

Features

- Output Current of 0.5A
- Thermal Overload Protection
- Short Circuit Protection
- Lead Free
- Output transistor safe area protection
- No external components
- Package: TO220
- Output voltage accuracy: tolerance $\pm 5\%$

General Description

AL78MXX is three-terminal positive regulators. One of these regulators can deliver up to 0.5A of output current. The internal limiting and thermal-shutdown features of the regulator make them essentially immune to overload. When used as a

replacement for a zener diode-resistor

Combination, an effective improvement in output impedance can be obtained, together with lower quiescent current.

Pin Configuration

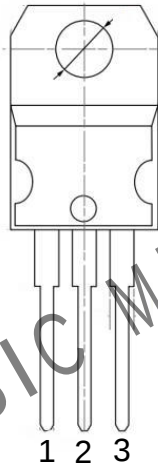
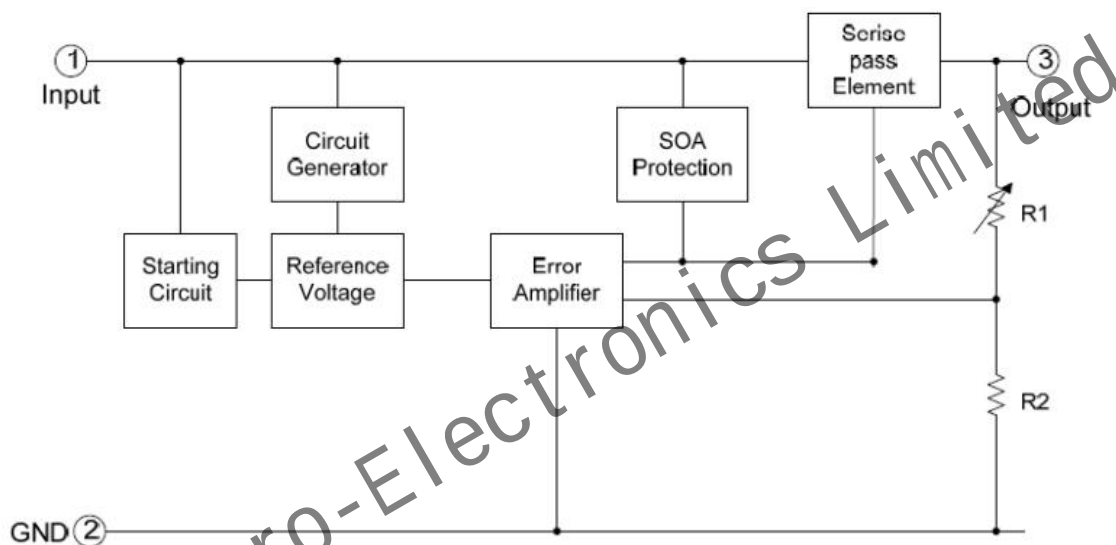


Table1: AL78Mxx series (TO220 PKG)

PIN NO.	PIN NAME	FUNCTION
1	VIN	Input voltage pin
2	GND	GND pin
3	VOUT	Output voltage pin

Selection Table

Part No.	Output Voltage	Package	Marking
AL78M05NT1	5.0V	TO220	L7805CV/XXXX
AL78M06NT1	6.0V		L7806CV/XXXX
AL78M08NT1	8.0V		L7808CV/XXXX
AL78M09NT1	9.0V		L7809CV/XXXX
AL78M12NT1	12V		L7812CV/XXXX

Block Diagram

Absolute Maximum Ratings (Ta=25°C)

Parameter	Rating	Unit
Input supply voltage: VIN	40	V
MAX. Output current: Iout	500	mA
MAX Power: Pmax	1.5	W
Maximum junction temperature: Tj	-25~125	°C
Storage temperature: Tstr	-55~125	°C
Soldering temperature and time	+260(Recommended 10S)	°C

