

Option 11, 12, 21, 22, 31, 32, 1L, 1S, 2L, 2S

Standard SMT and Through-Hole Lead Bend

Options for Subminiature LED Lamps

Description

Broadcom[®] Subminiature lamps (HLMX-PXXX, HLMX-QXXX, HLMP-6XXX, HLMP-70XX) are available with the standard options listed in this data sheet. Subminiature Lamps with Options 11, 12, 21, 22, 31, and 32 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) or bulk. Options 1L, 1S, 2L, and 2S are right-angle lead bends suitable for through-hole applications.

Features

- Surface-mount lead configurations
- Right-angle lead bend for through-hole mounting
- Tape and reel in accordance with ANSI/EIA RS-481 specifications

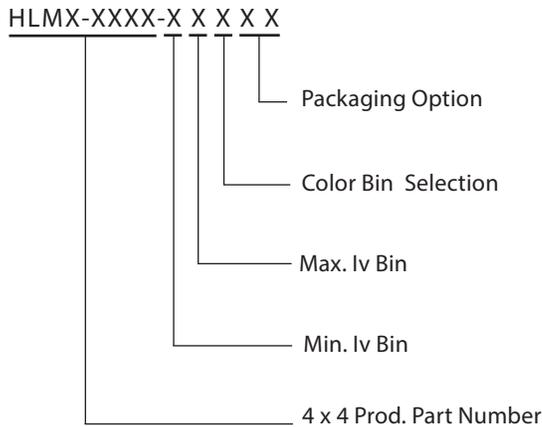
Device Selection Guide

Option Code	Package Configuration		Package Outline Drawing
11	Gull-Wing Leads, 12-mm Tape on 7 in. Diameter Reel, 1500 Parts per Reel ^a	Surface-Mount Lead Configurations	A, H, K, L
12	Gull-Wing Lead, Bulk Packaging, Quantity of 500 Parts ^b		
14	Gull-Wing Leads, 12-mm Tape on 13 in. Diameter Reel, 6000 Parts per Reel ^a		
21	Yoke Leads, 12-mm Tape on 7 in. Diameter Reel 1500 Parts per Reel ^a		B, I, K, L
22	Yoke Leads, Bulk Packaging, Quantity of 500 Parts ^b		
24	Yoke Leads, 12-mm Tape on 13 in. Diameter Reel, 6000 Parts per Reel ^a		
31	Z-Bend Leads, 12-mm Tape on 7 in. Diameter Reel 1500 Parts per Reel ^a		C, J, K, L
32	Z-Bend Leads, Bulk Packaging, Quantity of 500 Parts ^b		
34	Z-Bend Leads, 12-mm Tape on 13 in. Diameter Reel, 6000 Parts per Reel ^a		
1L	2.54-mm (0.100 inch), Long Leads: 10.4 mm (0.410 in.)		Right Angle Lead Bends for Through-hole Mounting
1S	Center Lead Spacing, Short Leads: 3.7 mm (0.145 in.)	E	
2L	5.08 mm (0.200 inch), Long Leads: 9.2 mm (0.364 in.)	F	
2S	Center Lead Spacing, Short Leads: 3.7 mm (0.145 in.)	G	

a. 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.

b. Vapor barrier bags are used for bulk packaging.

Part Numbering System



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-6300-F00xx with Option 11 gull-wing leads in 12-mm embossed tape on 178-mm (7 inch) diameter reels, with 1500 lamps per reel, order as follows: HLMP-6300-F0011.

Order quantities must be placed in reel increments only. Orders for partial reels will not be accepted. For additional information, contact your Broadcom sales office or franchised distributor for assistance.

