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# Standard SMT and Through Hole Lead Bend Options for Subminiature LED Lamps

## Technical Data

**Option 011, 012, 013,  
021, 022, 031, 032, 1L1,  
1S1, 2L1, 2S1**

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### Features

- **Surface Mount Lead Configurations**
- **Right Angle Lead Bend for Through Hole Mounting**
- **Tape and Reel in Accordance with ANSI/EIA RS-481 Specifications**

### Description

Subminiature lamps (HLMP-PXXX, HLMP-Q1XX, HLMP-6XXX, HLMP-70XX) are available with the above standard options. Subminiature Lamps with Options 01X, 02X and 03X are suitable for surface mount applications and their leads are formed with gull wing, yoke bend and Z bend respectively. They are available in Tape and Reel (compatible to ANSI/EIA RS-481), bulk or arrays in a shipping tube. Option 1X1 and 2X1 are right angle lead bends suitable for through hole applications.

### Ordering Information

To order Subminiature Lamps packaged with these standard options, include the appropriate option code along with the device catalog part number. Example: to order the HLMP-P005 with Option 011 gull wing leads in 12 mm embossed tape on 178 mm (7 inch) diameter reels, with 1500 lamps per reel; order as follows: HLMP-P005 Option 011. Order quantities must be placed in reel increments only. Orders for partial reels will not be accepted. For additional information, please contact your local Agilent Technologies sales office or franchised distributor for assistance.

## Selection Guide

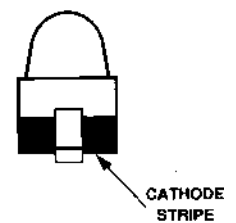
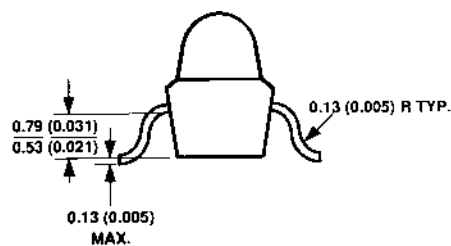
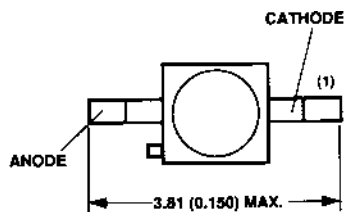
Option Code	Package Configuration		Package Outline Drawing	
011	Gull Wing Leads, 12 mm Tape on 7 in. Dia. Reel, 1500 Parts per Reel <sup>[1]</sup>	Surface Mount Lead Configurations	A, I, M	
012	Gull Wing Lead, Bulk Packaging, Quantity of 500 Parts <sup>[2]</sup>			
013	Gull Wing Leads, Arrays, Shipping Tube, Quantity see Figure J		B, J	
014	Gull Wing Leads, 12 mm Tape on 13 in. Dia. Reel, 6000 Parts per Reel <sup>[1]</sup>		A, I, M	
021	Yoke Leads, 12 mm Tape on 7 in. Dia. Reel 1500 Parts per Reel <sup>[1]</sup>		C, K, M	
022	Yoke Leads, Bulk Packaging, Quantity of 500 Parts <sup>[2]</sup>			
024	Yoke Leads, 12 mm Tape on 13 in. Dia. Reel, 6000 Parts per Reel <sup>[1]</sup>			
031	Z-Bend Leads, 12 mm Tape on 7 in. Dia. Reel 1500 Parts per Reel <sup>[1]</sup>		D, L, M	
032	Z-Bend Leads, Bulk Packaging, Quantity of 500 Parts <sup>[2]</sup>			
034	Z-Bend Leads, 12 mm Tape on 13 in. Dia. Reel, 6000 Parts per Reel <sup>[1]</sup>			
1L1 <sup>[3]</sup>	2.54 mm (0.100 inch)	Long Leads; 10.4 mm (0.410 in.)	Right Angle Lead Bends for Through Hole Mounting	
1S1 <sup>[3]</sup>	Center Lead Spacing	Short Leads; 3.7 mm (0.145 in.)		E
2L1 <sup>[3]</sup>	5.08 mm (0.200 inch)	Long Leads; 9.2 mm (0.364 in.)		F
2S1 <sup>[3]</sup>	Center Lead Spacing	Short Leads; 3.7 mm (0.145 in.)		G
			H	

### Notes:

- SMT lamps are supplied in 12 mm embossed carrier tape. Minimum order is for one full reel, either 7 inch or 13 inch. All other order quantities must be in reel increments only. Orders for partial reels are not accepted.
- Vapor barrier bags are used for bulk packaging.
- Not applicable for all AlInGaP devices.

