



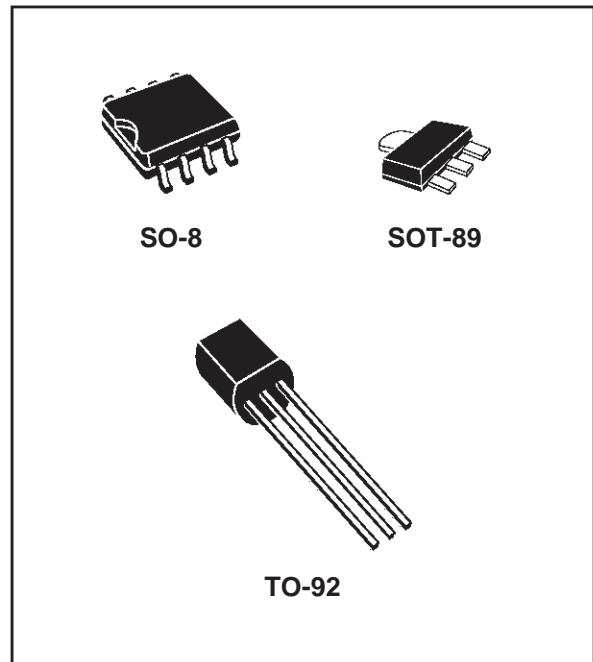
## NEGATIVE VOLTAGE REGULATORS

- OUTPUT CURRENT UP TO 100 mA
- OUTPUT VOLTAGES OF -5; -6; -8; -9; -12; -15V
- THERMAL OVERLOAD PROTECTION
- SHORT CIRCUIT PROTECTION
- NO EXTERNAL COMPONENTS ARE REQUIRED
- AVAILABLE IN EITHER  $\pm 5\%$  (AC) OR  $\pm 10\%$  (C) SELECTION

### DESCRIPTION

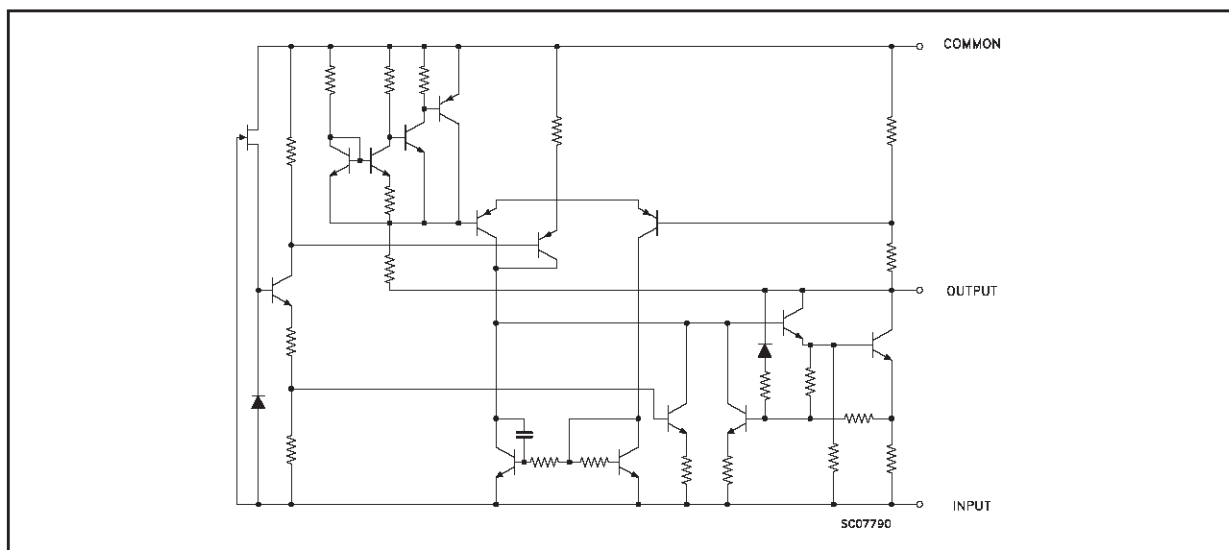
The L79L00 series of three-terminal positive regulators employ internal current limiting and thermal shutdown, making them essentially indestructible. If adequate heatsink is provided, they can deliver up to 100 mA output current. They are intended as fixed voltage regulators in a wide range of applications including local or on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high-current voltage regulators.

The L79L00 series used as Zener diode/resistor combination replacement, offers an effective



output impedance improvement of typically two orders of magnitude, along with lower quiescent current and lower noise.

