

100mA 3-Terminal Positive Linear Regulator

Description

The ZM78L05 of regulators is complete with internal current limiting, thermal shutdown protection, and safe-area compensation which make them virtually immune from output overload. If adequate heat sinking is provided, these regulators can deliver output currents up to 0.1A.

Applications

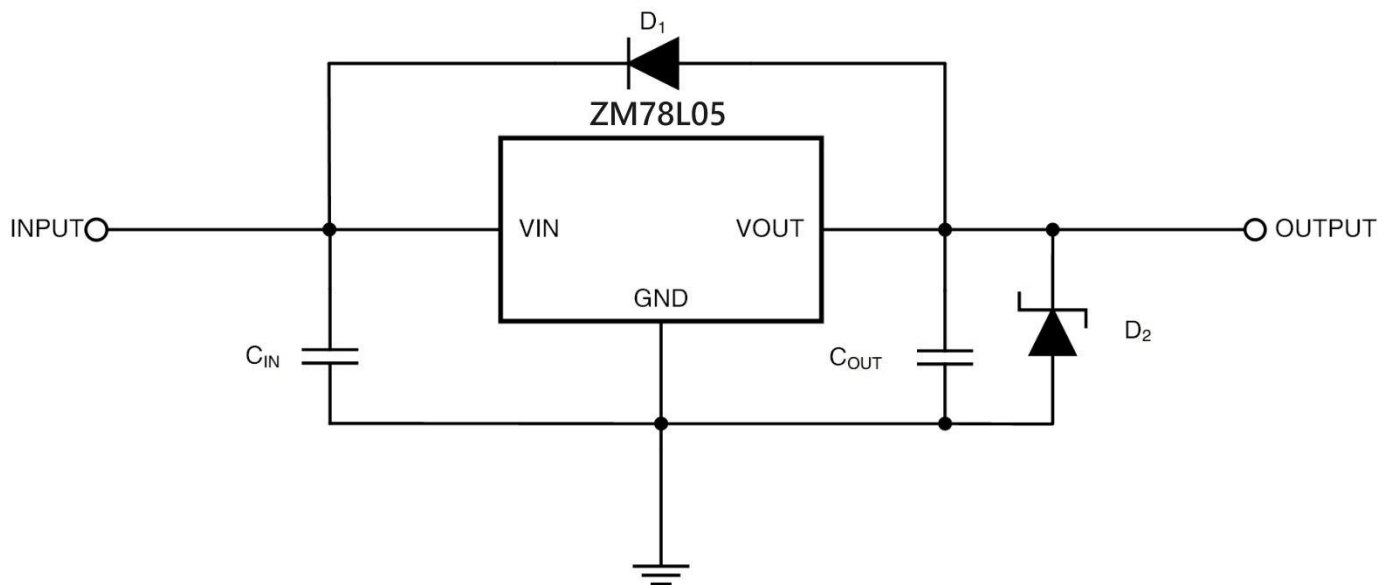
- Consumer Electronics

Typical Application

- Microprocessor Power Supply
- Mother Board I/O Power Supply

Features

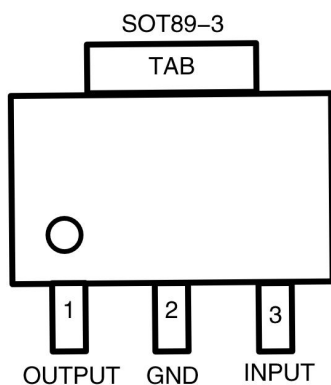
- Output Current up to 0.1A
- Fixed Output Voltages of 5V
- Output Voltage Tolerances of $\pm 1\%$
- Internal Short Circuit Current-limiting
- Internal Thermal Overload Protection



Ordering Information

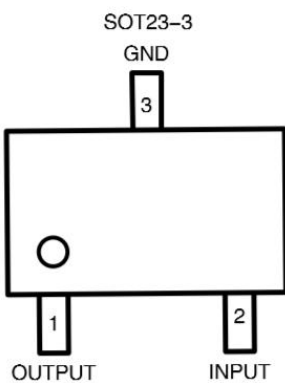
Tube	Tape and reel	Form factor	Packing
ZM78L05	ZM78L05	SOT89-3	Taping
ZM78L05Z	ZM78L05Z	SOT23-3	Taping