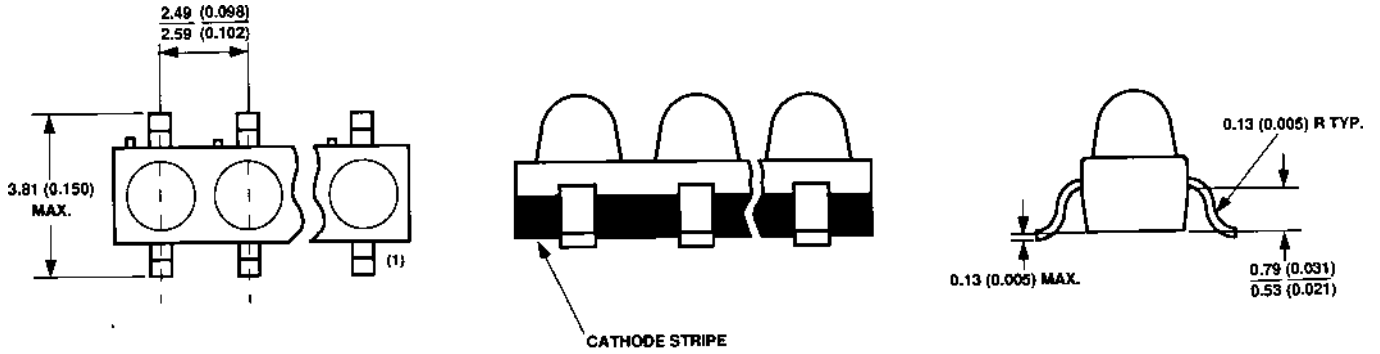
## Package Dimensions, Lead Bend Options

### (A) Individual Lamp, Gull Wing Lead, Option 011, 012, and 014



ALL DIMENSIONS ARE IN MILLIMETRES (INCHES)

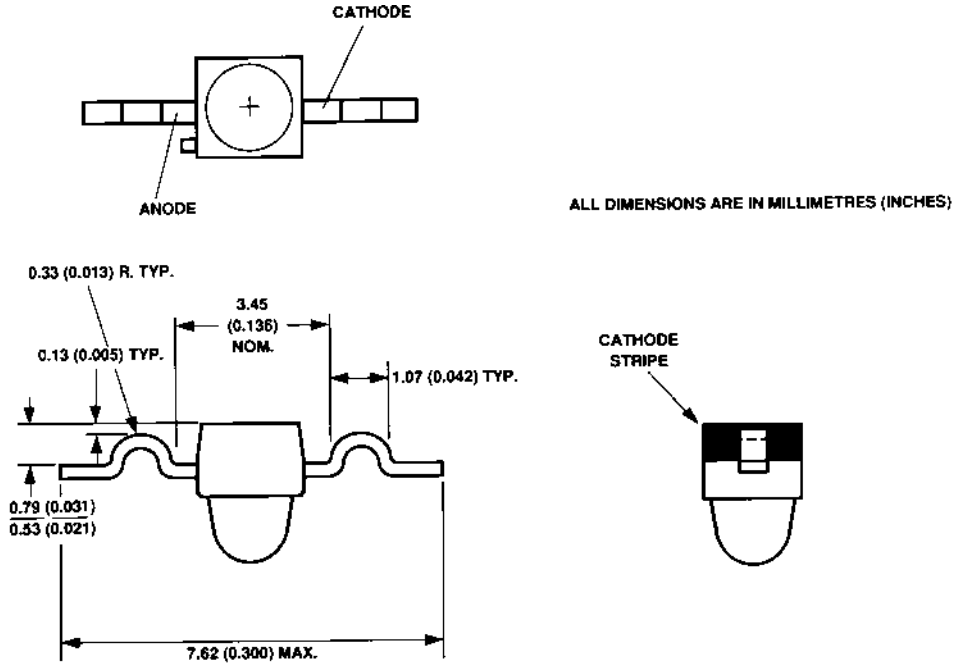
**(B) Subminiature Array, Gull Wing Lead, Option 013**



ALL DIMENSIONS ARE IN MILLIMETRES (INCHES)

