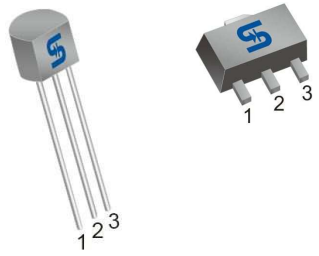
TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

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

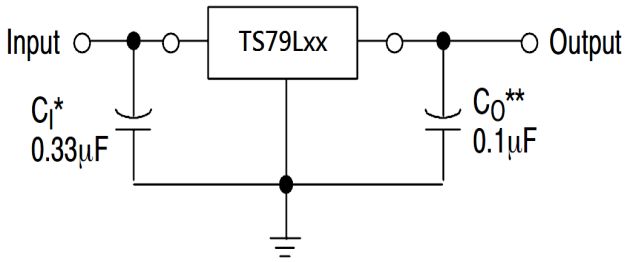
- Output Voltage Range -5V, -9V
- Output current up to 100mA
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation
- Output voltage offered in 4% tolerance

Ordering Information

Part No.	Package	Packing
TS79L**xx**CT B0G	TO-92	1Kpcs / Bulk
TS79L**xx**CT A3G	TO-92	2kpcs / Ammo
TS79L**xx**CY RMG	SOT-89	1kpcs / 7” Reel

Note: Refer to detail ordering information table.
“G” denotes for Halogen Free

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.

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

Parameter		Symbol	Limit	Unit
Input Voltage		V_{IN}	-35	V
Power Dissipation		P_D	Internal Limited	W
Operating Temperature range		T_{OPR}	0~+125	°C
Junction Temperature		T_J	+150	°C
Storage Temperature Range		T_{STG}	-65~+150	°C
Thermal Resistance - Junction to Case	TO-92	$R_{\Theta JC}$	--	°C/W
	SOT-89		18	
Thermal Resistance - Junction to Ambient	TO-92	$R_{\Theta JA}$	210	°C/W
	SOT-89		--	

Note: * Considering 6cm^2 of copper board heat-sink

TS79L05 Electrical Characteristics

(V_{IN}=-10V, I_{OUT}=40mA, 0°C≤T_J≤125°C, C_{IN}=0.33uF, C_{OUT}=0.1uF; unless otherwise specified.)

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

TS79L09 Electrical Characteristics

(V_{IN}=-15V, I_{OUT}=40mA, 0°C≤T_J≤125°C, C_{IN}=0.33uF, C_{OUT}=0.1uF; unless otherwise specified.)

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

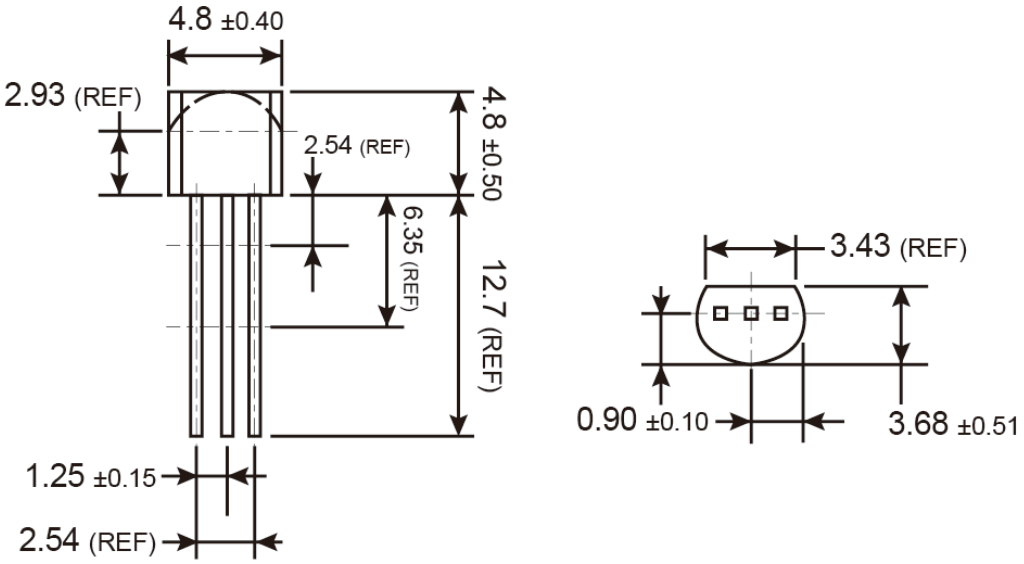
Ordering information

Voltage	TO-92	SOT-89
5V	TS79L05CT B0G TS79L05CT A3G	TS79L05CY RMG
9V	TS79L09CT B0G TS79L09CT A3G	

Packing code information

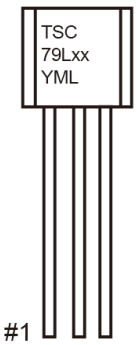
Packing	B0: 1kpcs / Bulk A3: 2kcs / Ammo	1kpcs / 7" Reel