Package Drawings

Lead Bend Options

Figure 1: Package A, Gull-Wing Lead, Option 11, 12, and 14

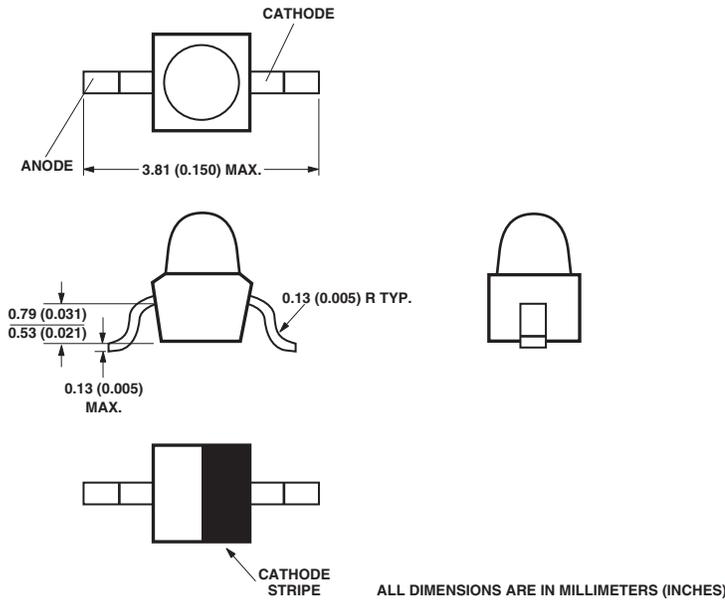


Figure 2: Package B, Yoke Lead, Options 21, 22, and 24

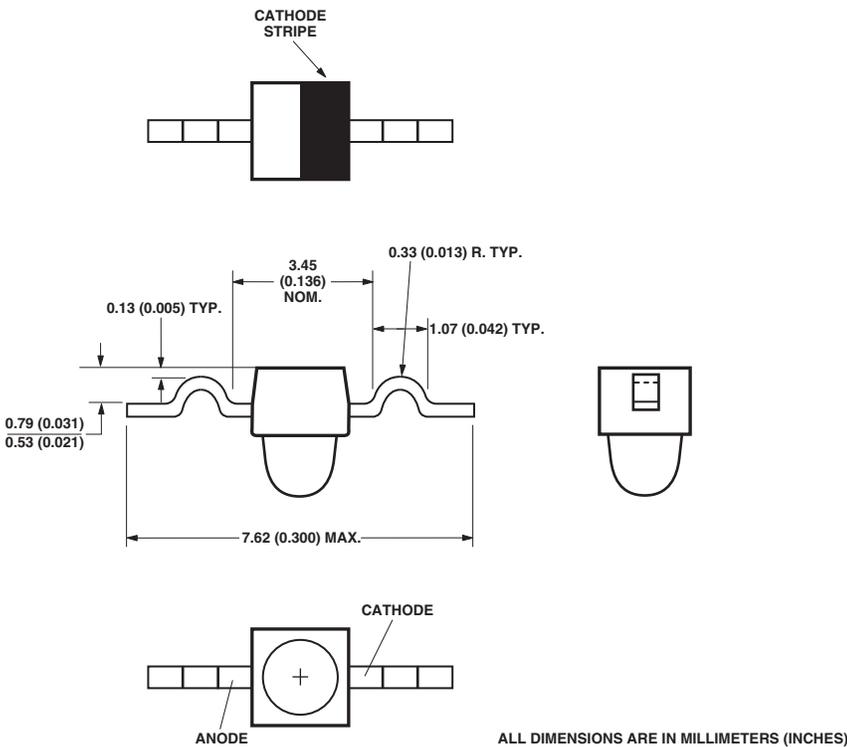