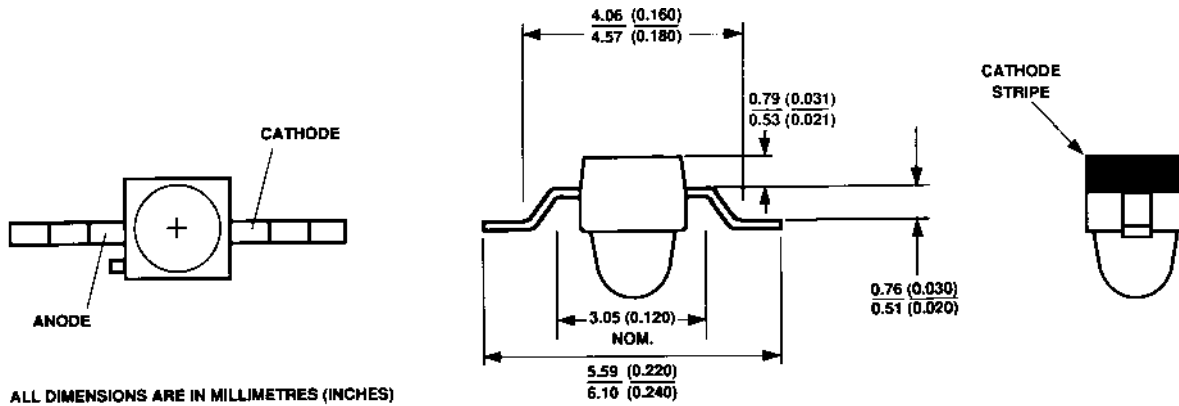
(1) DUE TO SHEARING PROCESS, LEAD WIDTH AT END MAY VARY 0.483 mm/0.663 mm.

**(C) Individual Lamp, "Yoke" Lead, Options 021, 022, and 024**

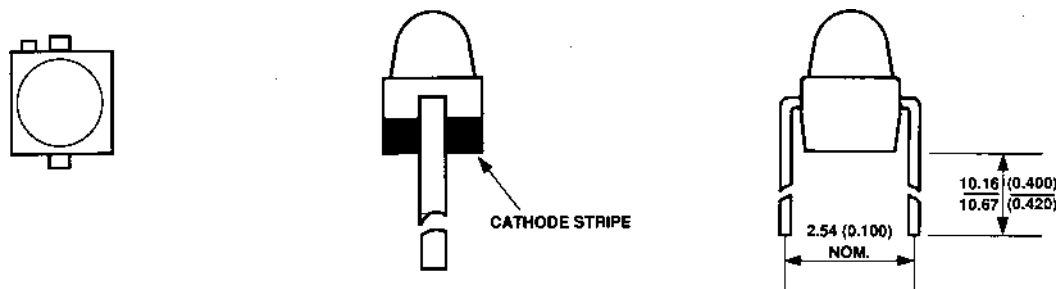


ALL DIMENSIONS ARE IN MILLIMETRES (INCHES)

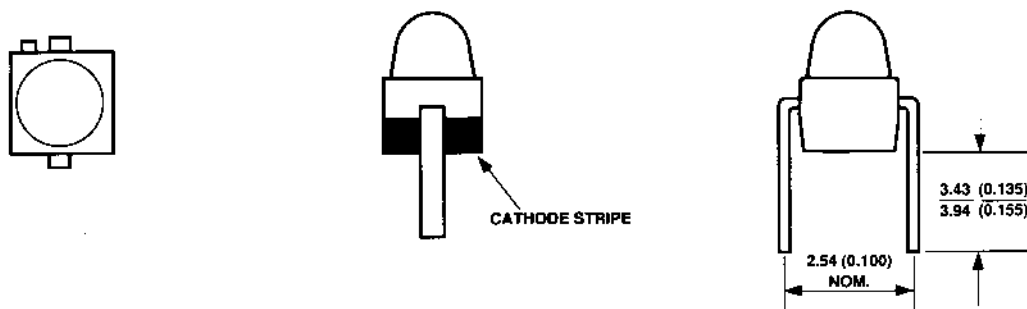
## (D) Individual Lamp, Z-Bend Lead, Option 031, 032, and 034

