

## 3-Terminal 100mA Negative Voltage Regulator

### DESCRIPTION

The TS79L05CY 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 TS7905 and TS79M05 Series cousins, these regulators feature internal current limiting and thermal shutdown making them remarkably rugged. No external components are required with the TS79L05CY 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

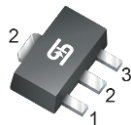
- Output Voltage Range -5V
- Output current up to 100mA
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation
- Output voltage offered in 4% tolerance
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATION

- Switching power supply
- Home appliance



**SOT-89**

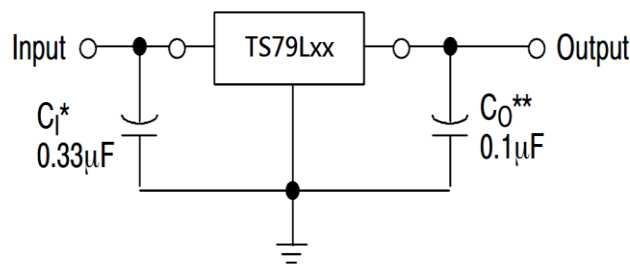


#### Pin Definition:

1. Ground
2. Input
3. Output

**Notes:** MSL 3 (Moisture Sensitivity Level) per J-STD-020

### 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.

\* =  $C_{in}$  is required if regulator is located an appreciable distance from power supply filter.

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

**ABSOLUTE MAXIMUM RATINGS**

| PARAMETER                            | SYMBOL    | LIMIT              | UNIT |
|--------------------------------------|-----------|--------------------|------|
| DC Input Voltage                     | $V_{IN}$  | -35                | V    |
| Power Dissipation                    | $P_D$     | Internally Limited | W    |
| Operating Temperature range          | $T_{OPR}$ | 0 ~ +125           | °C   |
| Operating Junction Temperature Range | $T_J$     | 0 ~ +150           | °C   |
| Storage Temperature Range            | $T_{STG}$ | -65 ~ +150         | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                           | SYMBOL          | TYP | UNIT |
|-------------------------------------|-----------------|-----|------|
| Junction to Case Thermal Resistance | $R_{\theta JC}$ | 18  | °C/W |

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

**ELECTRICAL SPECIFICATIONS TS79L05CY**

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

| PARAMETER                                 | CONDITIONS                                                       | SYMBOL                        | MIN   | TYP   | MAX   | UNIT    |
|-------------------------------------------|------------------------------------------------------------------|-------------------------------|-------|-------|-------|---------|
| Output voltage                            | $T_J=25^{\circ}C$                                                | $V_{OUT}$                     | -4.80 | -5    | -5.20 | V       |
|                                           | $-7.5V \leq V_{IN} \leq -20V$ ,<br>$5mA \leq I_{OUT} \leq 100mA$ |                               | -4.75 | -5    | -5.25 | V       |
| Line Regulation                           | $T_J=25^{\circ}C$ $-7.5V \leq V_{IN} \leq -20V$                  | $REG_{LINE}$                  | --    | 50    | 150   | mV      |
| Load Regulation                           | $T_J=25^{\circ}C$ $5mA \leq I_{OUT} \leq 100mA$                  | $REG_{LOAD}$                  | --    | 20    | 60    | mV      |
|                                           | $5mA \leq I_{OUT} \leq 40mA$                                     |                               | --    | 10    | 30    |         |
| Quiescent Current                         | $I_{OUT}=0$ , $T_J=25^{\circ}C$                                  | $I_Q$                         | --    | 3     | 6     | mA      |
| Quiescent Current Change                  | $-7.5V \leq V_{IN} \leq -25V$                                    | $\Delta I_Q$                  | --    | --    | 1.5   | mA      |
|                                           | $5mA \leq I_{OUT} \leq 40mA$                                     |                               | --    | --    | 0.1   |         |
| Output Noise Voltage                      | $10Hz \leq f \leq 100kHz$ , $T_J=25^{\circ}C$                    | $V_N$                         | --    | 40    | --    | $\mu V$ |
| Ripple Rejection Ratio                    | $f=120Hz$ , $-8V \leq V_{IN} \leq -18V$                          | $RR$                          | 41    | 49    | --    | dB      |
| Voltage Drop                              | $I_{OUT}=100mA$ , $T_J=25^{\circ}C$                              | $V_{DROP}$                    | --    | 1.7   | --    | V       |
| Peak Output Current                       | $T_J=25^{\circ}C$                                                | $I_{O\ peak}$                 | --    | 0.15  | --    | A       |
| Temperature Coefficient of Output Voltage | $I_{OUT}=5mA$ , $0^{\circ}C \leq T_J \leq 125^{\circ}C$          | $\Delta V_{OUT} / \Delta T_J$ | --    | -0.65 | --    | mV/°C   |

