



# TX75XXS series 200mA Low Power LDO

## Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 37V)
- Output voltage accuracy: tolerance  $\pm 2\%$
- TO92、SOT23-3 and SOT89 package

## Applications

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

## General Description

The TX75XXS series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 37V. 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
TX7530Sxx	3.0V	TO92 SOT89	75XX-H#(for TO92) 75XX-H#(for SOT89) XX-H(for SOT23-3)
TX7533Sxx	3.3V		
TX7536Sxx	3.6V		
TX7544Sxx	4.4V		
TX7550Sxx	5.0V		

Note:"xx" stands for package and RoHS.

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

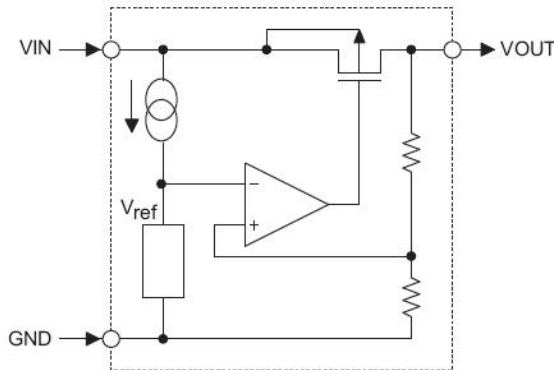
## Order Information

TX75①②③④⑤

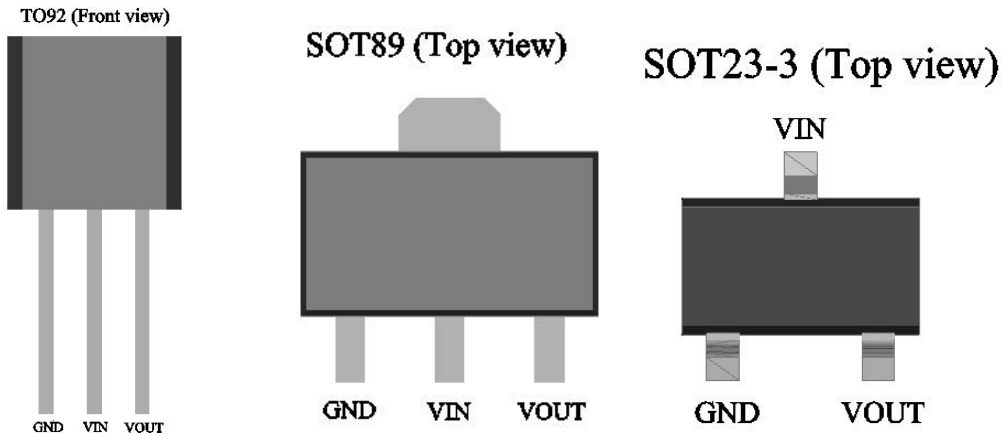
Designator	Symbol	Description
① ②	Integer	Output Voltage(3.0~5.0V)
③	S	Standard
④	T	Package:TO-92
	P	Package:SOT89
	M	Package:SOT23-3
⑤	R	RoHS / Pb Free
	G	Halogen Free



**Block Diagram**



**Pin Assignment**



**Absolute Maximum Ratings**

Supply Voltage .....-0.3V to 37V      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
$\theta_{JA}$	Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink)	SOT23	500	°C/W
		TO92	200	°C/W
		SOT89	200	°C/W
$P_D$	Power Dissipation	SOT23	0.20	W
		TO92	0.50	W
		SOT89	0.50	W

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



# TX75XXS series 200mA Low Power LDO

## Electrical Characteristics

### TX7530Sxx, +3.0V Output Type

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>IN</sub>	Conditions				
V <sub>OUT</sub>	Output Voltage	8V	I <sub>OUT</sub> =10mA	2.94	3.00	3.06	V
I <sub>OUT</sub>	Output Current	6V	-	-	200	-	mA
ΔV <sub>OUT</sub>	Load Regulation	8V	1mA ≤ I <sub>OUT</sub> ≤ 20mA	-	40	60	mV
V <sub>DIF</sub>	Voltage Drop(Note)	-	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	-	10	-	mV
ISS	Current Consumption	8V	No load	-	2.0	5.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	-	4V ≤ V <sub>IN</sub> ≤ 37V I <sub>OUT</sub> =1mA	-	0.3	-	%/V
V <sub>IN</sub>	Input Voltage	-	-	-	-	35	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	8V	I <sub>OUT</sub> =10mA 0°C < T <sub>a</sub> < 100°C	-	±0.12	-	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<sub>IN</sub> = V<sub>OUT</sub>+2V with a fixed load.

