

# Advanced Monolithic Systems

## Packaging for Automatic Handling

### Tape & Reel and Ammo Pack

#### Tape and Reel Packing

Tape and reel packing is available for all SO, SOT-223, TO-92, DD and D packages. Surface mount packages are retained in an embossed carrier tape by a cover tape. For TO-92 package, the leads are secured to a backing tape by a cover tape.

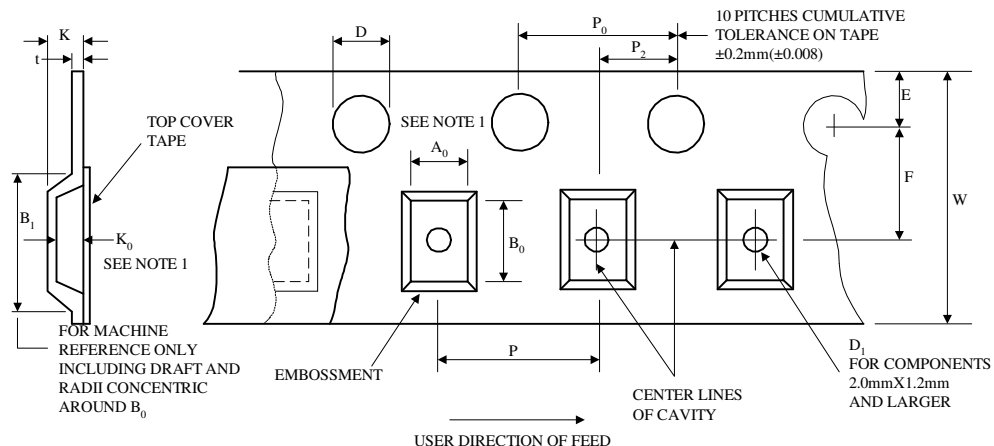
#### Ammo Pack

TO-92 packages are also available in "ammo pack", in which the leads are secured to a backing tape by a cover tape and are fanfolded into a box.

#### Tape and Reel Specifications

AMS Package Code	Package type	Quantity/ reel	Reel Diameter	Carrier Tape Width	Carrier Tape Pitch
S	SO-8	2,500	13"	12mm	8mm
S	SO-14	2,500	13"	16mm	8mm
S	SO-16	2,500	13"	16mm	8mm
M	SOT-23-3	3,000	7"	8mm	4mm
M-1	SOT-23-5	3,000	7"	8mm	4mm
M-2	SOT-23-6	3,000	7"	8mm	4mm
L	SOT-89	1,000	7"	12mm	8mm
	SOT-223	2,500	13"	12mm	8mm
M	TO-263-2L	500	13"	24mm	16mm
	TO-263-3L	500	13"	24mm	16mm
	TO-263-5L	500	13"	24mm	16mm
D	TO-252	2,500	13"	16mm	8mm
N	TO-92	2,000	14"	18mm	12mm

#### EMBOSSED CARRIER DIMENSIONS (12mm, 16mm, 24mm tape only)



# TAPE AND REEL SPECIFICATIONS

## EMBOSSED TAPE – CONSTANT DIMENSIONS

Tape Size	D	E	P <sub>0</sub>	t (Max.)	A <sub>0</sub> B <sub>0</sub> K <sub>0</sub>
12mm	1.5 +0.10	1.75± 0.10	4.0± 0.10	0.600 (0.024)	See Note 1
16mm	-0.0	(0.069± 0.004)	(0.157± 0.004)		
24mm	(0.059) +0.004 -0.0				

## EMBOSSED TAPE – VARIABLE DIMENSIONS

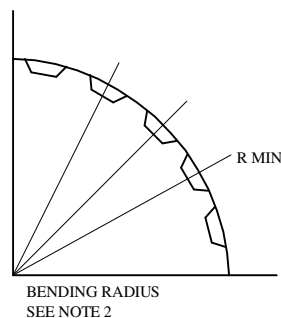
Tape Size	B1 Max.	D1 Max.	F	K Max.	P <sub>2</sub>	R Min	W
12mm	8.2 (0.323)	1.5 (0.059)	5.5± 0.05 (0.217± 0.002)	6.5 (0.256)	2.0± 0.05 (0.079± 0.002)	30 (1.181)	12.0± 0.30 (0.472± 0.012)
16mm	12.1 (0.476)		7.5± 0.10 (0.295± 0.004)		2.0± 0.10 (0.079± 0.004)	40 (1.575)	16± 0.30 (0.630± 0.012)
24mm	20.1 (0.791)		11.5± 0.10 (0.453± 0.004)		50 (1.969)	24± 0.30 (0.945± 0.012)	