Note: The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

Electrical Characteristics

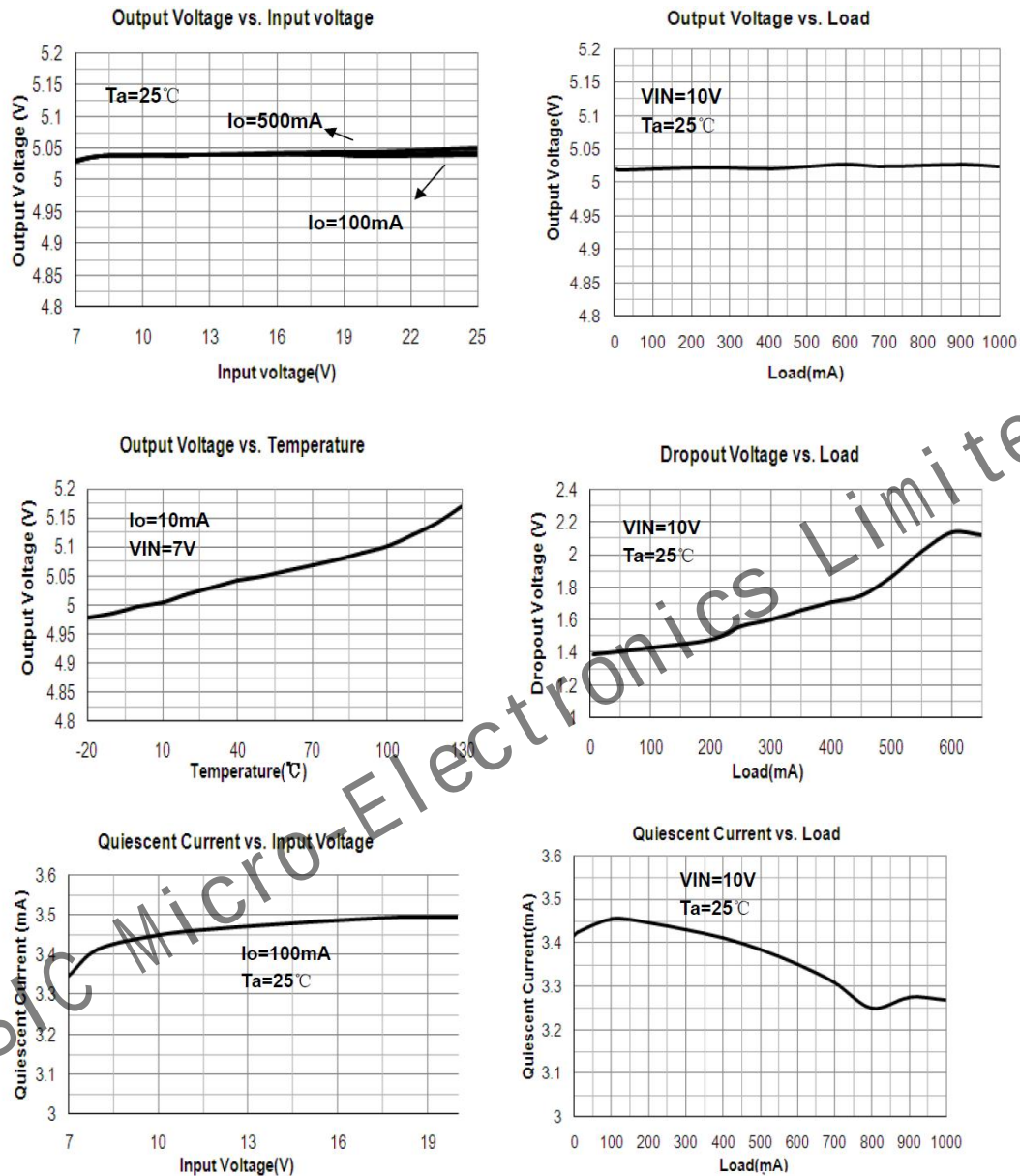
(C_{in}=0.33μF, C_o=0.1μF, 0≤T_j≤125℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V _{out}	I _o =40mA, V _{IN} =10V	0.964V _{out}	V _{out}	1.036V _{out}	V
		I _o =1mA~40mA V _{IN} =7V~18V	0.96V _{out}	V _{out}	1.04V _{out}	
		I _o =1mA~10mA V _{IN} =10V	0.95V _{out}	V _{out}	1.05V _{out}	
Line Regulation	LNR	V _{IN} =7V~18V, I _o =40mA	-150	-	150	mV
		V _{IN} =8V~18V, I _o =40mA	-100	-	100	
Load Regulation	LDR	V _{IN} =10V, I _o =1mA~100mA	-60	-	60	mV
		V _{IN} =10V, I _o =1mA~40mA	-30	-	30	
Dropout Voltage	V _{DIF}	T _j =25℃, I _o =100mA	-	2	-	V
Output noise Voltage	V _N	F=10Hz to 100KHz	-	60	-	μV/V _o
Ripple Rejection	PSRR	T _j =25℃, f=120Hz, I _o =40mA, V _{IN} =8V~20V	-	60	-	dB
Quiescent Current	I _Q	V _{IN} =10V, I _O UT=40mA	-	3	-	mA
Quiescent Current Change	ΔI _Q	V _{IN} =8V~18V, I _o =40mA	-1.5	-	1.5	mA
		V _{IN} =10V, I _O UT=1mA~40mA,	-0.1	-	0.1	

LNR: Line Regulation. The change in output voltage for a change in the input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that the average chip temperature is not significantly affected.

