

JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-DTC123J Series Digital Transistor (Built-In Resistors)

AD-DTC123JM/DTC123JE/DTC123JUA/DTC123JKA/DTC123JCA/DTC123JSA Digital transistor (NPN)

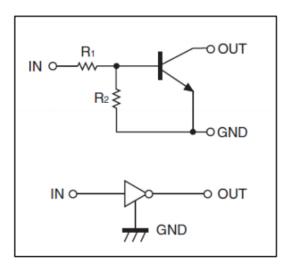
FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making device design easier
- AEC-Q101 qualified

PIN CONNECTIONS

AD-DTC123JM	SOT-723	AD-DTC123JE	SOT-523
	1. IN 2. GND 3. OUT		1. IN 2. GND 3. OUT
AD-DTC123JUA	SOT-323	AD-DTC123JKA	SOT-23-3L
1 2	1. IN 2. GND 3. OUT	1 2	1. IN 2. GND 3. OUT
AD-DTC123JCA 3	SOT-23	AD-DTC123JSA	TO-92S
1 2	1.IN 2.GND 3.OUT	1 2 3	1. GND 2. OUT 3. IN

EQUIVALENT CIRCUIT



ORDERING INFORMATION

Part number	Marking	Package	Packing method	Pack quantity
AD-DTC123JM	_ E42	SOT-723	Reel	8000pcs/reel
AD-DTC123JE		SOT-523	Reel	3000pcs/reel
AD-DTC123JUA	_ E42	SOT-323	Reel	3000pcs/reel
AD-DTC123JKA	_ E42	SOT-23-3L	Reel	3000pcs/reel
AD-DTC123JCA		SOT-23	Reel	3000pcs/reel
AD-DTC123JSA	C123 J XXX ¹⁾	TO-92S	Bulk	1000pcs/bag
AD-DTC123JSA-TA	C123 J XXX ¹⁾	TO-92S	Таре	3000pcs/box

¹⁾ XXX = Date code

MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

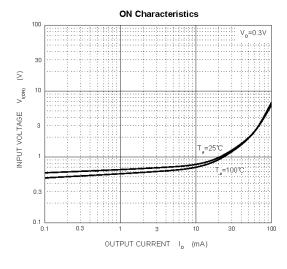
Parameter	Symbol	Value						Unit
		М	Е	UA	KA	CA	SA	
Supply voltage	Vcc	50						V
Input voltage	V _{IN}	-5 ~ 12						V
Output current	lo 1)	100						mA
Maximum power dissipation	P _D 1)	100	150	200	200	200	300	mW
Operating junction and storage temperature range	T _j , T _{stg}	-55 ~ 150					°C	

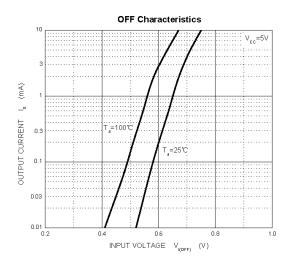
ELECTRICAL CHARACTERISTICS (Tj = 25°C unless otherwise specified)

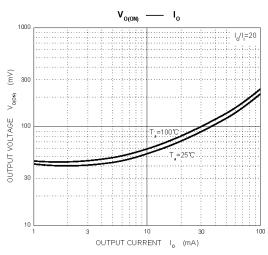
Parameter	Symbol	Test condition	Min	Тур	Max	Unit
Input voltage	$V_{I(off)}$	V _{CC} = 5V, I _O = 100μA	0.5	ı	-	V
Input voltage	$V_{l(on)}$	$V_{O} = 0.3V$, $I_{O} = 5mA$	ı	ı	1.1	V
Output voltage	$V_{O(on)}$	I _O /I _I = 5mA/0.25mA	ı	0.1	0.3	٧
Input current	l:	V _I = 5V	ı	ı	3.6	mA
Output current	I _{O(off)}	V _{CC} = 50V, V _I = 0V	-	-	0.5	μΑ
DC current gain	Gı	V _O = 5V, I _O = 10mA	80	-	-	-
Input resistance	R ₁		1.54	2.2	2.86	kΩ
Resistance ratio	R ₂ /R ₁		17	21	26	
Transition frequency	f⊤	V _O = 10V, I _O = 5mA, f = 100MHz	-	250	-	MHz

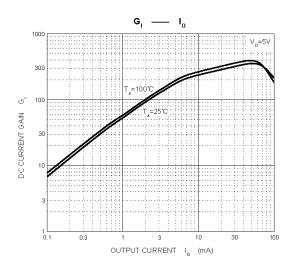
¹⁾ Maximum allowed temperature T_j = 25°C.

