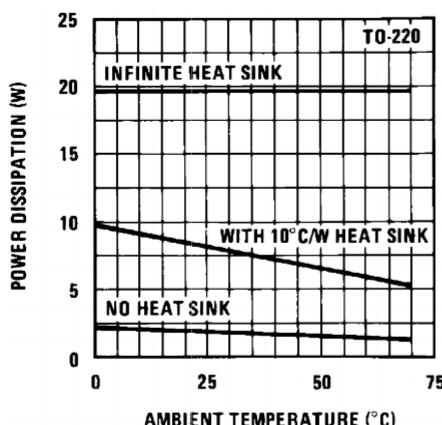


Figure 1 . Maximum Average Power Dissipation

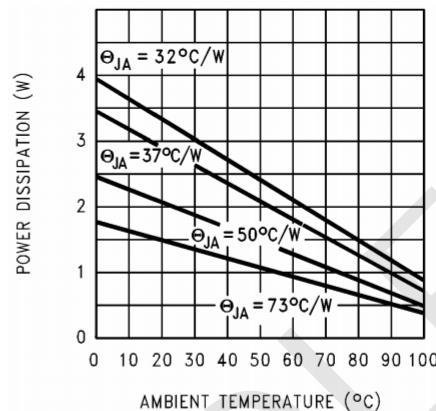
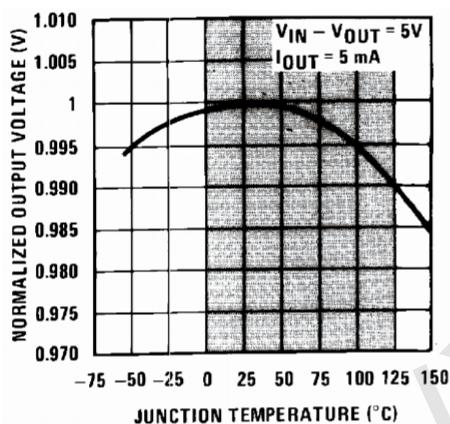


Figure 2 . Maximum Power Dissipation (TO-263)



Shaded area refers to L7805, L7812 and L7815.

Figure 3 . Output Voltage (Normalized to 1 V at  $T_J = 25^{\circ}\text{C}$ )

