

Features

- Quiescent Current: 4.2uA@12V
- PSRR:60dB@100Hz
- Voltage drop:600mV@100mA
- ESD HBM:8KV
- High input voltage (up to 40V)
- Output voltage accuracy: tolerance $\pm 2\%$
- Output current:100mA(Typ.)
- TO92,SOT89,SOT23-3,SOT23-5 and SOT23-5B package

Applications

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

General Description

The TX75XXH series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 40V. They are available with several fixed output voltages ranging from 1.8V 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
TX7518Hxx	1.8V	TO92 SOT89 SOT23-3 SOT23-5 SOT23-5B	75XX-H#(for TO92) 75XX-H#(for SOT89) XXH(for SOT23-5&SOT23-3) XXBH(for SOT23-5B)
TX7525Hxx	2.5V		
TX7527Hxx	2.7V		
TX7530Hxx	3.0V		
TX7533Hxx	3.3V		
TX7536Hxx	3.6V		
TX7540Hxx	4.0V		
TX7544Hxx	4.4V		
TX7550Hxx	5.0V		

Note:"XX" stands for output voltages.

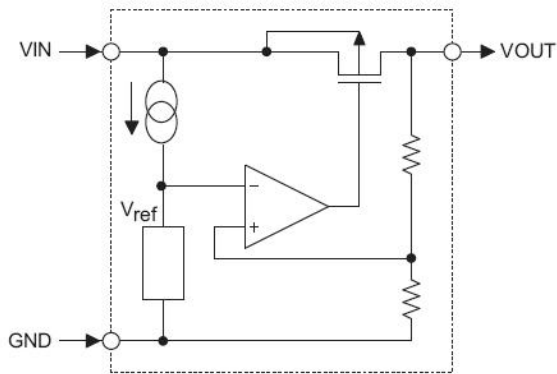
TO92 & SOT89 packages will add a "#" mark at the end of the marking.

Order Information

TX75①②③④⑤

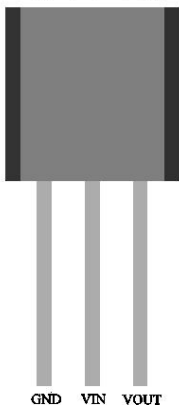
Designator	Symbol	Description
① ②	Integer	Output Voltage(1.8~5.0V)
③	H	Standard
④	T	Package:TO-92
	P	Package:SOT89
	M	Package:SOT23-3
	M5	Package:SOT23-5
	M5B	Package:SOT23-5B
⑤	R	RoHS / Pb Free
	G	Halogen Free

Block Diagram



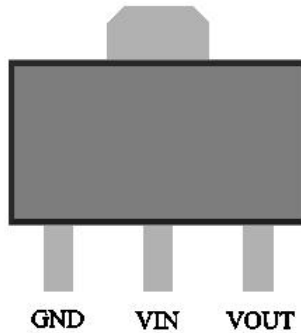
Pin Assignment

TO92 (Front view)



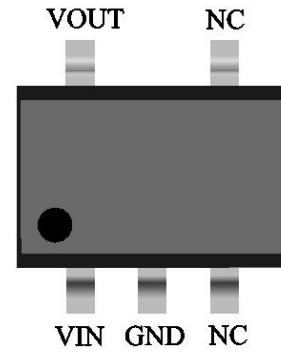
TX75XXHTG

SOT89 (Top view)



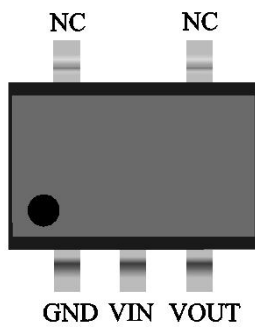
TX75XXHPG

SOT23-5 (Top view)

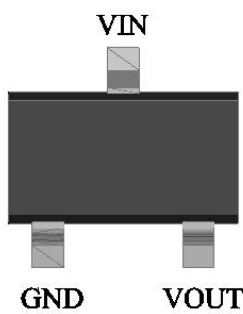


TX75XXHM5G

SOT23-5B (Top view) SOT23-3 (Top view)



TX75XXHM5BG



TX75XXHMG

TX75XXH series

100mA Low Power LDO

Absolute Maximum Ratings

Supply Voltage-0.3V to 40V 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
		SOT23-3	500	°C/W
		SOT23-5	500	°C/W
P_D	Power Dissipation	TO92	0.50	W
		SOT89	0.50	W
		SOT23-3	0.20	W
		SOT23-5	0.20	W

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

TX75XXH series

100mA Low Power LDO

Electrical Characteristics

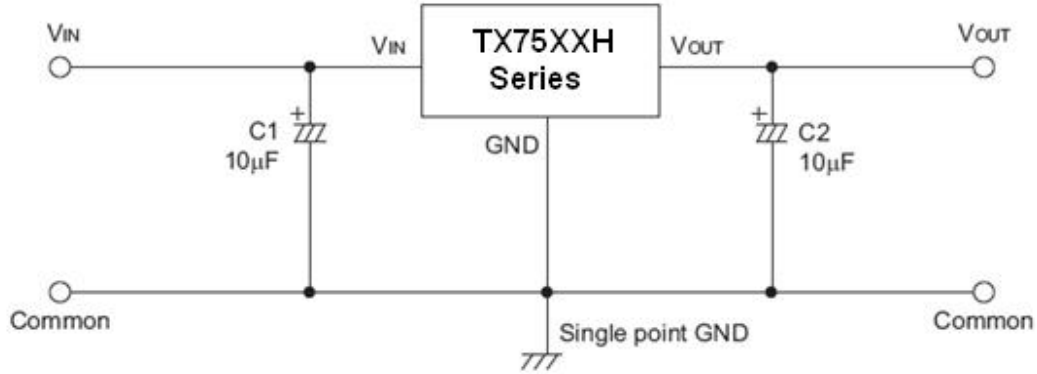
The following specifications apply for $V_{IN} = 12V$, $T_A = 25^\circ C$, $C_{IN} = C_{OUT} = 10\mu F$, unless specified otherwise.

SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Range	$I_{OUT} = 10mA$	4.75		40	V
V_{OUT}	Output Range	$I_{OUT} = 10mA$	$V_{OUT} \times 0.98$	V_{OUT}	$V_{OUT} \times 1.02$	V
ΔV_{OUT}	Output Voltage	$V_{IN} = 12V, I_{OUT} = 10mA$	4.9	5	5.1	V
			3.234	3.3	3.366	
			2.94	3.0	3.06	
I_Q	Quiescent Current	$V_{IN} = 7V, I_{OUT} = 0$		4	6	μA
		$V_{IN} = 24V, I_{OUT} = 0$		4.6	6.7	
		$V_{IN} = 40V, I_{OUT} = 0$		5.4	8.2	
I_{OUT_PK}	Maximum Output Current	$V_{IN} = 12V, R_L = 1\Omega$		190		mA
V_{DROP}	Dropout Voltage	$I_{OUT} = 10mA$		60	90	mV
		$I_{OUT} = 100mA$		600	900	
ΔV_{LINE}	Line Regulation	$V_{IN} = 7 \sim 24V, V_{OUT} = 5V, I_{OUT} = 1mA$		0.02	0.03	%/V
		$V_{IN} = 7 \sim 45V, V_{OUT} = 5V, I_{OUT} = 1mA$		0.08	0.1	
ΔV_{LOAD}	Load Regulation	$V_{IN} = 7V, I_{OUT} = 1 \sim 100mA$		19	37	mV
I_{SHORT}	Short Current	V_{OUT} Short to GND with 1Ω (1ms pulse), $V_{IN} = 40V$		180		mA
PSRR	Power Supply Rejection Rate	$V_{IN} = 10V,$ $V_{PP} = 0.5V,$ $I_{OUT} = 1mA$	F = 100Hz		60	dB
			F = 1kHz		50	
			F = 10kHz		40	
e_{NO}	Output Noise Voltage	10Hz to 100kHz, $C_{OUT} = 10\mu F,$ $I_{OUT} = 10mA$		± 100		μV_{RMS}
T_{SD}	Thermal Shutdown Protection	$V_{IN} = 12V, I_{OUT} = 1mA$		165		$^\circ C$
$\Delta V_O / \Delta T$	Temperature Coefficient			± 0.5		mV/ $^\circ C$