### BLOCK DIAGRAM



# L79L00

## ABSOLUTE MAXIMUM RATING

| Symbol    | Parameter  | Value                                | Unit |   |
|-----------|--|--------------------------------------|------|---|
| $V_i$     | DC Input Voltage   | $V_o = -5\text{ V to }-9\text{ V}$   | -30  | V |
|           |  | $V_o = -12\text{ V to }-15\text{ V}$ | -35  | V |
| $I_o$     | Output Current   | 100                                  | mA   |   |
| $P_{tot}$ | Power Dissipation  | Internally limited (*)               |      |   |
| $T_{stg}$ | Storage Temperature Range  | - 40 to 150                          | °C   |   |
| $T_{op}$  | Operating Junction Temperature Range For L79L00C, L79L00AC<br>For L79L00AB | 0 to 125                             | °C   |   |
|           |  | - 40 to 125                          | °C   |   |

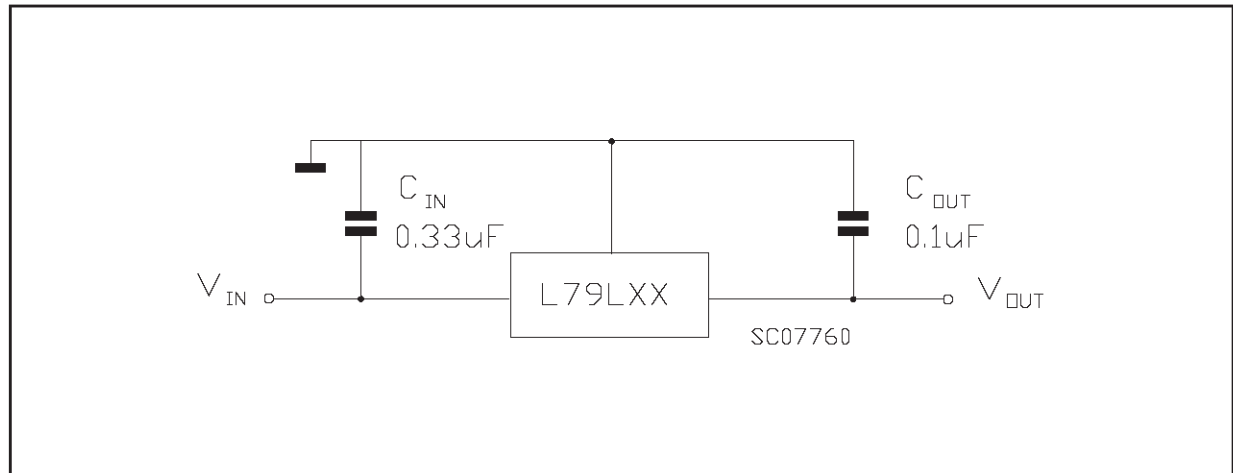
(\*) Our SO-8 package used for Voltage Regulators is modified internally to have pins 2, 3, 6 and 7 electrically commoned to the die attach flag. This particular frame decreases the total thermal resistance of the package and increases its ability to dissipate power when an appropriate area of copper on the printed circuit board is available for heatsinking. The external dimensions are the same as for the standard SO-8

## THERMAL DATA

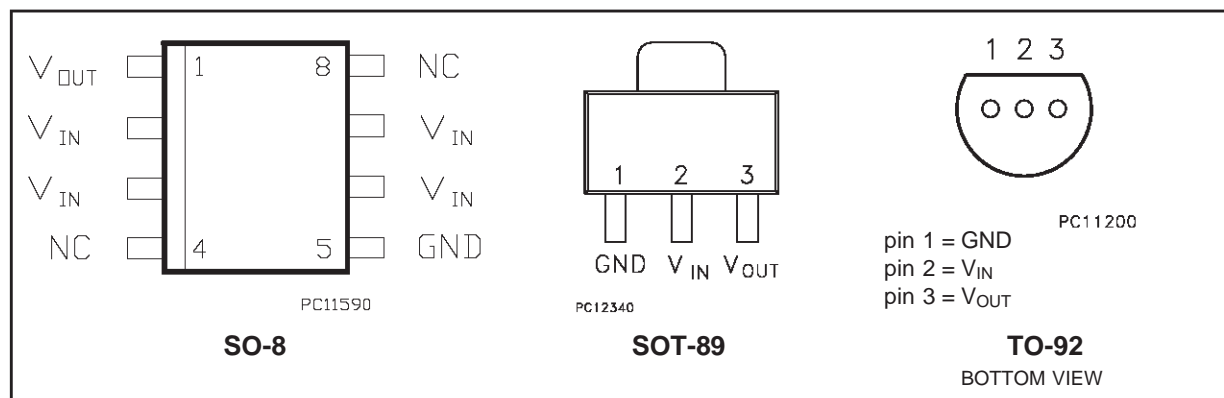
| Symbol         | Parameter                           |     | SO-8   | TO-92 | SOT-89 | Unit |
|----------------|-------------------------------------|-----|--------|-------|--------|------|
| $R_{thj-case}$ | Thermal Resistance Junction-case    | Max | 20     |       | 15     | °C/W |
| $R_{thj-amb}$  | Thermal Resistance Junction-ambient | Max | 55 (*) | 200   |        | °C/W |