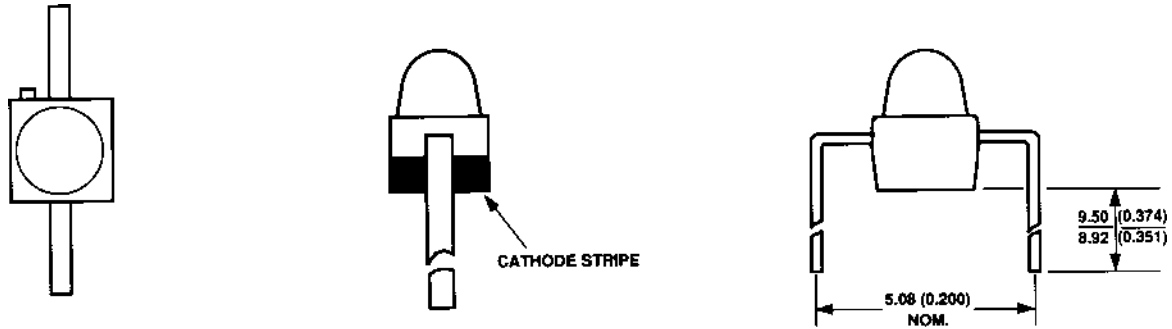


## (E) Individual Lamp or Array, Rt. Angle Bend Option 1L1

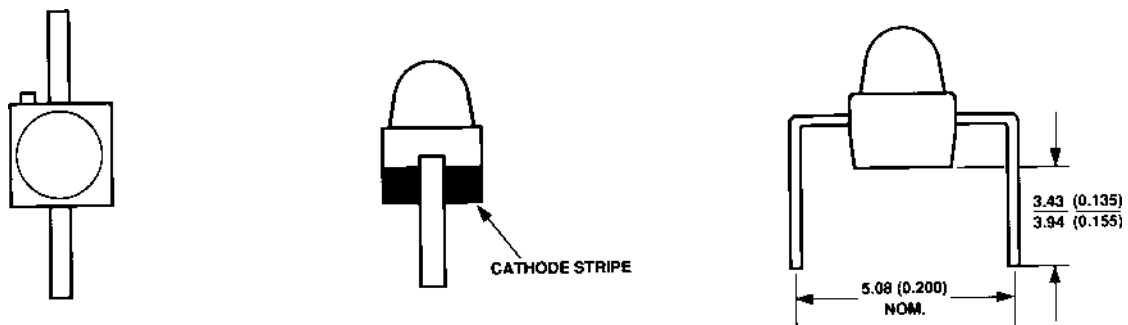


## (F) Individual Lamp or Array, Rt. Angle Bend Option 1S1



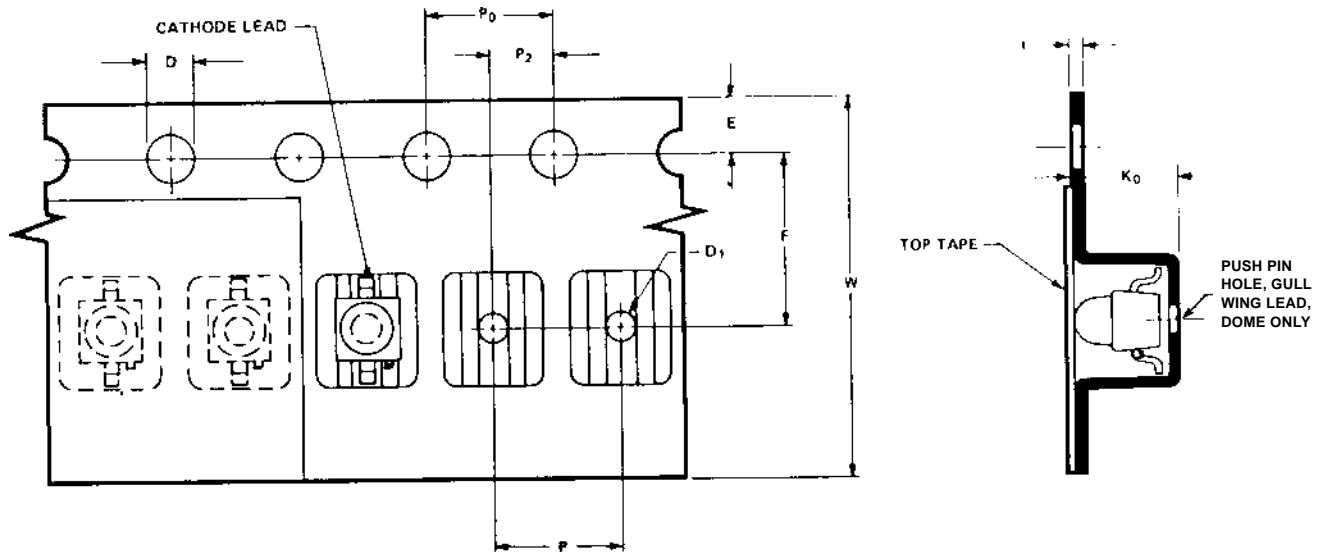
**(G) Individual Lamp or Array, Rt. Angle Bend Option 2L1**

ALL DIMENSIONS ARE IN MILLIMETRES (INCHES)

