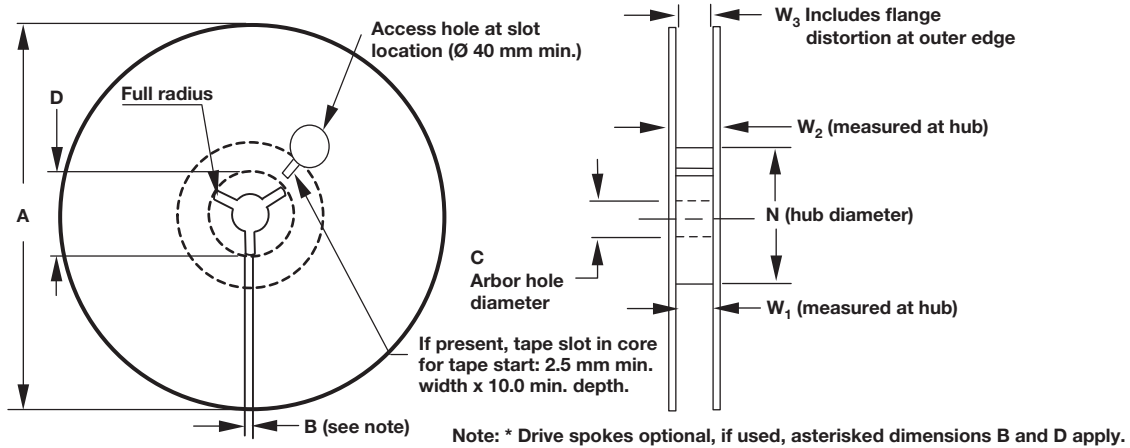


## Surface Mount Multilayer Ceramic Chip Capacitors



REEL DIMENSIONS in inches (millimeters)								
TAPE SIZE	A MAX.	B MIN.	C	D MIN.	N MIN.	W <sub>1</sub>	W <sub>2</sub> MAX.	W <sub>3</sub>
8 mm	12.992 (330)	0.059 (1.5)	0.512 + 0.50 - 0.20	0.795 (20.2)	1.969 (50.0)	0.331 + 0.059/- 0.0 (8.4 + 1.5/- 0.0)	0.567 (14.4)	Shall accommodate tape width without interference
12 mm						0.488 + 0.079/- 0.0 (12.4 + 2.0/- 0.0)	0.724 (18.4)	
16 mm			(13.0 + 0.50 - 0.20)		2.401 (61.0)	0.646 + 0.079/- 0.0 (16.4 + 2.0/- 0.0)	0.882 (22.4)	

### Notes

- (1) For reels less than 360 mm diameter (A), the most widely used reel diameters are 178 mm  $\pm$  2 mm and 330 mm  $\pm$  2 mm. Reel diameters ranging from 254 mm to 292 mm also exist. Commonly used hub diameters are 80 mm, 100 mm, 150 mm and 178 mm.
- (2) Tape with components must wrap around hub without damage.

STANDARD PACKAGING QUANTITIES (1)(2)(6)					
BODY SIZE	TAPE SIZE	7" REEL QUANTITIES		11 1/4" AND 13" REEL QUANTITIES	
		PAPER TAPE PACKAGING CODE "C"/"O" (4)	PLASTIC TAPE PACKAGING CODE "T"/"E" (6)	PAPER TAPE PACKAGING CODE "P"/"I" (4)	PLASTIC TAPE PACKAGING CODE "R"/"M" (6)
0402 (3)	8 mm	5000/10 000	n/a	10 000/30 000	n/a
0603	8 mm	4000	4000	10 000	10 000
0805 (5)	8 mm	3000	3000	10 000	10 000
1206 (5)	8 mm	3000	3000/2500	10 000	10 000/9000
1210 (5)	8 mm	n/a	3000/2500/2000	n/a	10 000/9000
1808 (5)	12 mm	n/a	2000	n/a	10 000
1812	12 mm	n/a	1000	n/a	4000
1825	12 mm	n/a	1000	n/a	4000
2220	12 mm	n/a	1000	n/a	4000
2225	12 mm	n/a	1000	n/a	4000
3640	16 mm	n/a	500	n/a	n/a