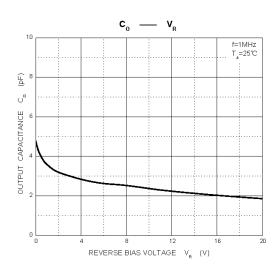
TYPICAL CHARACTERISTICS

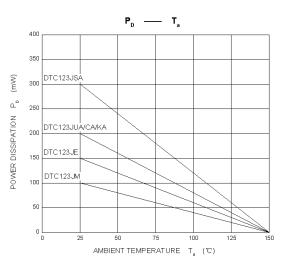




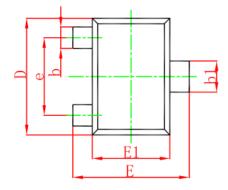


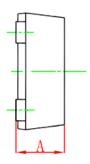


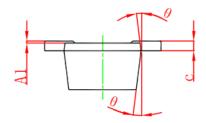




SOT-723 PACKAGE OUTLINE DIMENSIONS

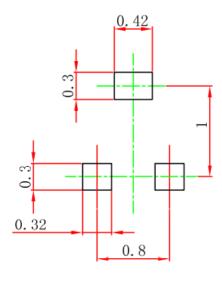






Symbol	Dimensions	In Millimeters	Dimensions In Inches			
Symbol	Min.	Max.	Min.	Max.		
Α	0.430	0.500	0.017	0.020		
A1	0.000	0.050	0.000	0.002		
b	0.170	0.270	0.007	0.011		
b1	0.270	0.370	0.011	0.015		
С	0.080	0.150	0.003	0.006		
D	1.150	1.250	0.045	0.049		
E	1.150	1.250	0.045	0.049		
E1	0.750	0.850	0.030	0.033		
е	0.80	0TYP.	0.031TYP.			
θ	7° F	REF.	7° I	REF.		

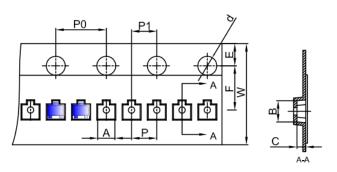
SOT-723 SUGGESTED PAD LAYOUT



- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

SOT-723 TAPE AND REEL

SOT-723 Embossed Carrier Tape

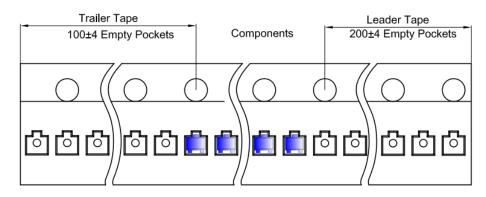


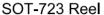
Packaging Description:

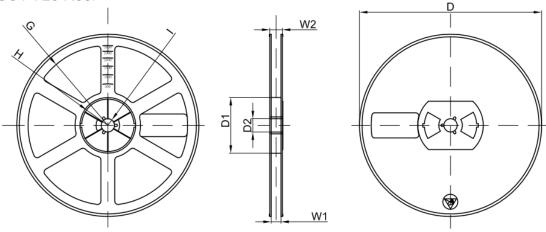
SOT-723 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 8,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

	Dimensions are in millimeter									
Pkg type	Α	В	С	d	E	F	P0	Р	P1	W
SOT-723	1.33	1.45	0.61	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00

SOT-723 Tape Leader and Trailer



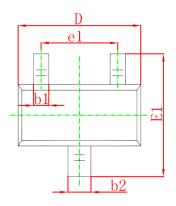


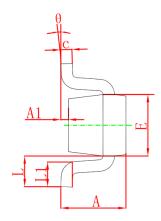


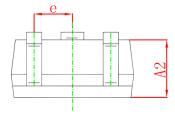
	Dimensions are in millimeter										
Reel Option D D1 D2 G H I W1 W2											
7"Dla	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30			

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
8000 pcs	7 inch	120,000 pcs	203×203×195	480,000 pcs	438×438×220	

