芯伯乐®
XINBOLE

Product Specification

XBLW L78MXX

700mA Three-terminal Positive Regulators

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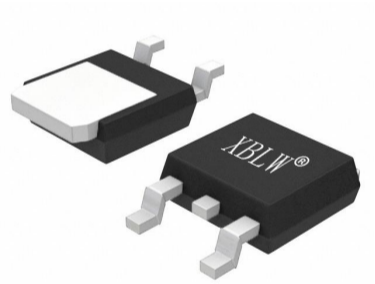
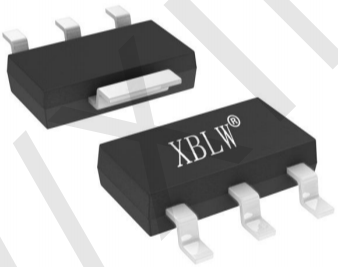
Descriptions

L78MXX series 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 700mA 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 TO220-3L ,TO252-2L and SOT223-3L package.



TO-252-2L



SOT-223

TO-220

Feature

- Output Current up to 700mA
- Output Voltages of 5,6,8,9,12,15,18,24V
- Thermal Overload Protection Short Circuit Protection
- Output Transistor Safe Operating area (SOA)Protection

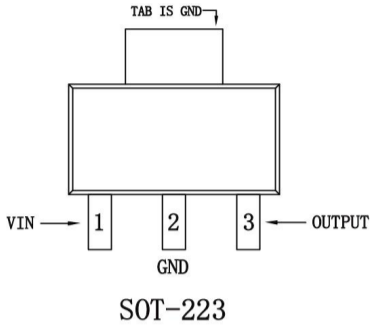
Applications

- Electronic point-of-sale
- Appliances and white goods
- TVs and set-top boxes
- Motor drives
- Building automation

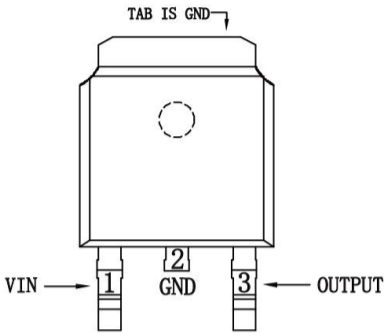
Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW L78M05HDTR	TO-252-2L	78M05H	Tape	2500Pcs/Reel
XBLW L78M06HDTR	TO-252-2L	78M06H	Tape	2500Pcs/Reel
XBLW L78M08HDTR	TO-252-2L	78M08H	Tape	2500Pcs/Reel
XBLW L78M09HDTR	TO-252-2L	78M09H	Tape	2500Pcs/Reel
XBLW L78M12HDTR	TO-252-2L	78M12H	Tape	2500Pcs/Reel
XBLW L78M15HDTR	TO-252-2L	78M15H	Tape	2500Pcs/Reel
XBLW L78M18HDTR	TO-252-2L	78M18H	Tape	2500Pcs/Reel
XBLW L78M24HDTR	TO-252-2L	78M24H	Tape	2500Pcs/Reel
XBLW L78M05CV	TO-220	L78M05CV	Tube	1000Pcs/Box
XBLW L78M06CV	TO-220	L78M06CV	Tube	1000Pcs/Box
XBLW L78M08CV	TO-220	L78M08CV	Tube	1000Pcs/Box
XBLW L78M09CV	TO-220	L78M09CV	Tube	1000Pcs/Box
XBLW L78M12CV	TO-220	L78M12CV	Tube	1000Pcs/Box
XBLW L78M15CV	TO-220	L78M15CV	Tube	1000Pcs/Box
XBLW L78M18CV	TO-220	L78M18CV	Tube	1000Pcs/Box
XBLW L78M24CV	TO-220	L78M24CV	Tube	1000Pcs/Box
XBLW L78M05SDTR	SOT-223	78M05S	Tape	2500Pcs/Reel
XBLW L78M06SDTR	SOT-223	78M06S	Tape	2500Pcs/Reel
XBLW L78M08SDTR	SOT-223	78M08S	Tape	2500Pcs/Reel
XBLW L78M09SDTR	SOT-223	78M09S	Tape	2500Pcs/Reel
XBLW L78M12SDTR	SOT-223	78M12S	Tape	2500Pcs/Reel
XBLW L78M15SDTR	SOT-223	78M15S	Tape	2500Pcs/Reel
XBLW L78M18SDTR	SOT-223	78M18S	Tape	2500Pcs/Reel
XBLW L78M24SDTR	SOT-223	78M24S	Tape	2500Pcs/Reel