### TX7533Sxx, +3.3V Output Type

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>IN</sub>	Conditions				
V <sub>OUT</sub>	Output Voltage	8V	I <sub>OUT</sub> =10mA	3.234	3.300	3.366	V
I <sub>OUT</sub>	Output Current	6.3V	-	-	200	-	mA
ΔV <sub>OUT</sub>	Load Regulation	8V	1mA ≤ I <sub>OUT</sub> ≤ 20mA	-	40	60	mV
V <sub>DIF</sub>	Voltage Drop(Note)	-	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	-	10	-	mV
ISS	Current Consumption	8V	No load	-	2.0	5.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	-	4.5V ≤ V <sub>IN</sub> ≤ 37V I <sub>OUT</sub> =1mA	-	0.3	-	%/V
V <sub>IN</sub>	Input Voltage	-	-	-	-	35	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	8V	I <sub>OUT</sub> =10mA 0°C < T <sub>a</sub> < 100°C	-	±0.12	-	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<sub>IN</sub> = V<sub>OUT</sub>+2V with a fixed load.



## TX75XXS series 200mA Low Power LDO

### TX7536Sxx, +3.6V Output Type

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>IN</sub>	Conditions				
V <sub>OUT</sub>	Output Voltage	8V	I <sub>OUT</sub> =10mA	3.528	3.600	3.672	V
I <sub>OUT</sub>	Output Current	6.6V	-	-	200	-	mA
ΔV <sub>OUT</sub>	Load Regulation	8V	1mA ≤ I <sub>OUT</sub> ≤ 20mA	-	40	60	mV
V <sub>DIF</sub>	Voltage Drop(Note)	-	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	-	10	-	mV
ISS	Current Consumption	8V	No load	-	2.0	5.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	-	4.6V ≤ V <sub>IN</sub> ≤ 37V I <sub>OUT</sub> =1mA	-	0.3	-	%/V
V <sub>IN</sub>	Input Voltage	-	-	-	-	35	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	8V	I <sub>OUT</sub> =10mA 0°C < T <sub>a</sub> < 100°C	-	±0.12	-	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<sub>IN</sub> = V<sub>OUT</sub>+2V with a fixed load.

### TX7544Sxx, +4.4V Output Type

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>IN</sub>	Conditions				
V <sub>OUT</sub>	Output Voltage	8V	I <sub>OUT</sub> =10mA	4.312	4.400	4.488	V
I <sub>OUT</sub>	Output Current	7.4V	-	-	200	-	mA
ΔV <sub>OUT</sub>	Load Regulation	8V	1mA ≤ I <sub>OUT</sub> ≤ 20mA	-	40	60	mV
V <sub>DIF</sub>	Voltage Drop(Note)	-	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	-	10	-	mV
ISS	Current Consumption	8V	No load	-	2.0	5.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	-	5.4V ≤ V <sub>IN</sub> ≤ 38V I <sub>OUT</sub> =1mA	-	0.3	-	%/V
V <sub>IN</sub>	Input Voltage	-	-	-	-	36	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	8V	I <sub>OUT</sub> =10mA 0°C < T <sub>a</sub> < 100°C	-	±0.12	-	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<sub>IN</sub> = V<sub>OUT</sub>+2V with a fixed load.