(\*) Considering 6cm<sup>2</sup> of copper Board heat-sink

## TEST CIRCUITS



## CONNECTION DIAGRAM AND ORDERING NUMBERS (top view)



## ORDERING NUMBERS

| Type     | SO-8      | TO-92     | SOT-89    | Output Voltage |
|----------|-----------|-----------|-----------|----------------|
| L79L05C  | L79L05CD  | L79L05CZ  |           | -5 V           |
| L79L05AC | L79L05ACD | L79L05ACZ | L79L05ACU | -5 V           |
| L79L05AB | L79L05ABD | L79L05ABZ | L79L05ABU | -5 V           |
| L79L06C  | L79L06CD  | L79L06CZ  |           | -6 V           |
| L79L06AC | L79L06ACD | L79L06ACZ | L79L06ACU | -6 V           |
| L79L06AB | L79L06ABD | L79L06ABZ | L79L06ABU | -6 V           |
| L79L08C  | L79L08CD  | L79L08CZ  |           | -8 V           |
| L79L08AC | L79L08ACD | L79L08ACZ | L79L08ACU | -8 V           |
| L79L08AB | L79L08ABD | L79L08ABZ | L79L08ABU | -8 V           |
| L79L09C  | L79L09CD  | L79L09CZ  |           | -9 V           |
| L79L09AC | L79L09ACD | L79L09ACZ | L79L09ACU | -9 V           |
| L79L09AB | L79L09ABD | L79L09ABZ | L79L09ABU | -9 V           |
| L79L12C  | L79L12CD  | L79L12CZ  |           | -12 V          |
| L79L12AC | L79L12ACD | L79L12ACZ | L79L12ACU | -12 V          |
| L79L12AB | L79L12ABD | L79L12ABZ | L79L12ABU | -12 V          |
| L79L15C  | L79L15CD  | L79L15CZ  |           | -15 V          |
| L79L15AC | L79L15ACD | L79L15ACZ |           | -15 V          |
| L79L15AB | L79L15ABD | L79L15ABZ |           | -15 V          |

## L79L00

**ELECTRICAL CHARACTERISTICS FOR L79L05** (refer to the test circuits,  $T_j = 0$  to  $125$  °C,  $V_i = -10V$ ,  $I_o = 40$  mA,  $C_i = 0.33$   $\mu$ F,  $C_o = 0.1$   $\mu$ F unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.         | Typ. | Max.         | Unit     |
|--------------|--------------------------|--|--------------|------|--------------|----------|
| $V_o$        | Output Voltage           | $T_j = 25$ °C  | -4.6         | -5   | -5.4         | V        |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40$ mA $V_i = -7$ to $-20$ V<br>$I_o = 1$ to $70$ mA $V_i = -10$ V | -4.5<br>-4.5 |      | -5.5<br>-5.5 | V<br>V   |
| $\Delta V_o$ | Line Regulation          | $V_i = -7$ to $-20$ V $T_j = 25$ °C<br>$V_i = -8$ to $-20$ V $T_j = 25$ °C       |              |      | 200<br>150   | mV<br>mV |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100$ mA $T_j = 25$ °C<br>$I_o = 1$ to $40$ mA $T_j = 25$ °C        |              |      | 60<br>30     | mV<br>mV |
| $I_d$        | Quiescent Current        | $T_j = 25$ °C<br>$T_j = 125$ °C  |              |      | 6<br>5.5     | mA<br>mA |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40$ mA   |              |      | 0.2          | mA       |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -8$ to $-20$ V  |              |      | 1.5          | mA       |
| eN           | Output Noise Voltage     | $B = 10$ Hz to $100$ KHz $T_j = 25$ °C   |              | 40   |              | $\mu$ V  |
| SVR          | Supply Voltage Rejection | $I_o = 40$ mA $f = 120$ Hz $T_j = 25$ °C<br>$V_i = -8$ to $-18$ V                | 40           | 49   |              | dB       |
| $V_d$        | Dropout Voltage          |  |              | 1.7  |              | V        |

**ELECTRICAL CHARACTERISTICS FOR L79L06** (refer to the test circuits,  $T_j = 0$  to  $125$  °C,  $V_i = -12V$ ,  $I_o = 40$  mA,  $C_i = 0.33$   $\mu$ F,  $C_o = 0.1$   $\mu$ F unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.         | Typ. | Max.         | Unit     |
|--------------|--------------------------|--|--------------|------|--------------|----------|
| $V_o$        | Output Voltage           | $T_j = 25$ °C  | -5.52        | -6   | -6.48        | V        |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40$ mA $V_i = -8.5$ to $-20$ V<br>$I_o = 1$ to $70$ mA $V_i = -12$ V | -5.4<br>-5.4 |      | -6.6<br>-6.6 | V<br>V   |
| $\Delta V_o$ | Line Regulation          | $V_i = -8.5$ to $-20$ V $T_j = 25$ °C<br>$V_i = -9$ to $-20$ V $T_j = 25$ °C       |              |      | 200<br>150   | mV<br>mV |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100$ mA $T_j = 25$ °C<br>$I_o = 1$ to $40$ mA $T_j = 25$ °C          |              |      | 60<br>30     | mV<br>mV |
| $I_d$        | Quiescent Current        | $T_j = 25$ °C<br>$T_j = 125$ °C  |              |      | 6<br>5.5     | mA<br>mA |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40$ mA   |              |      | 0.2          | mA       |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -8$ to $-20$ V  |              |      | 1.5          | mA       |
| eN           | Output Noise Voltage     | $B = 10$ Hz to $100$ KHz $T_j = 25$ °C   |              | 50   |              | $\mu$ V  |
| SVR          | Supply Voltage Rejection | $I_o = 40$ mA $f = 120$ Hz $T_j = 25$ °C<br>$V_i = -9$ to $-20$ V                  | 38           | 46   |              | dB       |
| $V_d$        | Dropout Voltage          |  |              | 1.7  |              | V        |