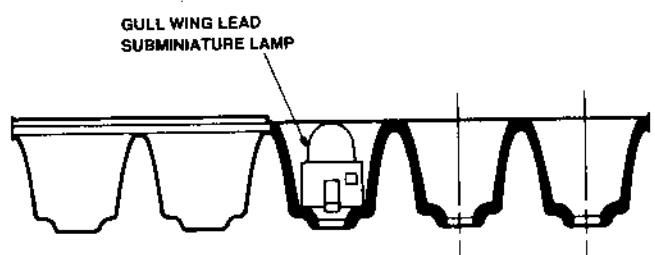
**(H) Individual Lamp or Array, Rt. Angle Bend Option 2S1**

### Package Dimensions: Surface Mount Tape and Reel Options

#### (I) 12 mm Tape and Reel, Gull Wing Lead



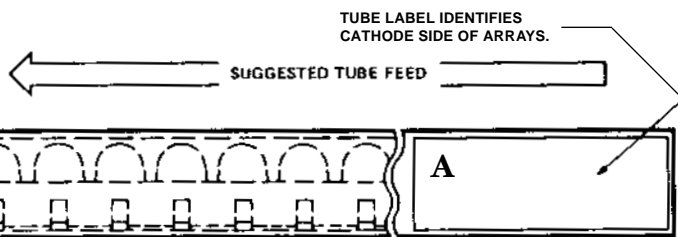
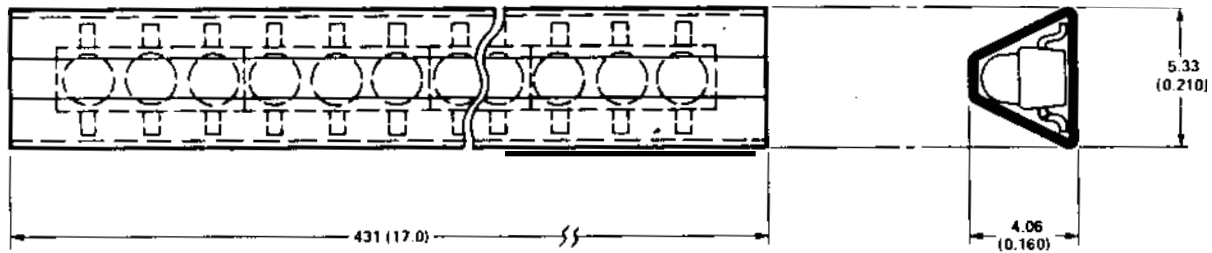
FEED DIRECTION →



**NOTES:**

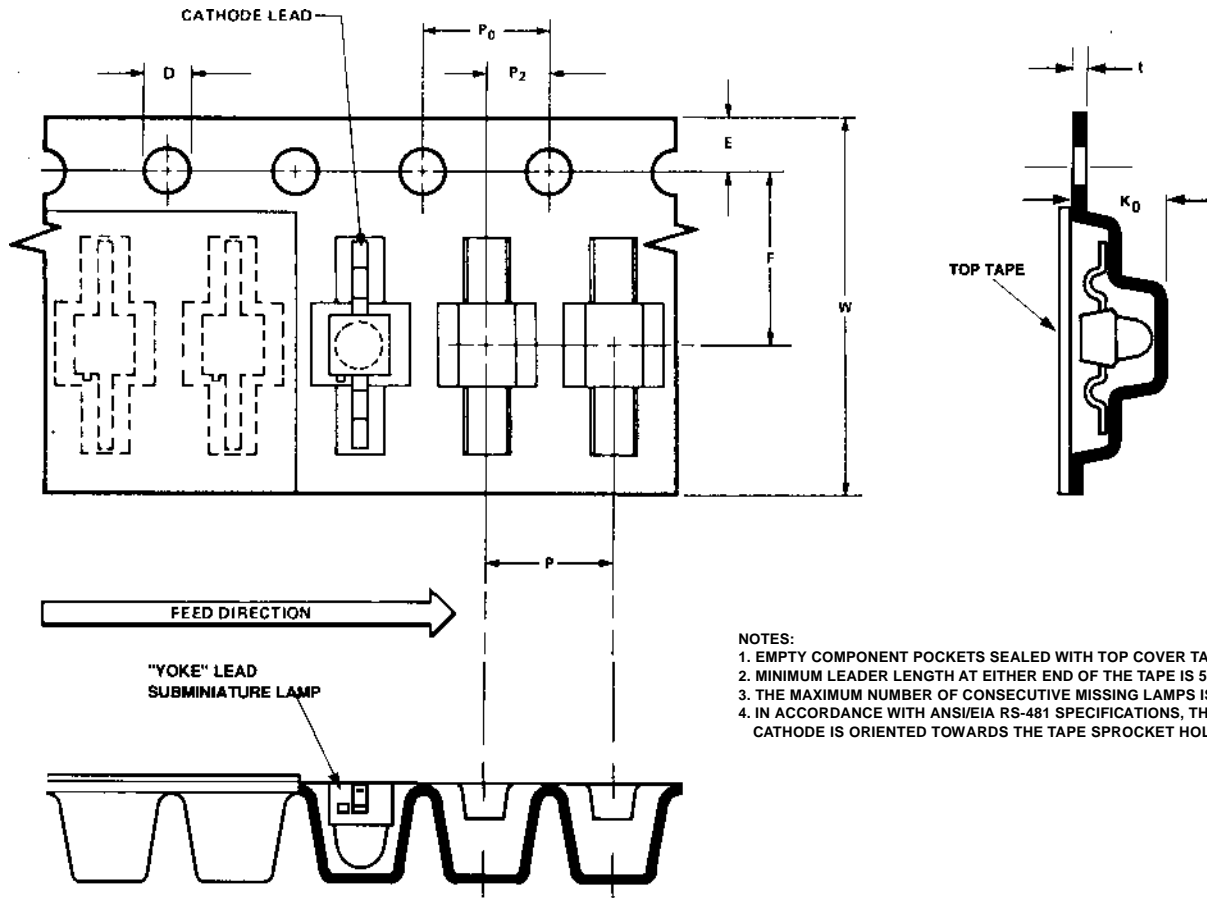
1. EMPTY COMPONENT POCKETS SEALED WITH TOP COVER TAPE.
2. MINIMUM LEADER LENGTH AT EITHER END OF THE TAPE IS 500 mm.
3. THE MAXIMUM NUMBER OF CONSECUTIVE MISSING LAMPS IS TWO.
4. IN ACCORDANCE WITH ANSI/EIA RS-481 SPECIFICATIONS, THE CATHODE IS ORIENTED TOWARDS THE TAPE SPROCKET HOLE.

