

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

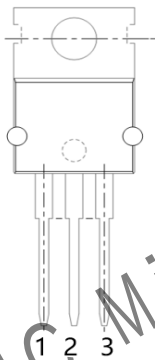


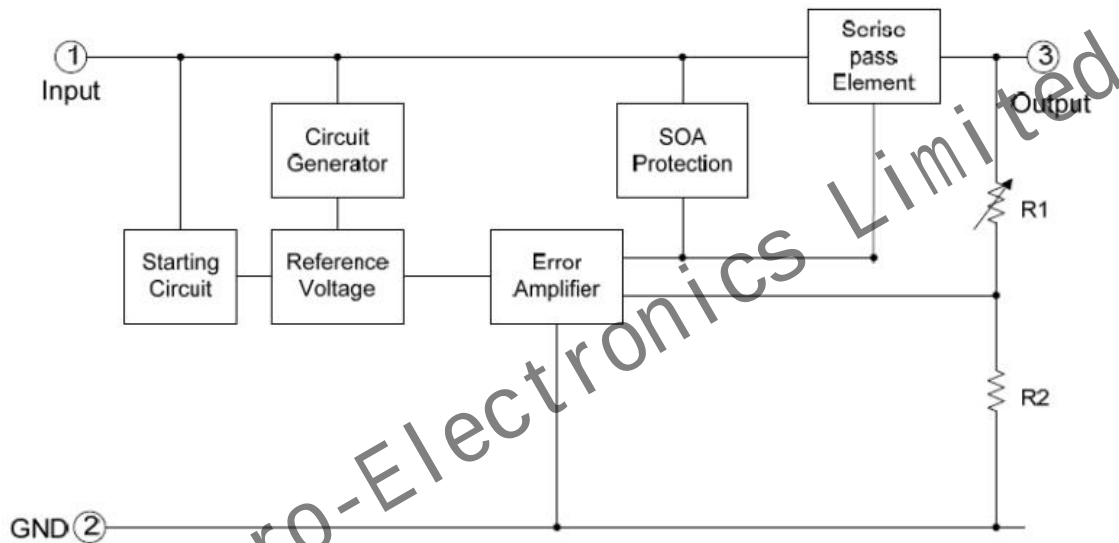
Table1: AL78Mxx series (TO220 PKG)

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

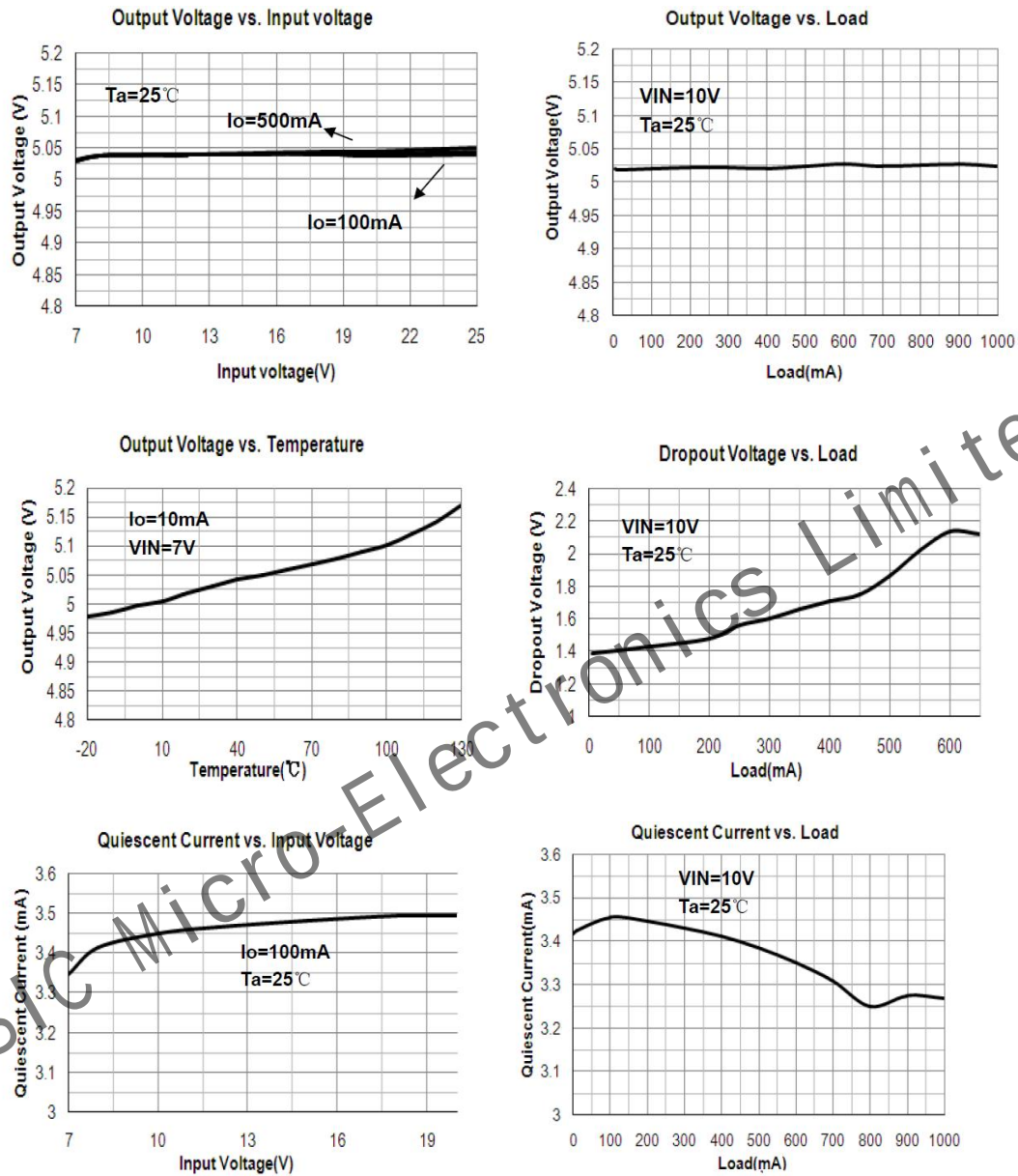
(C_{in}=0.33μF, C_o=0.1μF, 0≤T_j≤125℃, unless otherwise noted)