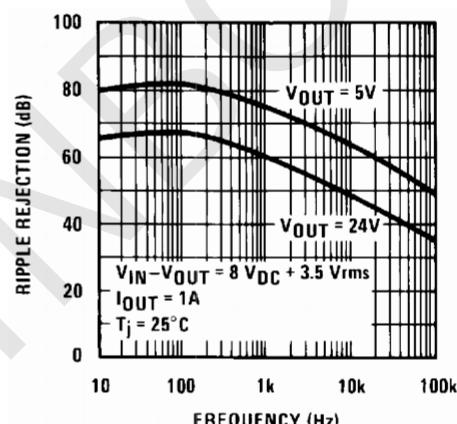


Figure 4 . Ripple Rejection

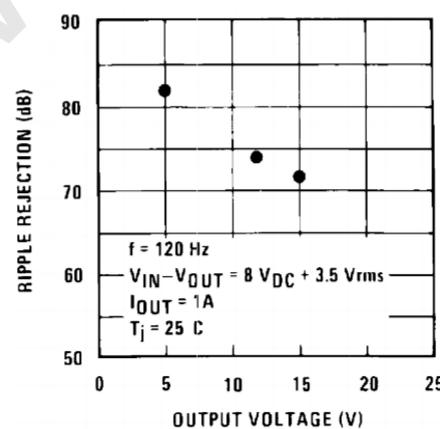


Figure 5 . Ripple Rejection

## Typical Characteristics (continued)

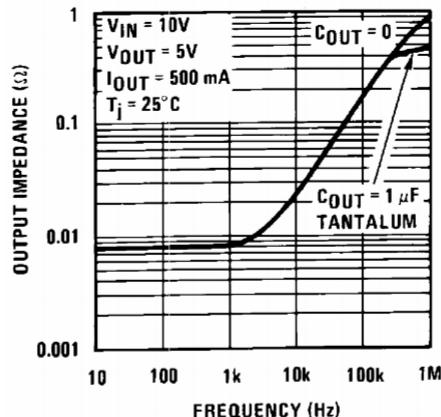
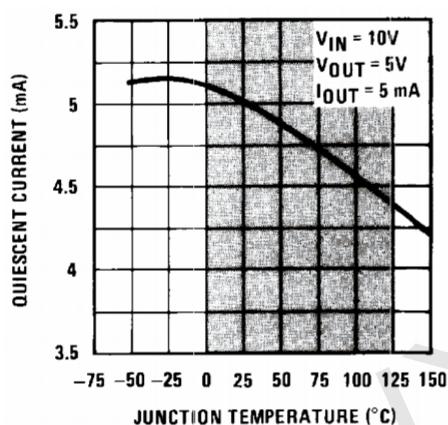


Figure 6 . Output Impedance



Shaded area refers to L7805, L7812 and L7815.