SOT-523 PACKAGE OUTLINE DIMENSIONS

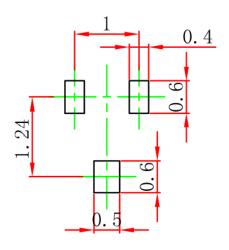






Cumbal	Dimensions	In Millimeters	Dimension	s In Inches	
Symbol	Min.	Max.	Min.	Max.	
Α	0.700	0.900	0.028	0.035	
A1	0.000	0.100	0.000	0.004	
A2	0.700	0.800	0.028	0.031	
b1	0.150	0.250	0.006	0.010	
b2	0.250	0.350	0.010	0.014	
С	0.100	0.200	0.004	800.0	
D	1.500	1.700	0.059	0.067	
E	0.700	0.900	0.028	0.035	
E1	1.450	1.750	0.057	0.069	
е	0.500	TYP.	0.020	TYP.	
e1	0.900	1.100	0.035	0.043	
L	0.400	REF.	0.016 REF.		
L1	0.260	0.460	0.010	0.018	
θ	0°	8°	0°	8°	

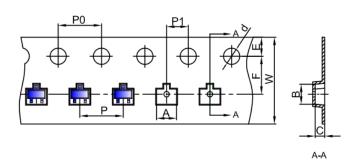
SOT-523 SUGGESTED PAD LAYOUT



- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

SOT-523 TAPE AND REEL

SOT-523 Embossed Carrier Tape

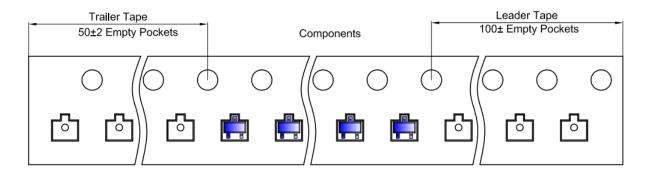


Packaging Description:

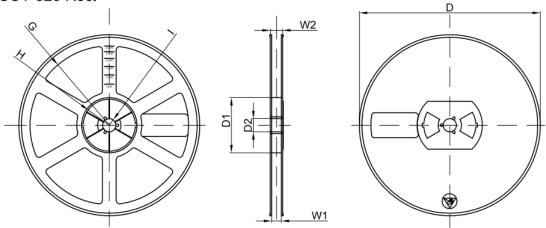
SOT-523 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

	Dimensions are in millimeter										
Pkg type	Α	В	С	d	E	F	P0	Р	P1	W	
SOT-523	1.85	1.85	0.875	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00	

SOT-523 Tape Leader and Trailer



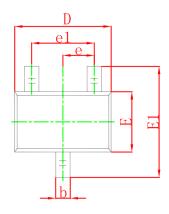


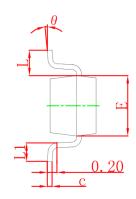


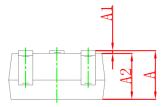
	Dimensions are in millimeter										
Reel Option	D	D1	D2	G	Н	I	W1	W2			
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30			

REEL	Reel Size	Вох	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

SOT-323 PACKAGE OUTLINE DIMENSIONS

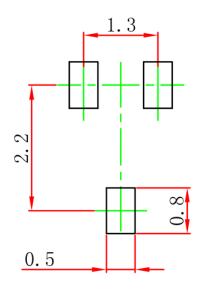






Cumbal	Dimensions	In Millimeters	Dimension	s In Inches
Symbol	Min	Max	Min	Max
Α	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
С	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
Е	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
е	0.650) TYP	0.026	3 TYP
e1	1.200	1.400	0.047	0.055
L	0.525	REF	0.021	REF
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

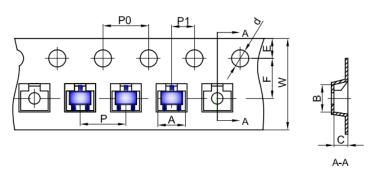
SOT-323 SUGGESTED PAD LAYOUT



- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

SOT-323 TAPE AND REEL

SOT-323 Embossed Carrier Tape

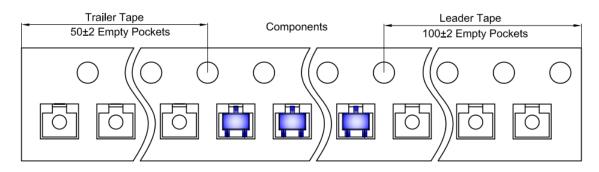


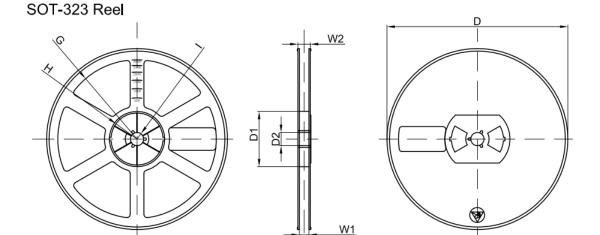
Packaging Description:

SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

	Dimensions are in millimeter										
Pkg type A B C d E F P0 P P1 W											
SOT-323	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00	

