

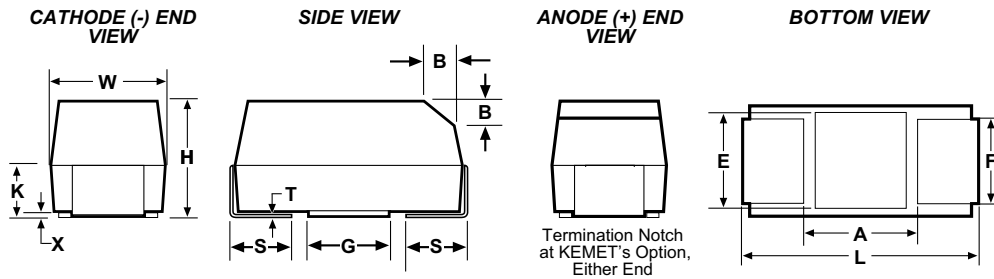
CONDUCTIVE POLYMER CHIP CAPACITORS **KEMET**

T530 SERIES - High Capacitance/Ultra-Low ESR

FEATURES

- Highest CV in Standard EIA Size
- Extremely Low ESR
- Operating Temperature: -55°C to 125°C
- Polymer Cathode Technology
- High Frequency Capacitance Retention
- Non-Ignition Failure Mode
- Capacitance: 150 to 1500 μ F
- Voltage: 2.5V to 10V
- Molded Case (pick-and-place precision)
- 100% Accelerated Steady State Aging
- 100% Surge Current Testing
- Utilizes Multiple Tantalum Anode Technology
- Volumetric Efficiency
- Use Up to 90% of Rated Voltage (10% Derating)
- Self-Healing Mechanism
- True SMT Capability
- RoHS Compliant/Lead Free

OUTLINE DRAWINGS



DIMENSIONS - MILLIMETERS (INCHES)

| Case Size | | L | W | H | K ± 0.20 | F ± 0.1 | S ± 0.3 | X(Ref) | T(Ref) | A(Min) | G(ref) | E(ref) |
|-----------|---------|---------------|---------------|---------------|--------------|-------------|-------------|-----------------|--------|--------|--------|--------|
| KEMET | EIA | | | | | | | | | | | |
| D | 7343-31 | 7.3 \pm 0.3 | 4.3 \pm 0.3 | 2.8 \pm 0.3 | 1.5 | 2.4 | 1.3 | 0.10 \pm 0.10 | 0.13 | 3.8 | 3.5 | 3.5 |
| Y | 7343-40 | 7.3 \pm 0.3 | 4.3 \pm 0.3 | 4.0 max | 1.9 | 2.4 | 1.3 | 0.10 \pm 0.10 | 0.13 | 3.8 | 3.5 | 3.5 |
| X | 7343-43 | 7.3 \pm 0.3 | 4.3 \pm 0.3 | 4.0 \pm 0.3 | 2.3 | 2.4 | 1.3 | 0.10 \pm 0.10 | 0.13 | 3.8 | 3.5 | 3.5 |

