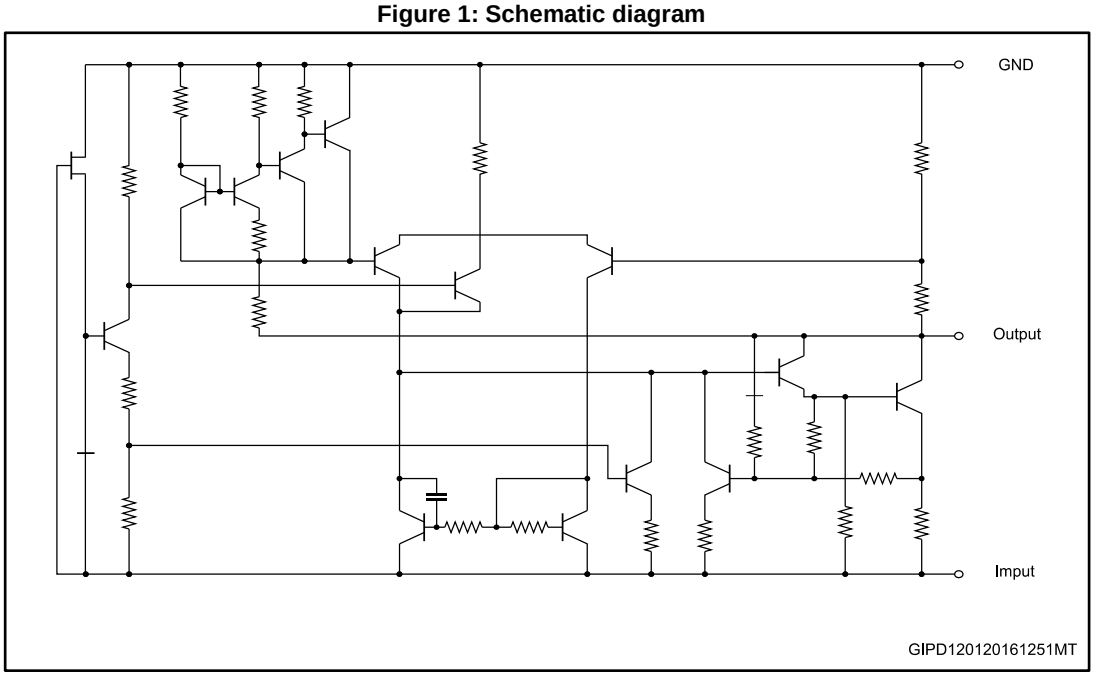
# Contents

# 1 Diagram

**Figure 1: Schematic diagram**



# 2 Pin configuration

**Figure 2: Pin connection (top view, bottom view for TO-92)**

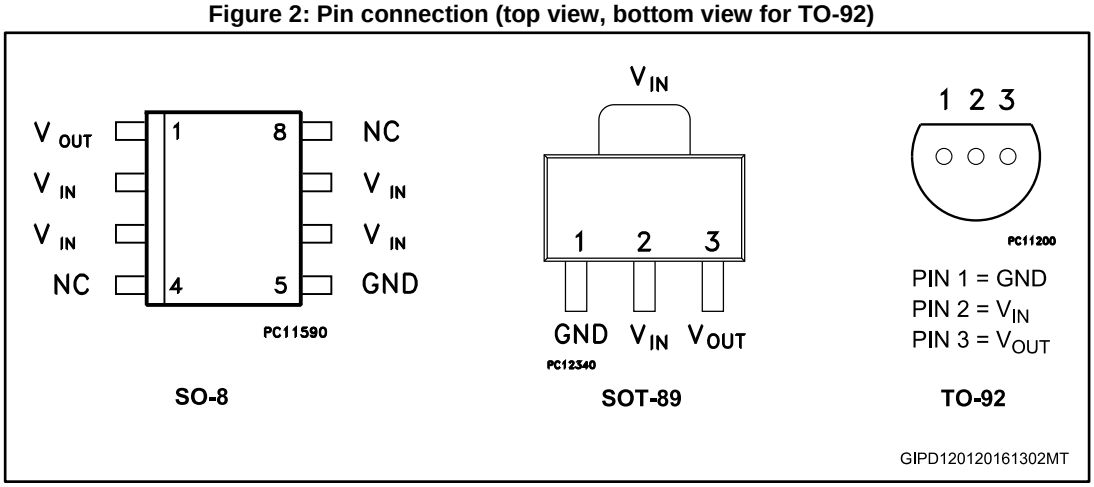
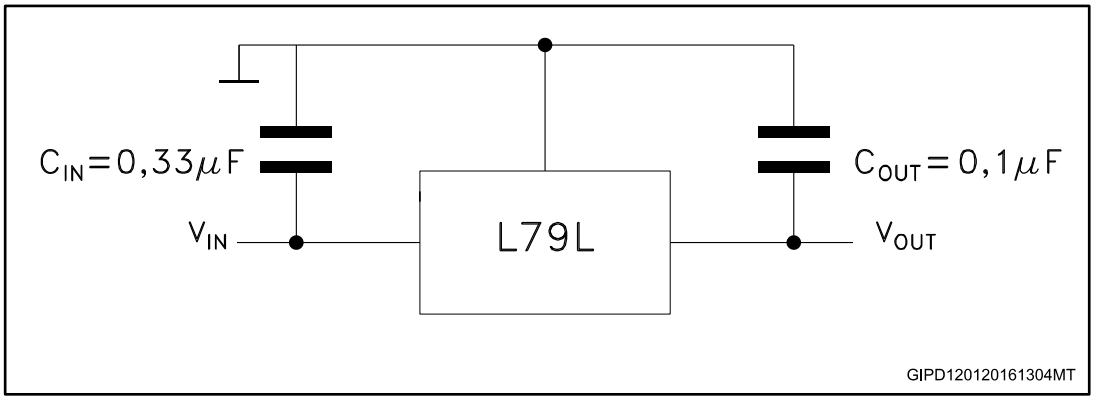



**Figure 3: Test circuit**



# 3 Maximum ratings

**Table 1: Absolute maximum ratings**

| Symbol | Parameter | Value | | Unit |
|---|---|---|---|---|
| $V_I$ | DC input voltage | $V_O$ = -5 to -9 V | -30 | V |
| | | $V_O$ = -12 to -15 V | -35 | |
| $I_O$ | Output current | | 100 | mA |
| $P_D$ | Power dissipation | | Internally limited (1) | mW |
| $T_{STG}$ | Storage temperature range | | -40 to 150 | °C |
| $T_{OP}$ | Operating junction temperature range | For L79LXXAC | 0 to 125 | °C |
| | | For L79LXXAB | -40 to 125 | |

**Notes:**

(1) Our SO-8 package used for Voltage Regulators is modified internally to have pins 2, 3, 6 and 7 electrically communed 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 heat-sinking. The external dimensions are the same as for the standard SO-8.

