



TX75XXJ series 200mA Low Power LDO

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 35V)
- Output voltage accuracy: tolerance $\pm 2\%$
- TO92 and SOT89 package

Applications

- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

General Description

The TX75XXJ series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 35V. They are available with several fixed output voltages ranging from 3.0V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

Selection Table

| Part No. | Output Voltage | Package | Marking |
|-----------|----------------|---------------|---|
| TX7530Jxx | 3.0V | TO92 SOT89 | 75XX-H#(for TO92) 75XX-H#(for SOT89) |
| TX7533Jxx | 3.3V | | |
| TX7536Jxx | 3.6V | | |
| TX7544Jxx | 4.4V | | |
| TX7550Jxx | 5.0V | | |

Note:"XX" stands for package and RoHS.

TO92 & SOT89 packages will add a "#" mark at the end of the marking.

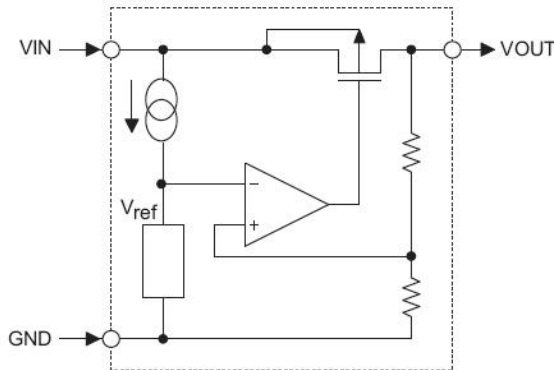
Order Information

TX75①②③④⑤

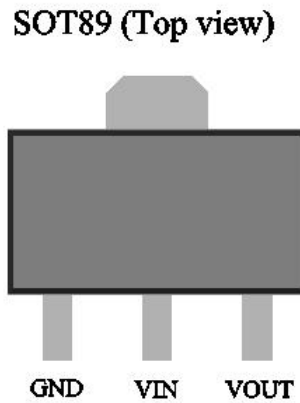
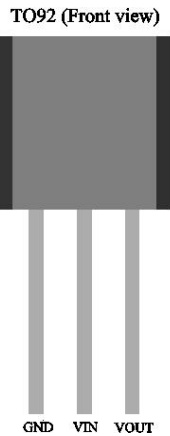
| Designator | Symbol | Description |
|------------|---------|--------------------------|
| ① ② | Integer | Output Voltage(3.0~5.0V) |
| ③ | J | Standard |
| ④ | T | Package:TO-92 |
| | P | Package:SOT89 |
| ⑤ | R | RoHS / Pb Free |
| | G | Halogen Free |



Block Diagram



Pin Assignment



Absolute Maximum Ratings

Supply Voltage-0.3V to 35V Storage Temperature-50°C to 125°C
 Operating Temperature-40°C to 85°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Thermal Information

| Symbol | Parameter | Package | Max. | Unit |
|---------------|--|---------|------|------|
| θ_{JA} | Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink) | TO92 | 200 | °C/W |
| | | SOT89 | 200 | °C/W |
| P_D | Power Dissipation | TO92 | 0.50 | W |
| | | SOT89 | 0.50 | W |

Note: P_D is measured at $T_a = 25^\circ\text{C}$



TX75XXJ series 200mA Low Power LDO

Electrical Characteristics

TX7530Jxx, +3.0V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|------|-------|------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 8V | I _{OUT} =10mA | 2.94 | 3.00 | 3.06 | V |
| I _{OUT} | Output Current | 7V | - | - | 200 | - | mA |
| ΔV _{OUT} | Load Regulation | 8V | 1mA ≤ I _{OUT} ≤ 20mA | - | 20 | 40 | mV |
| V _{DIF} | Voltage Drop(Note) | - | I _{OUT} =1mA, ΔV _{OUT} =2% | - | 15 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 3.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4V ≤ V _{IN} ≤ 35V I _{OUT} =1mA | - | 1.0 | - | %/V |
| V _{IN} | Input Voltage | - | - | - | - | 32 | V |
| $\frac{\Delta V_{OUT}}{\Delta T_a}$ | Temperature Coefficient | 8V | I _{OUT} =10mA 0°C < T _a < 70°C | - | ±0.35 | - | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