# TX75XXS series 200mA Low Power LDO

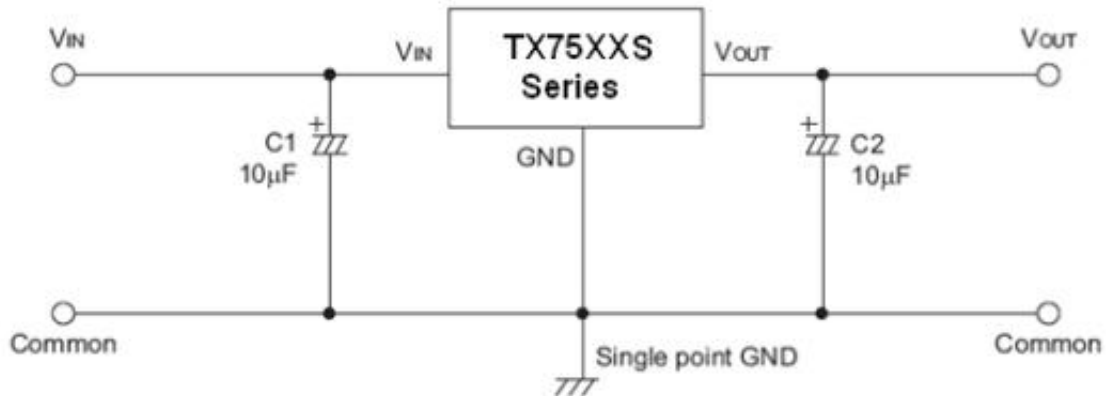
## TX7550Sxx, +5.0V Output Type

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>IN</sub>	Conditions				
V <sub>OUT</sub>	Output Voltage	8V	I <sub>OUT</sub> =10mA	4.90	5.00	5.10	V
I <sub>OUT</sub>	Output Current	8V	-	-	200	-	mA
ΔV <sub>OUT</sub>	Load Regulation	8V	1mA ≤ I <sub>OUT</sub> ≤ 20mA	-	40	60	mV
V <sub>DIF</sub>	Voltage Drop(Note)	-	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	-	10	-	mV
ISS	Current Consumption	8V	No load	-	2.0	5.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	-	6V ≤ V <sub>IN</sub> ≤ 39V I <sub>OUT</sub> =1mA	-	0.3	-	%/V
V <sub>IN</sub>	Input Voltage	-	-	-	-	36	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	8V	I <sub>OUT</sub> =10mA 0°C < T <sub>a</sub> < 100°C	-	±0.12	-	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<sub>IN</sub> = V<sub>OUT</sub>+2V with a fixed load.