**Table 2: Thermal data**

| Symbol | Parameter | SO-8 | TO-92 | SOT-89 | Unit |
|---|---|---|---|---|---|
| $R_{thJC}$ | Thermal resistance junction-case (max.) | 20 | | 15 | °C/W |
| $R_{thJA}$ | Thermal resistance junction-ambient (max.) | 55 (1) | 200 | 115 | °C/W |

**Notes:**

(1) Considering 6 $cm^2$ of copper Board heat-sink.

# 4 Electrical characteristics

Refer to the test circuits, $V_I$ = - 10 V, $I_O$ = 40 mA, $C_I$ = 0.33 µF, $C_O$ = 0.1 µF, $T_J$ = 0 to 125 °C for L79L05AC, $T_J$ = -40 to 125 °C for L79L05AB, unless otherwise specified.

**Table 3: Electrical characteristics of L79L05AC and L79L05AB**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_O$ | Output voltage | $T_J$ = 25 °C | -4.8 | -5 | -5.2 | V |
| $V_O$ | Output voltage | $I_O$ = 1 to 40 mA, $V_I$ = -7 to -20 V | -4.75 | | -5.25 | V |
| | | $I_O$ = 1 to 70 mA, $V_I$ = -10 V | -4.75 | | -5.25 | |
| $\Delta V_O$ | Line regulation | $V_I$ = -7 to -20 V, $T_J$ = 25 °C | | | 150 | mV |
| | | $V_I$ = -8 to -20 V, $T_J$ = 25 °C | | | 100 | |
| $\Delta V_O$ | Load regulation | $I_O$ = 1 to 100 mA, $T_J$ = 25 °C | | | 60 | mV |
| | | $I_O$ = 1 to 40 mA, $T_J$ = 25 °C | | | 30 | |
| $I_d$ | Quiescent current | $T_J$ = 25 °C | | | 6 | mA |
| | | $T_J$ = 125 °C | | | 5.5 | mA |
| $\Delta I_d$ | Quiescent current change | $I_O$ = 1 to 40 mA | | | 0.1 | mA |
| | | $V_I$ = -8 to -20 V | | | 1.5 | |
| eN | Output noise voltage | B = 10 Hz to 100 kHz, $T_J$ = 25 °C | | 40 | | µV |
| SVR | Supply voltage rejection | $V_I$ = -8 to -18 V, f = 120 Hz $I_O$ = 40 mA, $T_J$ = 25 °C | 41 | 49 | | dB |
| $V_d$ | Dropout voltage | | | 1.7 | | V |

Refer to the test circuits, $V_I$ = - 14 V, $I_O$ = 40 mA, $C_I$ = 0.33 µF, $C_O$ = 0.1 µF, $T_J$ = 0 to 125 °C for L79L08AC $T_J$ = -40 to 125 °C for L79L08AB, unless otherwise specified.

**Table 4: Electrical characteristics of L79L08AC and L79L08AB**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_O$ | Output voltage | $T_J$ = 25 °C | -7.68 | -8 | -8.32 | V |
| $V_O$ | Output voltage | $I_O$ = 1 to 40 mA, $V_I$ = -10.5 to -23 V | -7.6 | | -8.4 | V |
| | | $I_O$ = 1 to 70 mA, $V_I$ = -14 V | -7.6 | | -8.4 | |
| $\Delta V_O$ | Line regulation | $V_I$ = -10.5 to -23 V, $T_J$ = 25 °C | | | 175 | mV |
| | | $V_I$ = -11 to -23 V, $T_J$ = 25 °C | | | 125 | |
| $\Delta V_O$ | Load regulation | $I_O$ = 1 to 100 mA, $T_J$ = 25 °C | | | 80 | mV |
| | | $I_O$ = 1 to 40 mA, $T_J$ = 25 °C | | | 40 | |
| $I_d$ | Quiescent current | $T_J$ = 25 °C | | | 6 | mA |
| | | $T_J$ = 125 °C | | | 5.5 | mA |
| $\Delta I_d$ | Quiescent current change | $I_O$ = 1 to 40 mA | | | 0.1 | mA |
| | | $V_I$ = -11 to -23 V | | | 1.5 | |
| eN | Output noise voltage | B = 10 Hz to 100 kHz, $T_J$ = 25 °C | | 60 | | µV |

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| SVR | Supply voltage rejection | $V_I$ = -12 to -23 V, f = 120 Hz, $I_O$ = 40 mA, $T_J$ = 25 °C | 37 | 45 | | dB |
| $V_d$ | Dropout voltage | | | 1.7 | | V |

Refer to the test circuits, $V_I$ = - 19 V, $I_O$ = 40 mA, $C_I$ = 0.33 µF, $C_O$ = 0.1 µF, $T_J$ = 0 to 125 °C for L79L12AC, $T_J$ = -40 to 125 °C for L79L12AB, unless otherwise specified.