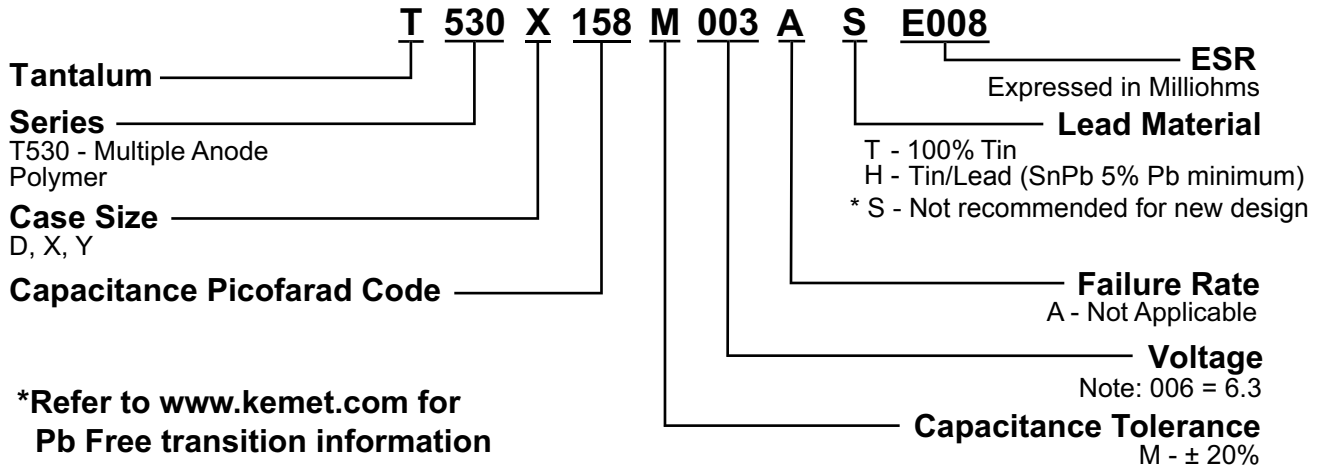
T530 RATINGS & PART NUMBER REFERENCE

| Capacitance μ F | Case Size | KEMET Part Number | DCL V_R | DF % 120Hz | ESR $m\Omega$ @100 kHz 25°C Max | Ripple Current (Arms) @ 100 kHz | |
|--|-----------|----------------------|-------------|------------|---------------------------------|---|---------------------------------|
| | | | | | | w/ $\Delta T=20^\circ C$ @ -55°C to 105°C | w/ $\Delta T=2^\circ C$ @ 125°C |
| 2.5 Volt Rating at 105°C (1.7 Volt Rating at 125°C) | | | | | | | |
| 470.0 | D | T530D477M2R5A(1)E005 | 118 μ A | 8.0 | 5.0 | 7.1 | 2.3 |
| 470.0 | D | T530D477M2R5A(1)E006 | 118 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 470.0 | D | T530D477M2R5A(1)E010 | 118 μ A | 10.0 | 10.0 | 5.0 | 1.6 |
| 560.0 | D | T530D567M2R5A(1)E005 | 140 μ A | 8.0 | 5.0 | 7.1 | 2.3 |
| 680.0 | Y | T530Y687M2R5A(1)E005 | 170 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 680.0 | Y | T530Y687M2R5A(1)E006 | 170 μ A | 8.0 | 6.0 | 6.6 | 2.1 |
| 680.0 | D | T530D687M2R5A(1)E006 | 170 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 680.0 | D | T530D687M2R5A(1)E010 | 170 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 680.0 | X | T530X687M2R5A(1)E006 | 170 μ A | 8.0 | 6.0 | 6.7 | 2.1 |
| 1000.0 | Y | T530Y108M2R5A(1)E005 | 250 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 1000.0 | Y | T530Y108M2R5A(1)E006 | 250 μ A | 8.0 | 6.0 | 6.6 | 2.1 |
| 1000.0 | X | T530X108M2R5A(1)E004 | 250 μ A | 8.0 | 4.0 | 8.2 | 2.3 |
| 1000.0 | X | T530X108M2R5A(1)E005 | 250 μ A | 8.0 | 5.0 | 7.3 | 2.6 |
| 1000.0 | X | T530X108M2R5A(1)E006 | 250 μ A | 8.0 | 6.0 | 6.7 | 2.1 |
| 1500.0 | X | T530X158M2R5A(1)E005 | 375 μ A | 8.0 | 5.0 | 7.3 | 2.3 |
| 3 Volt Rating at 105°C (2 Volt Rating at 125°C) | | | | | | | |
| 470.0 | D | T530D477M003A(1)E010 | 141 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 680.0 | D | T530D687M003A(1)E010 | 204 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 1000.0 | X | T530X108M003A(1)E010 | 300 μ A | 8.0 | 10.0 | 5.2 | 1.6 |
| 1500.0 | X | T530X158M003A(1)E008 | 450 μ A | 8.0 | 8.0 | 5.8 | 1.8 |
| 4 Volt Rating at 105°C (2.7 Volt Rating at 125°C) | | | | | | | |
| 330.0 | D | T530D337M004A(1)E005 | 132 μ A | 8.0 | 5.0 | 7.1 | 2.3 |
| 330.0 | D | T530D337M004A(1)E006 | 132 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 470.0 | D | T530D477M004A(1)E006 | 188 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 470.0 | D | T530D477M004A(1)E010 | 188 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 470.0 | Y | T530Y477M004A(1)E005 | 188 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 470.0 | Y | T530Y477M004A(1)E006 | 188 μ A | 8.0 | 6.0 | 6.6 | 2.1 |
| 680.0 | Y | T530Y687M004A(1)E005 | 272 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 680.0 | X | T530X687M004A(1)E004 | 272 μ A | 8.0 | 4.0 | 8.2 | 2.6 |
| 680.0 | X | T530X687M004A(1)E005 | 272 μ A | 8.0 | 5.0 | 7.3 | 2.3 |
| 680.0 | X | T530X687M004A(1)E006 | 272 μ A | 8.0 | 6.0 | 6.7 | 2.1 |
| 680.0 | X | T530X687M004A(1)E010 | 272 μ A | 8.0 | 10.0 | 5.2 | 1.6 |
| 1000.0 | X | T530X108M004A(1)E006 | 400 μ A | 8.0 | 6.0 | 6.7 | 2.1 |