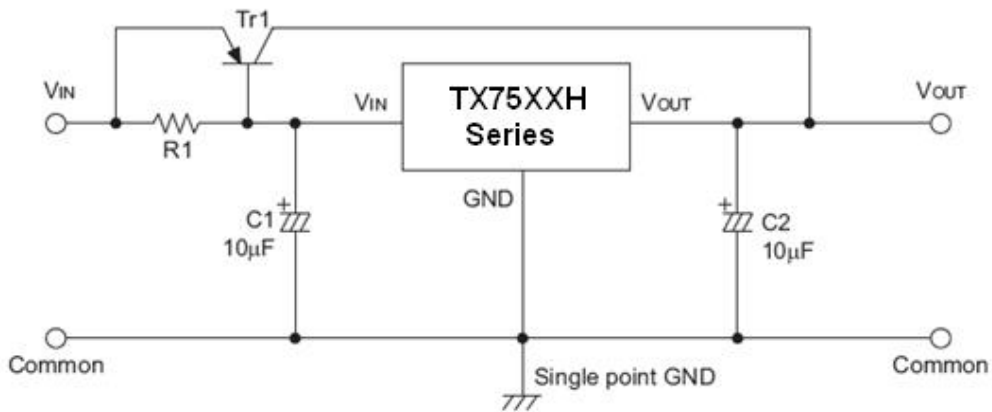
TX75XXH series 100mA Low Power LDO

Application Circuits

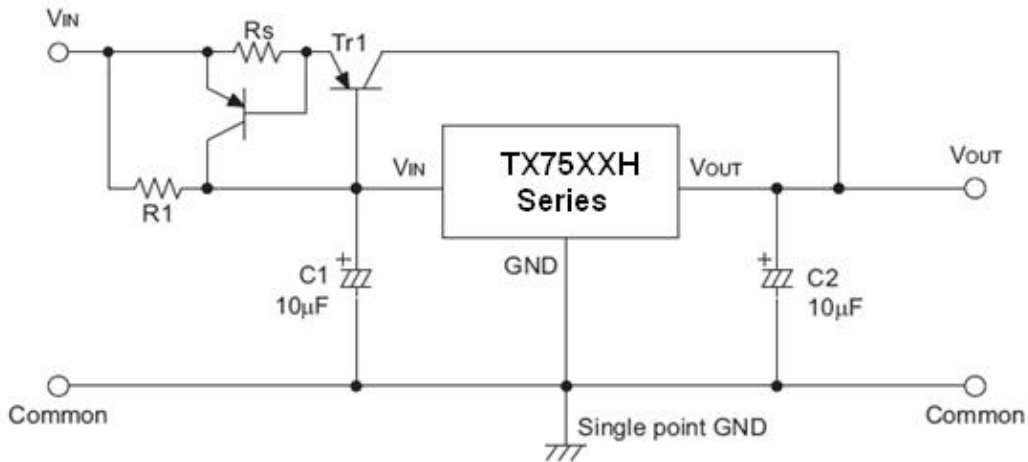
Basic Circuits



High Output Current Positive Voltage Regulator

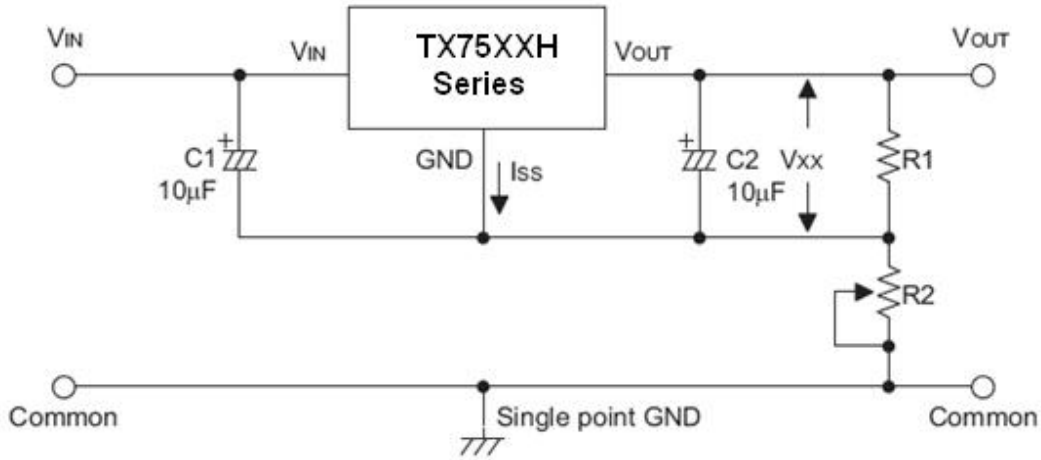


Short-Circuit Protection by Tr1

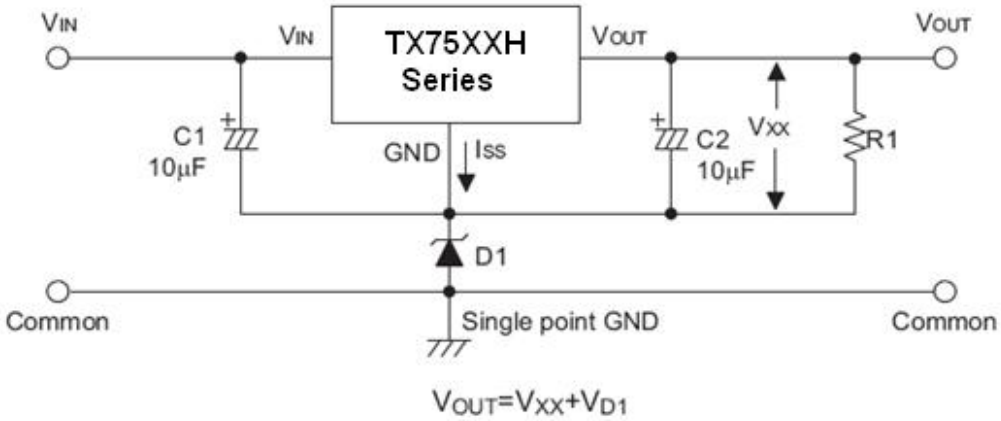


TX75XXH series 100mA Low Power LDO

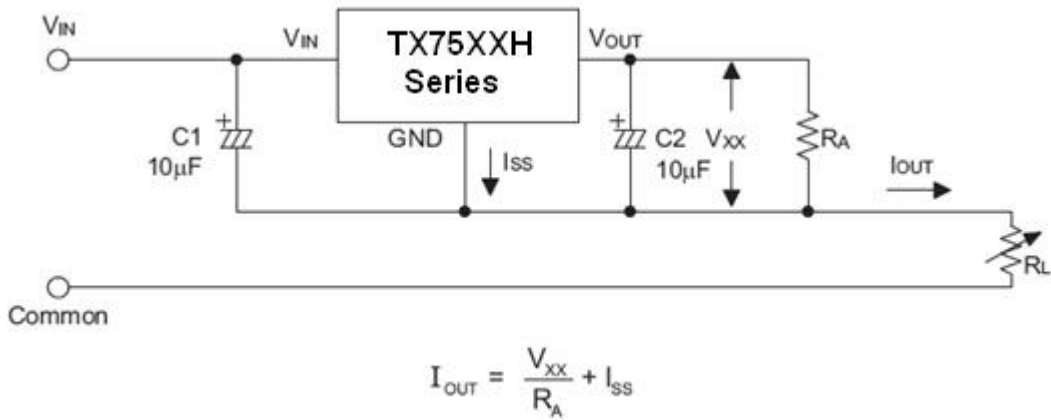
Circuit for Increasing Output Voltage