**Table 5: Electrical characteristics of L79L12AC and L79L12AB**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_O$ | Output voltage | $T_J$ = 25°C | -11.5 | -12 | -12.5 | V |
| $V_O$ | Output voltage | $I_O$ = 1 to 40 mA, $V_I$ = -14.5 to -27 V | -11.4 | | -12.6 | V |
| | | $I_O$ = 1 to 70 mA, $V_I$ = -19 V | -11.4 | | -12.6 | |
| $\Delta V_O$ | Line regulation | $V_I$ = -14.5 to -27 V, $T_J$ = 25 °C | | | 250 | mV |
| | | $V_I$ = -16 to -27 V, $T_J$ = 25 °C | | | 200 | |
| $\Delta V_O$ | Load regulation | $I_O$ = 1 to 100 mA, $T_J$ = 25 °C | | | 100 | mV |
| | | $I_O$ = 1 to 40 mA, $T_J$ = 25 °C | | | 50 | |
| $I_d$ | Quiescent current | $T_J$ = 25 °C | | | 6.5 | mA |
| | | $T_J$ = 125 °C | | | 6 | mA |
| $\Delta I_d$ | Quiescent current change | $I_O$ = 1 to 40 mA | | | 0.1 | mA |
| | | $V_I$ = -16 to -27 V | | | 1.5 | |
| eN | Output noise voltage | B = 10 Hz to 100 kHz, $T_J$ = 25 °C | | 80 | | µV |
| SVR | Supply voltage rejection | $V_I$ = -15 to -25 V, f = 120 Hz $I_O$ = 40 mA, $T_J$ = 25 °C | 37 | 42 | | dB |
| $V_d$ | Dropout voltage | | | 1.7 | | V |

Refer to the test circuits, $V_I$ = - 23 V, $I_O$ = 40 mA, $C_I$ = 0.33 µF, $C_O$ = 0.1 µF, $T_J$ = 0 to 125 °C for L79L15AC, $T_J$ = -40 to 125 °C for L79L15AB, unless otherwise specified.

**Table 6: Electrical characteristics of L79L15AC and L79L15AB**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_O$ | Output voltage | $T_J$ = 25°C | -14.4 | -15 | -15.6 | V |
| $V_O$ | Output voltage | $I_O$ = 1 to 40 mA, $V_I$ = -17.5 to -30 V | -14.25 | | -15.75 | V |
| | | $I_O$ = 1 to 70 mA, $V_I$ = -23 V | -14.25 | | -15.75 | |
| $\Delta V_O$ | Line regulation | $V_I$ = -17.5 to -30 V, $T_J$ = 25 °C | | | 300 | mV |
| | | $V_I$ = -20 to -30 V, $T_J$ = 25 °C | | | 250 | |
| $\Delta V_O$ | Load regulation | $I_O$ = 1 to 100 mA, $T_J$ = 25 °C | | | 150 | mV |
| | | $I_O$ = 1 to 40 mA, $T_J$ = 25 °C | | | 75 | |
| $I_d$ | Quiescent current | $T_J$ = 25 °C | | | 6.5 | mA |
| | | $T_J$ = 125 °C | | | 6 | mA |
| $\Delta I_d$ | Quiescent current change | $I_O$ = 1 to 40 mA | | | 0.1 | mA |
| | | $V_I$ = -20 to -30 V | | | 1.5 | |

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| eN | Output noise voltage | B = 10 Hz to 100 kHz, $T_J$ = 25 °C | | 90 | | µV |
| SVR | Supply voltage rejection | $V_I$ = -18.5 to -28.5.V, f = 120 Hz $I_O$ = 40 mA, $T_J$ = 25 °C | 34 | 39 | | dB |
| $V_d$ | Dropout voltage | | | 1.7 | | V |

# 5 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: ***www.st.com***. ECOPACK® is an ST trademark.

## 5.1 TO-92 package information

**Figure 4: TO-92 package outline**

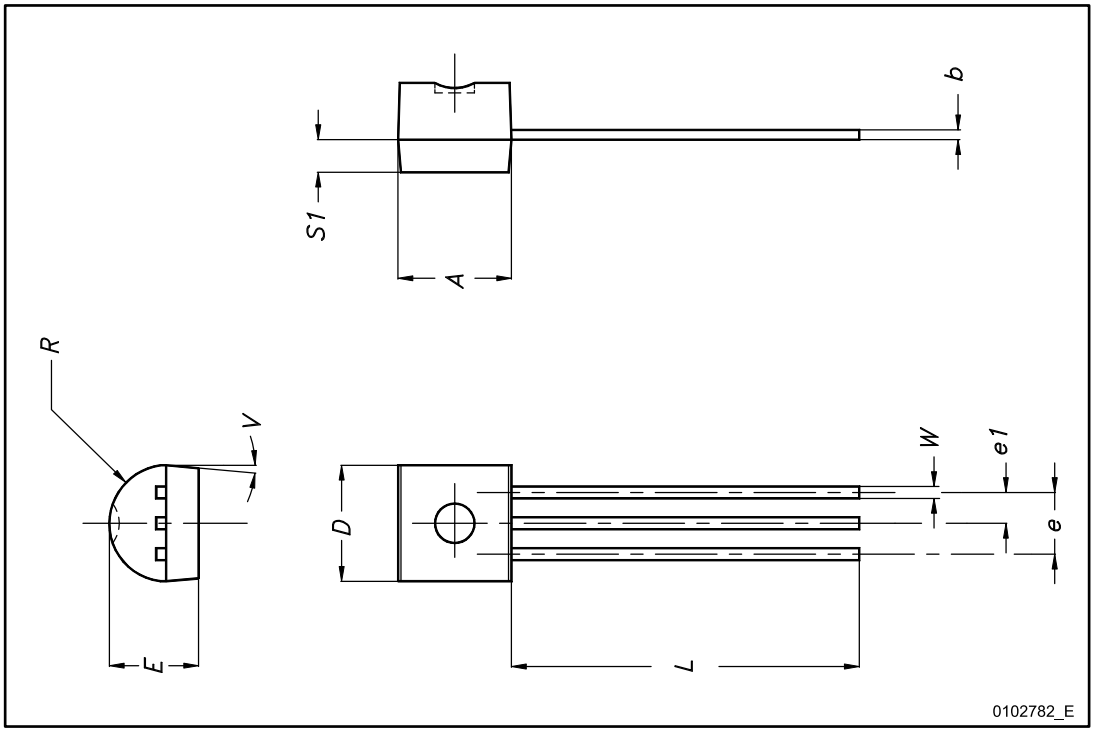



**Table 7: TO-92 mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 4.32 | | 4.95 |
| b | 0.36 | | 0.51 |
| D | 4.45 | | 4.95 |
| E | 3.30 | | 3.94 |
| e | 2.41 | | 2.67 |
| e1 | 1.14 | | 1.40 |
| L | 12.70 | | 15.49 |
| R | 2.16 | | 2.41 |
| S1 | 0.92 | | 1.52 |
| W | 0.41 | | 0.56 |
| V | | 5° | |

