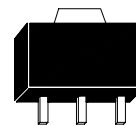


Low Current Positive Voltage Regulator

PL78L06XM3



SOT-89

Description

The PL78L06XM3 series of surface mount regulators are easy-to-use devices suitable for multitude of applications that require a regulated supply of up to 100mA. These regulators feature internal current limiting and thermal shutdown, making them remarkably rugged. No external components are required with the PL78L06XM3 devices in many applications.

These devices offer a substantial performance advantage over the traditional zener diode resistor combination, as output impedance and quiescent current are substantially reduced.

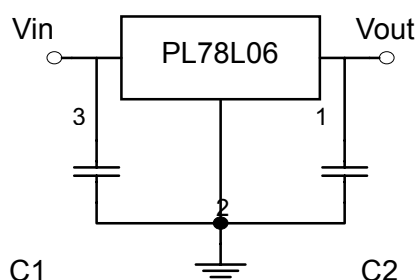
Features:

- Wide Range Of Available, Fixed Output Voltages
- Internal Short-Circuit Current Limiting
- Internal Thermal Overload Protection
- No External Components Required

Absolute Maximum Ratings (Ta=25°C)

- Input Voltage 30 V
- Total Power Dissipation Internally limited
- Operating Temperature Range 0 °C to +125 °C
- Maximum Junction Temperature 125 °C
- Storage Temperature Range -55 °C to +150 °C
- Lead Temperature (Soldering 10S) 260 °C

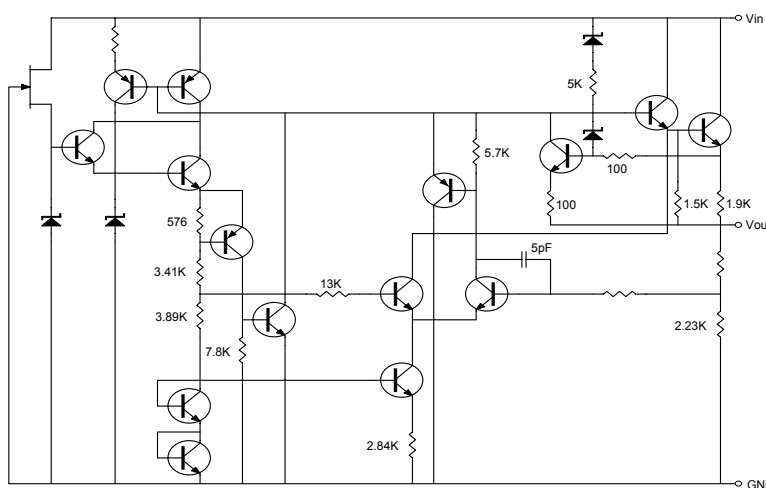
Typical Application



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0V above the output voltage even during the low point on the input ripple voltage.

Note : C1 and C2 are required if regulator is located far from power supply filter and load, or oscillation may induced on the loop.

Schematic Diagram





Electrical Characteristics

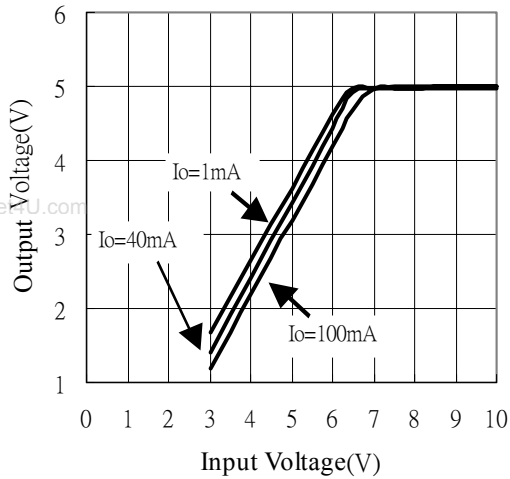
$V_{in}=12V$, $I_o=40mA$, $0^{\circ}C \leq T_j \leq 125^{\circ}C$ $P_D \leq 750mW$, unless otherwise specified