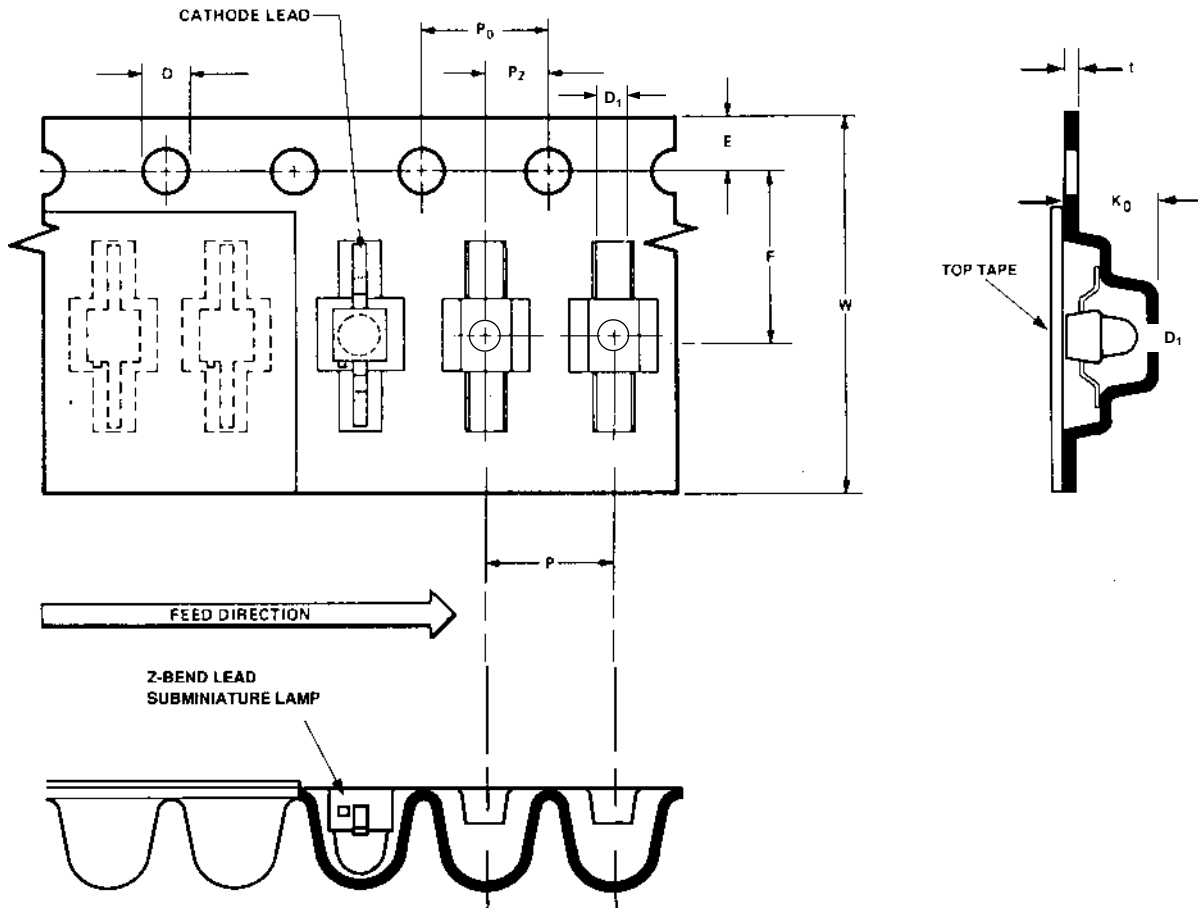
#### (J) Array Shipping Tube, Gull Wing Lead