SOT-323 Tape Leader and Trailer

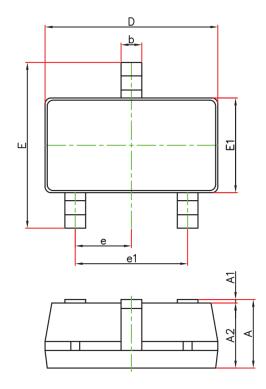


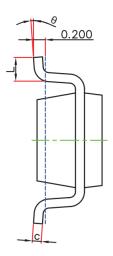


Dimensions are in millimeter									
Reel Option D D1 D2 G H I W1							W2		
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30	

REEL	Reel Size	Вох	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

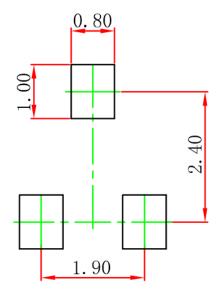
SOT-23-3L PACKAGE OUTLINE DIMENSIONS





Symbol	Dimensions In	n Millimeters	Dimension	s In Inches
Symbol	Min.	Max.	Min.	Max.
Α	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
С	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
е	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°

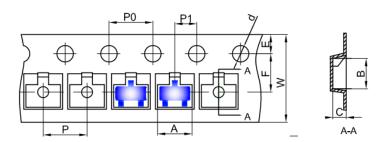
SOT-23-3L SUGGESTED PAD LAYOUT



- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

SOT-23-3L TAPE AND REEL

SOT-23-3L Embossed Carrier Tape

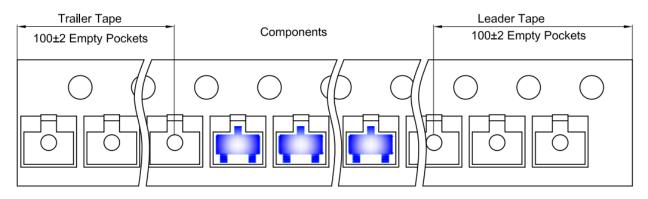


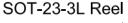
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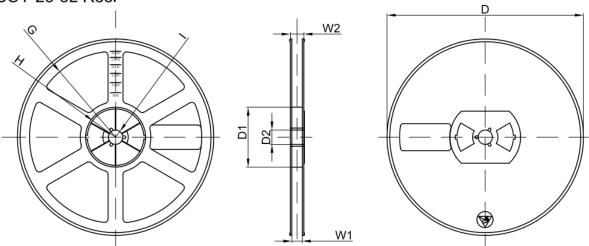
SOT-23-3L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 18.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

	Dimensions are in millimeter									
Pkg type A B C d E F P0 P P1 W										
SOT-23-3L	3.18	3.28	1.32	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23-3L Tape Leader and Trailer



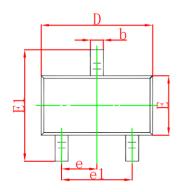


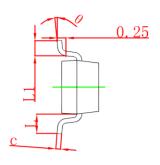


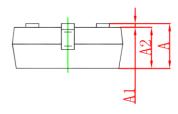
	Dimensions are in millimeter										
Reel Option	Reel Option D D1 D2 G H I W1 W2										
7"Dia Ø180.00 60.00 13.00 R78.00 R25.60 R6.50 9.50 13.10											

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	

SOT-23 PACKAGE OUTLINE DIMENSIONS

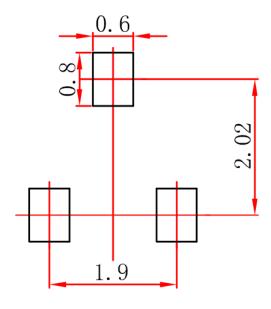






Cumbal	Dimensions	In Millimeters	Dimension	s In Inches
Symbol	Min	Max	Min	Max
Α	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
С	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
е	0.950	TYP	0.037	7 TYP
e1	1.800	2.000	0.071	0.079
L	0.550	REF	0.022	REF
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

