

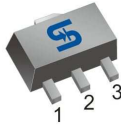
# TS79L00 Series

## 3-Terminal 100mA Negative Voltage Regulator

**TO-92**



**SOT-89**



**Pin Definition:**

1. Ground
2. Input
3. Output

### General Description

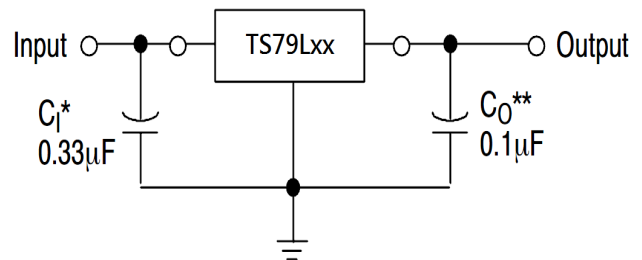
The TS79L00 Series of negative voltage regulators are inexpensive, easy-to-use devices suitable for a multitude of applications that require a regulated supply of up to 100mA. Like their higher power TS7900 and TS79M00 Series cousins, these regulators feature internal current limiting and thermal shutdown making them remarkably rugged. No external components are required with the TS79L00 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

- Output Voltage Range -5V, -9V
- Output current up to 100mA
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation
- Output voltage offered in 4% tolerance

### Standard Application Circuit



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.

XX = these two digits of the type number indicate voltage.

\* = Cin is required if regulator is located an appreciable distance from power supply filter.

\*\* = Co is not needed for stability; however, it does improve transient response.

### Ordering Information

Part No.	Package	Packing
TS79LxxCT B0	TO-92	1Kpcs / Bulk
TS79LxxCT A3	TO-92	2kpcs / Ammo
TS79LxxCY RM	SOT-89	1kpcs / 7" Reel

Note: Refer to detail ordering information table.

### Absolute Maximum Ratings (Ta = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Input Voltage	V <sub>IN</sub>	-35	V
Power Dissipation	P <sub>D</sub>	Internal Limited	W
Operating Temperature range	T <sub>OPR</sub>	0~+125	°C
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature Range	T <sub>STG</sub>	-65~+150	°C
Thermal Resistance - Junction to Case	TO-92	--	°C/W
	SOT-89	18	
Thermal Resistance - Junction to Ambient	TO-92	210	°C/W
	SOT-89	--	

Note: \* Considering 6cm<sup>2</sup> of copper board heat-sink

### TS79L05 Electrical Characteristics

( $V_{IN}=-10V$ ,  $I_{OUT}=40mA$ ,  $0^{\circ}C \leq T_J \leq 125^{\circ}C$ ,  $C_{IN}=0.33\mu F$ ,  $C_{OUT}=0.1\mu F$ ; unless otherwise specified.)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Output voltage	$V_{OUT}$	$T_J=25^{\circ}C$		-4.80	-5	-5.20	V
		$-7.5V \leq V_{in} \leq -20V$ , $5mA \leq I_{OUT} \leq 100mA$		-4.75	-5	-5.25	
Line Regulation	$REG_{LINE}$	$T_J=25^{\circ}C$	$-7.5V \leq V_{in} \leq -20V$	--	50	150	mV
Load Regulation	$REG_{LOAD}$	$T_J=25^{\circ}C$	$5mA \leq I_{OUT} \leq 100mA$	--	20	60	
			$5mA \leq I_{OUT} \leq 40mA$	--	10	30	
Quiescent Current	$I_Q$	$I_{OUT}=0$ , $T_J=25^{\circ}C$		--	3	6	mA
Quiescent Current Change	$\Delta I_Q$	$-7.5V \leq V_{in} \leq -25V$		--	--	1.5	
		$5mA \leq I_{OUT} \leq 40mA$		--	--	0.1	
Output Noise Voltage	$V_N$	$10Hz \leq f \leq 100KHz$ , $T_J=25^{\circ}C$		--	40	--	$\mu V$
Ripple Rejection Ratio	RR	$f=120Hz$ , $-8V \leq V_{in} \leq -18V$		41	49	--	dB
Voltage Drop	$V_{DROP}$	$I_{OUT}=100mA$ , $T_J=25^{\circ}C$		--	1.7	--	V
Peak Output Current	$I_{o\ peak}$	$T_J=25^{\circ}C$		--	0.15	--	A
Temperature Coefficient of Output Voltage	$\Delta V_{OUT} / \Delta T_J$	$I_{OUT}=5mA$ , $0^{\circ}C \leq T_J \leq 125^{\circ}C$		--	-0.65	--	$mV/^{\circ}C$