Figure 7 . Quiescent Current

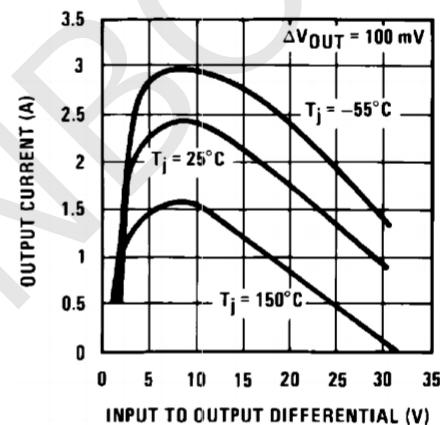
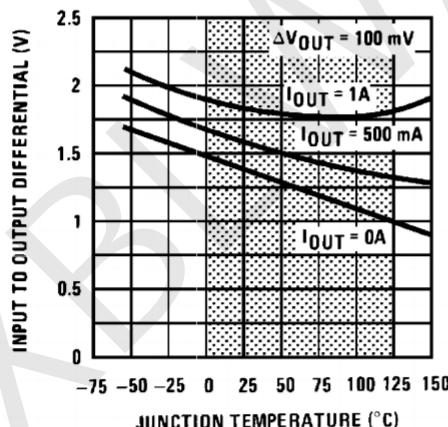


Figure 8 . Peak Output Current



Shaded area refers to L7805, L7812 and L7815.

Figure 9 . Dropout Voltage

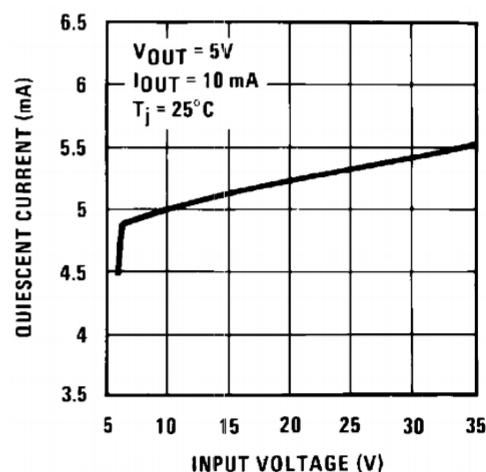
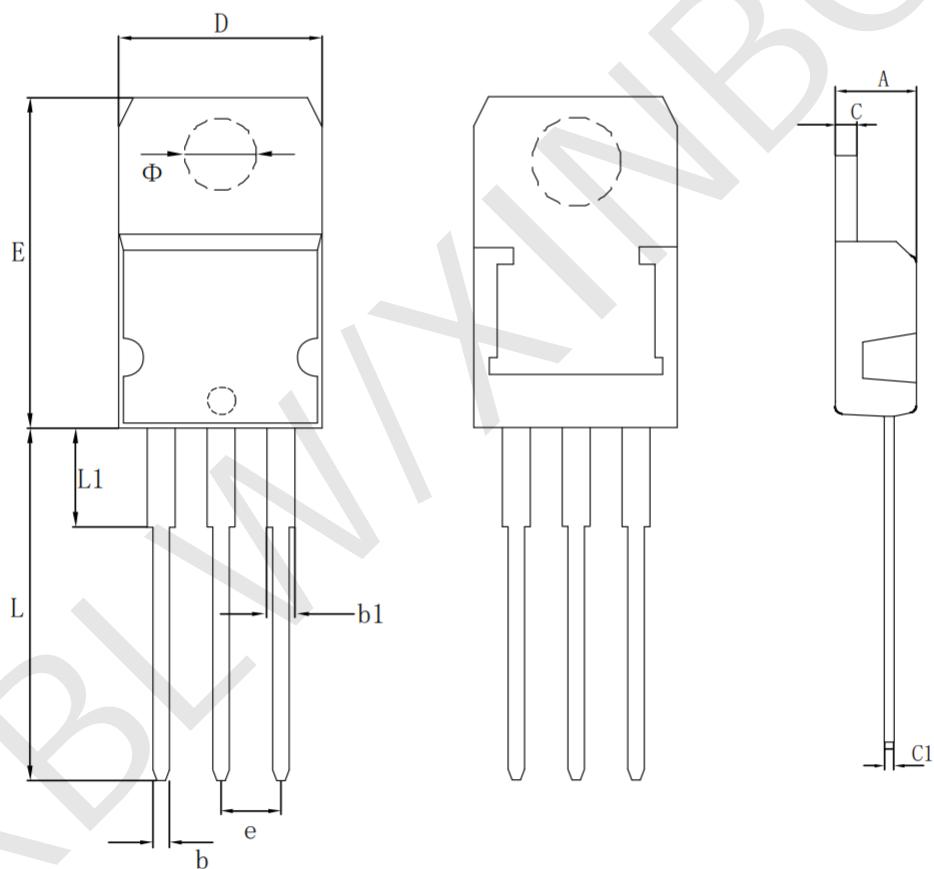