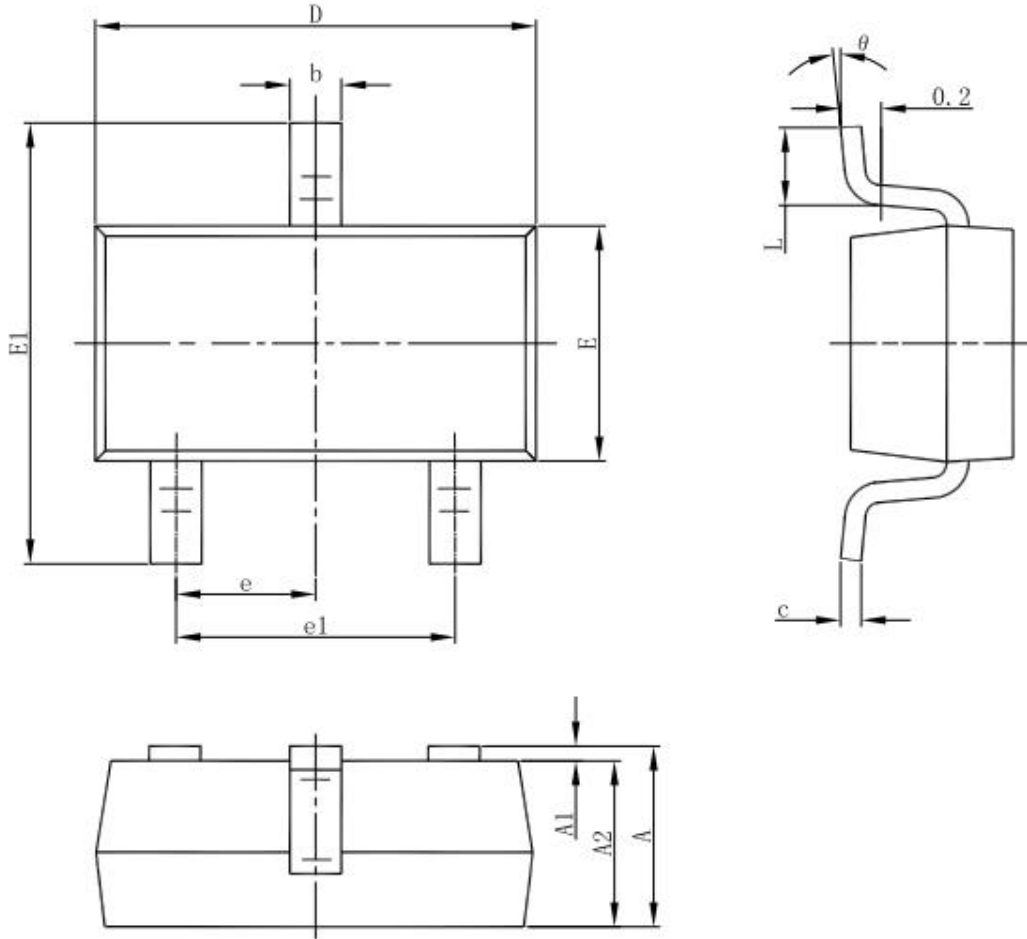
## Application Circuits

### Basic Circuits





**Package Information**  
**3-pin SOT23-3 Outline Dimensions**

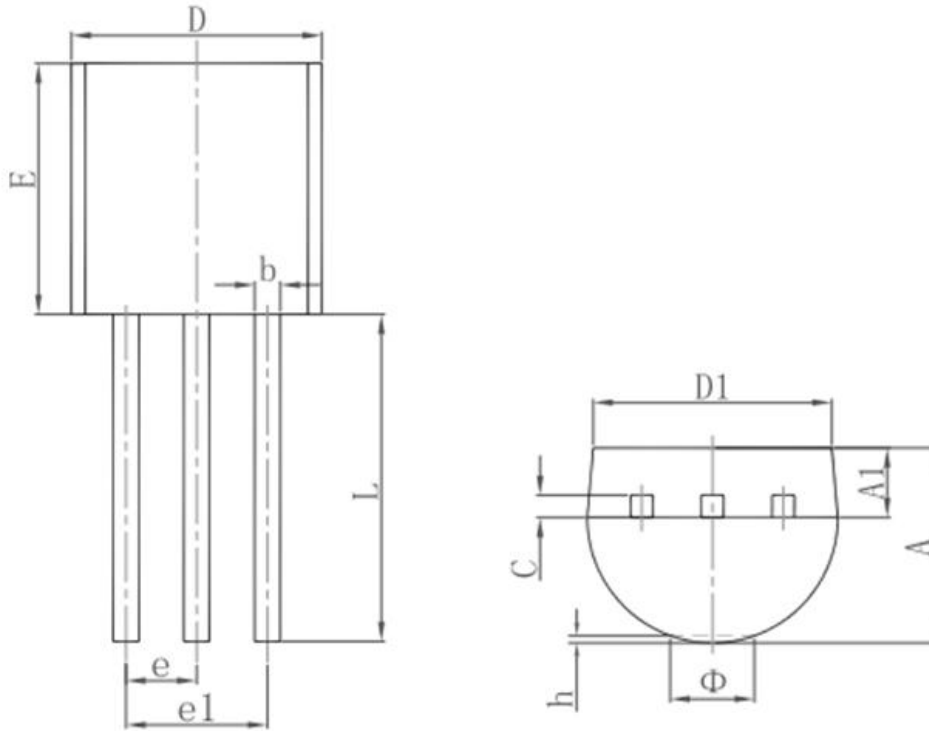


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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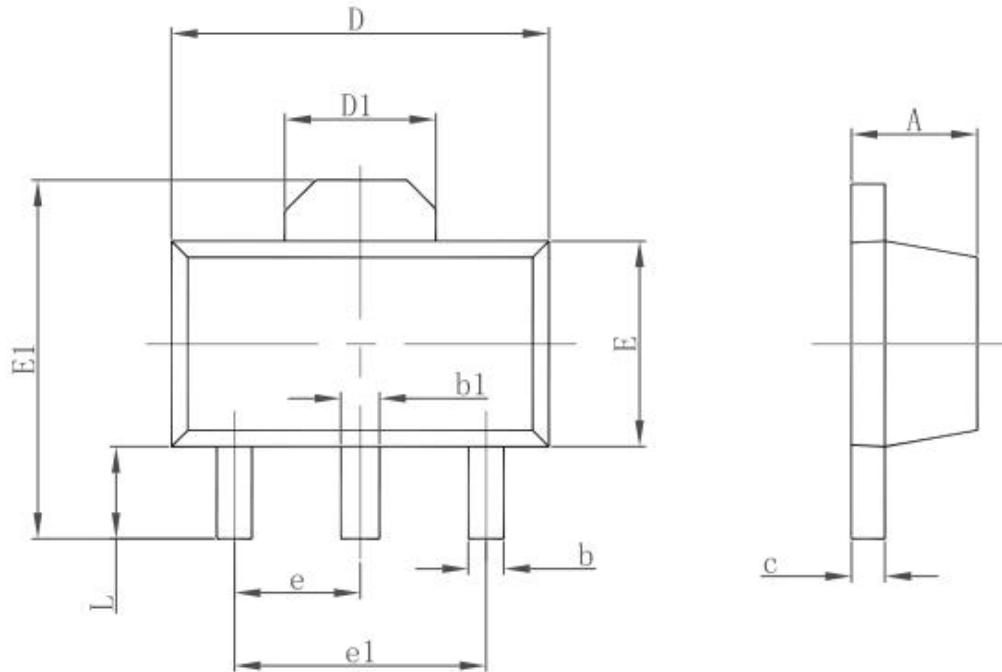