Figure 3: Package C, Z-Bend Lead, Option 31, 32, and 34

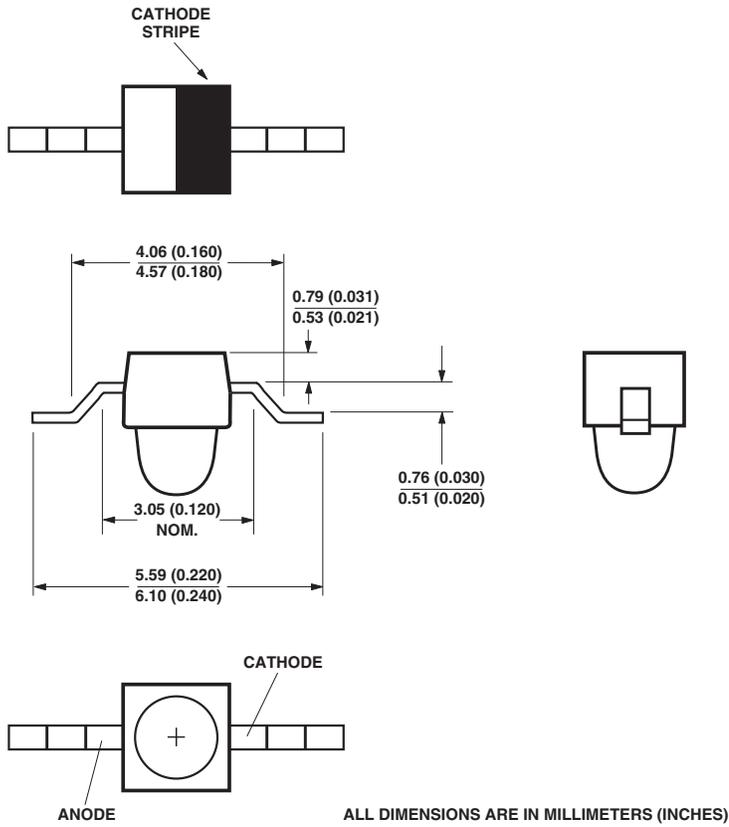


Figure 4: Package D, Right-Angle Bend, Option 1L

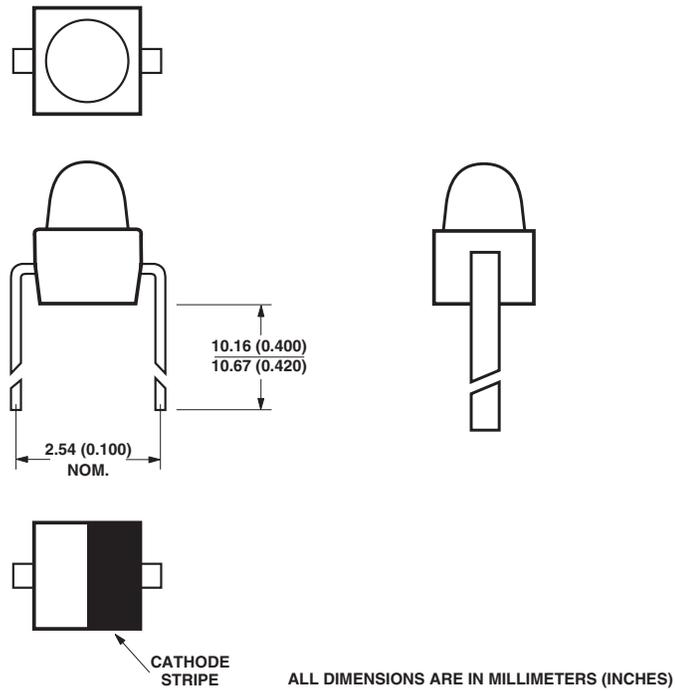