## 5.2 TO-92 packing information

**Figure 5: TO-92 tape and reel outline**

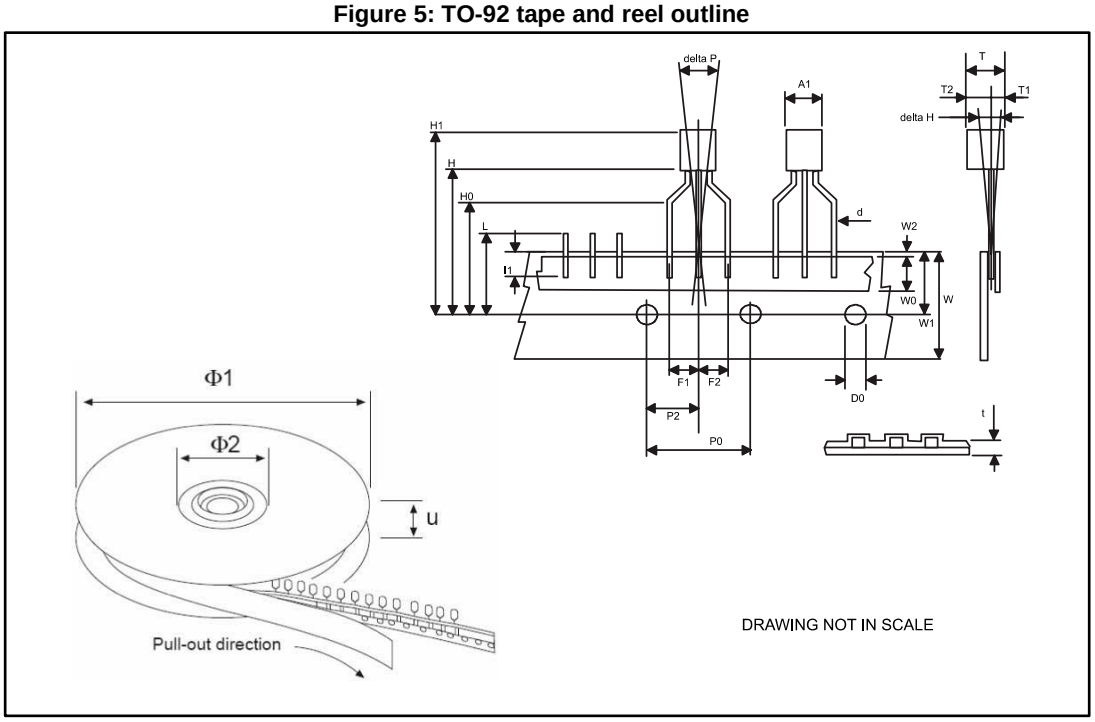


Table 8: TO-92 tape and reel mechanical data

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A1 | | | 4.80 |
| T | | | 3.80 |
| T1 | | | 1.60 |
| T2 | | | 2.30 |
| d | 0.45 | 0.47 | 0.48 |
| P0 | 12.50 | 12.70 | 12.90 |
| P2 | 5.65 | 6.35 | 7.05 |
| F1, F2 | 2.40 | 2.50 | 2.94 |
| F3 | 4.98 | 5.08 | 5.48 |
| delta H | -2.00 | | 2.00 |
| W | 17.50 | 18.00 | 19.00 |
| W0 | 5.5 | 6.00 | 6.5 |
| W1 | 8.50 | 9.00 | 9.25 |
| W2 | | | 0.50 |
| H | | 18.50 | 21 |
| H3 | 0.5 | 1 | 2 |
| H0 | 15.50 | 16.00 | 18.8 |
| H1 | | 25.0 | 27.0 |
| D0 | 3.80 | 4.00 | 4.20 |
| t | | | 0.90 |
| L | | | 11.00 |
| I1 | 3.00 | | |
| delta P | -1.00 | | 1.00 |
| Ø1 | 352 | 355 | 358 |
| Ø2 | 28 | 30 | 32 |
| u | 44 | 47 | 50 |