## 3-pin TO92 Outline Dimensions



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
Phi		1.600		0.063
h	0.000	0.380	0.000	0.015



**3-pin SOT89 Outline Dimensions**

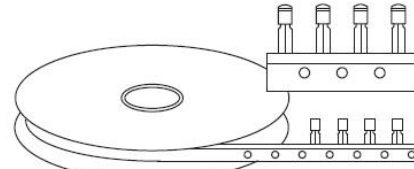
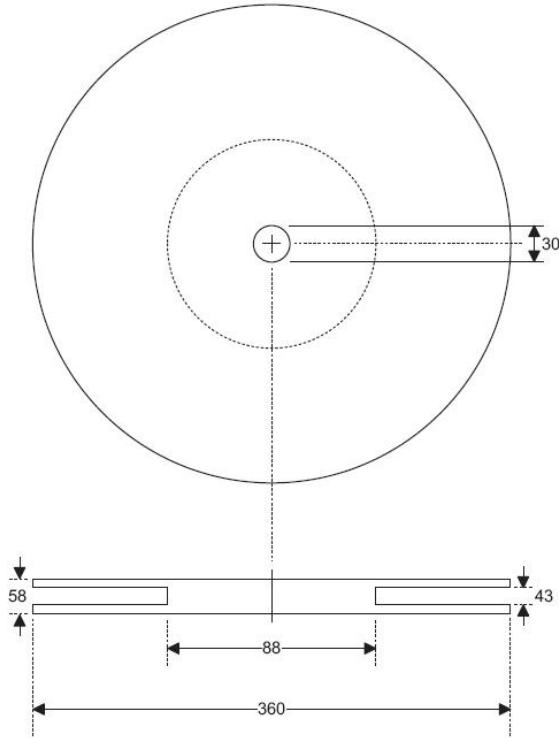


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.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