**ELECTRICAL CHARACTERISTICS FOR L79L08** (refer to the test circuits,  $T_j = 0$  to  $125$  °C,  
 $V_i = -14$ V,  $I_o = 40$  mA,  $C_i = 0.33$   $\mu$ F,  $C_o = 0.1$   $\mu$ F unless otherwise specified)

| Symbol       | Parameter                | Test Conditions   | Min.         | Typ. | Max.         | Unit     |
|--------------|--------------------------|---|--------------|------|--------------|----------|
| $V_o$        | Output Voltage           | $T_j = 25$ °C   | -7.36        | -8   | -8.64        | V        |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40$ mA $V_i = -10.5$ to $-23$ V<br>$I_o = 1$ to $70$ mA $V_i = -14$ V | -7.2<br>-7.2 |      | -8.8<br>-8.8 | V<br>V   |
| $\Delta V_o$ | Line Regulation          | $V_i = -10.5$ to $-23$ V $T_j = 25$ °C<br>$V_i = -11$ to $-23$ V $T_j = 25$ °C      |              |      | 200<br>150   | mV<br>mV |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100$ mA $T_j = 25$ °C<br>$I_o = 1$ to $40$ mA $T_j = 25$ °C           |              |      | 80<br>40     | mV<br>mV |
| $I_d$        | Quiescent Current        | $T_j = 25$ °C<br>$T_j = 125$ °C   |              |      | 6<br>5.5     | mA<br>mA |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40$ mA  |              |      | 0.2          | mA       |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -11$ to $-23$ V  |              |      | 1.5          | mA       |
| eN           | Output Noise Voltage     | $B = 10$ Hz to $100$ KHz $T_j = 25$ °C  |              | 60   |              | $\mu$ V  |
| SVR          | Supply Voltage Rejection | $I_o = 40$ mA $f = 120$ Hz $T_j = 25$ °C<br>$V_i = -12$ to $-23$ V                  | 36           | 45   |              | dB       |
| $V_d$        | Dropout Voltage          |   |              | 1.7  |              | V        |

**ELECTRICAL CHARACTERISTICS FOR L79L09** (refer to the test circuits,  $T_j = 0$  to  $125$  °C,  
 $V_i = -15$ V,  $I_o = 40$  mA,  $C_i = 0.33$   $\mu$ F,  $C_o = 0.1$   $\mu$ F unless otherwise specified)

| Symbol       | Parameter                | Test Conditions   | Min.         | Typ. | Max.         | Unit     |
|--------------|--------------------------|---|--------------|------|--------------|----------|
| $V_o$        | Output Voltage           | $T_j = 25$ °C   | -8.28        | -9   | -9.72        | V        |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40$ mA $V_i = -11.5$ to $-23$ V<br>$I_o = 1$ to $70$ mA $V_i = -15$ V | -8.1<br>-8.1 |      | -9.9<br>-9.9 | V<br>V   |
| $\Delta V_o$ | Line Regulation          | $V_i = -11.5$ to $-23$ V $T_j = 25$ °C<br>$V_i = -12$ to $-23$ V $T_j = 25$ °C      |              |      | 250<br>200   | mV<br>mV |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100$ mA $T_j = 25$ °C<br>$I_o = 1$ to $40$ mA $T_j = 25$ °C           |              |      | 80<br>40     | mV<br>mV |
| $I_d$        | Quiescent Current        | $T_j = 25$ °C<br>$T_j = 125$ °C   |              |      | 6<br>5.5     | mA<br>mA |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40$ mA  |              |      | 0.2          | mA       |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -12$ to $-23$ V  |              |      | 1.5          | mA       |
| eN           | Output Noise Voltage     | $B = 10$ Hz to $100$ KHz $T_j = 25$ °C  |              | 70   |              | $\mu$ V  |
| SVR          | Supply Voltage Rejection | $I_o = 40$ mA $f = 120$ Hz $T_j = 25$ °C<br>$V_i = -12$ to $-23$ V                  | 36           | 44   |              | dB       |
| $V_d$        | Dropout Voltage          |   |              | 1.7  |              | V        |