### TS79L09 Electrical Characteristics

( $V_{IN}=-15V$ ,  $I_{OUT}=40mA$ ,  $0^{\circ}C \leq T_J \leq 125^{\circ}C$ ,  $C_{IN}=0.33\mu F$ ,  $C_{OUT}=0.1\mu F$ ; unless otherwise specified.)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Output voltage	$V_{OUT}$	$T_J=25^{\circ}C$		-8.65	-9	-9.36	V
		$-11.5V \leq V_{in} \leq -24V$ , $5mA \leq I_{OUT} \leq 100mA$		-8.57	-9	-9.45	
Line Regulation	$REG_{LINE}$	$T_J=25^{\circ}C$	$-11.5V \leq V_{in} \leq -24V$	--	90	180	mV
Load Regulation	$REG_{LOAD}$	$T_J=25^{\circ}C$	$5mA \leq I_{OUT} \leq 100mA$	--	30	90	
			$5mA \leq I_{OUT} \leq 40mA$	--	15	45	
Quiescent Current	$I_Q$	$I_{OUT}=0$ , $T_J=25^{\circ}C$		--	3	6	mA
Quiescent Current Change	$\Delta I_Q$	$-11V \leq V_{in} \leq -23V$		--	--	1.5	
		$5mA \leq I_{OUT} \leq 40mA$		--	--	0.1	
Output Noise Voltage	$V_N$	$10Hz \leq f \leq 100KHz$ , $T_J=25^{\circ}C$		--	60	--	$\mu V$
Ripple Rejection Ratio	RR	$f=120Hz$ , $-13V \leq V_{in} \leq -24V$		37	57	--	dB
Voltage Drop	$V_{DROP}$	$I_{OUT}=100mA$ , $T_J=25^{\circ}C$		--	1.7	--	V
Peak Output Current	$I_{o\ peak}$	$T_J=25^{\circ}C$		--	0.15	--	A
Temperature Coefficient of Output Voltage	$\Delta V_{OUT} / \Delta T_J$	$I_{OUT}=5mA$ , $0^{\circ}C \leq T_J \leq 125^{\circ}C$		--	-0.9	--	$mV/^{\circ}C$

- Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible, and thermal effects must be taken into account separately.
- This specification applies only for DC power dissipation permitted by absolute maximum ratings.