## 5.3 TO-92 Ammopak packing information

**Figure 6: TO-92 Ammopak tape and reel outline**

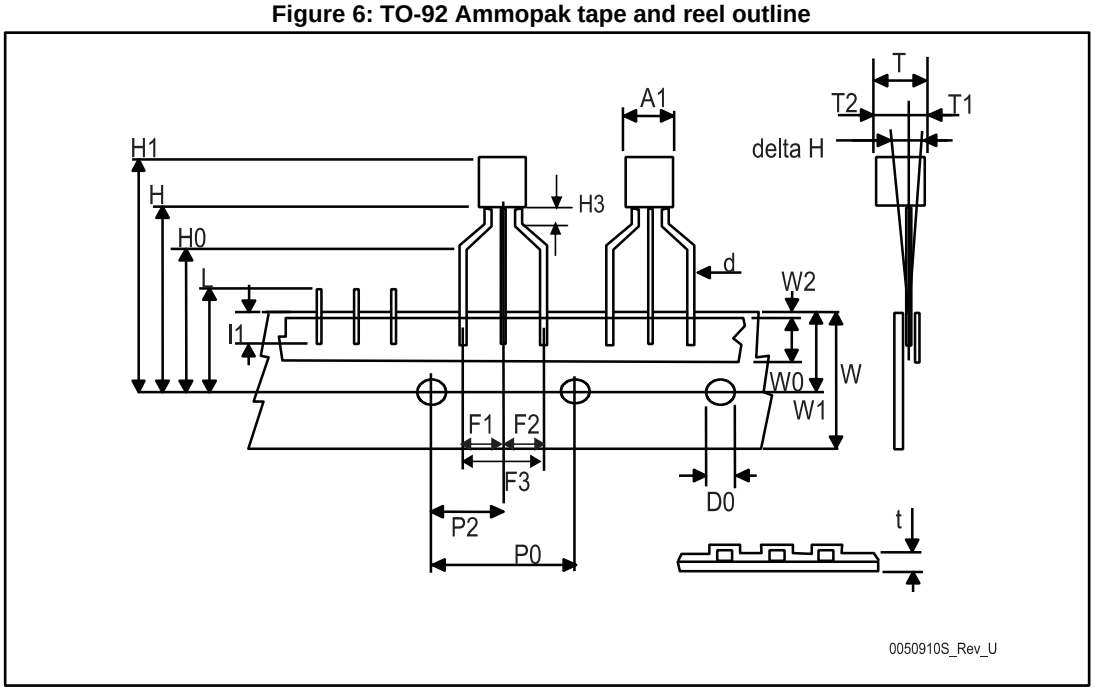


**Table 9: TO-92 Ammopak tape and reel mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A1 | | | 4.80 |
| T | | | 3.80 |
| T1 | | | 1.60 |
| T2 | | | 2.30 |
| d | 0.45 | 0.47 | 0.48 |
| P0 | 12.50 | 12.70 | 12.90 |
| P2 | 5.65 | 6.35 | 7.05 |
| F1, F2 | 2.40 | 2.50 | 2.94 |
| F3 | 4.98 | 5.08 | 5.48 |
| delta H | -2.00 | | 2.00 |
| W | 17.50 | 18.00 | 19.00 |
| W0 | 5.5 | 6.00 | 6.5 |
| W1 | 8.50 | 9.00 | 9.25 |
| W2 | | | 0.50 |
| H | | 18.50 | 21 |
| H3 | 0.5 | 1 | 2 |
| H0 | 15.50 | 16.00 | 18.8 |
| H1 | | 25.0 | 27.0 |
| D0 | 3.80 | 4.00 | 4.20 |
| t | | | 0.90 |
| L | | | 11.00 |
| I1 | 3.00 | | |
| delta P | -1.00 | | 1.00 |

## 5.4 SO-8 package information

**Figure 7: SO-8 package outline**

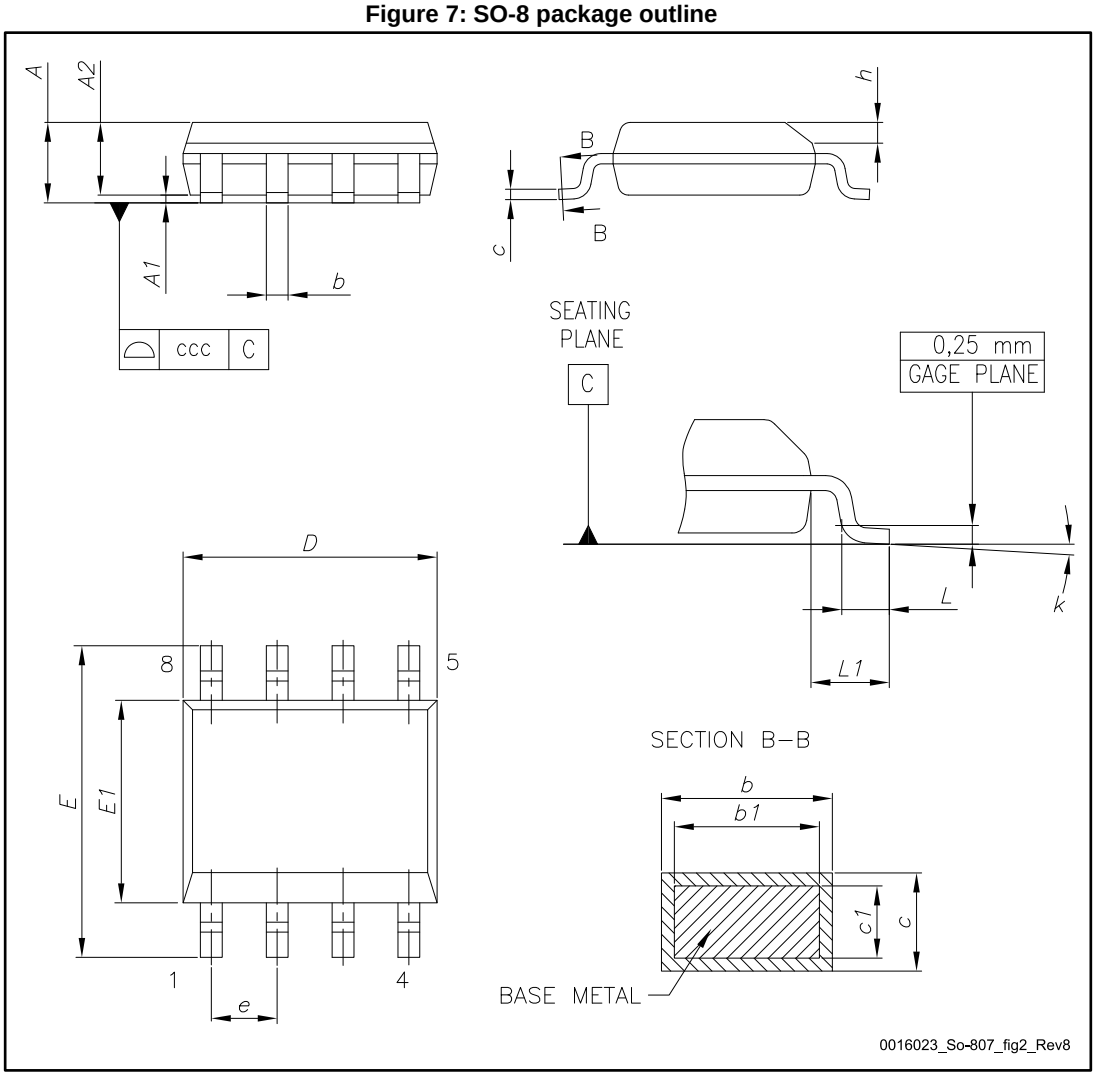
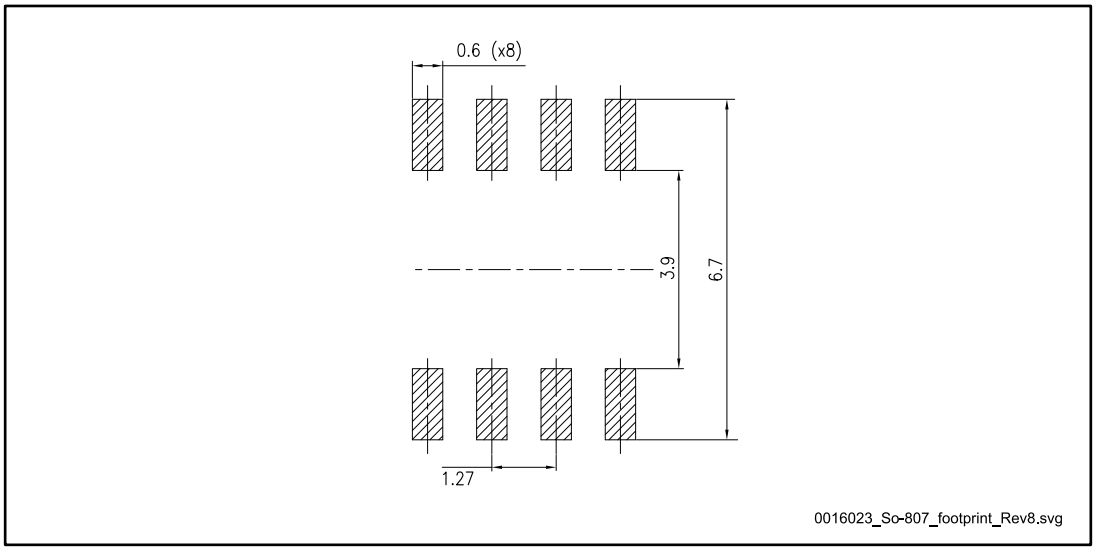