Pin Functions



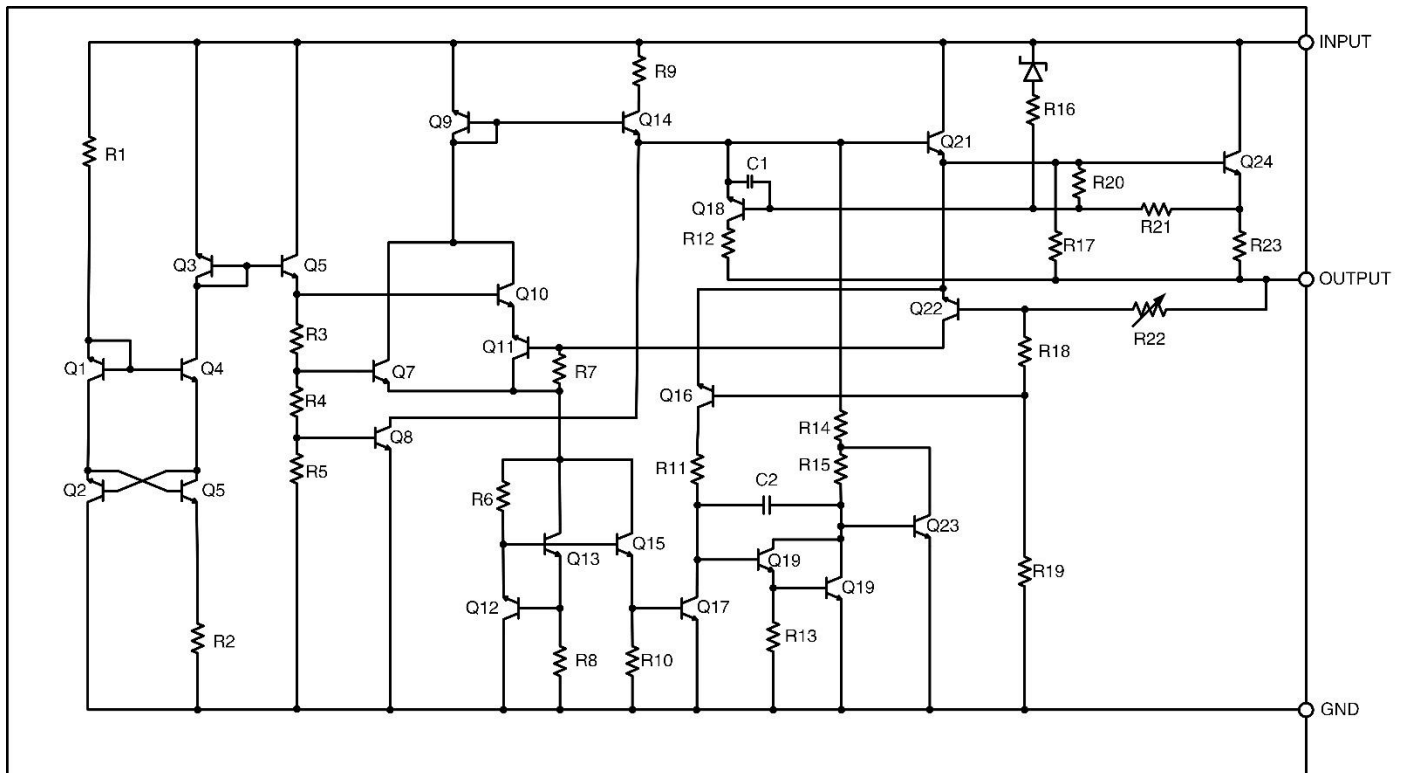
Pin	Name	Description
1	OUTPUT	Voltage Input
2	GND	Ground
3	INPUT	Voltage Output

Pin Functions



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1	OUTPUT	Voltage Input
2	INPUT	Ground
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Block Diagram



Absolute Maximum Ratings ⁽¹⁾

Input Voltage.....35V

Storage Temperature Range.....-55°C~150°C

Junction Temperature.....150°C

ESD (Human Body Model).....±2KV

(1) Stress exceeding the absolute maximum rated value may cause permanent damage to the equipment. These are only stress ratings and do not mean that the equipment operates beyond the recommended operating conditions under these conditions. Long term exposure to absolute maximum rated conditions may affect the reliability of the equipment.

Operating Ratings ⁽¹⁾

parameter	Min	Max	Units
Input Voltage		35	V
Operating Junction Temperature Range	-40	125	°C

(1) Recommended working conditions refer to the conditions under which the chip operates normally. For accurate specifications and testing conditions, please refer to the electrical characteristics

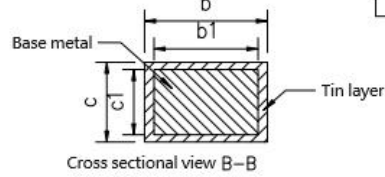
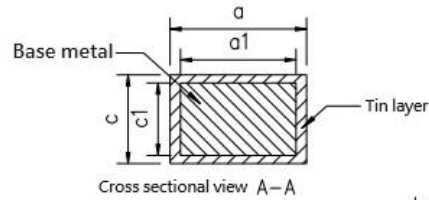
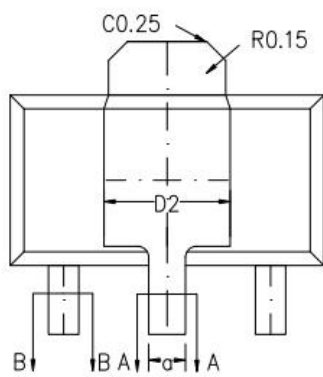
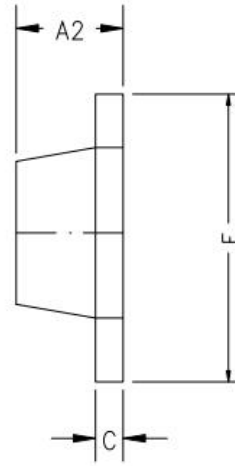
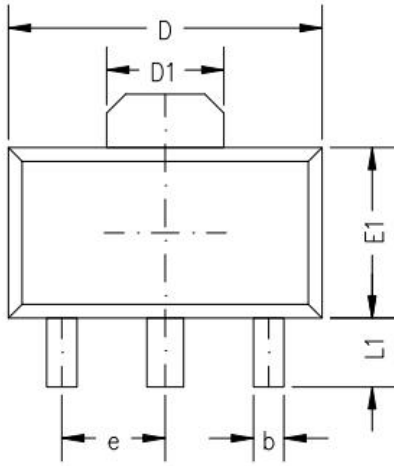
Dynamic Parameter