LDR: Load Regulation. The change in output voltage for a change in load current at constant chip temperature.

Typical Performance Characteristics



Typical Application

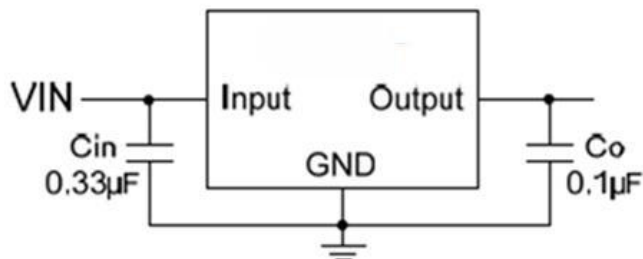
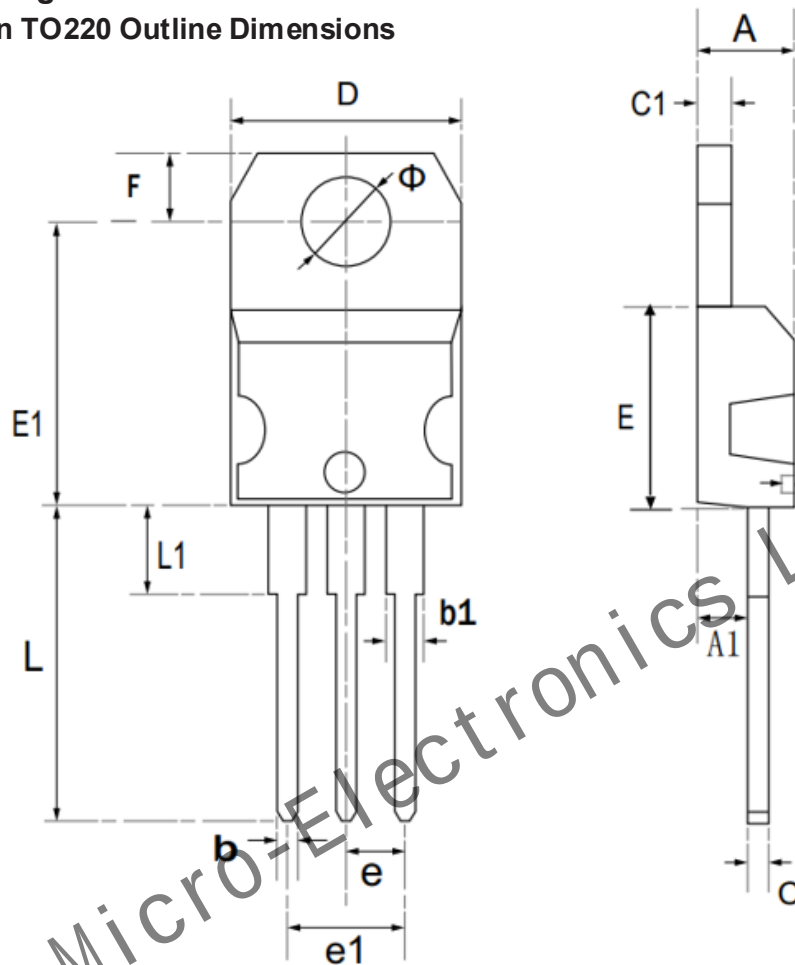


Fig.1 Fixed Output Regulator

Package Information
3-pin TO220 Outline Dimensions



Symbol	Dimensions in Millimeters			Dimensions in inches		
	Min	Type	Max	Min	Type	Max
A	4.005	4.45	4.895	0.158	0.175	0.193
A1	2.295	2.55	2.805	0.090	0.100	0.110
b	0.720	0.8	0.880	0.028	0.031	0.035
b1	1.143	1.27	1.397	0.045	0.050	0.055
c	0.405	0.45	0.495	0.016	0.018	0.019
c1	1.125	1.25	1.375	0.044	0.049	0.054
D	9.500	10.000	10.500	0.374	0.394	0.413
E	8.550	9.00	9.450	0.337	0.354	0.372
E1	12.065	12.70	13.335	0.475	0.500	0.525
e	2.540 TYP			0.100 TYP		
e1	4.826	5.08	5.334	0.190	0.200	0.210
F	2.565	2.7	2.835	0.101	0.106	0.112
h	0.120	0.150	0.180	0.005	0.006	0.007
L	12.445	13.100	13.755	0.490	0.516	0.542
L1	2.430	2.7	2.970	0.096	0.106	0.117
Φ	3.563	3.75	3.938	0.140	0.148	0.155

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