**ELECTRICAL CHARACTERISTICS FOR L79L12** (refer to the test circuits,  $T_j = 0$  to  $125\text{ }^\circ\text{C}$ ,  $V_i = -19\text{V}$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$  unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.           | Typ. | Max.           | Unit          |
|--------------|--------------------------|--|----------------|------|----------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -11.1          | -12  | -12.9          | V             |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40\text{ mA}$ $V_i = -14.5$ to $-27\text{ V}$<br>$I_o = 1$ to $70\text{ mA}$ $V_i = -19\text{ V}$                    | -10.8<br>-10.8 |      | -13.2<br>-13.2 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -14.5$ to $-27\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -16$ to $-27\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                |      | 250<br>200     | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1$ to $40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |                |      | 100<br>50      | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                |      | 6.5<br>6       | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40\text{ mA}$  |                |      | 0.2            | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -16$ to $-27\text{ V}$  |                |      | 1.5            | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz}$ to $100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                | 80   |                | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -15$ to $-25\text{ V}$                         | 36             | 42   |                | dB            |
| $V_d$        | Dropout Voltage          |  |                | 1.7  |                | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L15** (refer to the test circuits,  $T_j = 0$  to  $125\text{ }^\circ\text{C}$ ,  $V_i = -23\text{V}$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$  unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.           | Typ. | Max.           | Unit          |
|--------------|--------------------------|--|----------------|------|----------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -13.8          | -15  | -16.2          | V             |
| $V_o$        | Output Voltage           | $I_o = 1$ to $40\text{ mA}$ $V_i = -17.5$ to $-30\text{ V}$<br>$I_o = 1$ to $70\text{ mA}$ $V_i = -23\text{ V}$                    | -13.5<br>-13.5 |      | -16.5<br>-16.5 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -17.5$ to $-30\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -20$ to $-30\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                |      | 300<br>250     | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1$ to $100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1$ to $40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |                |      | 150<br>75      | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                |      | 6.5<br>6       | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1$ to $40\text{ mA}$  |                |      | 0.2            | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -20$ to $-30\text{ V}$  |                |      | 1.5            | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz}$ to $100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                | 90   |                | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -18.5$ to $-28.5\text{ V}$                     | 33             | 39   |                | dB            |
| $V_d$        | Dropout Voltage          |  |                | 1.7  |                | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L05AB AND L79L05AC**(refer to the test circuits,  $V_i = -10V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L05AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L05AB, unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.           | Typ. | Max.           | Unit          |
|--------------|--------------------------|--|----------------|------|----------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -4.8           | -5   | -5.2           | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -7\text{ to }-20\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -10\text{ V}$              | -4.75<br>-4.75 |      | -5.25<br>-5.25 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -7\text{ to }-20\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -8\text{ to }-20\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                |      | 150<br>100     | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$  |                |      | 60<br>30       | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                |      | 6<br>5.5       | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |                |      | 0.1            | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -8\text{ to }-20\text{ V}$  |                |      | 1.5            | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                | 40   |                | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -8\text{ to }-18\text{ V}$                           | 41             | 49   |                | dB            |
| $V_d$        | Dropout Voltage          |  |                | 1.7  |                | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L06AB AND L79L06AC**(refer to the test circuits,  $V_i = -12V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L06AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L06AB, unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.         | Typ. | Max.         | Unit          |
|--------------|--------------------------|--|--------------|------|--------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -5.76        | -6   | -6.24        | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -8.5\text{ to }-20\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -12\text{ V}$              | -5.7<br>-5.7 |      | -6.3<br>-6.3 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -8.5\text{ to }-20\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -9\text{ to }-20\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |              |      | 150<br>100   | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$    |              |      | 60<br>30     | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |              |      | 6<br>5.5     | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |              |      | 0.1          | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -9\text{ to }-20\text{ V}$  |              |      | 1.5          | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |              | 50   |              | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -9\text{ to }-20\text{ V}$                             | 39           | 46   |              | dB            |
| $V_d$        | Dropout Voltage          |  |              | 1.7  |              | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L08AB AND L79L08AC**(refer to the test circuits,  $V_i = -14V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L08AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L08AB, unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.         | Typ. | Max.         | Unit          |
|--------------|--------------------------|--|--------------|------|--------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -7.68        | -8   | -8.32        | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -10.5\text{ to }-23\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -14\text{ V}$               | -7.6<br>-7.6 |      | -8.4<br>-8.4 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -10.5\text{ to }-23\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -11\text{ to }-23\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |              |      | 175<br>125   | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |              |      | 80<br>40     | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |              |      | 6<br>5.5     | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |              |      | 0.1          | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -11\text{ to }-23\text{ V}$   |              |      | 1.5          | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{KHz}$ $T_j = 25\text{ }^\circ\text{C}$  |              | 60   |              | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -12\text{ to }-23\text{ V}$                              | 37           | 45   |              | dB            |
| $V_d$        | Dropout Voltage          |  |              | 1.7  |              | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L09AB AND L79L09AC**(refer to the test circuits,  $V_i = -15V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L09AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L09AB, unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.           | Typ. | Max.           | Unit          |
|--------------|--------------------------|--|----------------|------|----------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -8.64          | -9   | -9.36          | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -11.5\text{ to }-23\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -15\text{ V}$               | -8.55<br>-8.55 |      | -9.45<br>-9.45 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -11.5\text{ to }-23\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -12\text{ to }-23\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                |      | 225<br>150     | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |                |      | 80<br>40       | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                |      | 6<br>5.5       | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |                |      | 0.1            | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -12\text{ to }-23\text{ V}$   |                |      | 1.5            | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{KHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                | 70   |                | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -12\text{ to }-23\text{ V}$                              | 37             | 44   |                | dB            |
| $V_d$        | Dropout Voltage          |  |                | 1.7  |                | V             |



**ELECTRICAL CHARACTERISTICS FOR L79L12AB AND L79L12AC**(refer to the test circuits,  $V_i = -19V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L12AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L12AB, unless otherwise specified)