Circuit for Increasing Output Voltage

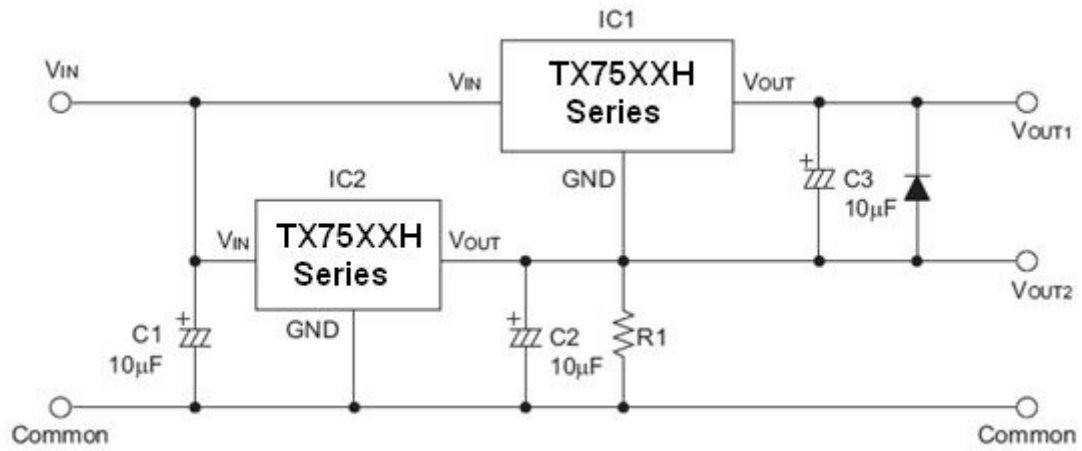


Constant Current Regulator



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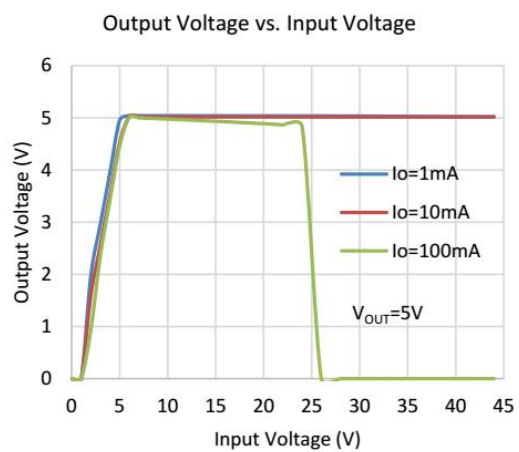
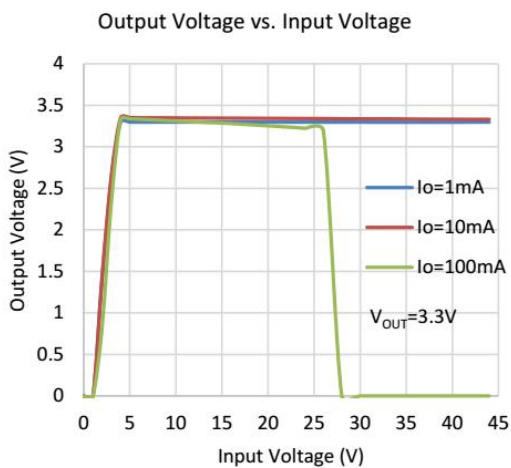
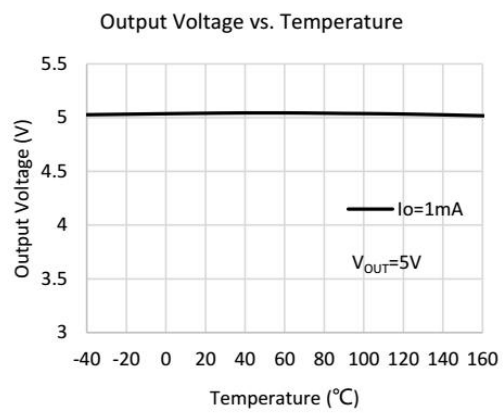
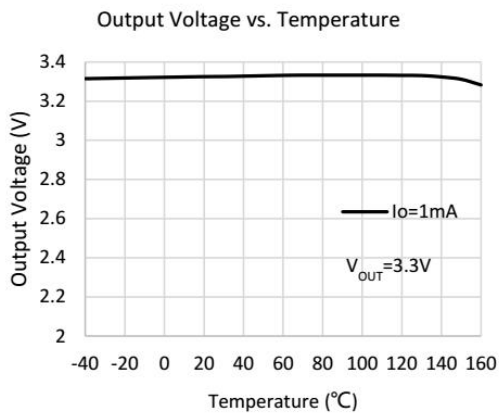
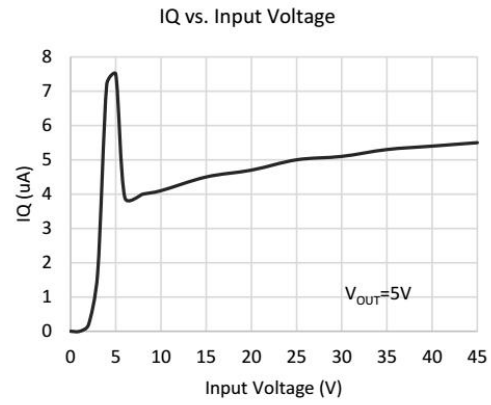
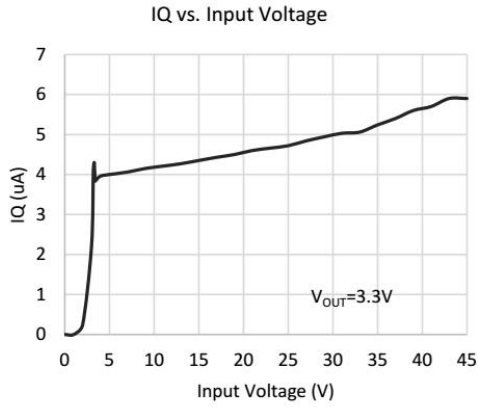
Dual Supply