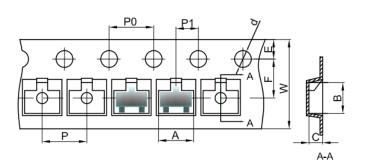
SOT-23 SUGGESTED PAD LAYOUT



- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

SOT-23 TAPE AND REEL

SOT-23 Embossed Carrier Tape

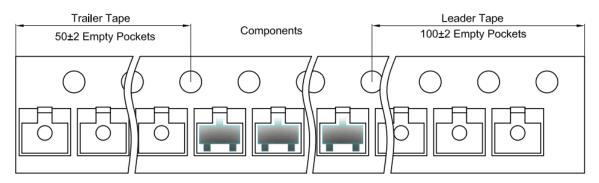


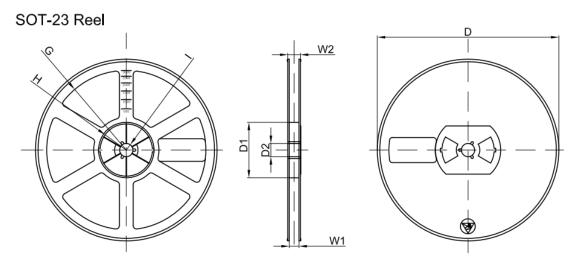
Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

	Dimensions are in millimeter									
Pkg type A B C d E F P0 P P1 W										
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

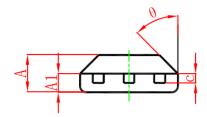


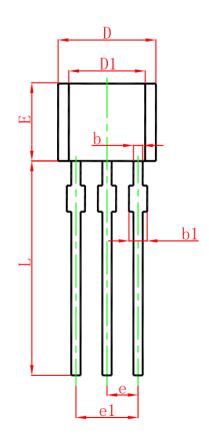


	Dimensions are in millimeter										
Reel Option	Reel Option D D1 D2 G H I W1 W2										
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30			

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

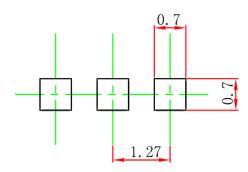
TO-92S PACKAGE OUTLINE DIMENSIONS





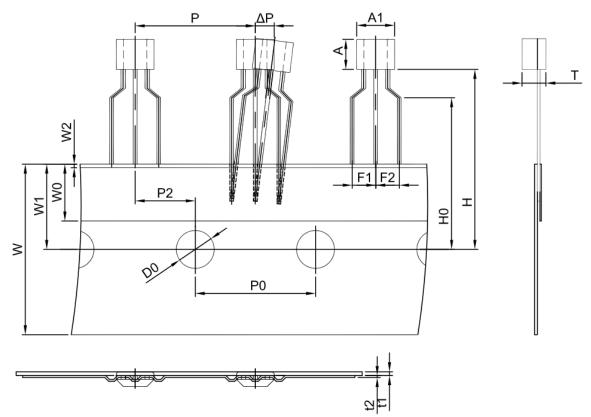
Symbol	Dimensions	In Millimeters	Dimensions In Inches		
	Min.	Max.	Min.	Max.	
Α	1.420	1.620	0.056	0.064	
A1	0.660	0.860	0.026	0.034	
b	0.330	0.480	0.013	0.019	
b1	0.400	0.510	0.016	0.020	
С	0.330	0.510	0.013	0.020	
D	3.900	4.100	0.154	0.161	
D1	2.280	2.680	0.090	0.106	
Е	3.050	3.250	0.120	0.128	
е	1.270 TYP.		0.050 TYP.		
e1	2.440	2.640	0.096	0.104	
L	15.100	15.500	0.594	0.610	
θ	45°	TYP.	45° TYP.		

TO-92S SUGGESTED PAD LAYOUT

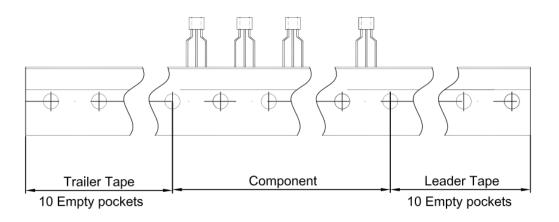


- 1. Controlling dimension in millimeters.
- 2. General tolerance: ±0.05mm.
- 3. The pad layout is for reference purpose only.

TO-92S PACKAGE TAPING DIMENSION



Dimiensions are in millimeter								
A1	Α	Т	Р	P0	P2	F1	F2	W
4.0	3.15	1.52	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	Н	H0	D0	t1	t2	ΔΡ
6.0	9.0	1.0	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92S	3000 pcs	333×162×43	30,000 pcs	350×340×250

PUBLISHED BY

JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

13th Floor, C Block, Tengfei Building, Yan Chuang Yuan, Nanjing Jiangbei New Area, China

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NSVMUN5135DW1T1G NSVMUN2237T1G NSVDTC143ZM3T5G SMUN5335DW1T2G SMUN5216DW1T1G NSVMUN5316DW1T1G

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