HLMP-	NO. OF LAMP ELEMENTS PER ARRAY	QUANTITY OF ARRAYS PER TUBE
6XX3	3	53
6XX4	4	40
6XX5	5	32
6XX6	6	26
6XX8	8	20

### (K) 12 mm Tape and Reel, "Yoke" Lead



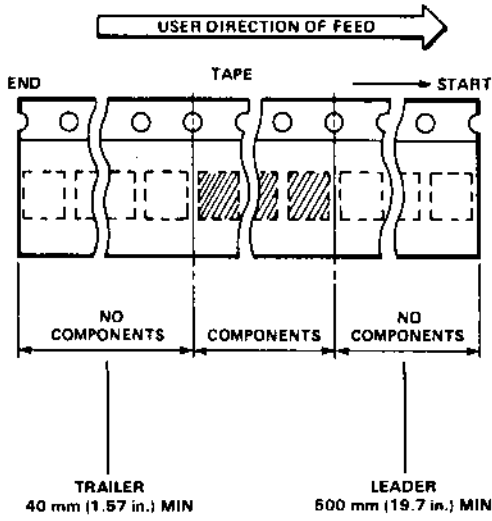
**(L) 12 mm Tape and Reel, Z-Bend Lead**

	Reel Dimensions Per ANSI/EIA Standard RS-481.	All Dimensions Are in Millimeters (Inches).
	7 inch Reel	13 Inch Reel
A	178.0 ± 2.0 (7.0 ± 0.08) Dia.	330 (12.9) Dia. Max.
C	13.0 (0.512) Dia. Typ.	13.0 (0.512) Dia. Typ.
N	50.0 (1.97) Min.	100.0 (3.93) Min.
T	18.4 (0.72) mMax.	18.4 (0.72) Max.

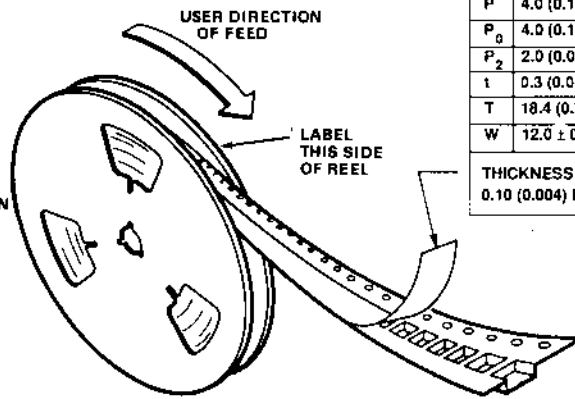
	Embossed Carrier Tape Dimensions Per ANSI/EIA Standard RS-481.		All Dimensions Are in Millimeters (Inches).		
	Gull Wing Dome	Gull Wing Flat Top	Yoke Dome	Z-Bend Dome	Yoke and Z-Bend Flat Top
D	1.55 (0.061 ± 0.002) Dia.	1.55 (0.061 ± 0.002) Dia.	1.55 (0.061 ± 0.002) Dia.	1.50 + 0.10 (0.059 + 0.004) Dia.	1.50 + 0.10 (0.059 + 0.004) Dia.
D <sub>1</sub>	1.0 (0.039) Dia. Min.	N/A (No Push Pin Hole)	N/A (No Push Pin Hole)	1.50 + 0.25 (0.059 + 0.010)	N/A (No Push Pin Hole)
D <sub>2</sub>	20.2 (0.795) Dia. Min.	20.2 (0.795) Dia. Min.	20.2 (0.795) Dia. Min.	20.2 (0.795) Dia. Min.	20.2 (0.795) Dia. Min.
E	1.75 ± 0.1 (0.069)	1.75 ± 0.1 (0.069)	1.75 ± 0.1 (0.069)	1.75 ± 0.1 (0.069)	1.75 ± 0.1 (0.069)
F	5.50 ± 0.05 (0.217 ± 0.002)				
K <sub>0</sub>	3.05 ± 0.1 (0.120) Typ.	2.54 ± 0.1 (0.100) Typ.	3.05 ± 0.1 (0.120) Typ.	2.97 ± 0.1 (0.117) Typ.	3.05 ± 0.1 (0.120) Typ.
P	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.
P <sub>0</sub>	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.	4.0 (0.157) Typ.
P <sub>2</sub>	2.0 (0.079 ± 0.002)	2.0 (0.079 ± 0.002)	2.0 (0.079 ± 0.002)	2.0 (0.079 ± 0.002)	2.0 (0.079 ± 0.002)
t	0.3 (0.012) Typ.	0.3 (0.012) Typ.	0.3 (0.012) Typ.	0.305 ± 0.013 (0.0120 ± 0.0005)	0.305 ± 0.013 (0.0120 ± 0.0005)
W	12.0 ± 0.3 (0.472 ± 0.012)	12.0 ± 0.3 (0.472 ± 0.012)	12.0 ± 0.3 (0.472 ± 0.012)	12.0 ± 0.3 (0.472 ± 0.012)	12.0 ± 0.3 (0.472 ± 0.012)