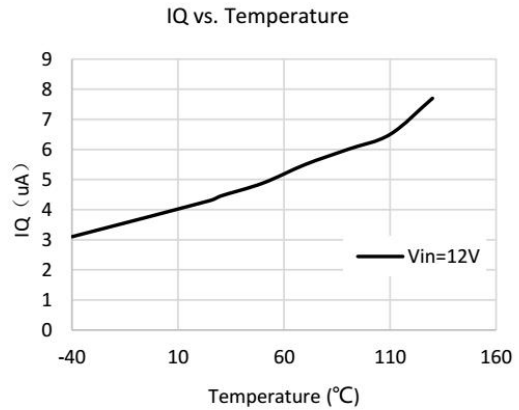
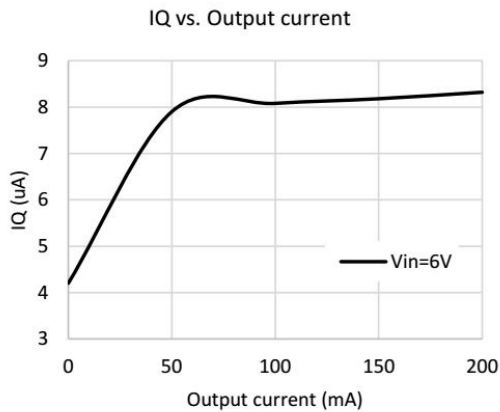
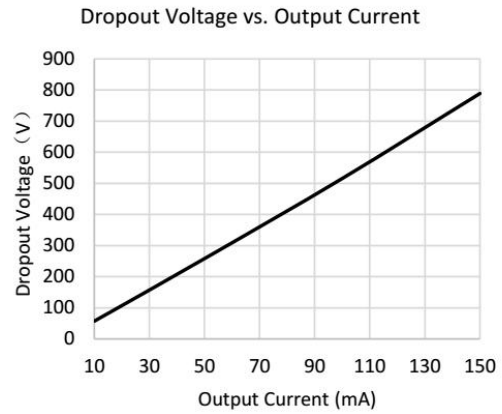
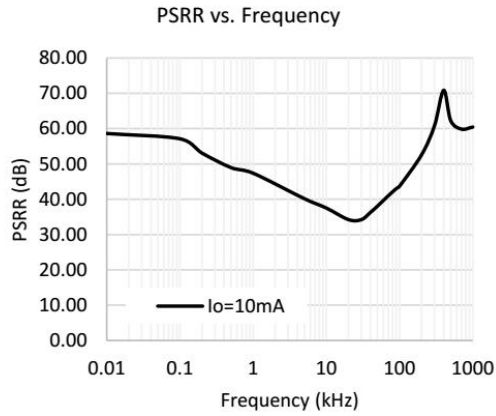
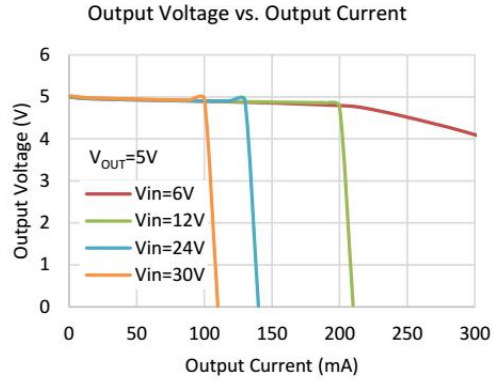
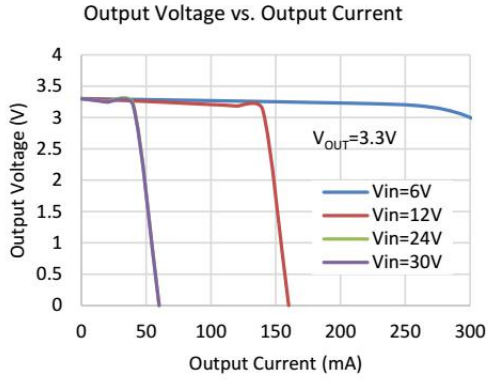
TX75XXH series 100mA Low Power LDO

Typical Performance Characteristics

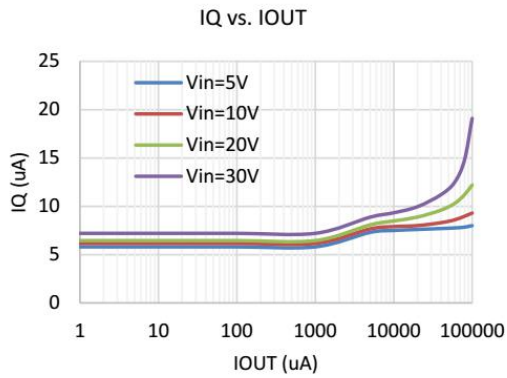
$C_{IN} = 10\mu F$, $C_{OUT} = 10\mu F$, $T_{OPT} = 25^\circ C$, unless specified otherwise. (Package: SOT89-3L)