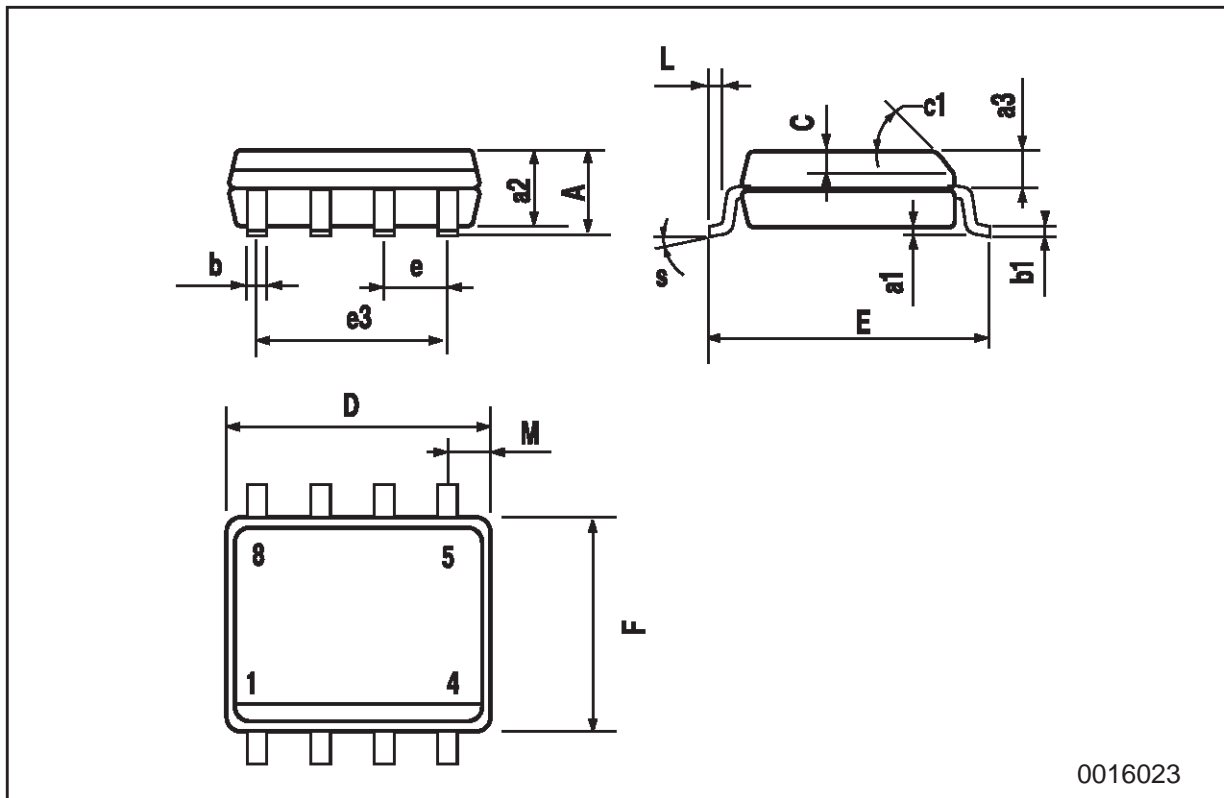
| Symbol       | Parameter                | Test Conditions  | Min.           | Typ. | Max.           | Unit          |
|--------------|--------------------------|--|----------------|------|----------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -11.5          | -12  | -12.5          | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -14.5\text{ to }-27\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -19\text{ V}$               | -11.4<br>-11.4 |      | -12.6<br>-12.6 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -14.5\text{ to }-27\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -16\text{ to }-27\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                |      | 250<br>200     | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |                |      | 100<br>50      | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                |      | 6.5<br>6       | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |                |      | 0.1            | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -16\text{ to }-27\text{ V}$   |                |      | 1.5            | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                | 80   |                | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -15\text{ to }-25\text{ V}$                              | 37             | 42   |                | dB            |
| $V_d$        | Dropout Voltage          |  |                | 1.7  |                | V             |

**ELECTRICAL CHARACTERISTICS FOR L79L15AB AND L79L15AC**(refer to the test circuits,  $V_i = -23V$ ,  $I_o = 40\text{ mA}$ ,  $C_i = 0.33\text{ }\mu\text{F}$ ,  $C_o = 0.1\text{ }\mu\text{F}$ , $T_j = 0\text{ to }125\text{ }^\circ\text{C}$  for L79L15AC,  $T_j = -40\text{ to }125\text{ }^\circ\text{C}$  for L79L15AB, unless otherwise specified)

| Symbol       | Parameter                | Test Conditions  | Min.             | Typ. | Max.             | Unit          |
|--------------|--------------------------|--|------------------|------|------------------|---------------|
| $V_o$        | Output Voltage           | $T_j = 25\text{ }^\circ\text{C}$   | -14.4            | -15  | -15.6            | V             |
| $V_o$        | Output Voltage           | $I_o = 1\text{ to }40\text{ mA}$ $V_i = -17.5\text{ to }-30\text{ V}$<br>$I_o = 1\text{ to }70\text{ mA}$ $V_i = -23\text{ V}$               | -14.25<br>-14.25 |      | -15.75<br>-15.75 | V<br>V        |
| $\Delta V_o$ | Line Regulation          | $V_i = -17.5\text{ to }-30\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -20\text{ to }-30\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ |                  |      | 300<br>250       | mV<br>mV      |
| $\Delta V_o$ | Load Regulation          | $I_o = 1\text{ to }100\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$<br>$I_o = 1\text{ to }40\text{ mA}$ $T_j = 25\text{ }^\circ\text{C}$      |                  |      | 150<br>75        | mV<br>mV      |
| $I_d$        | Quiescent Current        | $T_j = 25\text{ }^\circ\text{C}$<br>$T_j = 125\text{ }^\circ\text{C}$  |                  |      | 6.5<br>6         | mA<br>mA      |
| $\Delta I_d$ | Quiescent Current Change | $I_o = 1\text{ to }40\text{ mA}$   |                  |      | 0.1              | mA            |
| $\Delta I_d$ | Quiescent Current Change | $V_i = -20\text{ to }-30\text{ V}$   |                  |      | 1.5              | mA            |
| eN           | Output Noise Voltage     | $B = 10\text{Hz to }100\text{kHz}$ $T_j = 25\text{ }^\circ\text{C}$  |                  | 90   |                  | $\mu\text{V}$ |
| SVR          | Supply Voltage Rejection | $I_o = 40\text{ mA}$ $f = 120\text{ Hz}$ $T_j = 25\text{ }^\circ\text{C}$<br>$V_i = -18.5\text{ to }-28.5\text{ V}$                          | 34               | 39   |                  | dB            |
| $V_d$        | Dropout Voltage          |  |                  | 1.7  |                  | V             |