**Table 10: SO-8 mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | | | 1.75 |
| A1 | 0.10 | | 0.25 |
| A2 | 1.25 | | |
| b | 0.31 | | 0.51 |
| b1 | 0.28 | | 0.48 |
| c | 0.10 | | 0.25 |
| c1 | 0.10 | | 0.23 |
| D | 4.80 | 4.90 | 5.00 |
| E | 5.80 | 6.00 | 6.20 |
| E1 | 3.80 | 3.90 | 4.00 |
| e | | 1.27 | |
| h | 0.25 | | 0.50 |
| L | 0.40 | | 1.27 |
| L1 | | 1.04 | |
| L2 | | 0.25 | |
| k | 0° | | 8° |
| ccc | | | 0.10 |

**Figure 8: SO-8 recommended footprint (dimensions are in mm)**



## 5.5 SO-8 packing information

**Figure 9: SO-8 tape and reel dimensions**

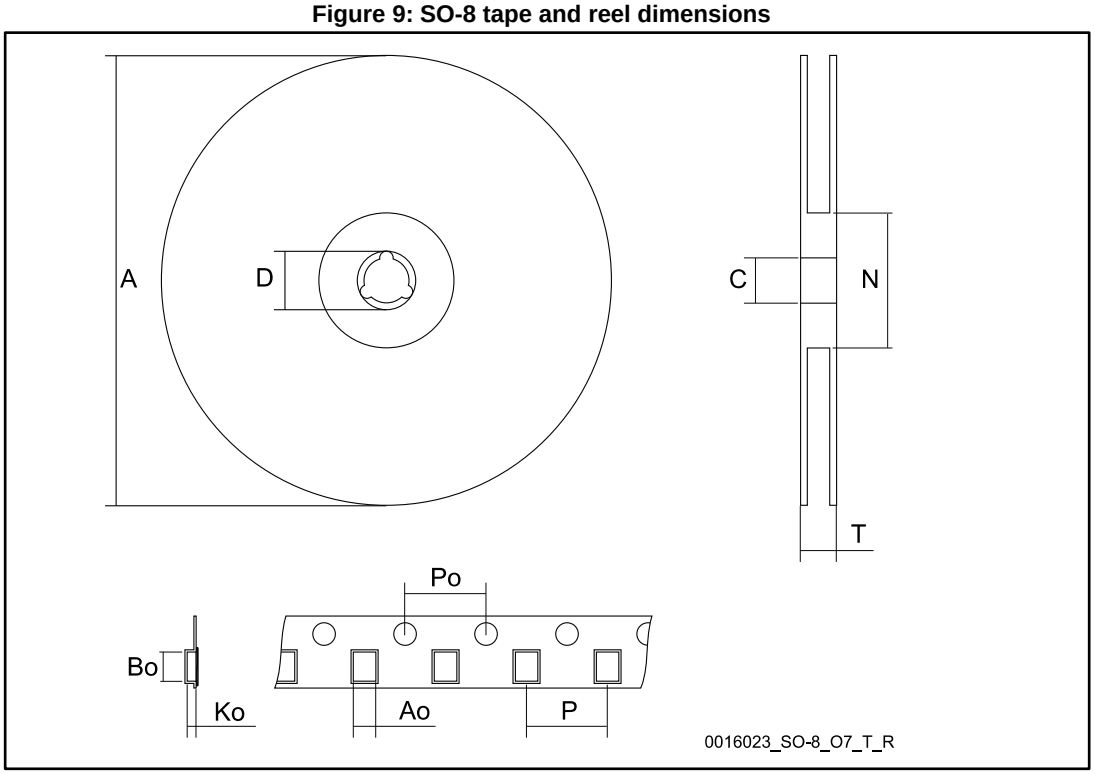



**Table 11: SO-8 tape and reel mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | | - | 330 |
| C | 12.8 | | 13.2 |
| D | 20.2 | | |
| N | 60 | | |
| T | | | 22.4 |
| Ao | 8.1 | | 8.5 |
| Bo | 5.5 | | 5.9 |
| Ko | 2.1 | | 2.3 |
| Po | 3.9 | | 4.1 |
| P | 7.9 | | 8.1 |