Pin Descriptions



SOT-223



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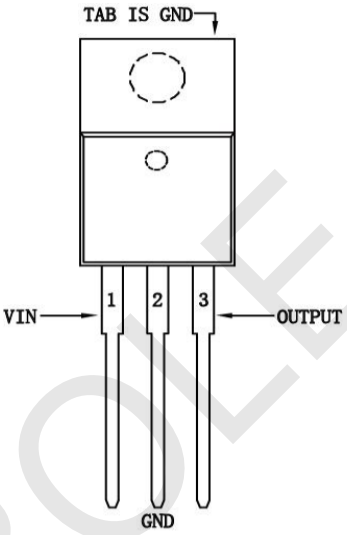
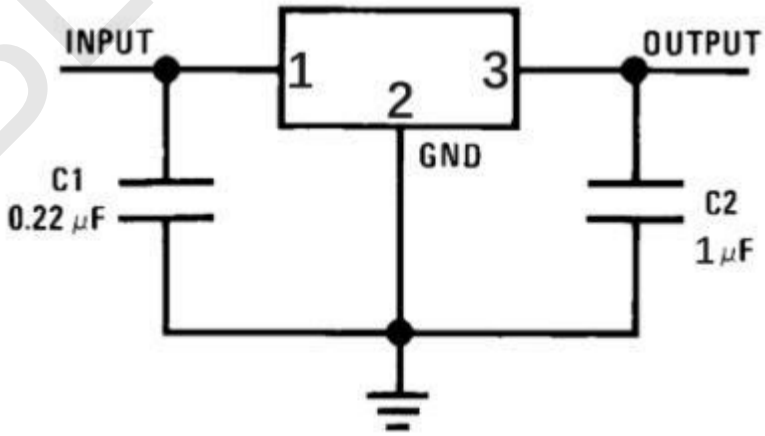


TO-220

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

Typical Application



Absolute Maximum Ratings

Parameter		Symbol	Ratings	Unit
Input Voltage		V_{IN}	40	V
Output Current		I_{OUT}	1.0	A
Power Dissipation (T_C=25℃)	SOT223	P_O	1	W
	TO252-2L		2	
	TO220		4	
Operating Junction Temperature		T_J	-20 ～125	℃
Storage Temperature		T_{STG}	-55 ～+150	℃

Electrical Characteristics（78M05）

(Refer to the test circuits, 0＜T_J＜+125℃, I_O=250mA, V_I=10V, unless otherwise specified, C_I = 0.33μF, C_O=1μF)

Parameter	Symbol	Conditions		Value Min	Value Typ	Value Max	Unit
Output Voltage	V_O	I_O= 5mA～500mA,P_D ≤ 15 W V_I=7～20V		4.9	5	5.1	V
Line Regulation	ΔV_O	I_O = 250mA	V_I=7V～25V			100	mV
		I_O = 250mA	V_I=8V～20V			50	
Load Regulation	ΔV_O	Tj=25℃	I_O= 5mA～500mA			100	mV
			I_O=50mA～250mA			50	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M06）

(Refer to the test circuits, 0＜T_J＜+125℃, I_O=250mA, V_I=11V, unless otherwise specified, C_I = 0.33μF, C_O=1μF)

Parameter	Symbol	Conditions		Value Min	Value Typ	Value Max	Unit
Output Voltage	V_O	I_O= 5mA～500mA,P_D ≤ 15 W V_I=8～20V		5.88	6	6.12	V
Line Regulation	ΔV_O	I_O = 250mA	V_I=8V～25V			100	mV
		I_O = 250mA	V_I=9V～20V			50	
Load Regulation	ΔV_O	Tj=25℃	I_O= 5mA～500mA			100	mV
			I_O=50mA～250mA			50	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M08）

(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, 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～500mA,P_D ≤ 15 W V_I=10～23V		7.84	8	8.16	V
Line Regulation	ΔV_O	I_O = 250mA	V_I= 10V～25V			100	mV
		I_O = 250mA	V_I= 11V～20V			50	
Load Regulation	ΔV_O	Tj=25℃	I_O= 5mA～500mA			100	mV
			I_O= 50mA～250mA			50	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M09）