| Capacitance μ F | Case Size | KEMET Part Number | DCL V_R | DF % 120Hz | ESR $m\Omega$ @100 kHz 25°C Max | Ripple Current (Arms) @ 100 kHz | |
|--|-----------|----------------------|-------------|------------|---------------------------------|---|---------------------------------|
| | | | | | | w/ $\Delta T=20^\circ C$ @ -55°C to 105°C | w/ $\Delta T=2^\circ C$ @ 125°C |
| 6.3 Volt Rating at 105°C (4.2 Volt Rating at 125°C) | | | | | | | |
| 220.0 | D | T530D227M006A(1)E005 | 139 μ A | 8.0 | 5.0 | 7.1 | 2.3 |
| 220.0 | D | T530D227M006A(1)E006 | 139 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 330.0 | D | T530D337M006A(1)E006 | 208 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 330.0 | D | T530D337M006A(1)E010 | 208 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 330.0 | Y | T530Y337M006A(1)E005 | 208 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 330.0 | Y | T530Y337M006A(1)E006 | 208 μ A | 8.0 | 6.0 | 6.6 | 2.1 |
| 330.0 | Y | T530Y337M006A(1)E010 | 208 μ A | 8.0 | 10.0 | 5.1 | 1.6 |
| 470.0 | Y | T530Y477M006A(1)E005 | 296 μ A | 8.0 | 5.0 | 7.2 | 2.3 |
| 470.0 | X | T530X477M006A(1)E004 | 296 μ A | 8.0 | 4.0 | 8.2 | 2.6 |
| 470.0 | X | T530X477M006A(1)E005 | 296 μ A | 8.0 | 5.0 | 7.3 | 2.3 |
| 470.0 | X | T530X477M006A(1)E006 | 296 μ A | 8.0 | 6.0 | 6.7 | 2.1 |
| 470.0 | X | T530X477M006A(1)E010 | 296 μ A | 8.0 | 10.0 | 5.2 | 1.6 |
| 10 Volt Rating at 105°C (6.6 Volt Rating at 125°C) | | | | | | | |
| 150.0 | D | T530D157M010A(1)E005 | 150 μ A | 8.0 | 5.0 | 7.1 | 2.3 |
| 150.0 | D | T530D157M010A(1)E006 | 150 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 150.0 | D | T530D157M010A(1)E010 | 150 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 220.0 | D | T530D227M010A(1)E006 | 220 μ A | 8.0 | 6.0 | 6.5 | 2.1 |
| 220.0 | D | T530D227M010A(1)E010 | 220 μ A | 8.0 | 10.0 | 5.0 | 1.6 |
| 220.0 | Y | T530Y227M010A(1)E006 | 220 μ A | 8.0 | 6.0 | 6.6 | 2.1 |
| 330.0 | X | T530X337M010A(1)E004 | 330 μ A | 8.0 | 4.0 | 8.2 | 2.6 |
| 330.0 | X | T530X337M010A(1)E005 | 330 μ A | 8.0 | 5.0 | 7.3 | 2.3 |
| 330.0 | X | T530X337M010A(1)E006 | 330 μ A | 8.0 | 6.0 | 6.7 | 2.1 |
| 330.0 | X | T530X337M010A(1)E010 | 330 μ A | 8.0 | 10.0 | 5.2 | 1.6 |
| 16 Volt Rating at 105°C (10.6 Volt Rating at 125°C) | | | | | | | |
| 150.0 | X | T530X157M016A(1)E015 | 240 μ A | 8.0 | 15.0 | 4.2 | 1.3 |
| 150.0 | X | T530X157M016A(1)E025 | 240 μ A | 8.0 | 25.0 | 3.3 | 1.0 |
| 150.0 | X | T530X157M016A(1)E040 | 240 μ A | 8.0 | 40.0 | 2.6 | 0.8 |