# TS79L00 Series

## 3-Terminal 100mA Negative Voltage Regulator

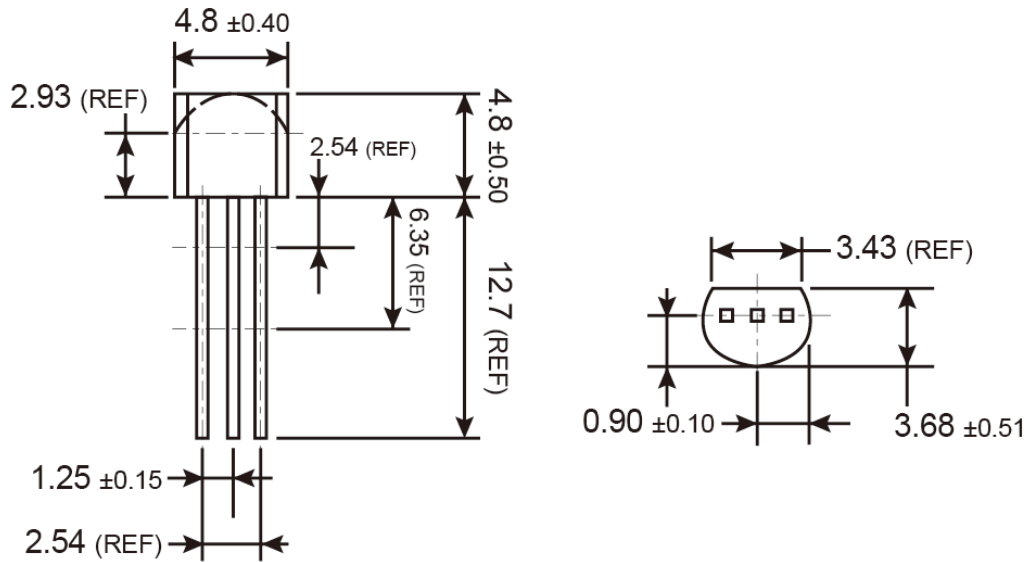
### Ordering information

Voltage	TO-92	SOT-89
5V	TS79L05CT B0 TS79L05CT A3	TS79L05CY RM
9V	TS79L09CT B0 TS79L09CT A3	

### Packing code information

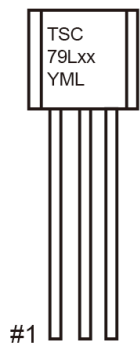
Packing	B0: 1kpcs / Bulk A3: 2kcs / Ammo	1kpcs / 7" Reel

### TO-92 Mechanical Drawing



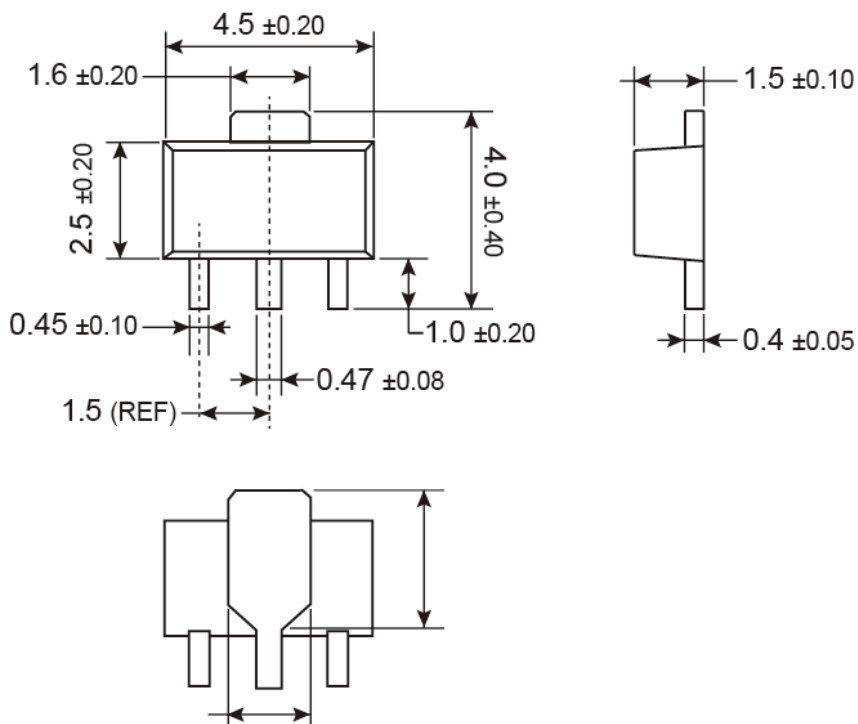
Unit: Millimeters

### Marking Diagram



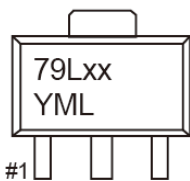
- XX** = Output Voltage  
(**05**=-5V, **09**=-9V)
- Y** = Year Code
- M** = Month Code  
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
- L** = Lot Code