TX7533Jxx, +3.3V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 8V | I _{OUT} =10mA | 3.234 | 3.300 | 3.366 | V |
| I _{OUT} | Output Current | 7.3V | - | - | 200 | - | mA |
| ΔV _{OUT} | Load Regulation | 8V | 1mA ≤ I _{OUT} ≤ 20mA | - | 20 | 40 | mV |
| V _{DIF} | Voltage Drop(Note) | - | I _{OUT} =1mA, ΔV _{OUT} =2% | - | 15 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 3.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4.5V ≤ V _{IN} ≤ 35V I _{OUT} =1mA | - | 1.0 | - | %/V |
| V _{IN} | Input Voltage | - | - | - | - | 32 | V |
| $\frac{\Delta V_{OUT}}{\Delta T_a}$ | Temperature Coefficient | 8V | I _{OUT} =10mA 0°C < T _a < 70°C | - | ±0.35 | - | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.



TX75XXJ series 200mA Low Power LDO

TX7536Jxx, +3.6V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 8V | I _{OUT} =10mA | 3.528 | 3.600 | 3.672 | V |
| I _{OUT} | Output Current | 7.6V | - | - | 200 | - | mA |
| ΔV _{OUT} | Load Regulation | 8V | 1mA ≤ I _{OUT} ≤ 20mA | - | 20 | 40 | mV |
| V _{DIF} | Voltage Drop(Note) | - | I _{OUT} =1mA, ΔV _{OUT} =2% | - | 15 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 3.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 4.6V ≤ V _{IN} ≤ 35V I _{OUT} =1mA | - | 1.0 | - | %/V |
| V _{IN} | Input Voltage | - | - | - | - | 32 | V |
| $\frac{\Delta V_{OUT}}{\Delta T_a}$ | Temperature Coefficient | 8V | I _{OUT} =10mA 0°C < T _a < 70°C | - | ±0.35 | - | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

TX7544Jxx, +4.4V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 8V | I _{OUT} =10mA | 4.312 | 4.400 | 4.488 | V |
| I _{OUT} | Output Current | 8.4V | - | - | 200 | - | mA |
| ΔV _{OUT} | Load Regulation | 8V | 1mA ≤ I _{OUT} ≤ 20mA | - | 20 | 40 | mV |
| V _{DIF} | Voltage Drop(Note) | - | I _{OUT} =1mA, ΔV _{OUT} =2% | - | 15 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 3.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 5.4V ≤ V _{IN} ≤ 36V I _{OUT} =1mA | - | 1.0 | - | %/V |
| V _{IN} | Input Voltage | - | - | - | - | 33 | V |
| $\frac{\Delta V_{OUT}}{\Delta T_a}$ | Temperature Coefficient | 8V | I _{OUT} =10mA 0°C < T _a < 70°C | - | ±0.35 | - | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.



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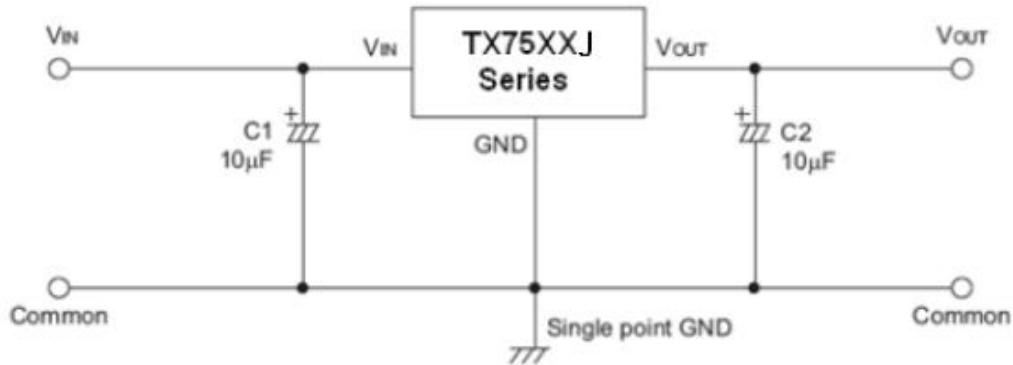
TX7550Jxx, +5.0V Output Type