**Note 1:** A<sub>0</sub> B<sub>0</sub> K<sub>0</sub> are determined by component size. The clearance between the component and the cavity must be within 0.05(0.002) min. to 0.65 (0.026) max. for 12mm tape and 0.05(0.002) min. to 0.90 (0.035) max. for 16mm tape. The component cannot rotate more than 10° within the determined cavity.

**Note 2:** Tape and components shall pass around radius “R” without damage.

**Note 3:** Dimensions are in millimeters (inches) unless otherwise noted.

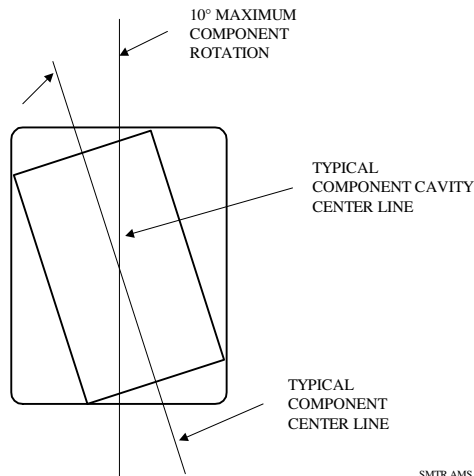
## BENDING RADIUS



SMTIR AMS DRW# 040202

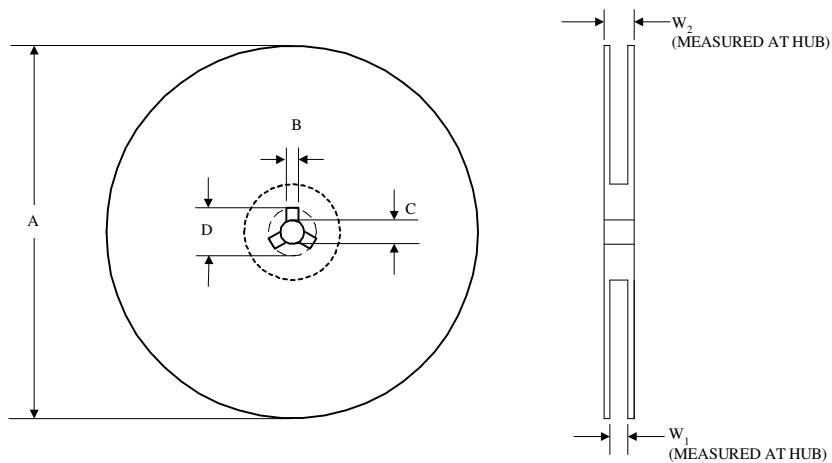
# TAPE AND REEL SPECIFICATIONS

## COMPONENT ROTATION



SMTR AMS DRW# 040203

## REEL DIMENSIONS



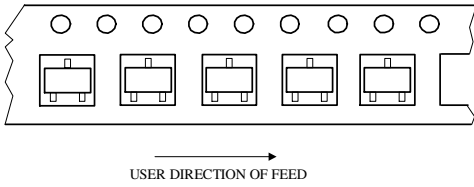
SMTR AMS DRW# 040204

TAPE SIZE	A	B MIN	C	D MIN	W 1	W 2
12mm	330 +0.25 -4.0 (12.992) +0.010 -0.158	1.5 (0.059)	13.0± 0.20 (0.512 ± 0.008)	20.2 (0.795)	12.4 +2.0 -0.0 (0.488) +0.078 -0.0	18.4 (0.724)
16mm	330 +0.25 -4.0 (12.992) +0.010 -0.158	1.5 (0.059)	13.0± 0.20 (0.512 ± 0.008)	20.2 (0.795)	16.4 +2.0 -0.0 (0.646) +0.078 -0.0	22.4 (0.882)
24mm	330 +0.25 -4.0 (12.992) +0.010 -0.158	1.5 (0.059)	13.0± 0.20 (0.512 ± 0.008)	20.2 (0.795)	24.4 +2.0 -0.0 (0.961) +0.078 -0.0	30.4 (1.197)