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 _{OUT} =40mA	-	3	-	mA
Quiescent Current Change	ΔI _Q	V _{IN} =8V~18V, I _o =40mA	-1.5	-	1.5	mA
		V _{IN} =10V, I _{OUT} =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

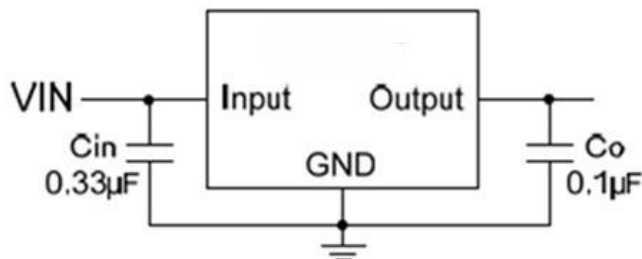
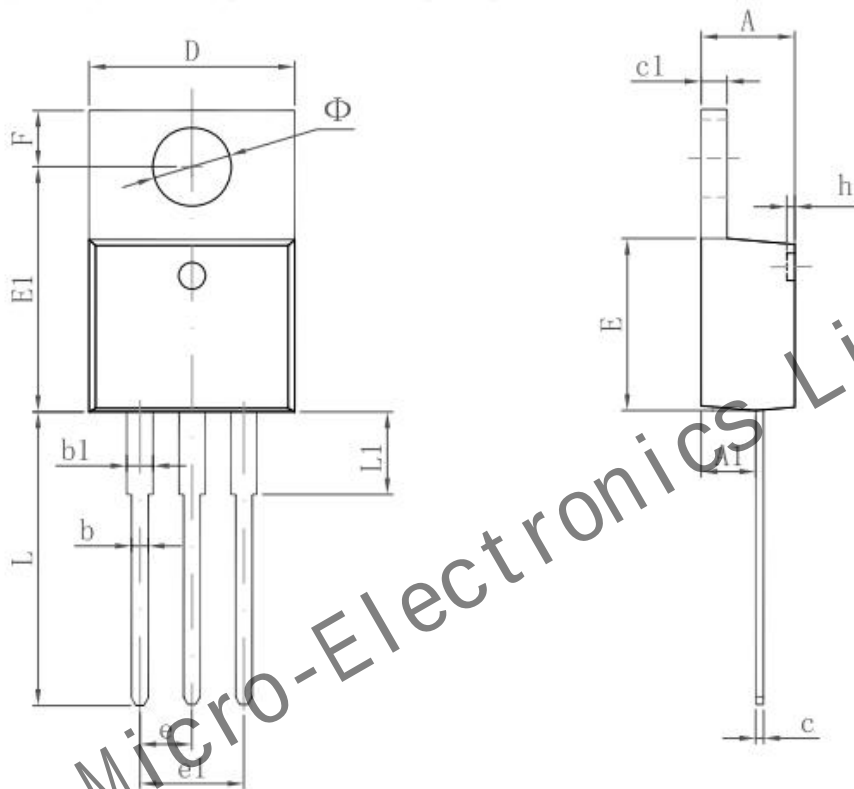