### Notes

- (1) Reference: EIA standard RS 481 - "Taping of Surface Mount Components for Automatic Placement" packaging quantities used unless specified in single data sheets
- (2) n/a = Not available, not supported anymore
- (3) Quantity can vary with customer request
- (4) Flamed paper tape code "O" (7" reel) and "I" (11 1/4"/13" reel) for AgPd terminated parts (termination code "F", "E" and size 0402/0603/0805)
- (5) Packaging code "C/P" or "T/R" and lower quantities can depend from product thickness
- (6) Packaging code "E" and "M" used in automotive series (VJ..31/VJ..34) for size 0603/0805/1206/1210 where applicable.

## EMBOSED 8 mm, 12 mm AND 16 mm CARRIER TAPE

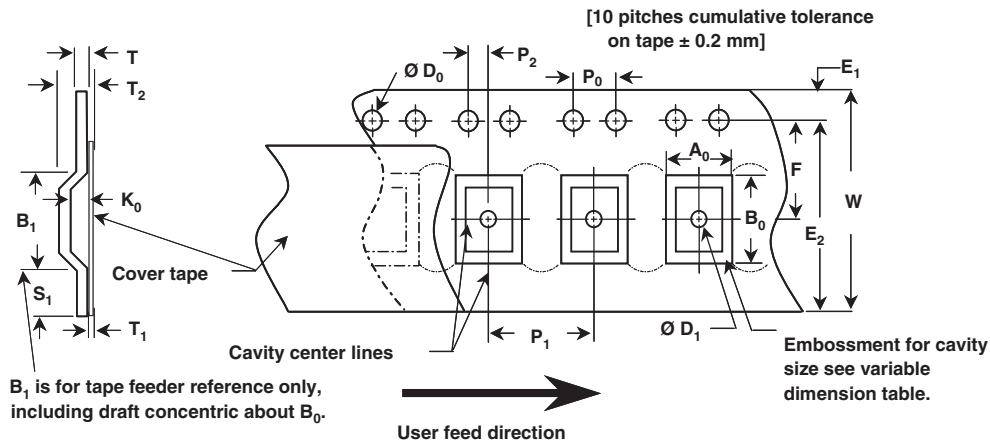


Figure 1

CONSTANT CARRIER TAPE METRIC DIMENSIONS in inches (millimeters)							
TAPE SIZE	D <sub>0</sub>	E <sub>1</sub>	P <sub>0</sub>	P <sub>2</sub>	S <sub>1</sub> MIN.	T MAX.	T <sub>1</sub>
8 mm and 12 mm	0.059 + 0.004/- 0.0 (1.50 + 0.10/- 0.0)	0.069 ± 0.004 (1.75 ± 0.10)	0.175 ± 0.004 (4.0 ± 0.10)	0.079 ± 0.002 (2.0 ± 0.05)	0.024 (0.60)	0.024 (0.60)	0.004 (0.10) MAX.

VARIABLE CARRIER TAPE METRIC DIMENSIONS in inches (millimeters)									
TAPE SIZE	B <sub>1</sub> MAX.	D <sub>1</sub> MIN.	E <sub>2</sub> MIN.	F	P <sub>1</sub>	R MIN.	T <sub>2</sub>	W MAX.	A <sub>0</sub> , B <sub>0</sub> AND K <sub>0</sub>
8 mm 2 mm Pitch	0.171 (4.35)	0.177 (0.450)	0.246 (6.25)	0.138 ± 0.002 (3.50 ± 0.05)	0.79 ± 0.004 (2.00 ± 0.10)	0.984 (25.0)	0.098 (2.50) max.	0.327 (8.30)	see note 1
8 mm 4 mm Pitch	0.171 (4.35)	0.177 (0.450)	0.246 (6.25)	0.138 ± 0.002 (3.50 ± 0.05)	0.157 ± 0.004 (4.00 ± 0.10)	0.984 (25.0)	0.098 (2.50) max.	0.327 (8.30)	see note 1
12 mm 2 mm Pitch	0.323 (8.20)	0.059 (0.150)	0.404 (10.25)	0.217 ± 0.002 (5.50 ± 0.05)	0.157 ± 0.004 (4.00 ± 0.10)	1.181 (30.0)	0.256 (6.50) max.	0.484 (12.30)	see note 1
16 mm 4 mm Pitch	0.476 (12.1)	0.059 (0.150)	0.561 (14.25)	0.295 ± 0.004 (7.50 ± 0.1)	0.157 ± 0.004 (4.00 ± 0.10)	1.181 (30.0)	0.341 (8.0) max.	0.641 (16.3)	see note 1