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|------|-------|------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 8V | I _{OUT} =10mA | 4.90 | 5.00 | 5.10 | V |
| I _{OUT} | Output Current | 9V | - | - | 200 | - | mA |
| ΔV _{OUT} | Load Regulation | 8V | 1mA ≤ I _{OUT} ≤ 20mA | - | 20 | 40 | mV |
| V _{DIF} | Voltage Drop(Note) | - | I _{OUT} =1mA, ΔV _{OUT} =2% | - | 15 | - | mV |
| ISS | Current Consumption | 8V | No load | - | 3.0 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | - | 6V ≤ V _{IN} ≤ 37V I _{OUT} =1mA | - | 1.0 | - | %/V |
| V _{IN} | Input Voltage | - | - | - | - | 33 | V |
| $\frac{\Delta V_{OUT}}{\Delta T_a}$ | Temperature Coefficient | 8V | I _{OUT} =10mA 0°C < T _a < 70°C | - | ±0.35 | - | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

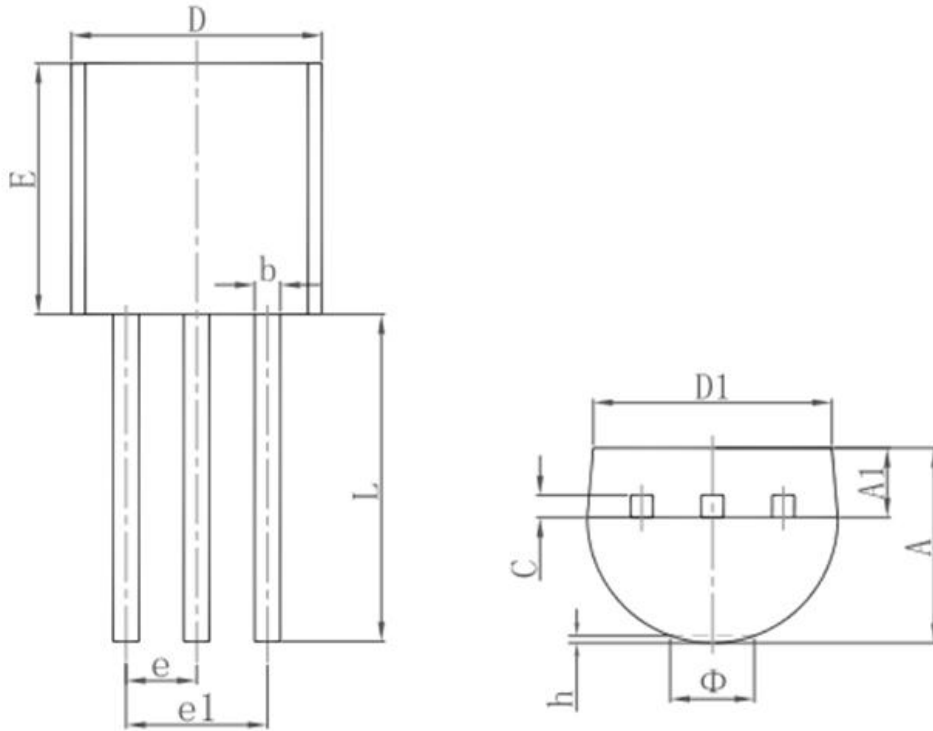
Application Circuits

Basic Circuits





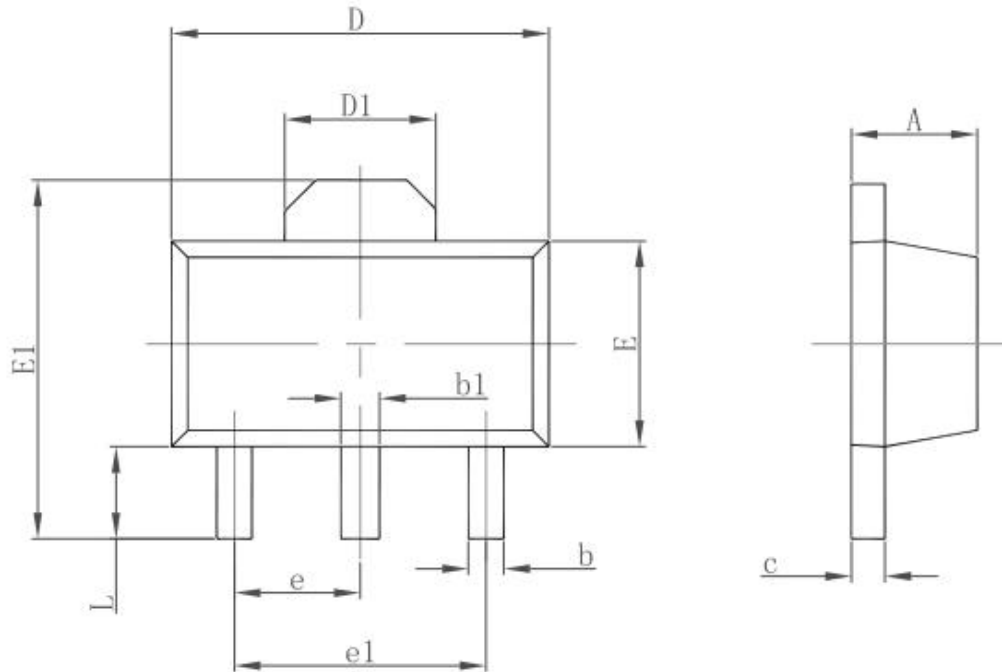
Package Information
3-pin TO92 Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 3.300 | 3.700 | 0.130 | 0.146 |
| A1 | 1.100 | 1.400 | 0.043 | 0.055 |
| b | 0.380 | 0.550 | 0.015 | 0.022 |
| c | 0.360 | 0.510 | 0.014 | 0.020 |
| D | 4.300 | 4.700 | 0.169 | 0.185 |
| D1 | 3.430 | | 0.135 | |
| E | 4.300 | 4.700 | 0.169 | 0.185 |
| e | 1.270 TYP. | | 0.050 TYP. | |
| e1 | 2.440 | 2.640 | 0.096 | 0.104 |
| L | 14.100 | 14.500 | 0.555 | 0.571 |
| Φ | | 1.600 | | 0.063 |
| h | 0.000 | 0.380 | 0.000 | 0.015 |



3-pin SOT89 Outline Dimensions



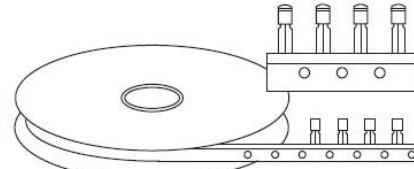
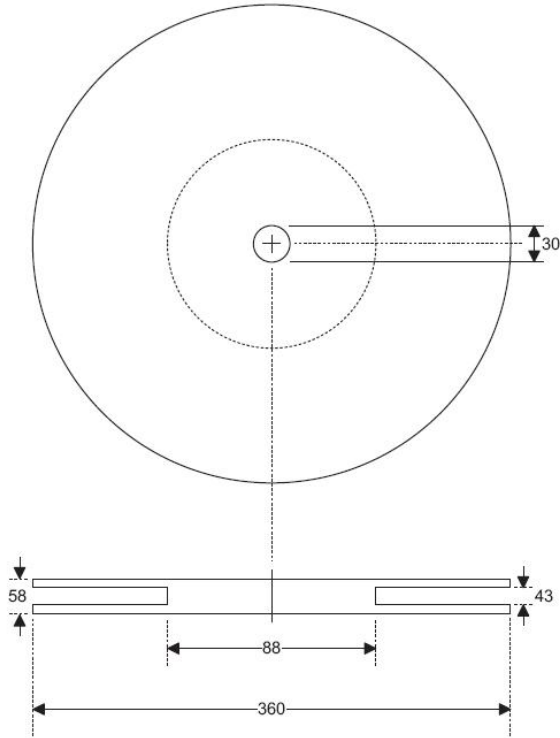
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |