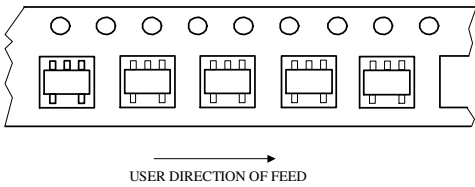
# TAPE AND REEL SPECIFICATIONS

## PACKAGE ORIENTATION

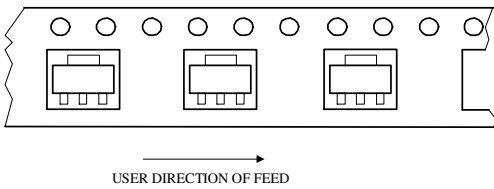
**SOT-23 PACKAGE ORIENTATION**



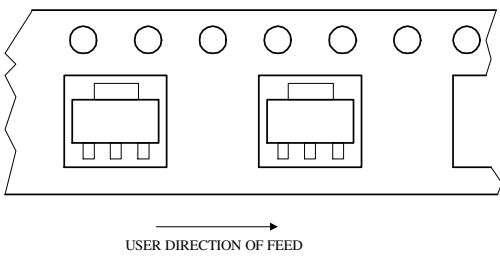
**SOT-23-5 PACKAGE ORIENTATION**



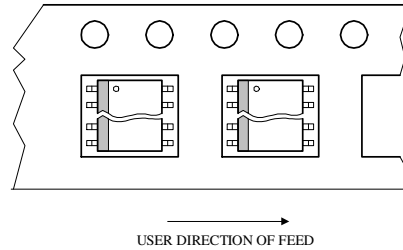
**SOT-89 PACKAGE ORIENTATION**



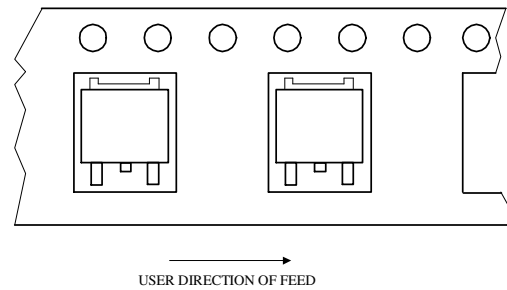
**SOT-223 PACKAGE ORIENTATION**



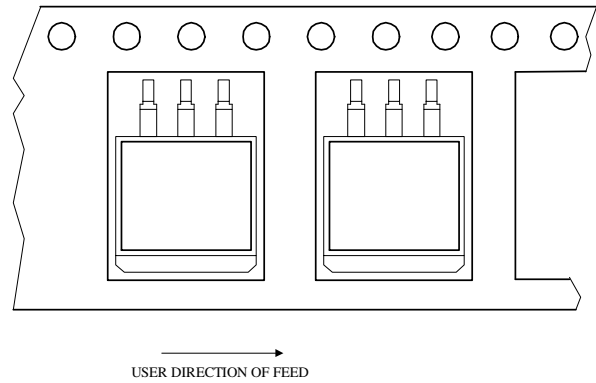
**SOIC PACKAGE ORIENTATION**



**TO-252 (D PAK) PACKAGE ORIENTATION**



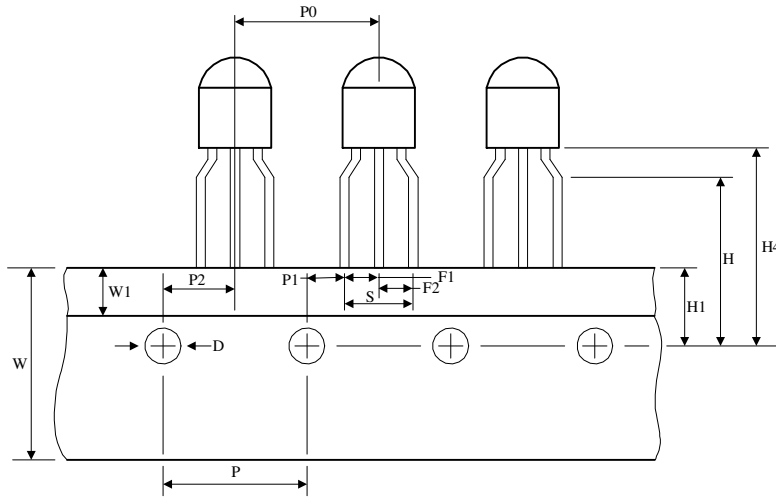
**TO-263 (DD PAK) PACKAGE ORIENTATION**



SMTRAMS DRW# 040205

# TAPE AND REEL SPECIFICATIONS

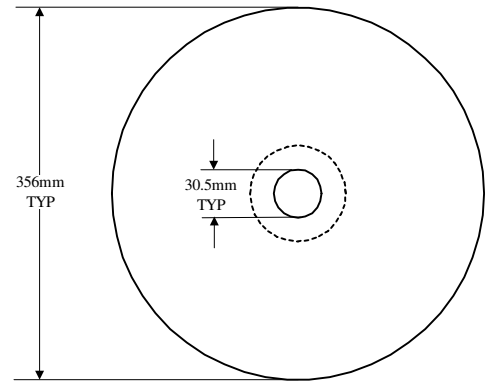
## TO-92 TAPE DIMENSIONS



TO92TR AMS DRW# 050201

## TO-92 REEL DIMENSIONS

SYMBOL	DESCRIPTION	DIMENSIONS