**Note:**

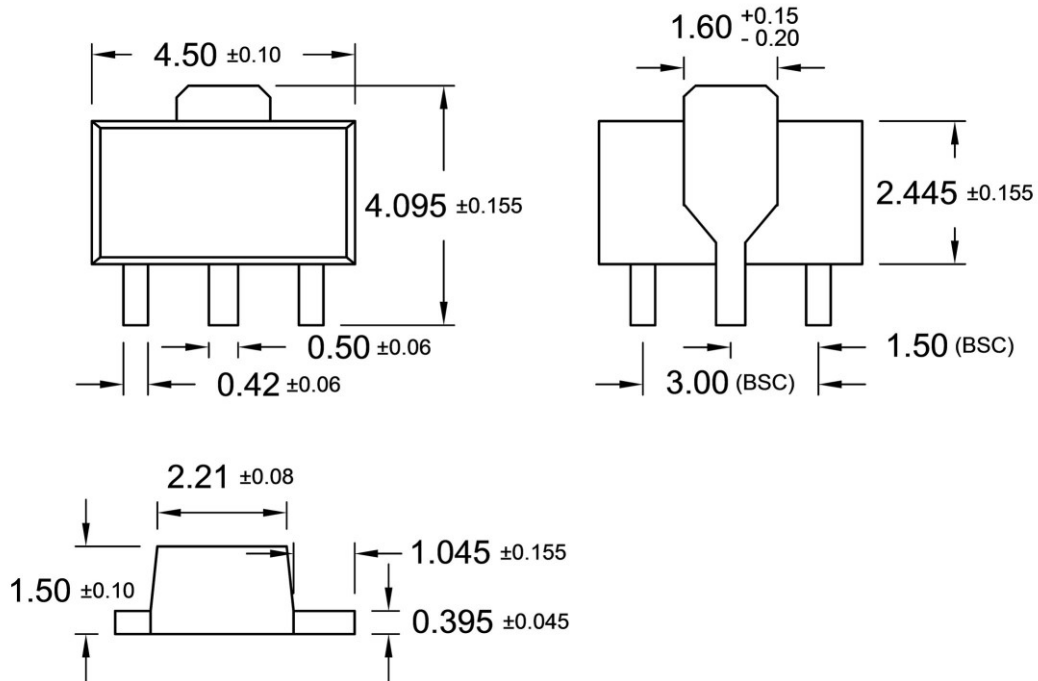
- Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible, and thermal effects must be taken into account separately
- This specification applies only for DC power dissipation permitted by absolute maximum ratings.

**ORDERING INFORMATION**

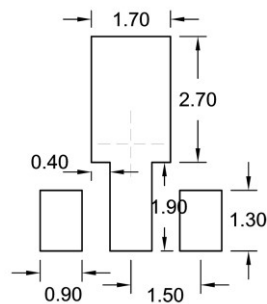
| ORDERING CODE | PACKAGE | PACKING            |
|---------------|---------|--------------------|
| TS79L05CY RMG | SOT-89  | 1,000pcs / 7" Reel |

**PACKAGE OUTLINE DIMENSIONS** (Unit: Millimeters)

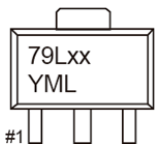
**SOT-89**



**SUGGESTED PAD LAYOUT** (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  
**W** =Sep **X** =Oct **Y** =Nov **Z** =Dec  
**L** = Lot Code

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