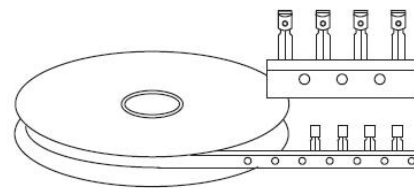
<http://www.txsemi.com>

TX75XXJ series **200mA Low Power LDO**

Product Tape and Reel Specifications 3-pin TO92 Reel Dimensions (Unit: mm)



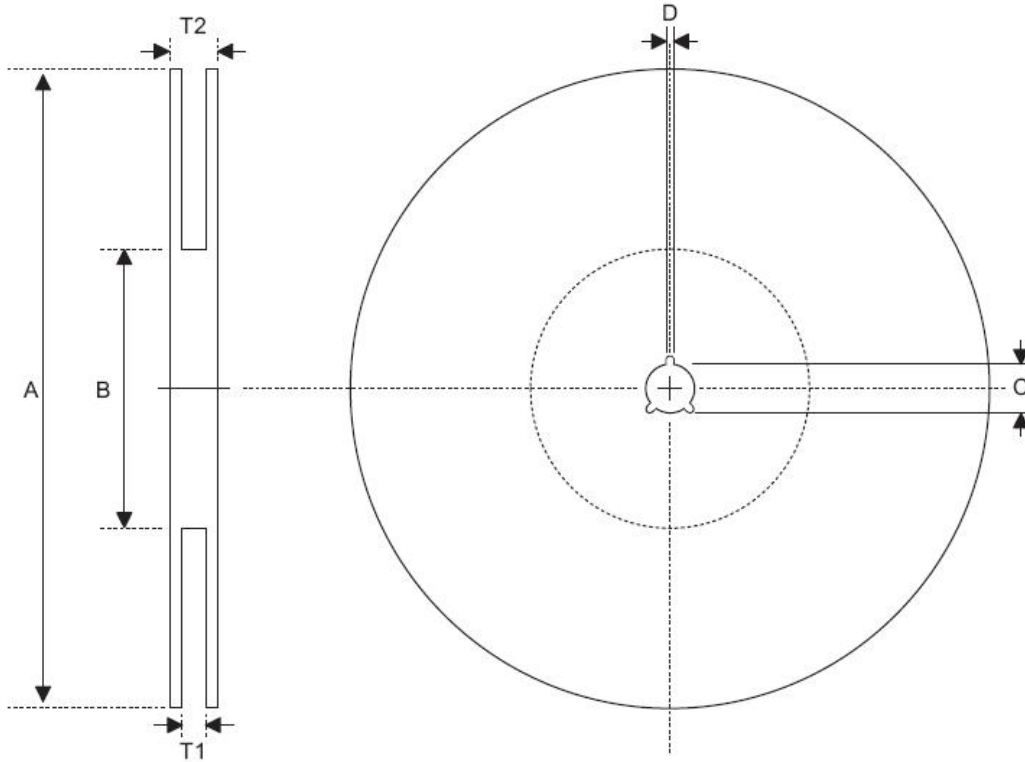
Package Up, Flat Side Up



Package Up, Flat Side Down



Reel Dimensions



SOT89

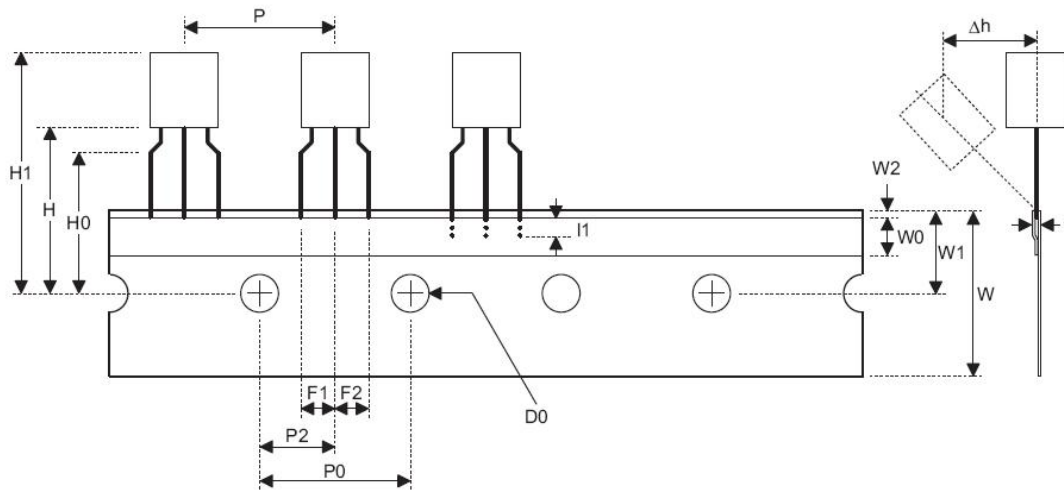
| Symbol | Description | Dimensions in mm |
|--------|-----------------------|------------------------------|
| A | Reel Outer Diameter | 180.0±1.0 |
| B | Reel Inner Diameter | 62.0±1.5 |
| C | Spindle Hole Diameter | 12.75 ^{+0.15/-0.00} |
| D | Key Slit Width | 1.90±0.15 |
| T1 | Space Between Flange | 12.4 ^{+0.2/-0.00} |
| T2 | Reel Thickness | 17.0 ^{+0.0/-0.4} |

SOT23-5

| Symbol | Description | Dimensions in mm |
|--------|-----------------------|---------------------------|
| A | Reel Outer Diameter | 178.0±1.0 |
| B | Reel Inner Diameter | 62.0±1.0 |
| C | Spindle Hole Diameter | 13.0±0.2 |
| D | Key Slit Width | 2.50±0.25 |