D	Sprocket Hole Diameter	$4 \pm 0.2$
H	Length from Seating Plane	$16 \pm 0.5$
H1	Sprocket Hole Location	$9 \pm 0.5$
H4	Component Base Height	20 Max
P	Sprocket Hole Pitch	$12.7 \pm 0.2$
P0	Pitch of Component	$12.7 \pm 0.5$
P1	Lead Location	$3.85 \pm 0.5$
P2	Center of Seating Plane Location	$6.35 \pm 0.4$
S	Component Lead Spacing	$5 + 8, -0.2$
W	Carrier Tape Width	$18 + 1, -0.5$
W1	Adhesive Tape Width	$6.0 \pm 1.0$
F1, F2	Lead-to-Lead Distance	$2.5 + 0.4, -0.1$



TO92TR AMS DRW# 050202

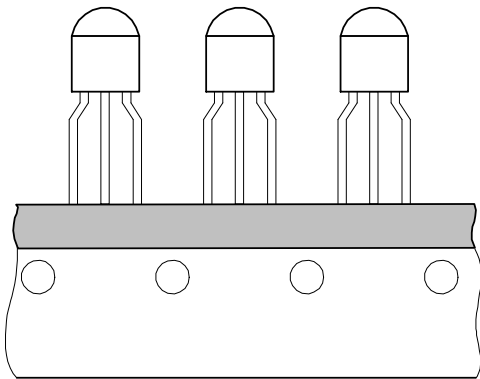
## PACKAGE ORIENTATION

### STYLE S : Standard

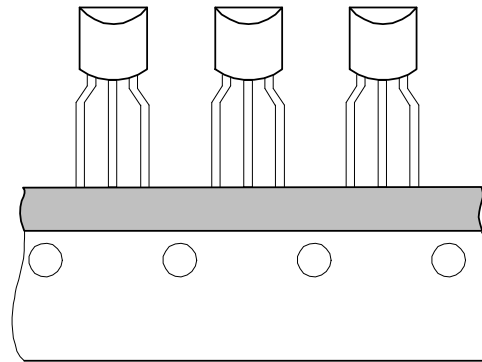
(Flat Side of Package Faces Toward the Adhesive Tape)

### STYLE R: Reverse

(Rounded Side of Package Faces Toward the Adhesive Tape)



TO92TR AMS DRW# 050203



TO92TR AMS DRW# 050204