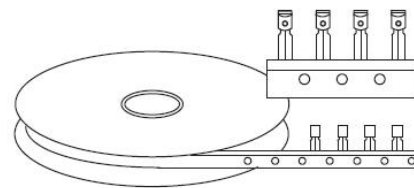




## Product Tape and Reel Specifications 3-pin TO92 Reel Dimensions (Unit: mm)



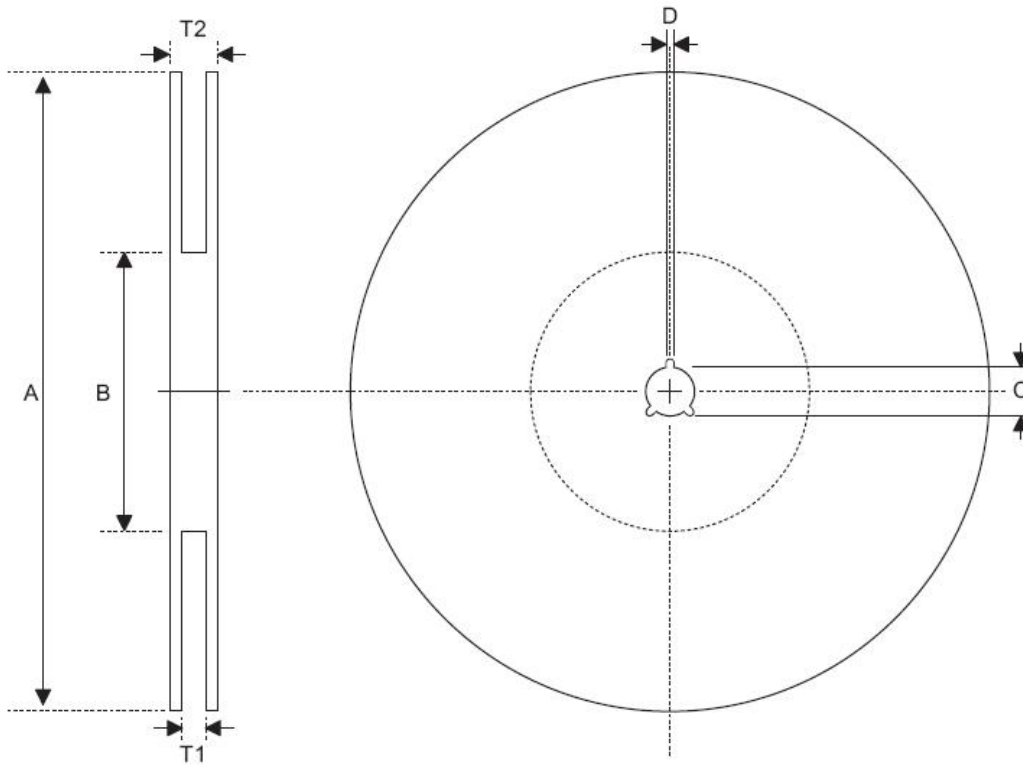
Package Up, Flat Side Up



Package Up, Flat Side Down



**Reel Dimensions**



SOT89

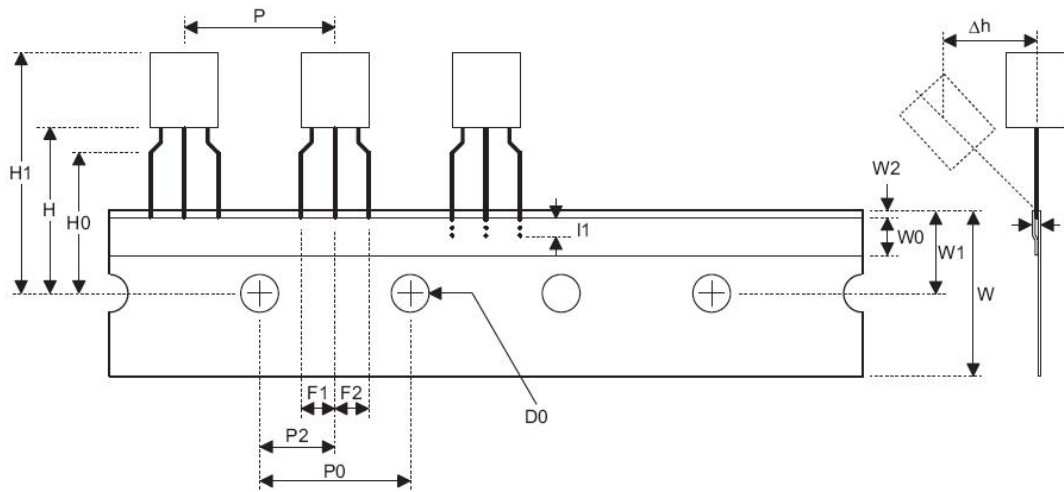
Symbol	Description	Dimensions in mm
A	Reel Outer Diameter	180.0±1.0
B	Reel Inner Diameter	62.0±1.5
C	Spindle Hole Diameter	12.75 <sup>+0.15/-0.00</sup>
D	Key Slit Width	1.90±0.15
T1	Space Between Flange	12.4 <sup>+0.2/-0.00</sup>
T2	Reel Thickness	17.0 <sup>+0.0/-0.4</sup>