| T1 | Space Between Flange | 8.4 ^{+1.5/-0.0} |
| T2 | Reel Thickness | 11.4 ^{+1.5/-0.0} |



Carrier Tape Dimensions



TO92

| Symbol | Description | Dimensions in mm |
|----------------|---|---------------------------|
| I1 | Taped Lead Length | (2.5) |
| P | Component Pitch | 12.7±1.0 |
| P ₀ | Perforation Pitch | 12.7±0.3 |
| P ₂ | Component to Perforation (Length Direction) | 6.35±0.40 |
| F ₁ | Lead Spread | 2.5 ^{+0.4/-0.1} |
| F ₂ | Lead Spread | 2.5 ^{+0.4/-0.1} |
| Δh | Component Alignment | 0.0±0.1 |
| W | Carrier Tape Width | 18.0 ^{+1.0/-0.5} |
| W ₀ | Hold-down Tape Width | 6.0±0.5 |
| W ₁ | Perforation Position | 9.0±0.5 |
| W ₂ | Hold-down Tape Position | (0.5) |
| H ₀ | Lead Clinch Height | 16.0±0.5 |
| H ₁ | Component Height | Less than 24.7 |
| D ₀ | Perforation Diameter | 4.0±0.2 |
| t | Taped Lead Thickness | 0.7±0.2 |
| H | Component Base Height | 19.0±0.5 |

Note: Thickness less than 0.38_0.05mm~0.5mm

P₀ Accumulated pitch tolerance: _1mm/20pitches.