TX75XXH series 100mA Low Power LDO



TX75XXH series 100mA Low Power LDO



Power ON/OFF

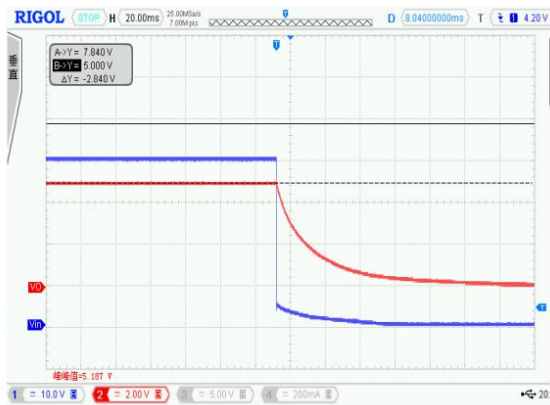
CH1: V_{IN}

CH2: V_{OUT}

V_{IN}=40V

I_{OUT}=1mA

V_{OUT}=5V



Line Transient

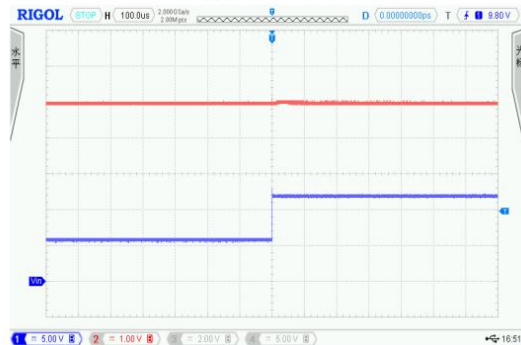
CH1: V_{IN}

CH2: V_{OUT}

V_{IN}=6V-12V

I_{OUT}=1mA

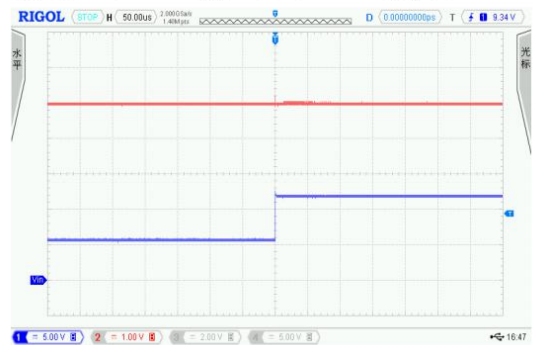
V_{OUT}=5V



V_{IN}=6V-12V

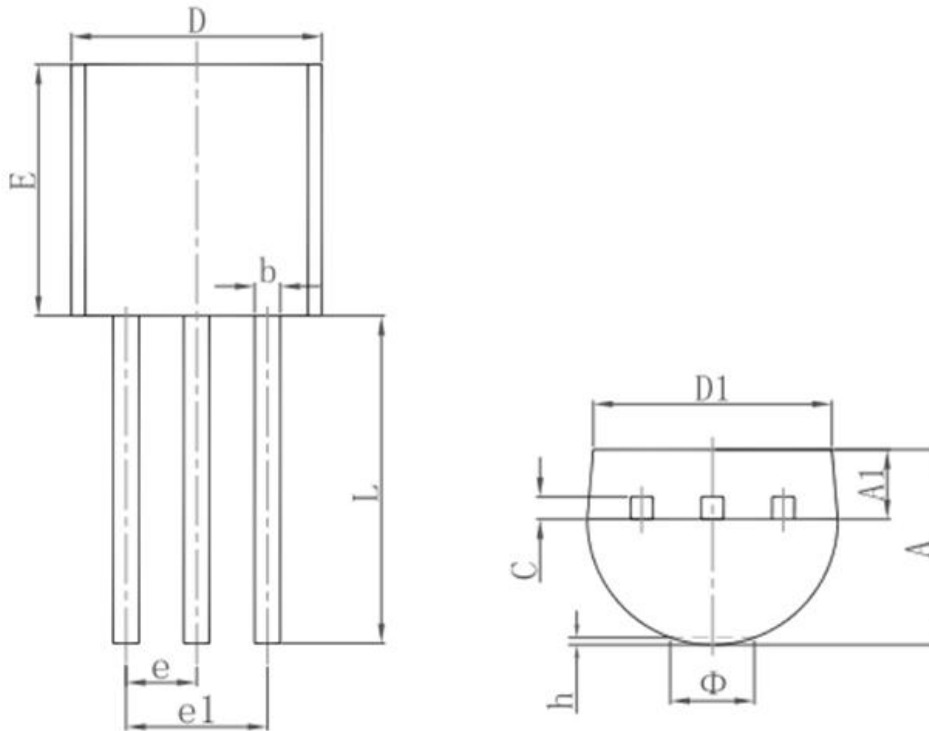
I_{OUT}=10mA

V_{OUT}=5V



TX75XXH series 100mA Low Power LDO

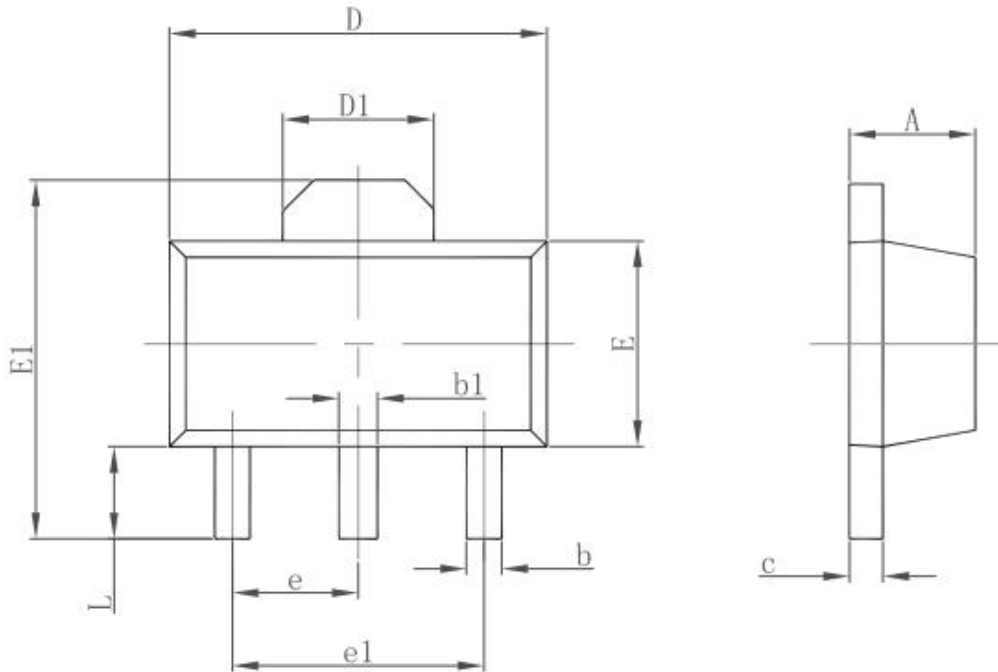
Package Information 3-pin TO92 Outline Dimensions