**Note**

- (1) The cavity defined by A<sub>0</sub>, B<sub>0</sub> and K<sub>0</sub> shall surround the component with sufficient clearance that:
- The component does not protrude above the top surface of the carrier tape.
  - The component can be removed from the cavity in a vertical direction without mechanical restriction, after the cover tape has been removed.
  - Rotation of the component is limited to 20° maximum for 8 mm and 12 mm tapes and 10° maximum for 16 mm figure 3 and 4.
  - Lateral movement of the component is restricted to 0.5 mm maximum for 8 mm and 12 mm wide tape and to 1.0 mm maximum for 16 mm wide tape figure 5.

### PAPER 8 mm CARRIER TAPE

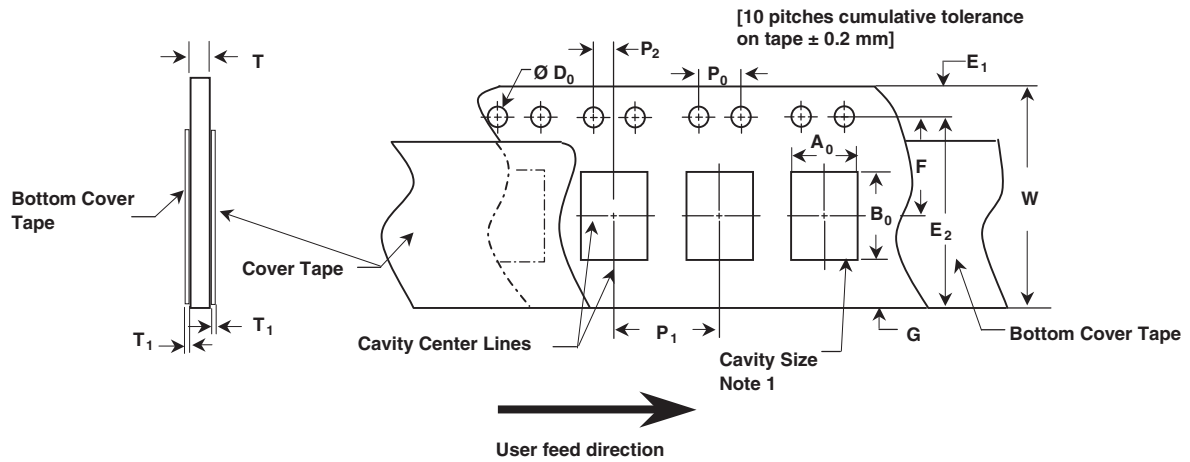


Figure 2

CONSTANT CARRIER TAPE METRIC DIMENSIONS in inches (millimeters)							
TAPE SIZE	D <sub>0</sub>	E <sub>1</sub>	P <sub>0</sub>	P <sub>2</sub>	T <sub>1</sub> MAX.	G MIN.	R REF.
8 mm	0.059 + 0.004/- 0.0 (1.50 + 0.10/- 0.0)	0.069 + 0.004 (1.75 ± 0.10)	0.175 + 0.004 (4.0 ± 0.10)	0.079 + 0.002 (2.0 ± 0.05)	0.024 (0.60)	0.029 (0.75)	0.010 (0.25)