Figure 10. Quiescent Current

## Package Information

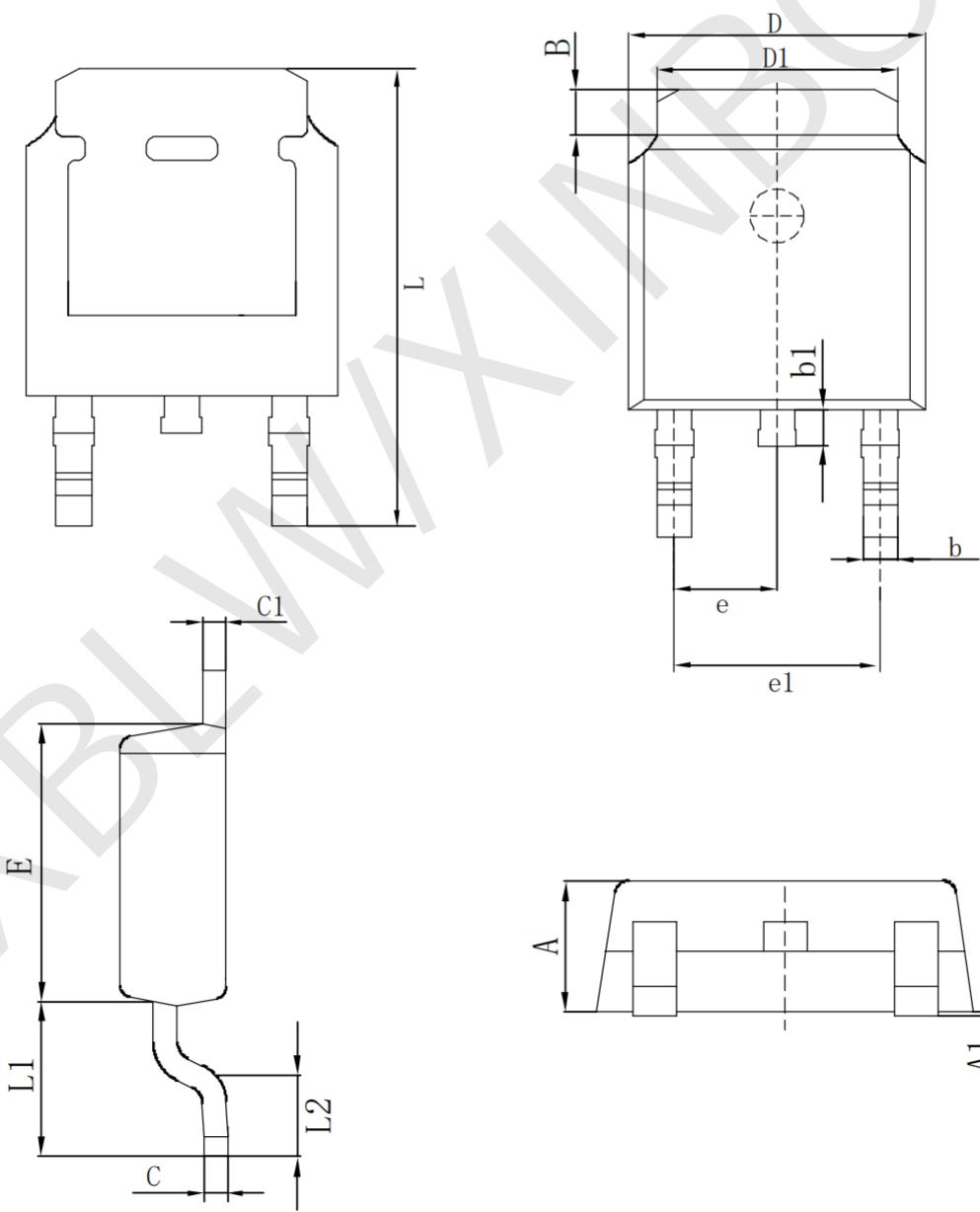
### · TO-220

Symbol	Dimensions In Millimeters		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