(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, 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～500mA,P_D ≤ 15 W V_I=11～24V		8.82	9	9.18	V
Line Regulation(Note)	ΔV_O	I_O = 250mA	V_I= 11V～25V			100	mV
		I_O = 250mA	V_I= 12V～18V			50	
Load Regulation(Note)	ΔV_O	Tj=25℃	I_O= 5mA～500mA			180	mV
			I_O= 50mA～250mA			90	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M12）

(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, 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～500mA,P_D ≤ 15 W V_I= 14～27V		11.76	12	12.24	V
Line Regulation(Note)	ΔV_O	I_O = 250mA	V_I= 14V～30V			100	mV
		I_O = 1A	V_I= 15V～24V			50	
Load Regulation(Note)	ΔV_O	Tj=25℃	I_O= 5mA～500mA			240	mV
			I_O= 50mA～250mA			120	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M15）

(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, 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～500mA,P_D ≤ 15 W V_I= 17～30V		14.70	15	15.30	V
Line Regulation(Note)	ΔV_O	I_O = 250mA	V_I= 17V～30V			100	mV
		I_O = 250mA	V_I= 18V～30V			50	
Load Regulation(Note)	ΔV_O	Tj=25℃	I_O= 5mA～500mA			300	mV
			I_O= 50mA～250mA			150	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M18）

(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, 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～500mA,P_D ≤ 15 W V_I=20～33V		17.64	18	18.36	V
Line Regulation(Note)	ΔV_O	I_O = 250mA	V_I=20V～33V			100	mV
		I_O = 250mA	V_I=21V～30V			50	
Load Regulation(Note)	ΔV_O	Tj=25℃	I_O= 5mA～500mA			360	mV
			I_O= 50mA～250mA			180	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Electrical Characteristics（78M24）

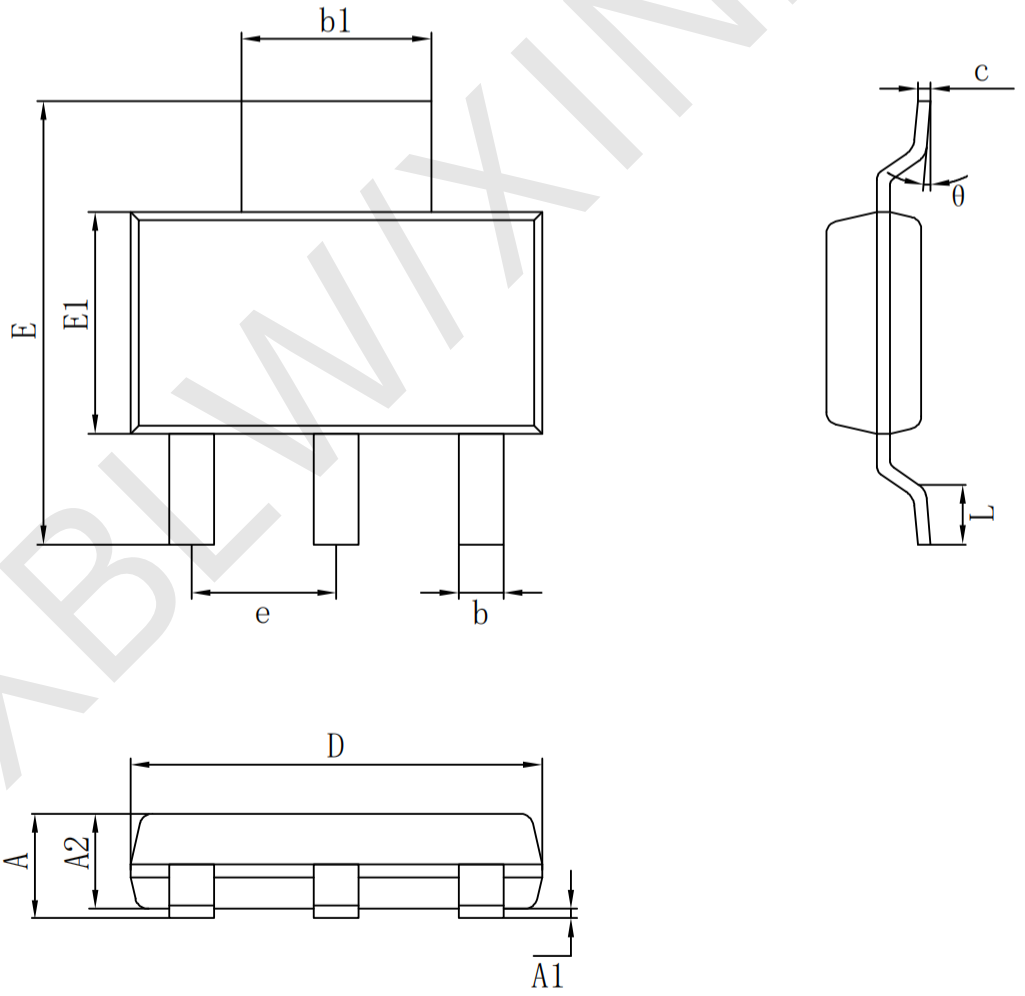
(Refer to the test circuits, $0 < T_J < +125℃$, I_O=250mA, V_I=33V, unless otherwise specified, C_I = 0.33μF, C_O=1μF)