**SO-8 MECHANICAL DATA**

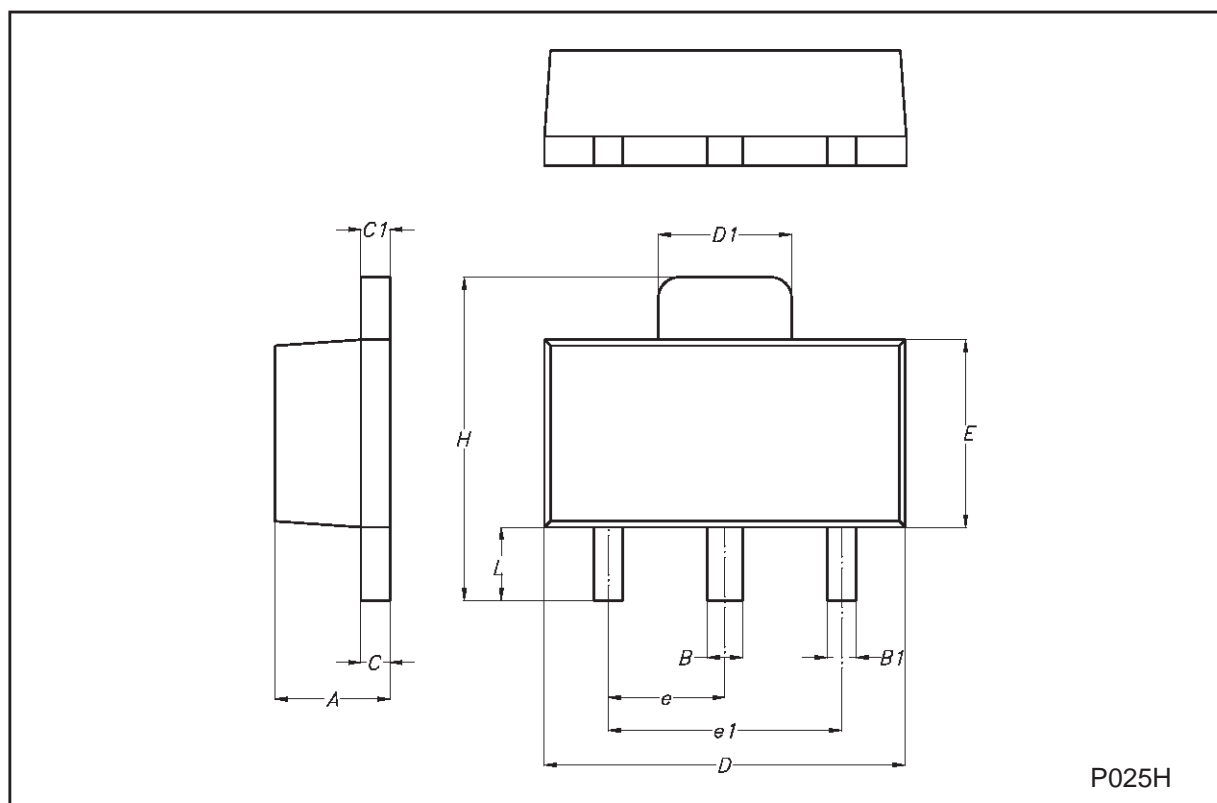
| DIM. | mm        |      |      | inch  |       |       |
|------|-----------|------|------|-------|-------|-------|
|      | MIN.      | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    |           |      | 1.75 |       |       | 0.068 |
| a1   | 0.1       |      | 0.25 | 0.003 |       | 0.009 |
| a2   |           |      | 1.65 |       |       | 0.064 |
| a3   | 0.65      |      | 0.85 | 0.025 |       | 0.033 |
| b    | 0.35      |      | 0.48 | 0.013 |       | 0.018 |
| b1   | 0.19      |      | 0.25 | 0.007 |       | 0.010 |
| C    | 0.25      |      | 0.5  | 0.010 |       | 0.019 |
| c1   | 45 (typ.) |      |      |       |       |       |
| D    | 4.8       |      | 5.0  | 0.188 |       | 0.196 |
| E    | 5.8       |      | 6.2  | 0.228 |       | 0.244 |
| e    |           | 1.27 |      |       | 0.050 |       |
| e3   |           | 3.81 |      |       | 0.150 |       |
| F    | 3.8       |      | 4.0  | 0.14  |       | 0.157 |
| L    | 0.4       |      | 1.27 | 0.015 |       | 0.050 |
| M    |           |      | 0.6  |       |       | 0.023 |
| S    | 8 (max.)  |      |      |       |       |       |