Figure 5: Package E, Right-Angle Bend Option 1S

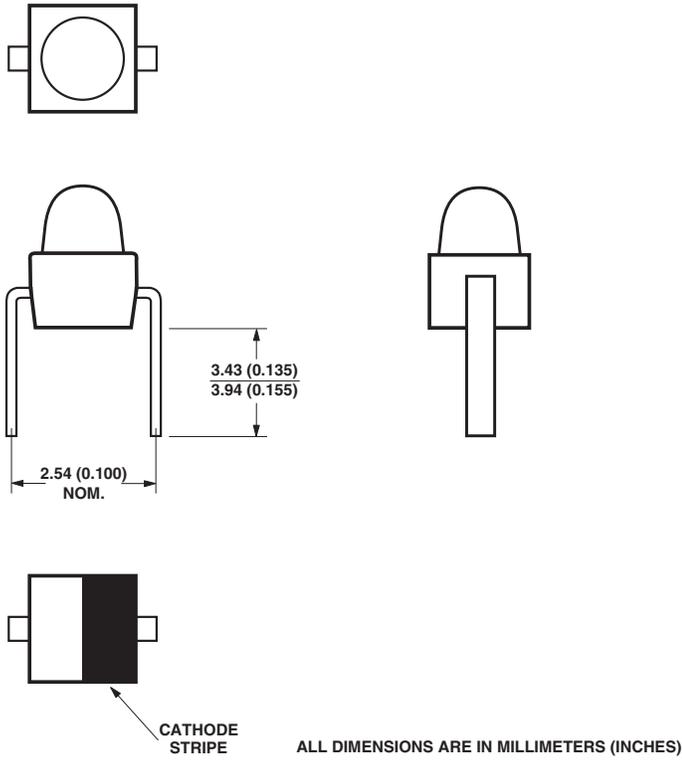


Figure 6: Package F, Right-Angle Bend Option 2L

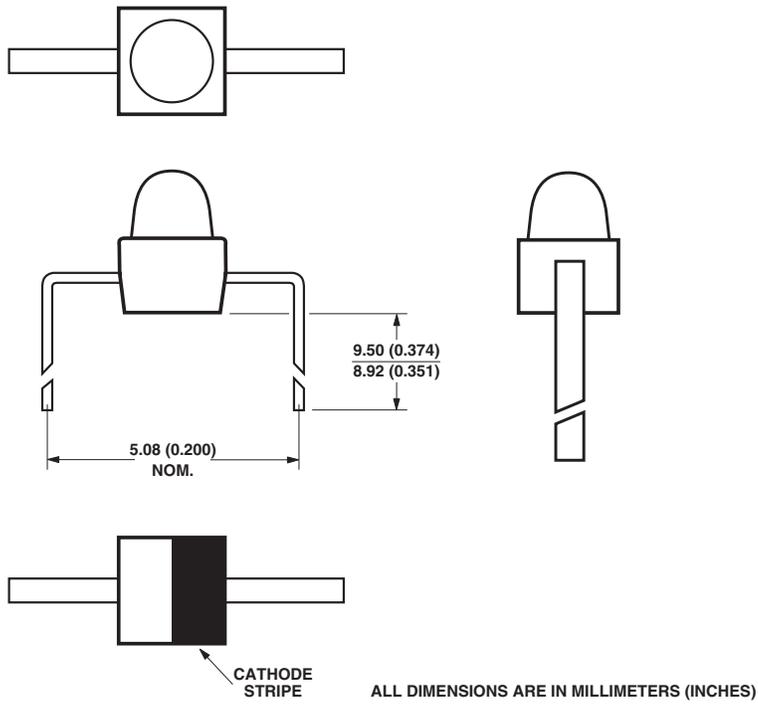
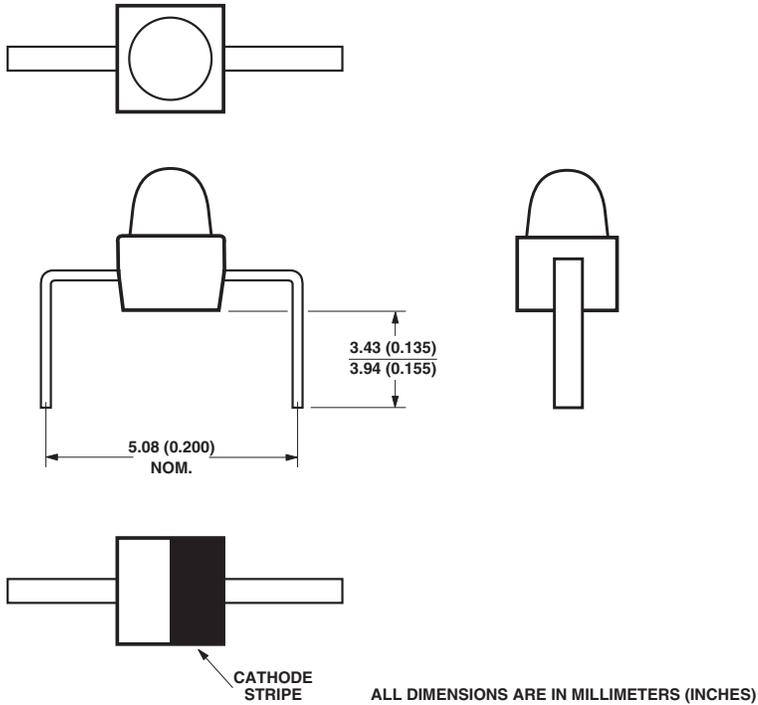