Parameter	Symbol	Conditions		Value			Unit
				Min	Typ	Max	
Output Voltage	V_O	I_O= 5mA～500mA,P_D ≤ 15 W V_I=27～38V		23.52	24	24.48	V
Line Regulation(Note)	ΔV_O	I_O = 250mA	V_I=27V～38V			100	mV
		I_O = 250mA	V_I=28V～38V			50	
Load Regulation(Note)	ΔV_O	Tj=25℃	I_O= 5mA～500mA			480	mV
			I_O= 50mA～250mA			240	
Quiescent Current	I_Q	Tj=25℃				6.0	mA
Quiescent Current Change	ΔI_Q	I_O=5mA～250mA				0.5	mA
		I_O=250mA,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℃,I_O = 250mA			2		V
Short Circuit Current	I_{SC}	Tj=25℃,V_I=35V			0.1		A
Peak Current	I_{PK}	Tj=25℃			1.0		A

Package Information

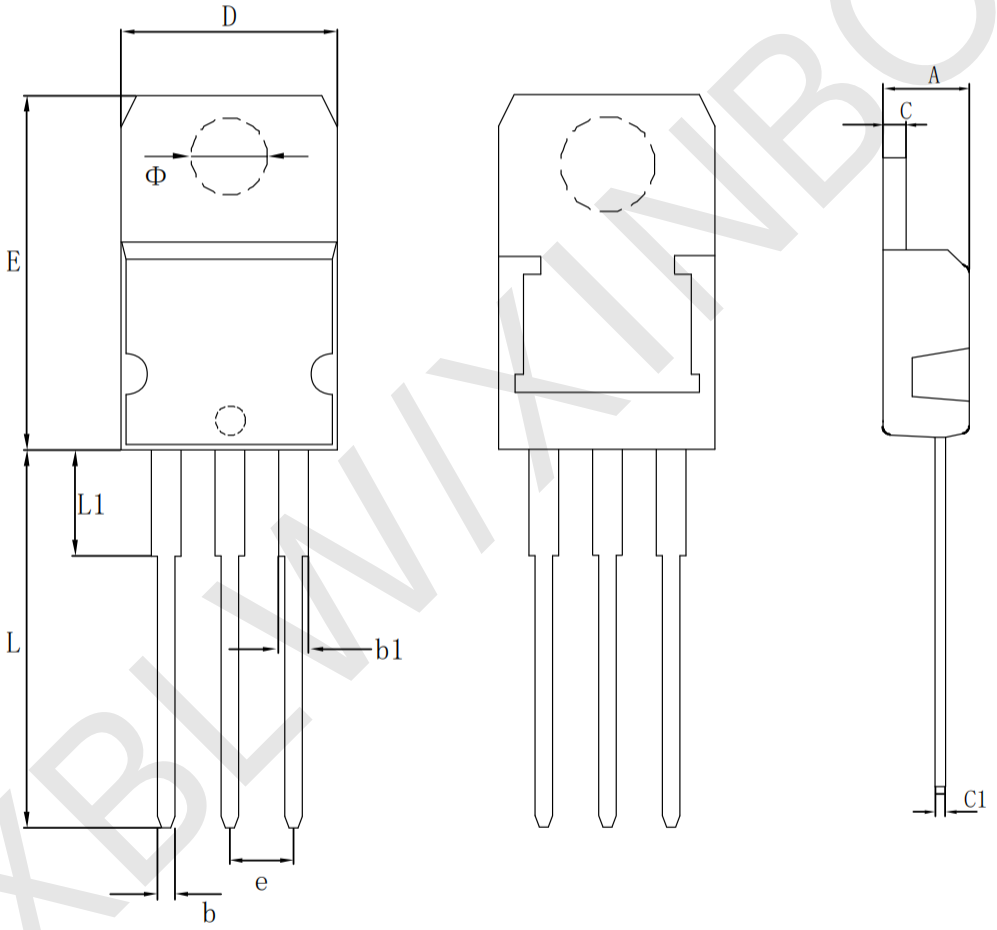
· SOT-223