Symbol	Characteristic	PL78L06A			Units
		Min	Typ	Max	
Vo	Output Voltage ($T_j=25^{\circ}C$)	5.82	6	6.18	V
	Output Voltage ($8V \leq V_{in} \leq 20V$, $1mA \leq I_o \leq 40mA$)	5.76	6	6.24	
	Output Voltage ($8V \leq V_{in} \leq 30V$, $1mA \leq I_o \leq 70mA$)	5.76	6	6.24	
Regline	Line Regulation ($T_j=25^{\circ}C$, $8V \leq V_{in} \leq 20V$)	-	55	150	mV
	Line Regulation ($T_j=25^{\circ}C$, $9V \leq V_{in} \leq 20V$)	-	45	100	
Regload	Load Regulation ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 100mA$)	-	10	70	mV
	Load Regulation ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 40mA$)	-	5	35	
IB	Quiescent Current ($T_j=25^{\circ}C$)	-	2	5.5	mA
ΔIB	Quiescent Current Change ($T_j=25^{\circ}C$, $8V \leq V_{in} \leq 20V$)	-	-	1.5	mA
	Quiescent Current Change ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 40mA$)	-	-	0.1	
RR	Ripple Rejection ($9V \leq V_{in} \leq 19V$, $f=120Hz$)	40	-	-	dB
V_i-V_o	Dropout Voltage ($T_j=25^{\circ}C$)	-	1.7	-	V
VN	Output Noise Voltage ($T_j=25^{\circ}C$, $10Hz \leq f \leq 100KHz$)	-	50	100	μV
Isc	Short Circuit Current Limit ($T_j=25^{\circ}C$, $V_{in}=35V$)	-	140	-	mA
I _{max}	Peak Output Current ($T_j=25^{\circ}C$)	-	140	-	mA
TCVo	Average Temperature Coefficient of Outpt Voltage, $I_o=5mA$	-	-0.5	-	$mV/^{\circ}C$

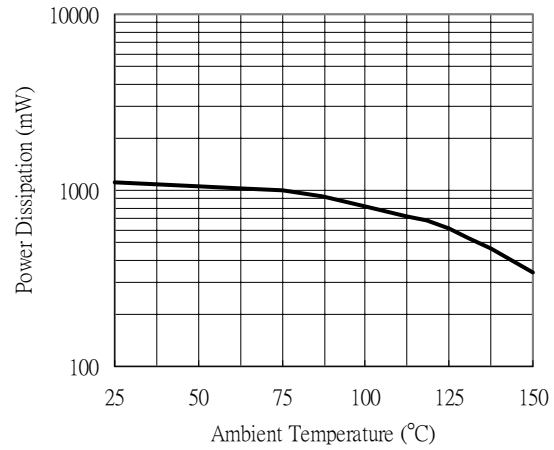
Symbol	Characteristic	PL78L06B			Units
		Min	Typ	Max	
Vo	Output Voltage ($T_j=25^{\circ}C$)	5.7	6	6.3	V
	Output Voltage ($8V \leq V_{in} \leq 20V$, $1mA \leq I_o \leq 40mA$)	5.68	6	6.36	
	Output Voltage ($8V \leq V_{in} \leq 30V$, $1mA \leq I_o \leq 70mA$)	5.68	6	6.36	
Regline	Line Regulation ($T_j=25^{\circ}C$, $8V \leq V_{in} \leq 20V$)	-	55	175	mV
	Line Regulation ($T_j=25^{\circ}C$, $9V \leq V_{in} \leq 20V$)	-	45	125	
Regload	Load Regulation ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 100mA$)	-	10	100	mV
	Load Regulation ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 40mA$)	-	5	50	
IB	Quiescent Current ($T_j=25^{\circ}C$)	-	2	6	mA
ΔIB	Quiescent Current Change ($T_j=25^{\circ}C$, $8V \leq V_{in} \leq 20V$)	-	-	1.6	mA
	Quiescent Current Change ($T_j=25^{\circ}C$, $1mA \leq I_o \leq 40mA$)	-	-	0.1	
RR	Ripple Rejection ($9V \leq V_{in} \leq 19V$, $f=120Hz$)	40	-	-	dB
V_i-V_o	Dropout Voltage ($T_j=25^{\circ}C$)	-	1.7	-	V
VN	Output Noise Voltage ($T_j=25^{\circ}C$, $10Hz \leq f \leq 100KHz$)	-	50	120	μV
Isc	Short Circuit Current Limit ($T_j=25^{\circ}C$, $V_{in}=35V$)	-	140	-	mA
I _{max}	Peak Output Current ($T_j=25^{\circ}C$)	-	140	-	mA
TCVo	Average Temperature Coefficient of Outpt Voltage, $I_o=5mA$	-	-0.5	-	$mV/^{\circ}C$