Unless otherwise specified, $V_{IN}=10V$, $I_{OUT}=40mA$, $C_{IN}=0.33\ \mu F$, $C_{OUT}=0.1\mu F$, $T=25^{\circ}C$

Symbol	parameter	Test conditions	Min	Typ	Max	Units
VOUT	Output Voltage	$T=25^{\circ}C$	4.8	5	5.2	V
		$1mA \leq I_O \leq 40mA$, $PD \leq 15W$ $7V \leq V_{IN} \leq 20V$	4.5		5.4	
Regline	Line Regulation	$7V \leq V_{IN} \leq 20V$		10	75	mV
		$8V \leq V_{IN} \leq 20V$		8	54	
Regload	Load Regulation	$1.0\ mA \leq I_O \leq 100mA$		5	60	mV
		$1mA \leq I_O \leq 40mA$		5	30	
IQ	Quiescent Current	$T=25^{\circ}C$		4	6	mA
ΔIQ	Quiescent Current Change	$1.0\ mA \leq I_O \leq 40mA$			0.5	mA
		$8V \leq V_{IN} \leq 20V$			1	
RR	Ripple Rejection	$6.3V \leq V_{IN} \leq 16.3V$, $f=120\ Hz$	41	49		dB
ISC	Short Circuit Current	$V_{IN} = 35V$, $T=25^{\circ}C$		50		mA
$V_{IN}-V_{OUT}$ T	Dropout Voltage	$\Delta V_{OUT} = 1\%$, $T=25^{\circ}C$ $I_{OUT}=40mA$		1		V
IPK	Peak Output Current	$T=25^{\circ}C$		150		mA

Pod Diagram

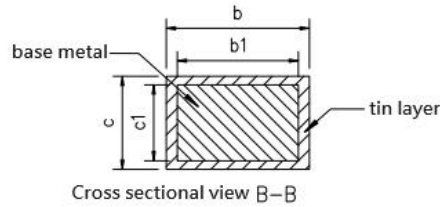
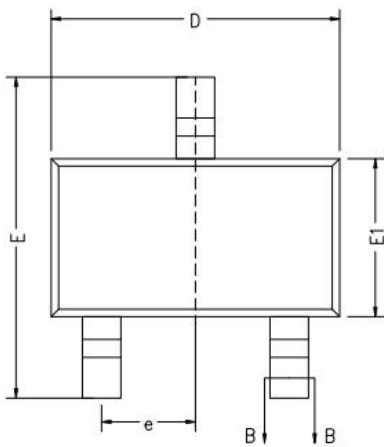
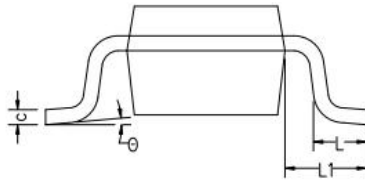
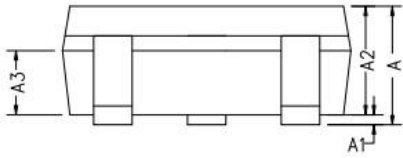
SOT89-3



Symbol	Units(mm)		
	Min	Typ	Max
A2	1.40	1.50	1.60
b	0.38	—	0.46
b1	0.37	0.40	0.43
c	0.38	—	0.42
c1	0.37	0.38	0.39
a	0.46	—	0.56
a1	0.45	0.48	0.51
D	4.40	4.50	4.60
D1	1.62	—	1.83
E	3.95	—	4.25
E1	2.40	2.50	2.60
e	Theoretical value:1.50		
L1	0.89	—	1.20
L/F Carrier size (Mil)	D2	E2	
	66.9*63	1.75REF	2.84REF

Pod Diagram(continued)

SOT23-3



Symbol	Units (mm)		
	Min	Typ	Max
A	—	—	1.25
A1	0.04	—	0.10
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.33	—	0.41
b1	0.32	0.35	0.38
c	0.15	—	0.19
c1	0.14	0.15	0.16
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	theoretical value : 0.95		
L	0.30	—	0.60
L1	reference value : 0.60		
θ	0°	—	8°