## 5.6 SOT-89 package information

**Figure 10: SOT-89 package outline**

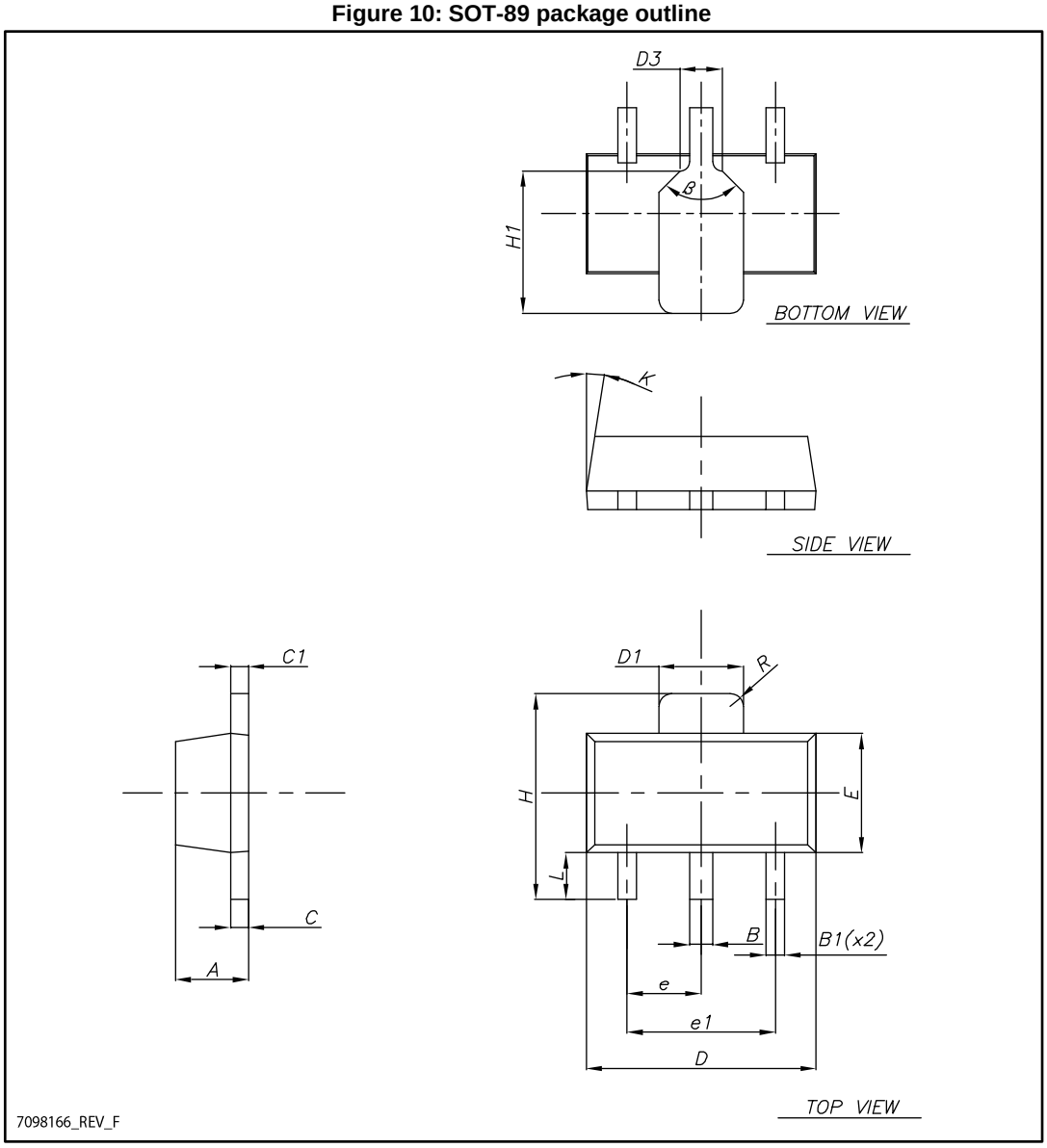
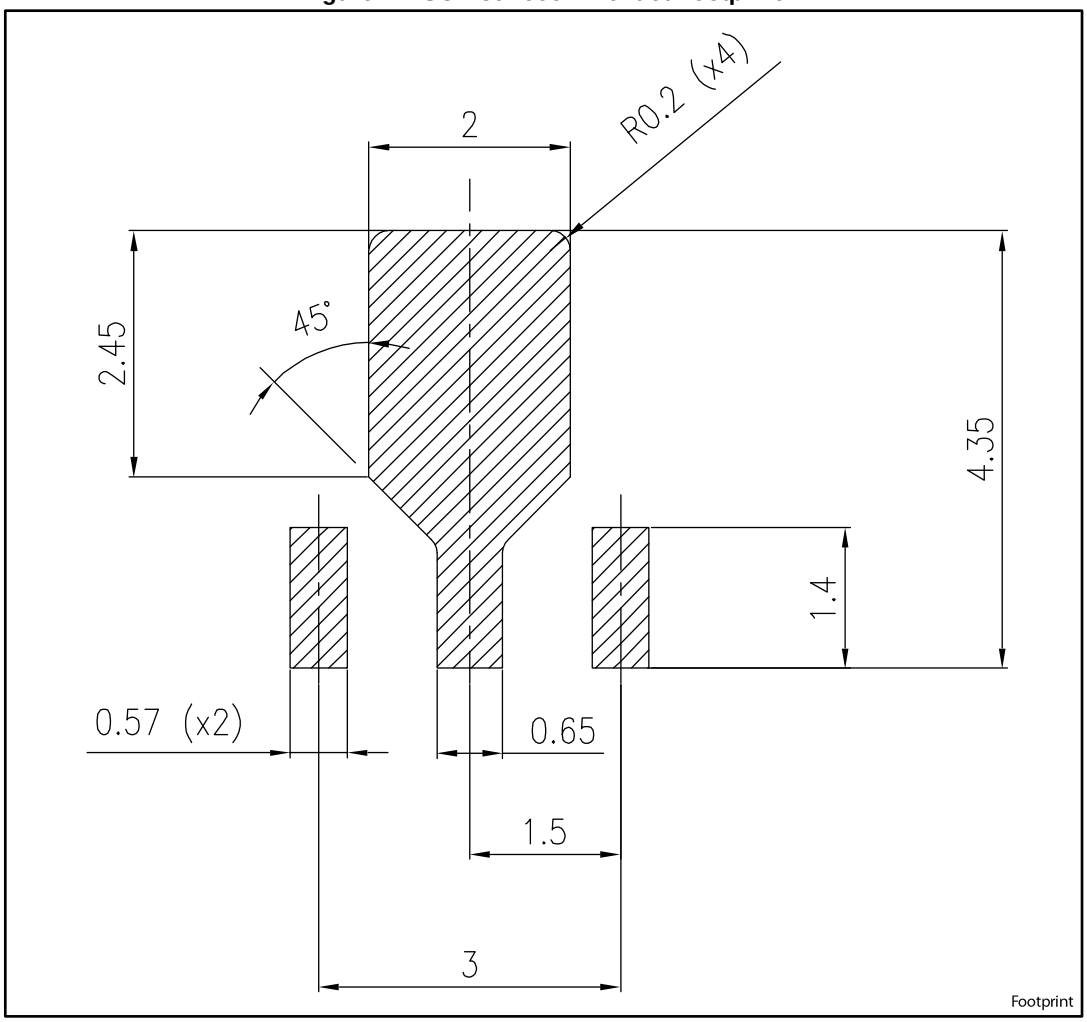