(M) 12 mm Tape and Reel

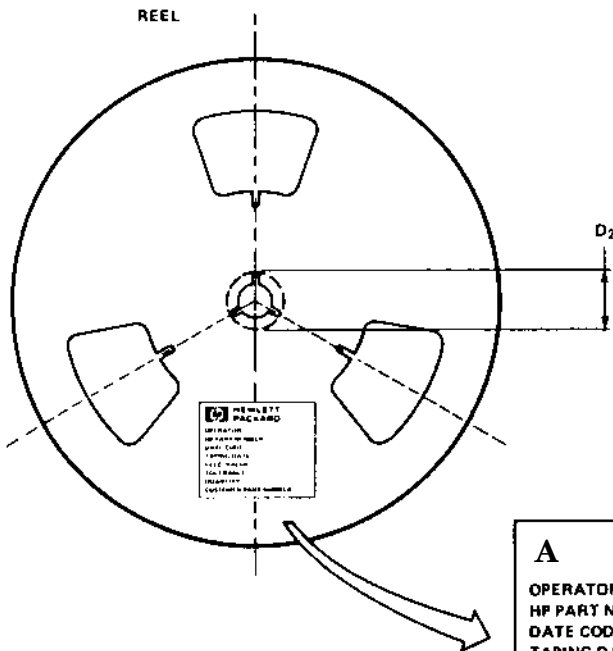


TOLERANCES (UNLESS OTHERWISE SPECIFIED):  
 .X ± .1; .XX ± .05 (.XXX ± .004)



DIMENSIONS PER ANSI/EIA STANDARD RS-481. ALL DIMENSIONS ARE IN MILLIMETRES (INCHES).

A	178.0 ± 2.0 (7.0 ± 0.08) DIA.
C	13.0 (0.512) DIA. TYP.
D	1.55 (0.061 ± 0.002) DIA.
D <sub>1</sub>	1.0 (0.039) DIA. MIN.
D <sub>2</sub>	20.2 (0.795) DIA. MIN.
E	1.75 ± 0.1 (0.069)
F	5.50 (0.127 ± 0.002)
K <sub>0</sub>	3.05 ± 0.1 (0.120) TYP.
N	50.0 (1.970) MIN.
P	4.0 (0.157) TYP.
P <sub>0</sub>	4.0 (0.157) TYP.
P <sub>2</sub>	2.0 (0.079 ± 0.002) TYP.
t	0.3 (0.012) TYP.
T	18.4 (0.72) MAX.
W	12.0 ± 0.3 (0.472 ± 0.012)
THICKNESS OF TOP COVER TAPE 0.10 (0.004) MAX.	



**A**

OPERATOR \_\_\_\_\_  
 HP PART NUMBER \_\_\_\_\_  
 DATE CODE \_\_\_\_\_  
 TAPING DATE \_\_\_\_\_  
 ELEC. VALUE \_\_\_\_\_  
 TOLERANCE \_\_\_\_\_  
 QUANTITY \_\_\_\_\_  
 CUSTOMER PART NUMBER \_\_\_\_\_