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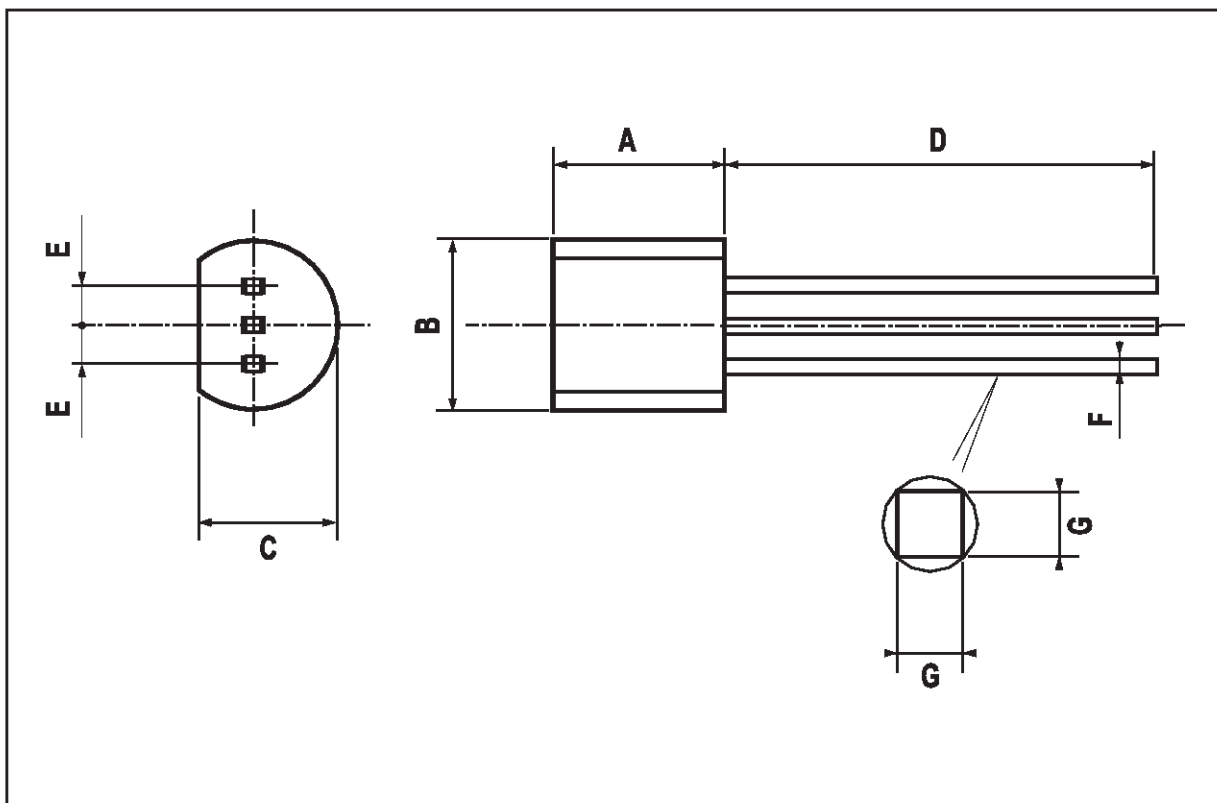
## SOT-89 MECHANICAL DATA

| DIM. | mm   |      |      | mils  |      |       |
|------|------|------|------|-------|------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP. | MAX.  |
| A    | 1.4  |      | 1.6  | 55.1  |      | 63.0  |
| B    | 0.44 |      | 0.56 | 17.3  |      | 22.0  |
| B1   | 0.36 |      | 0.48 | 14.2  |      | 18.9  |
| C    | 0.35 |      | 0.44 | 13.8  |      | 17.3  |
| C1   | 0.35 |      | 0.44 | 13.8  |      | 17.3  |
| D    | 4.4  |      | 4.6  | 173.2 |      | 181.1 |
| D1   | 1.62 |      | 1.83 | 63.8  |      | 72.0  |
| E    | 2.29 |      | 2.6  | 90.2  |      | 102.4 |
| e    | 1.42 |      | 1.57 | 55.9  |      | 61.8  |
| e1   | 2.92 |      | 3.07 | 115.0 |      | 120.9 |
| H    | 3.94 |      | 4.25 | 155.1 |      | 167.3 |
| L    | 0.89 |      | 1.2  | 35.0  |      | 47.2  |



**TO-92 MECHANICAL DATA**

| DIM. | mm   |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    | 4.58 |      | 5.33 | 0.180 |       | 0.210 |
| B    | 4.45 |      | 5.2  | 0.175 |       | 0.204 |
| C    | 3.2  |      | 4.2  | 0.126 |       | 0.165 |
| D    | 12.7 |      |      | 0.500 |       |       |
| E    |      | 1.27 |      |       | 0.050 |       |
| F    | 0.4  |      | 0.51 | 0.016 |       | 0.020 |
| G    | 0.35 |      |      | 0.14  |       |       |



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