**Table 12: SOT-89 mechanical data**

| Dim. | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 1.40 | | 1.60 |
| B | 0.44 | | 0.56 |
| B1 | 0.36 | | 0.48 |
| C | 0.35 | | 0.44 |
| C1 | 0.35 | | 0.44 |
| D | 4.40 | | 4.60 |
| D1 | 1.62 | | 1.83 |
| D3 | | 0.90 | |
| E | 2.29 | | 2.60 |
| e | 1.42 | | 1.57 |
| e1 | 2.92 | | 3.07 |
| H | 3.94 | | 4.25 |
| H1 | 2.70 | | 3.10 |
| K | 1° | | 8° |
| L | 0.89 | | 120 |
| R | | 0.25 | |
| β | | 90° | |

**Figure 11: SOT-89 recommended footprint**



## 5.7 SOT-89 packing information

**Figure 12: SOT-89 carrier tape outline**

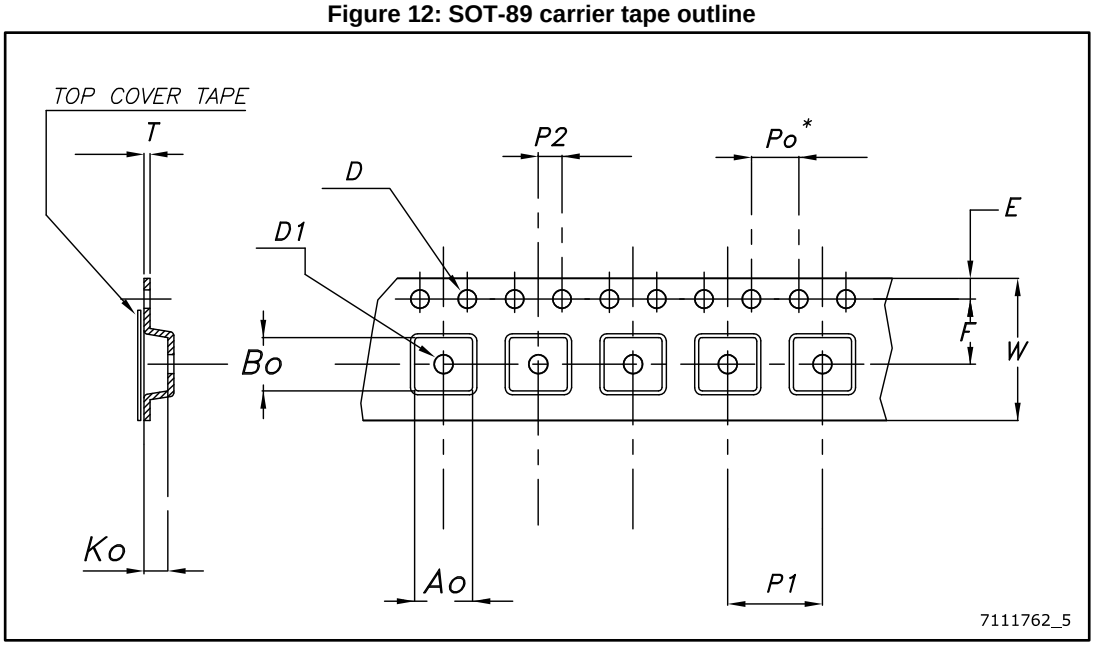



**Table 13: SOT-89 carrier tape mechanical data**

| Dim. | mm | |
|---|---|---|
| | Value | Tolerance |
| Ao | 4.91 | ± 0.10 |
| Bo | 4.52 | ± 0.10 |
| Ko | 1.90 | ± 0.10 |
| F | 5.50 | ± 0.10 |
| E | 1.75 | ± 0.10 |
| W | 12 | ± 0.30 |
| P2 | 2 | ± 0.10 |
| Po | 4 | ± 0.10 |
| P1 | 8 | ± 0.10 |
| T | 0.30 | ± 0.10 |
| D | Ø 1.55 | ± 0.05 |
| D1 | Ø 1.60 | ± 0.10 |

# 6 Ordering information

**Table 14: Ordering information**

| SO-8 | TO-92 (bag) | TO-92 (Ammopak) | TO-92 (tape and reel) | SOT-89 | Output voltage (V) |
|---|---|---|---|---|---|
| L79L05ABD13TR | L79L05ACZ | L79L05ABZ-AP | | L79L05ABUTR | -5 |
| L79L05ACD13TR | | L79L08ACZ-AP | L79L05ACZ-TR | L79L05ACUTR | -5 |
| L79L08ACD13TR | | | | | -8 |
| L79L12ACD13TR | | | L79L12ACZ-TR | L79L12ACUTR | -12 |
| L79L15ABD13TR | | | | | -15 |
| L79L15ACD13TR | | | | L79L15ACUTR | -15 |

# 7 Revision history

**Table 15: Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 14-Mar-2005 | 9 | Add Tape and Reel for TO-92. |
| 15-Mar-2005 | 10 | Add note on Table 3. |
| 23-Dec-2005 | 11 | Mistake on ordering Table in Header. |
| 12-Sep-2006 | 12 | Order codes updated. |
| 25-Jul-2007 | 13 | Pin connection for SOT-89 updated on Figure 2. |
| 04-Dec-2007 | 14 | Modified: Table 14. |
| 14-Jul-2008 | 15 | Modified: Table 14 on page 24. |
| 29-Jul-2009 | 16 | Modified: Table 14 on page 24. |
| 17-Apr-2014 | 17 | Part numbers L79LxxAB, L78LxxAC, L78LxxC changed to L79L. Removed Table 1: Device summary. Updated the features and description in cover page. Updated Figure 1: Schematic diagram, Table 1: Absolute maximum ratings and Table 14: Order codes. Added Section 5: Packaging mechanical data. Minor text changes. |
| 12-Feb-2016 | 18 | Updated Section 5: Package information. Minor text changes. |
| 06-Dec-2017 | 19 | Updated features in cover page. |

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