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 <sup>+1.5/-0.0</sup>
T2	Reel Thickness	11.4 <sup>+1.5/-0.0</sup>



## Carrier Tape Dimensions



TO92

Symbol	Description	Dimensions in mm
I1	Taped Lead Length	(2.5)
P	Component Pitch	12.7±1.0
P <sub>0</sub>	Perforation Pitch	12.7±0.3
P <sub>2</sub>	Component to Perforation (Length Direction)	6.35±0.40
F <sub>1</sub>	Lead Spread	2.5 <sup>+0.4/-0.1</sup>
F <sub>2</sub>	Lead Spread	2.5 <sup>+0.4/-0.1</sup>
Δh	Component Alignment	0.0±0.1
W	Carrier Tape Width	18.0 <sup>+1.0/-0.5</sup>
W <sub>0</sub>	Hold-down Tape Width	6.0±0.5
W <sub>1</sub>	Perforation Position	9.0±0.5
W <sub>2</sub>	Hold-down Tape Position	(0.5)
H <sub>0</sub>	Lead Clinch Height	16.0±0.5
H <sub>1</sub>	Component Height	Less than 24.7
D <sub>0</sub>	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

P<sub>0</sub> Accumulated pitch tolerance: \_1mm/20pitches.

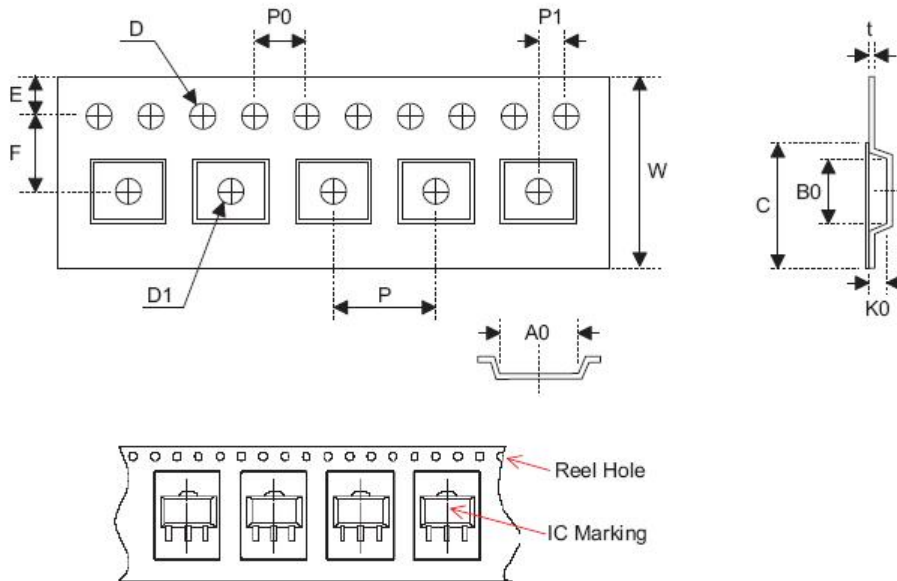
( ) Bracketed figures are for consultation only



# TX75XXS series 200mA Low Power LDO

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## Carrier Tape Dimensions



SOT89

Symbol	Description	Dimensions in mm
W	Carrier Tape Width	12.0 <sup>+0.3/-0.1</sup>
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 <sup>+0.1/-0.0</sup>
D1	Cavity Hole Diameter	1.5 <sup>+0.1/-0.0</sup>
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 <sup>+0.1/-0.0</sup>
D1	Cavity Hole Diameter	1.5 <sup>+0.1/-0.0</sup>
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>

## ***TX75XXS series*** ***200mA Low Power LDO***

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