Figure 7: Package G, Right-Angle Bend Option 2S



Surface-Mount Tape-and-Reel Options

Figure 8: Package H, 12-mm Tape-and-Reel, Gull Wing Lead

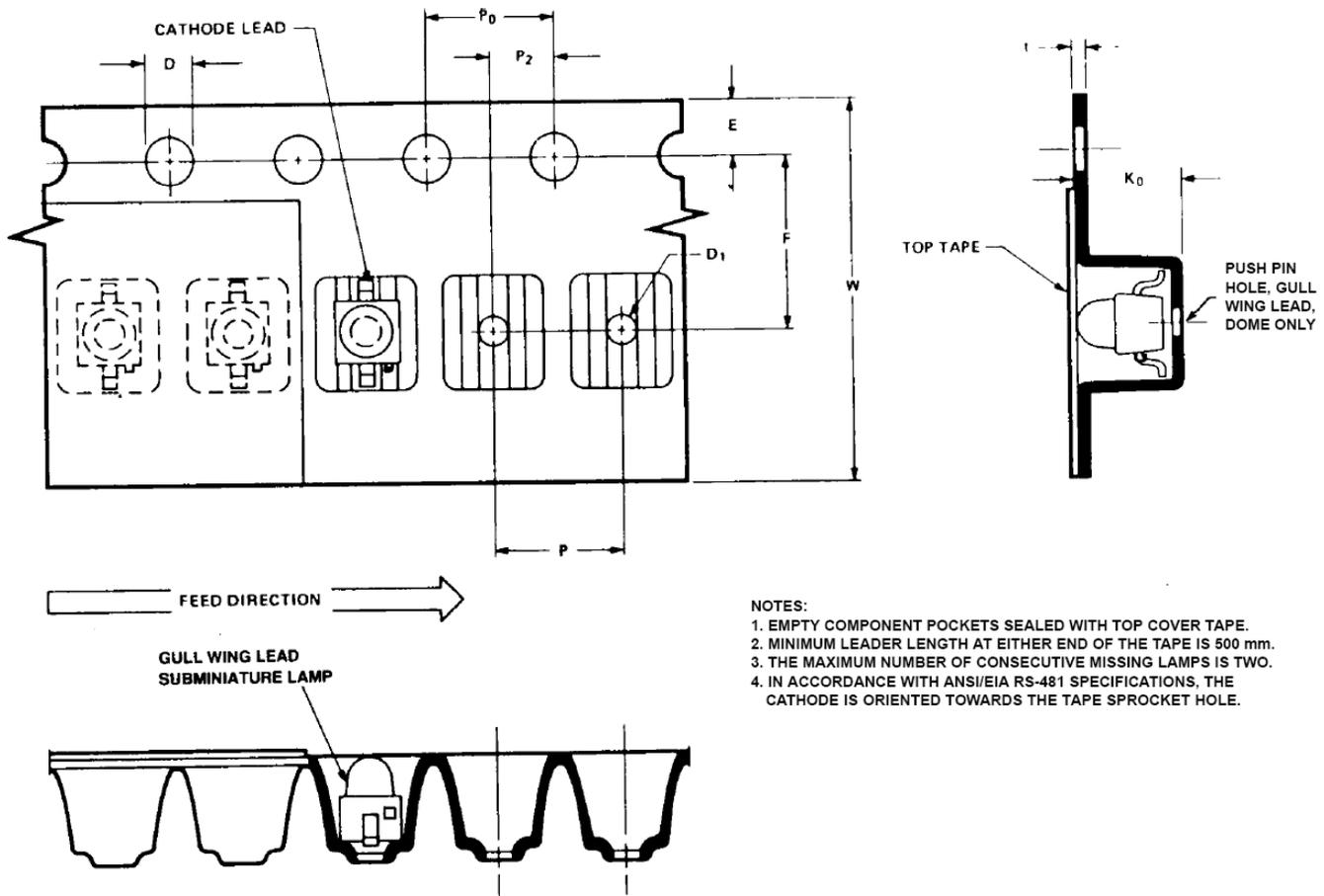
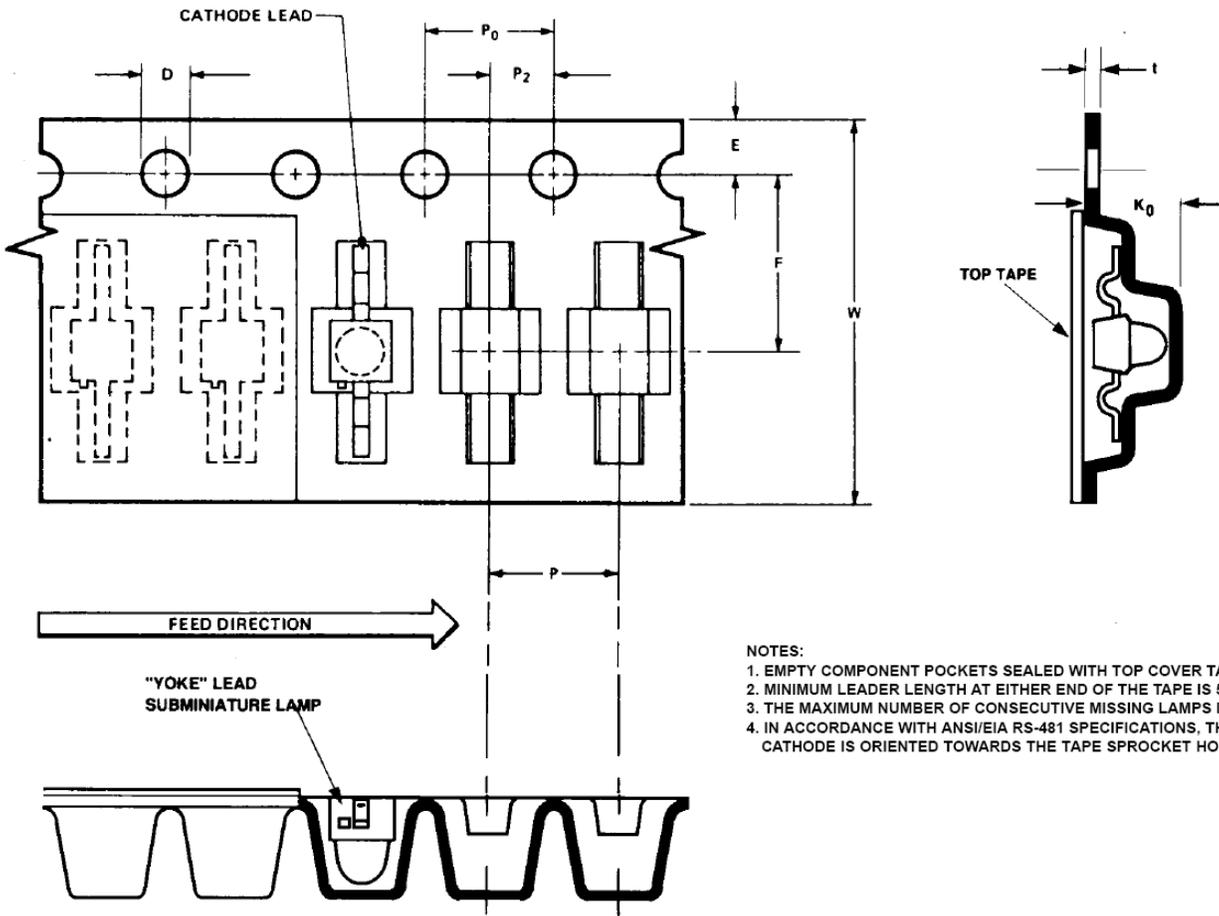
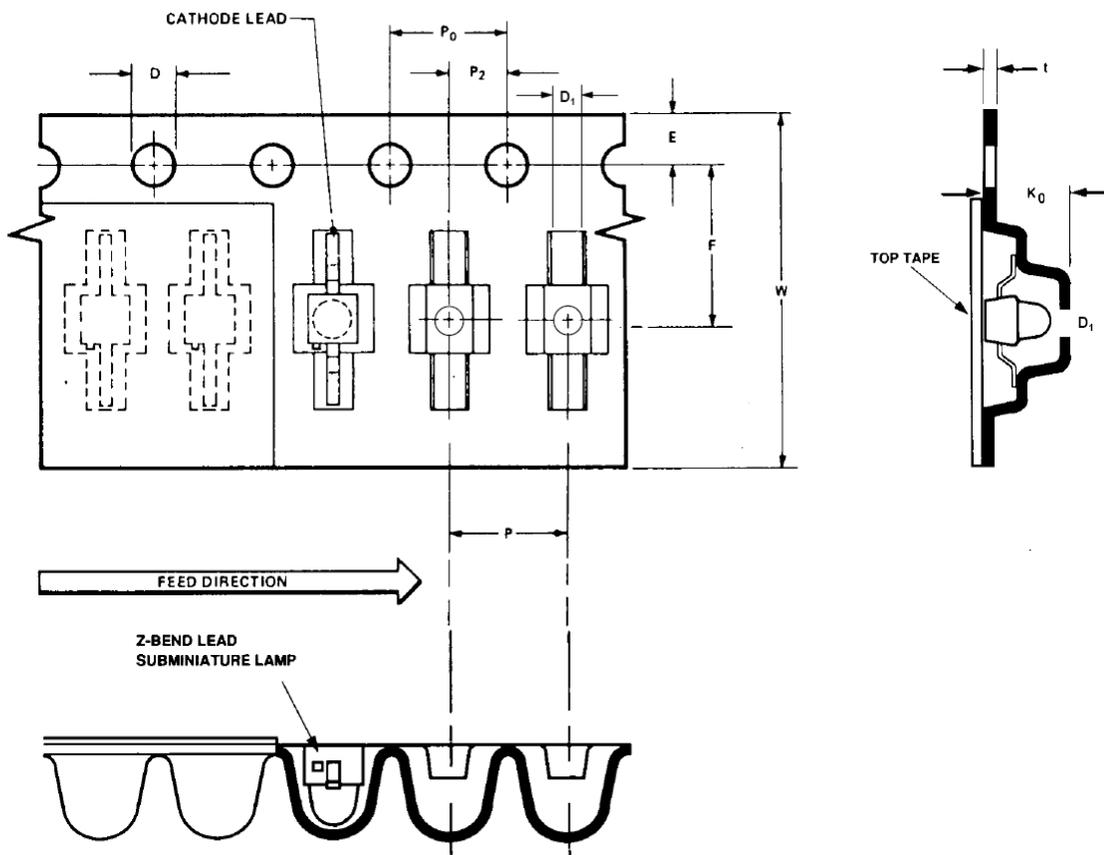