### SOT-89 Mechanical Drawing



Unit: Millimeters

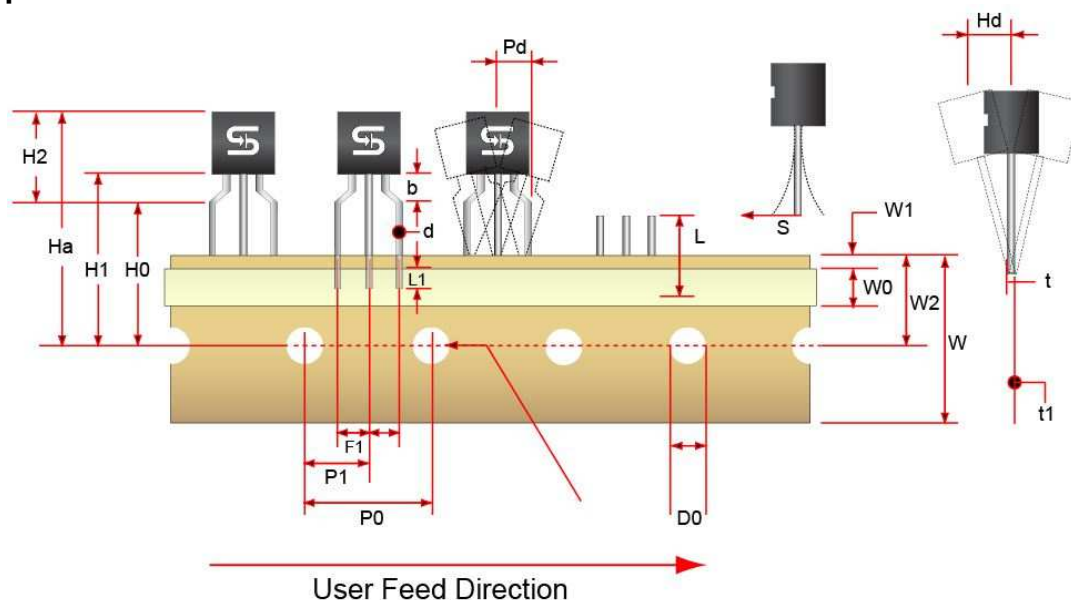
### Marking Diagram



- XX** = Output Voltage  
(05=-5V)
- Y** = Year Code
- M** = Month Code  
(A=Jan, B=Feb, C=Mar, D=Apr, E=May, F=Jun, G=Jul, H=Aug, I=Sep, J=Oct, K=Nov, L=Dec)
- L** = Lot Code

### TO-92 Ammo Pack Specification

#### TO-92 Tape Leader and Trailer



#### TO-92 Tape Dimension

Item Description	Symbol	Dimension
Base of Package to Lead Bend	b	3.0 (typ.)
Component Height	Ha	23.57 (typ.)
Lead Clinch Height	H0	16.0 ±0.5
Component Base Height	H1	19.0 ±0.5
Component Top to Lead Bend	H2	8.0 (max)
Component Alignment (side / side)	Pd	1.02 (max)
Component Alignment (front / back)	Hd	0.79 (max)
Feed Hole Pitch	P0	12.7 ±0.3
Hole Center to Component Center	P1	6.25 ±0.4
Lead Spread	F1	2.5 ±0.3
Lead Thickness	d	0.46 (typ.)
Cut Lead Length	L	10.9 (max)
Taped Lead Length	L1	5.31 (typ.)
Taped Lead Thickness	t	0.81 ±0.2
Carrier Tape Thickness	t1	0.5 ±0.2
Carrier Tape Width	W	18.0 ±0.5
Hold – down Tape Width	W0	0.5 ±0.2
Hold – down Tape position	W1	9.0 ±0.7
Feed Hole Position	W2	6.0 ±0.2
Sprocket Hole Diameter	D0	4.0 ±0.2
Lead Spring Out	S	0.1 (max)

Note: All dimensions are in millimeter.

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