TO-92 Mechanical Drawing



Unit: Millimeters

Marking Diagram



XX = Output Voltage
(**05**=-5V, **09**=-9V)
Y = Year Code
M = Month Code for Halogen Free Product

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

L = Lot Code

TS79L00 Series

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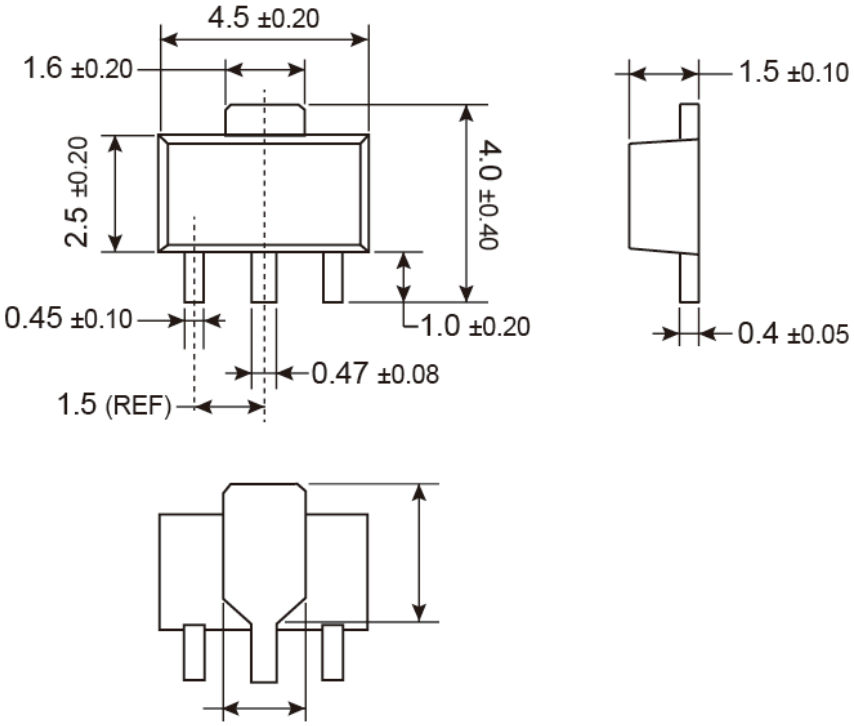
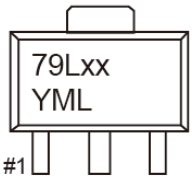
SOT-89 Mechanical Drawing



Unit: Millimeters

Marking Diagram



XX = Output Voltage
(**05**=-5V)
Y = Year Code
M = Month Code for Halogen Free Product

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
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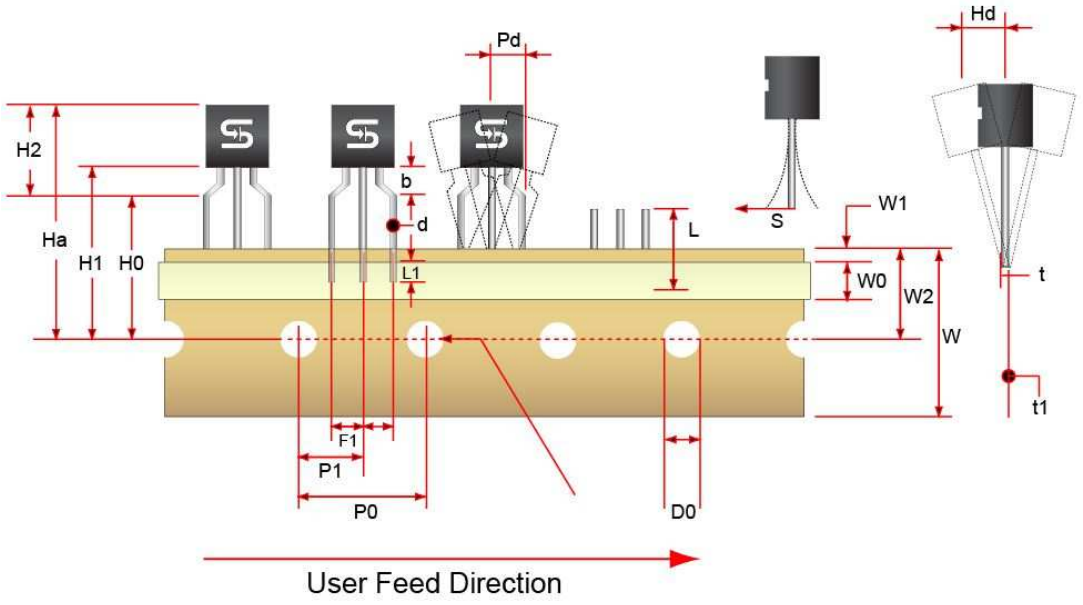
TO-92 Ammo Pack Specification

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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