Figure 9: Package I, 12-mm Tape-and-Reel, Yoke Lead



- 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.

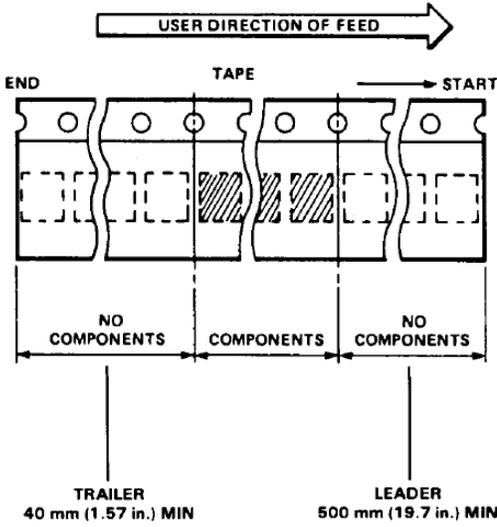
Figure 10: Package J, 12-mm Tape-and-Reel, Z-Bend Lead



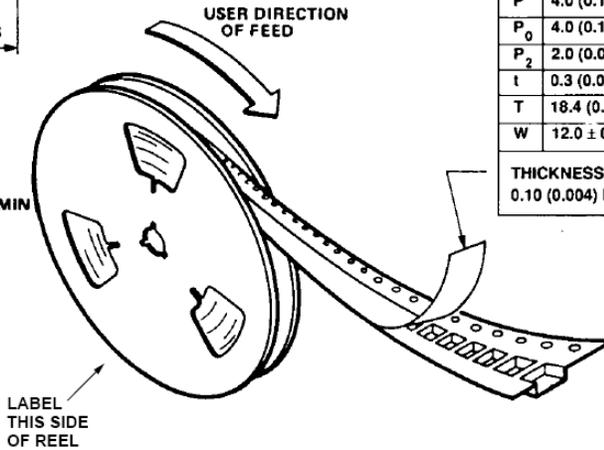
	Embossed Carrier Tape Dimensions, Per ANSI/EIA Standard RS-481 ^a				
	Gull-Wing Dome	Gull-Wing Flat Top	Yoke Dome	Z-Bend Dome	Yoke and Z-Bend Flat Top
D	1.55 (0.061 ± 0.002) Diameter	1.55 (0.061 ± 0.002) Diameter	1.55 (0.061 ± 0.002) Diameter (0.059 + 0.004) Diameter	1.50 + 0.10 (0.059 + 0.004) Diameter	1.50 + 0.10
D ₁	1.0 (0.039) Diameter 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 ₂	20.2 (0.795) Diameter Min.	20.2 (0.795) Diameter Min.	20.2 (0.795) Diameter Min.	20.2 (0.795) Diameter Min.	20.2 (0.795) Diameter 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 ₀	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 ₀	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 ₂	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)

a. All dimensions are in millimeters (inches).

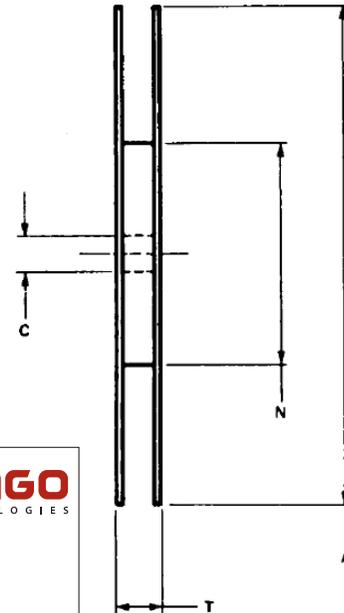
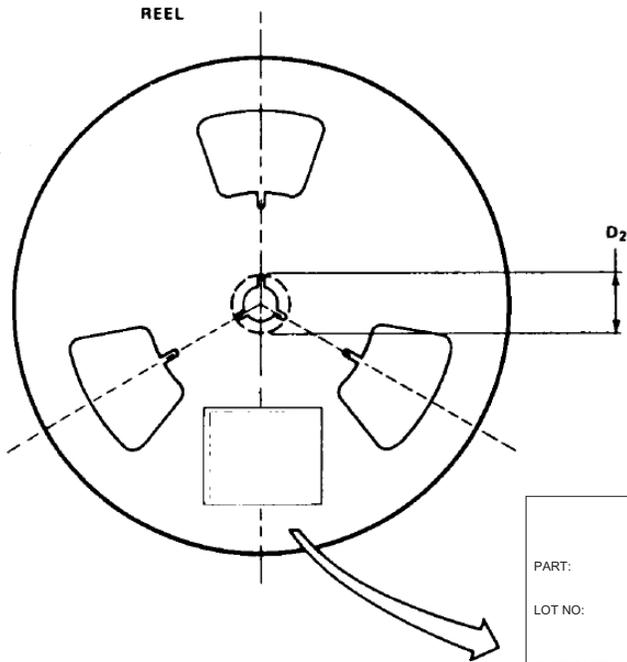
Figure 11: Package K, 12-mm Tape and Reel



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 ₁	1.0 (0.039) DIA. MIN.
D ₂	20.2 (0.795) DIA. MIN.
E	1.75 ± 0.1 (0.069)
F	5.50 (0.127 ± 0.002)
K ₀	3.05 ± 0.1 (0.120) TYP.
N	50.0 (1.970) MIN.
P	4.0 (0.157) TYP.
P ₀	4.0 (0.157) TYP.
P ₂	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.	



PART:

LOT NO:

CUST PART:

QTY:

D/C:

TAPE DATE:

CAT:

BIN:

QA INSP:

C/O:

	Reel Dimensions, Per ANSI/EIA Standard RS-481 ^a	
	7-inch Reel	13-Inch Reel
A	178.0 ± 2.0 (7.0 ± 0.08) Diameter	330 (12.9) Diameter Max.
C	13.0 (0.512) Diameter Typ.	13.0 (0.512) Diameter Typ.
N	50.0 (1.97) Min.	100.0 (3.93) Min.
T	18.4 (0.72) Max.	18.4 (0.72) Max.