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

TX75XXH series 100mA Low Power LDO

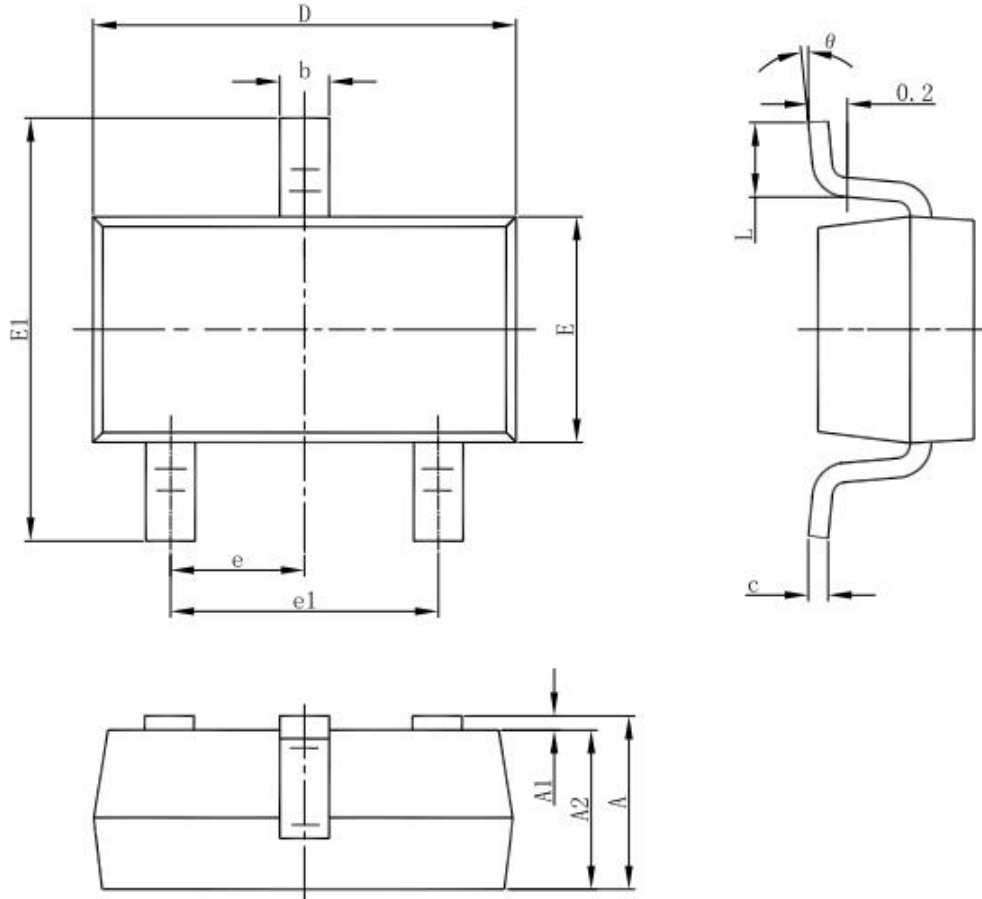
3-pin SOT89 Outline Dimensions



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

TX75XXH series 100mA Low Power LDO

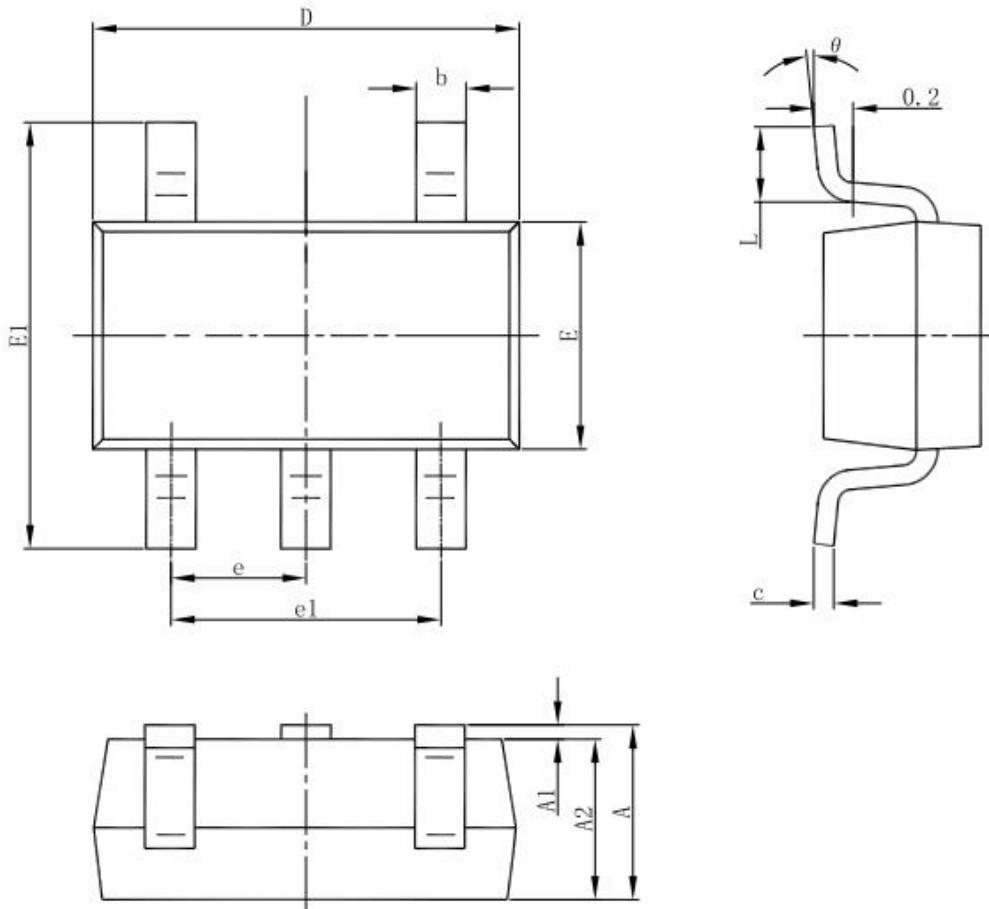
3-pin SOT23-3 Outline Dimensions



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°

TX75XXH series 100mA Low Power LDO

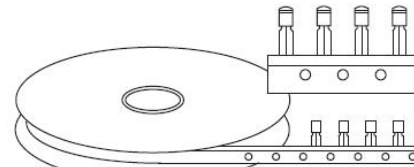
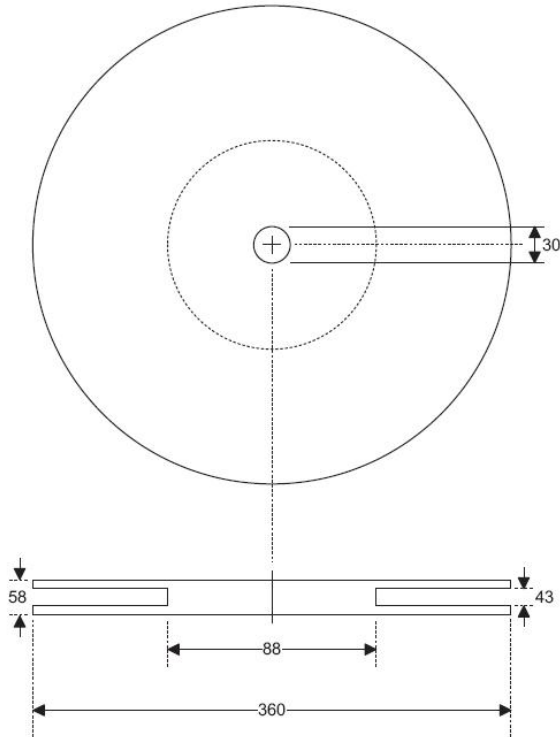
SOT23-5 Outline Dimensions