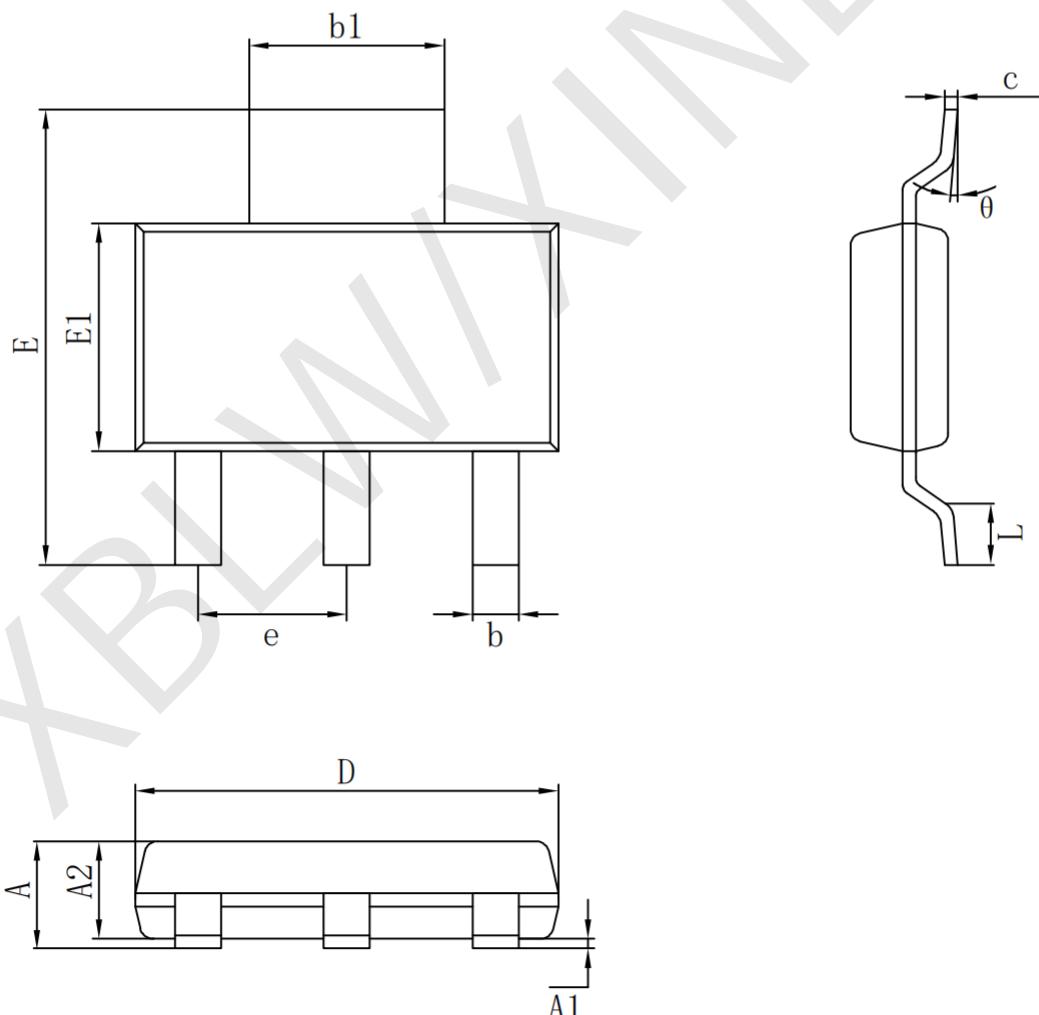
· T0-252-2L

Symbol	Dimensions In Millimeters		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



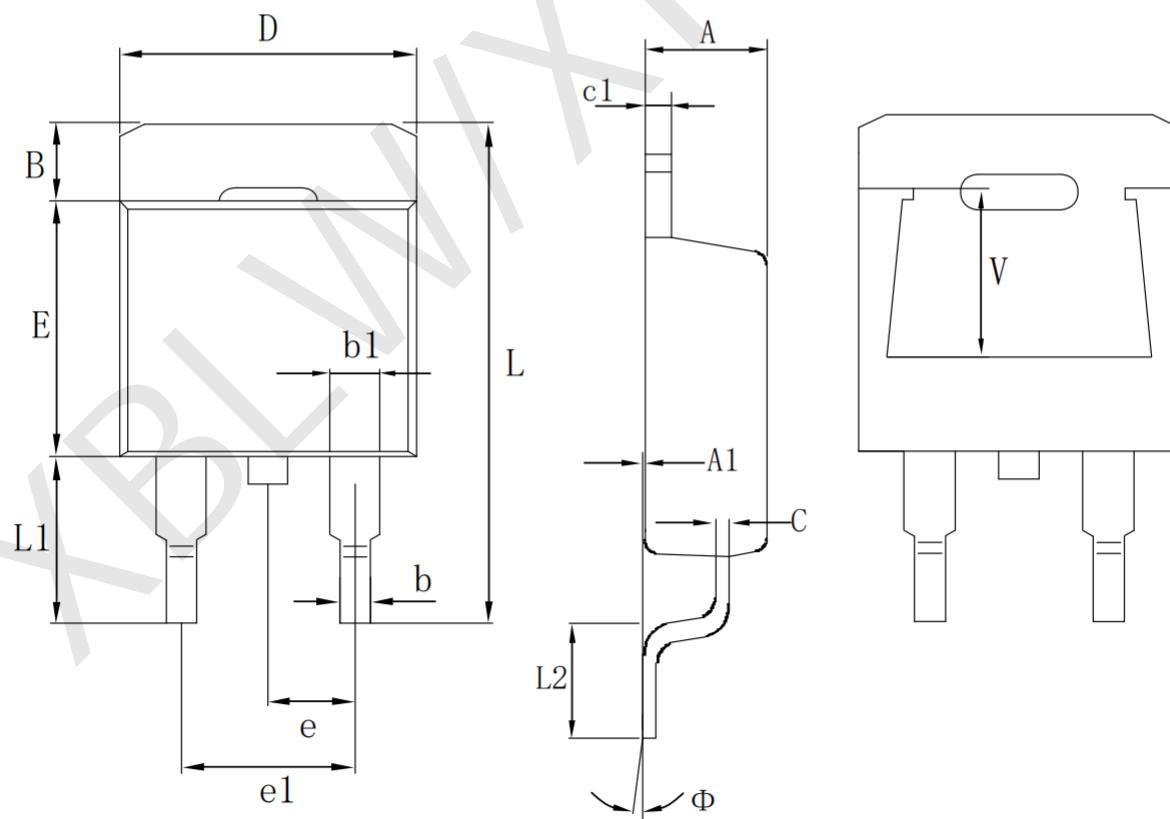
· SOT-223

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	
$\theta$	0°	10°	$\theta$	0°	10°



· T0-263-2L

Symbol	Dimensions In Millimeters		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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