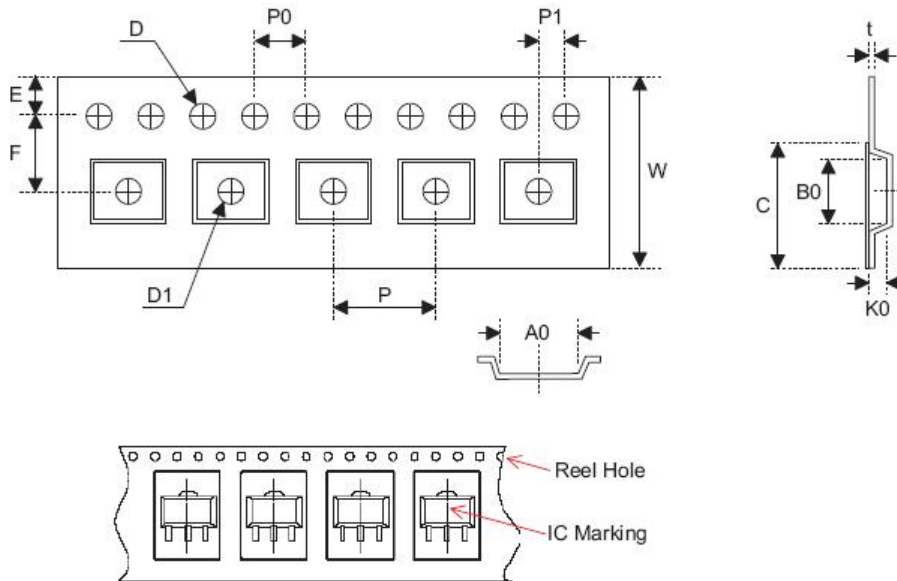
() Bracketed figures are for consultation only



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Carrier Tape Dimensions



SOT89

| Symbol | Description | Dimensions in mm |
|--------|--|---------------------------|
| W | Carrier Tape Width | 12.0 ^{+0.3/-0.1} |
| P | Cavity Pitch | 8.0±0.1 |
| E | Perforation Position | 1.75±0.10 |
| F | Cavity to Perforation (Width Direction) | 5.50±0.05 |
| D | Perforation Diameter | 1.5 ^{+0.1/-0.0} |
| D1 | Cavity Hole Diameter | 1.5 ^{+0.1/-0.0} |
| P0 | Perforation Pitch | 4.0±0.1 |
| P1 | Cavity to Perforation (Length Direction) | 2.0±0.1 |
| A0 | Cavity Length | 4.8±0.1 |
| B0 | Cavity Width | 4.5±0.1 |
| K0 | Cavity Depth | 1.8±0.1 |
| t | Carrier Tape Thickness | 0.300±0.013 |
| C | Cover Tape Width | 9.3±0.1 |

SOT23-5

| Symbol | Description | Dimensions in mm |
|--------|--|--------------------------|
| W | Carrier Tape Width | 8.0±0.3 |
| P | Cavity Pitch | 4.0±0.1 |
| E | Perforation Position | 1.75±0.10 |
| F | Cavity to Perforation (Width Direction) | 3.50±0.05 |
| D | Perforation Diameter | 1.5 ^{+0.1/-0.0} |
| D1 | Cavity Hole Diameter | 1.5 ^{+0.1/-0.0} |
| P0 | Perforation Pitch | 4.0±0.1 |
| P1 | Cavity to Perforation (Length Direction) | 2.00±0.05 |
| A0 | Cavity Length | 3.15±0.10 |
| B0 | Cavity Width | 3.2±0.1 |
| K0 | Cavity Depth | 1.4±0.1 |
| t | Carrier Tape Thickness | 0.20±0.03 |
| C | Cover Tape Width | 5.3±0.1 |



<http://www.txsemi.com>

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