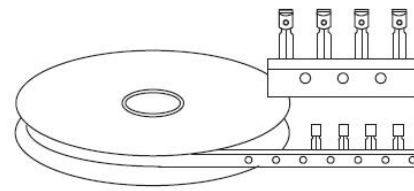
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)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

TX75XXH series 100mA Low Power LDO

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



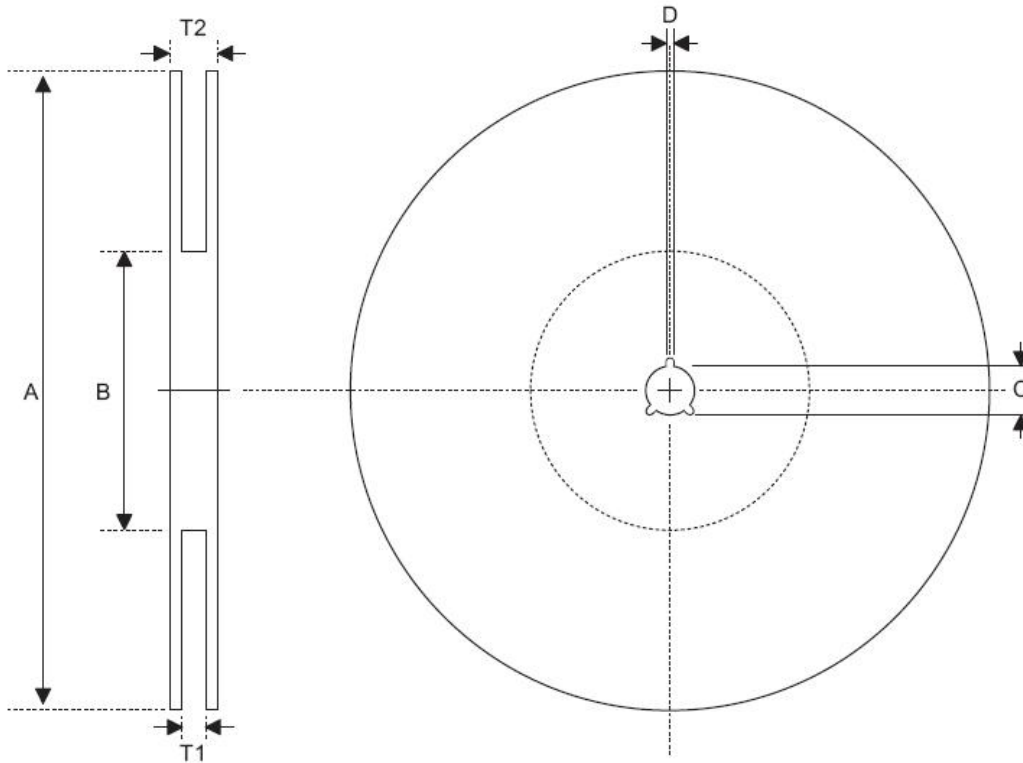
Package Up, Flat Side Up



Package Up, Flat Side Down

TX75XXH series 100mA Low Power LDO

Reel Dimensions



SOT89

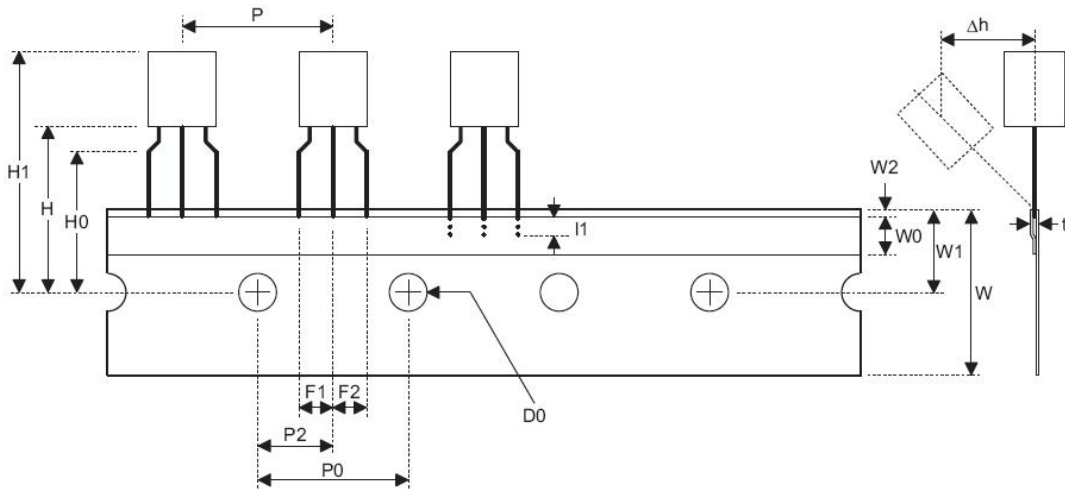
Symbol	Description	Dimensions in mm
A	Reel Outer Diameter	180.0±1.0
B	Reel Inner Diameter	62.0±1.5
C	Spindle Hole Diameter	12.75 ^{+0.15/-0.00}
D	Key Slit Width	1.90±0.15
T1	Space Between Flange	12.4 ^{+0.2/-0.00}
T2	Reel Thickness	17.0 ^{+0.0/-0.4}

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}

TX75XXH series 100mA Low Power LDO

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