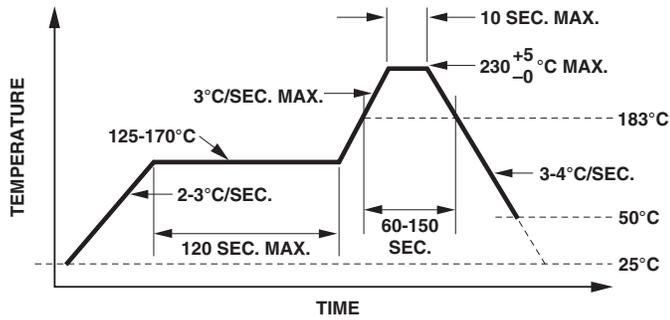
a. All dimensions are in millimeters (inches).

NOTE:

- Storage Condition: 5°C to 30°C at 60% RH max.
- Baking is required under the following conditions:
 - Humidity Indicator Card is >10% when read at 23 ± 5°C.
 - The pack has been opened for more than 4 weeks.
- Baking recommended condition: 60 ± 5°C for 20 hours.

Recommended Reflow Soldering Profile and Soldering Pad Pattern

Figure 12: Recommended SnPb Reflow Soldering Profile



Wait until device has cooled to room temperature before handling.

Figure 13: Recommended Pb-Free Reflow Soldering Profile

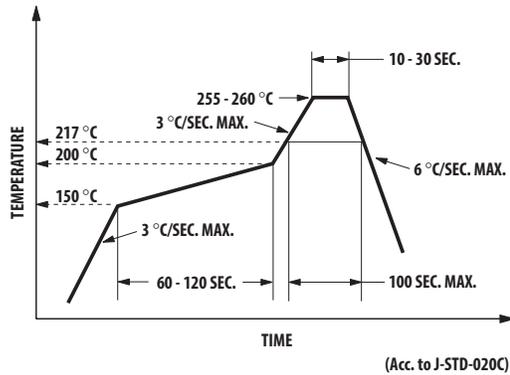


Figure 14: Recommended Soldering Pad Pattern for Gull-Wing Leads 11, 12, and 14

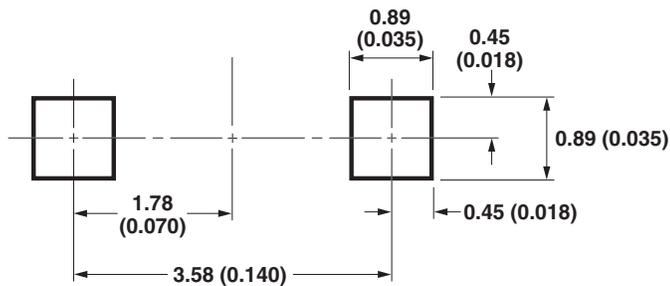


Figure 15: Recommended Soldering Pad Pattern for Yoke Leads 21, 22, and 24

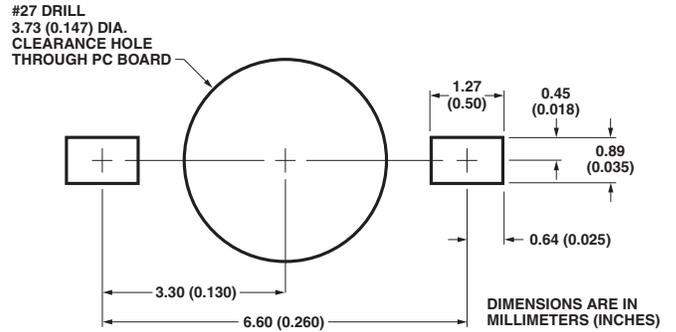
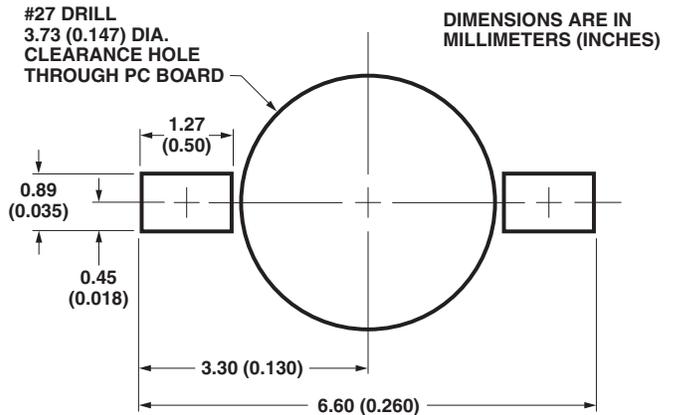


Figure 16: Recommended Soldering Pad Pattern for Z-Bend Leads 31, 32, and 34



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