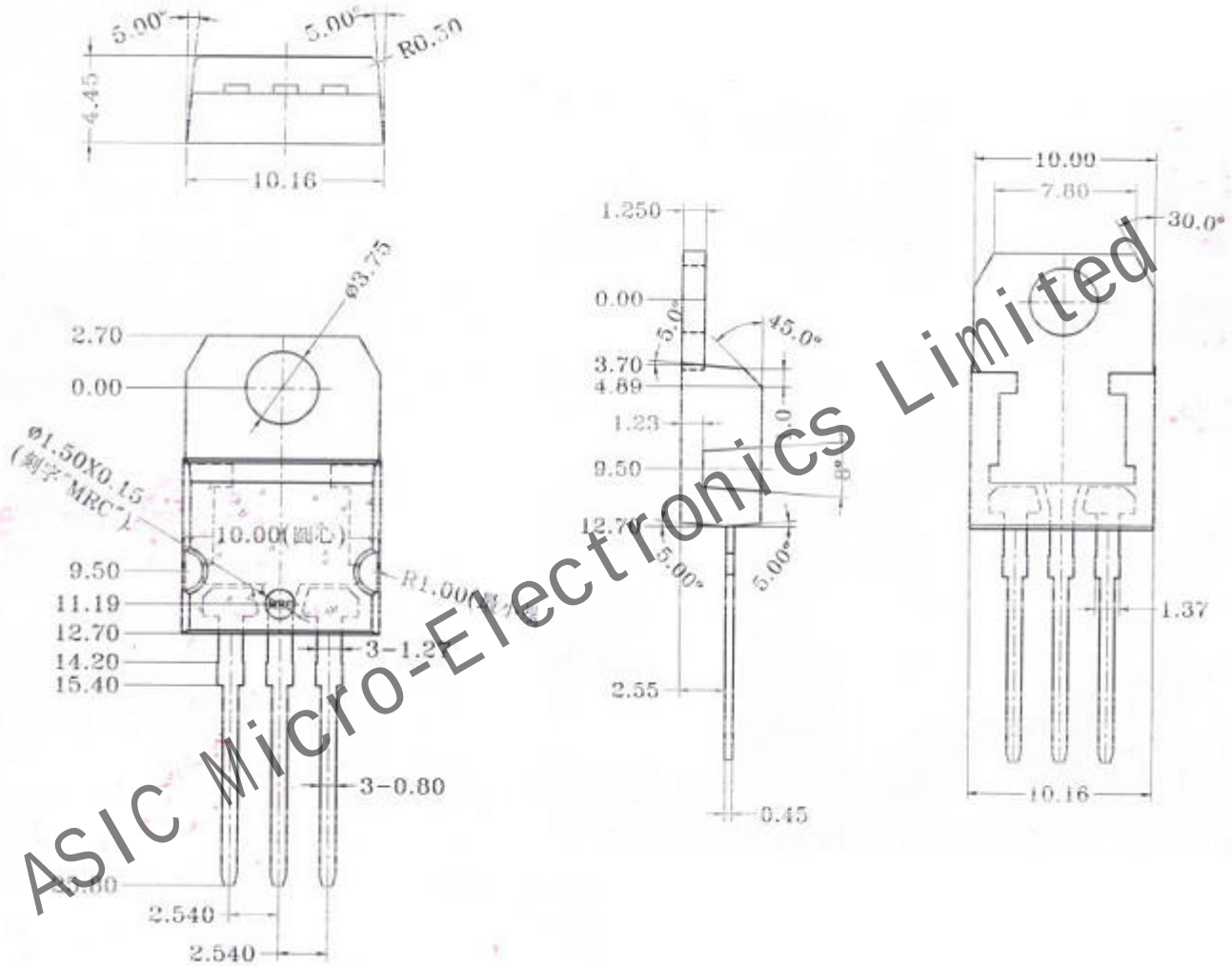
Fig.1 Fixed Output Regulator

Package Information
3-pin TO220 Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

Package Information Revision
Data sheet: Rev-2.6
Release Date: 2025/4/30
Revision: Change packaging frame



Symbol	Rev-2.5		Rev-2.6
	min	max	
A	4.470	4.670	4.100 min
D	10.010	10.310	9.550 min
E	8.500	8.900	9.200 max
L	13.400	13.800	12.760 min

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