Characteristic Curves

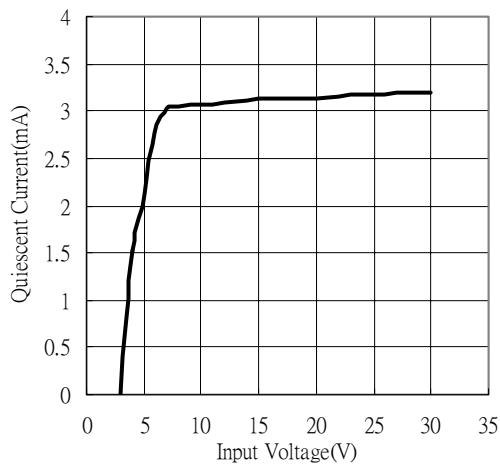
Dropout Characteristics



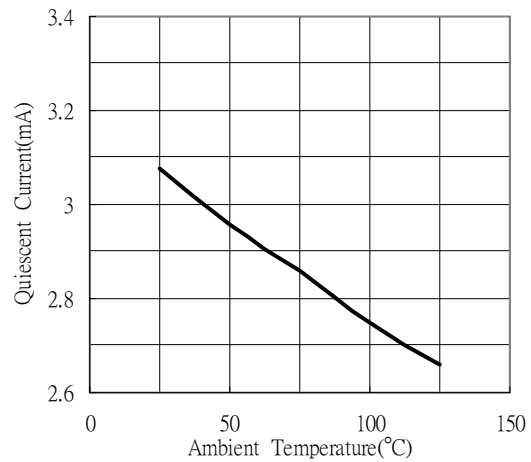
Maximum Average Power Dissipation



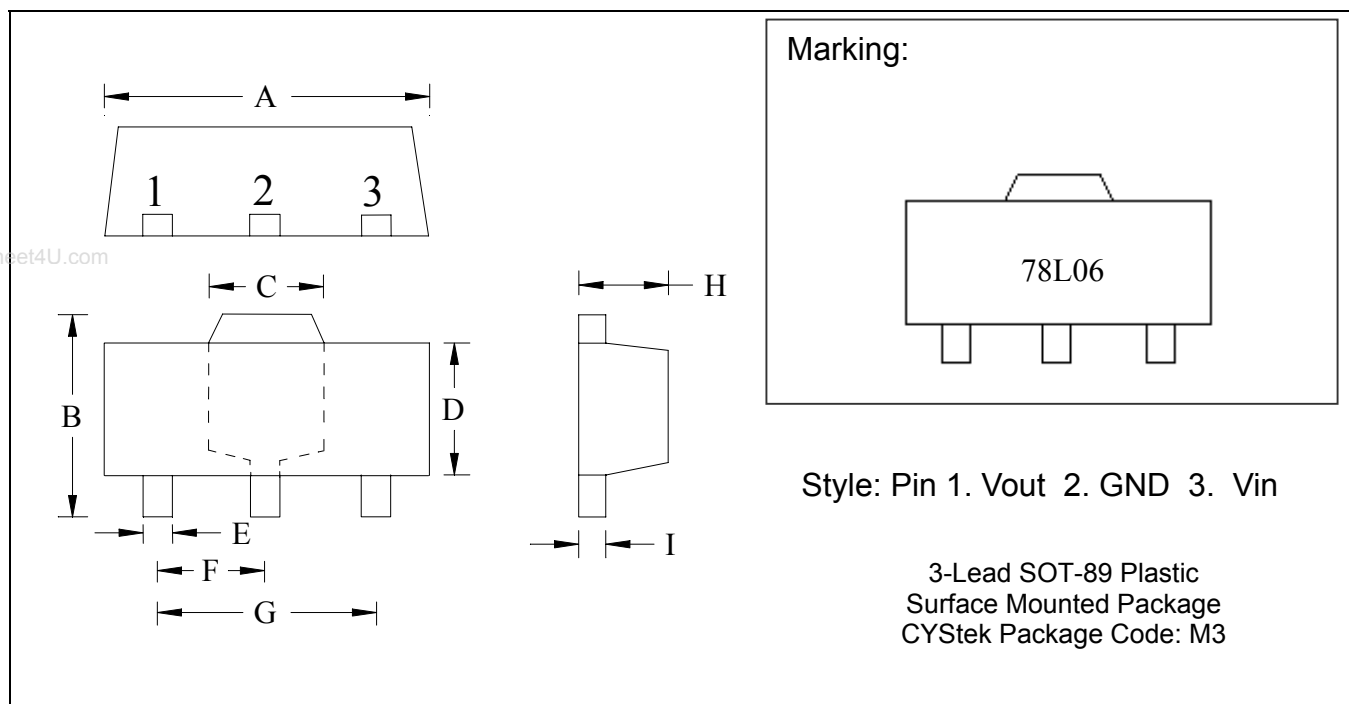
Quiescent Current



Quiescent Current



SOT-89 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0583	0.0598	1.48	1.527
B	0.1594	0.1673	4.05	4.25	G	0.1165	0.1197	2.96	3.04
C	0.0591	0.0663	1.50	1.70	H	0.0551	0.0630	1.40	1.60
D	0.0945	0.1024	2.40	2.60	I	0.0138	0.0161	0.35	0.41
E	0.01417	0.0201	0.36	0.51					

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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