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°



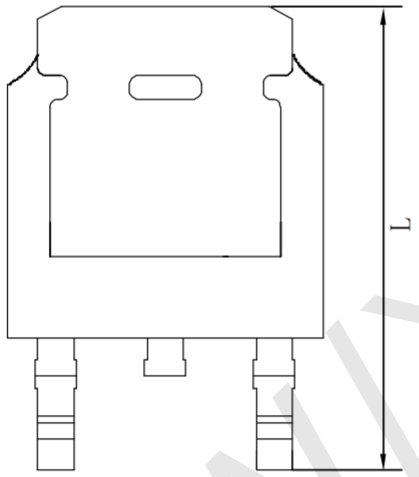
· TO-220

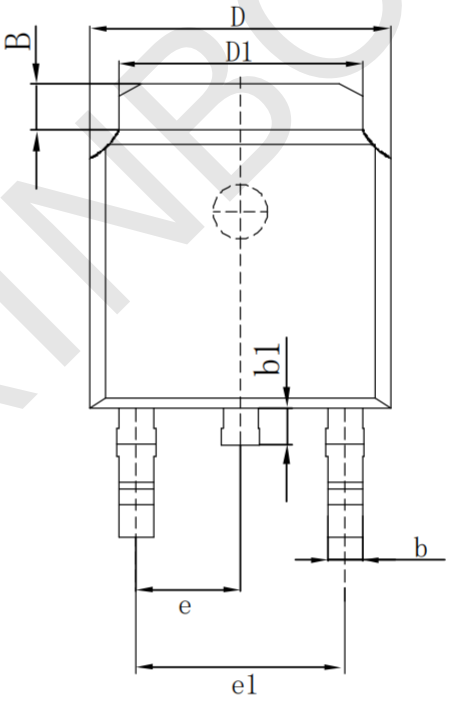
Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	4.150	4.250	A	0.163	0.167
C	0.985	1.015	C	0.039	0.040
C1	0.365	0.395	C1	0.014	0.016
D	10.03	10.10	D	0.395	0.398
E	15.02	15.75	E	0.591	0.620
Φ	3.700	3.900	Φ	0.146	0.154
e	2.540(TYP)		e	0.100(TYP)	
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

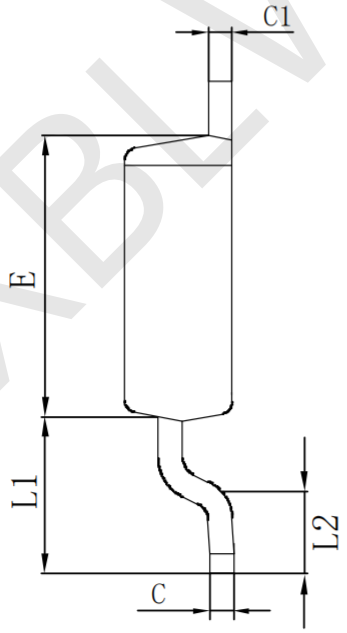


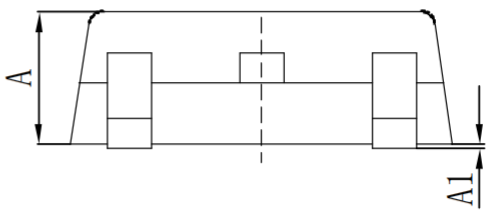
· TO-252-2L

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









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