VARIABLE CARRIER TAPE METRIC DIMENSIONS in inches (millimeters)						
TAPE SIZE	E <sub>2</sub> MIN.	F	P <sub>1</sub>	W MAX.	A <sub>0</sub> , B <sub>0</sub> AND K <sub>0</sub>	T
8 mm 2 mm Pitch	0.246 (6.25)	0.138 ± 0.002 (3.50 ± 0.05)	0.79 ± 0.004 (2.00 ± 0.10)	0.327 (8.30)	see note 1	1.1 mm maximum for paper base tape
8 mm 4 mm Pitch	0.246 (6.25)	0.138 ± 0.002 (3.50 ± 0.05)	0.157 ± 0.004 (4.00 ± 0.10)	0.327 (8.30)	see note 1	1.1 mm maximum for paper base tape

**Note**

- (1) The cavity defined by A<sub>0</sub>, B<sub>0</sub> and K<sub>0</sub> shall surround the component with sufficient clearance that:
- The component does not protrude above the top surface of the carrier tape.
  - The component can be removed from the cavity in a vertical direction without mechanical restriction, after the cover tape has been removed.
  - Rotation of the component is limited to 20° maximum for 8 mm and 12 mm tapes and 10° maximum for 16 mm figure 3 and 4.
  - Lateral movement of the component is restricted to 0.5 mm maximum for 8 mm and 12 mm wide tape and to 1.0 mm maximum for 16 mm wide tape figure 5.

## MAXIMUM COMPONENT ROTATION FOR PUNCHED AND EMBOSSED CARRIER

Maximum Lateral Movement Carrier Top View

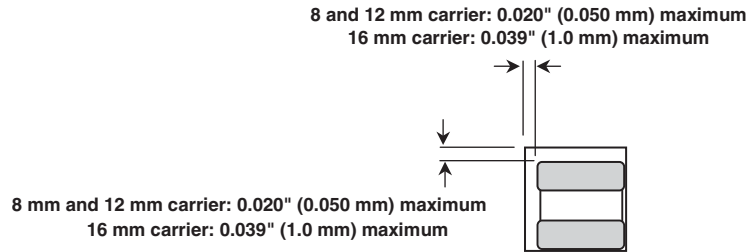
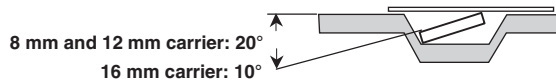


Figure 3

Maximum Component Rotation Embossed Carrier Side View



Maximum Component Rotation Paper Carrier Side View



Figure 4

## MAXIMUM LATERAL MOVEMENT FOR PUNCHED AND EMBOSSED CARRIER

Maximum Component Rotation Top View

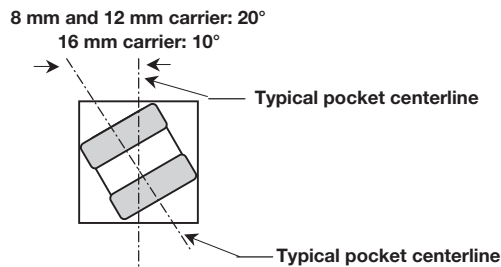


Figure 5

## BENDING RADIUS FOR PUNCHED EMBOSSED CARRIER

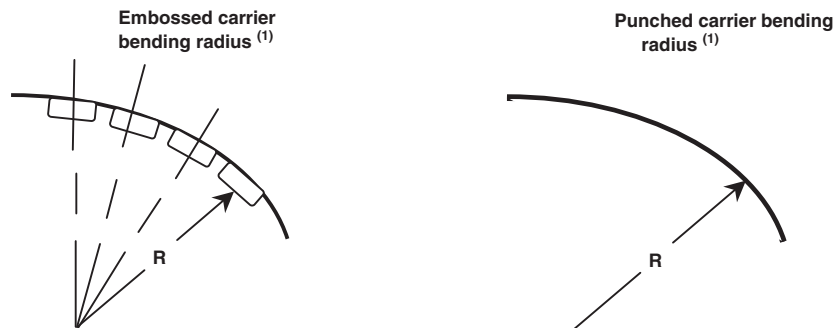


Figure 6

**Note**

<sup>(7)</sup> The tape with or without components shall pass without damage round "R", see dimensions table