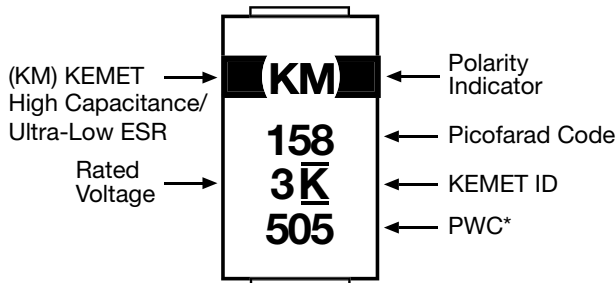
(1) To complete KEMET Part Number, insert lead material designation from ordering information on page 58. Higher voltage ratings and tighter tolerance product may be substituted within the same size at KEMET's option. Voltage substitutions will be marked with the higher voltage rating.

T530 ORDERING INFORMATION



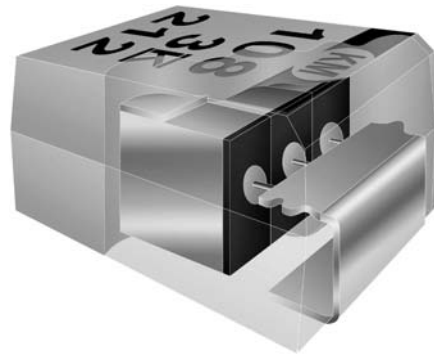
*Refer to www.kemet.com for Pb Free transition information

COMPONENT MARKING

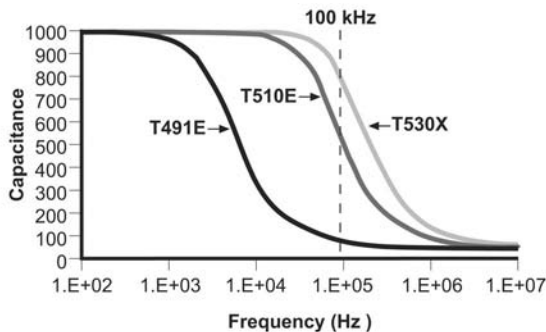


"505" = The 5th week of 2005.

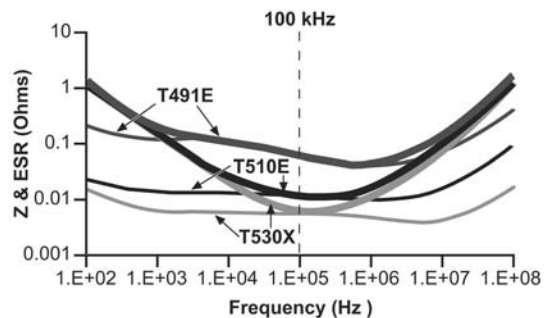
T530 SERIES CONSTRUCTION



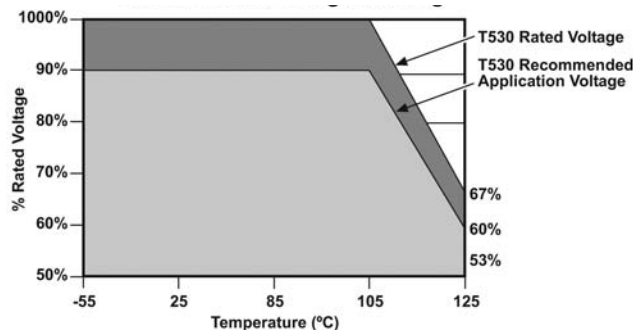
T530X/T510E/T491E 1,000µF Capacitance vs. Frequency



T530X/T510E/T491E 1,000µF Impedance & ESR vs. Frequency

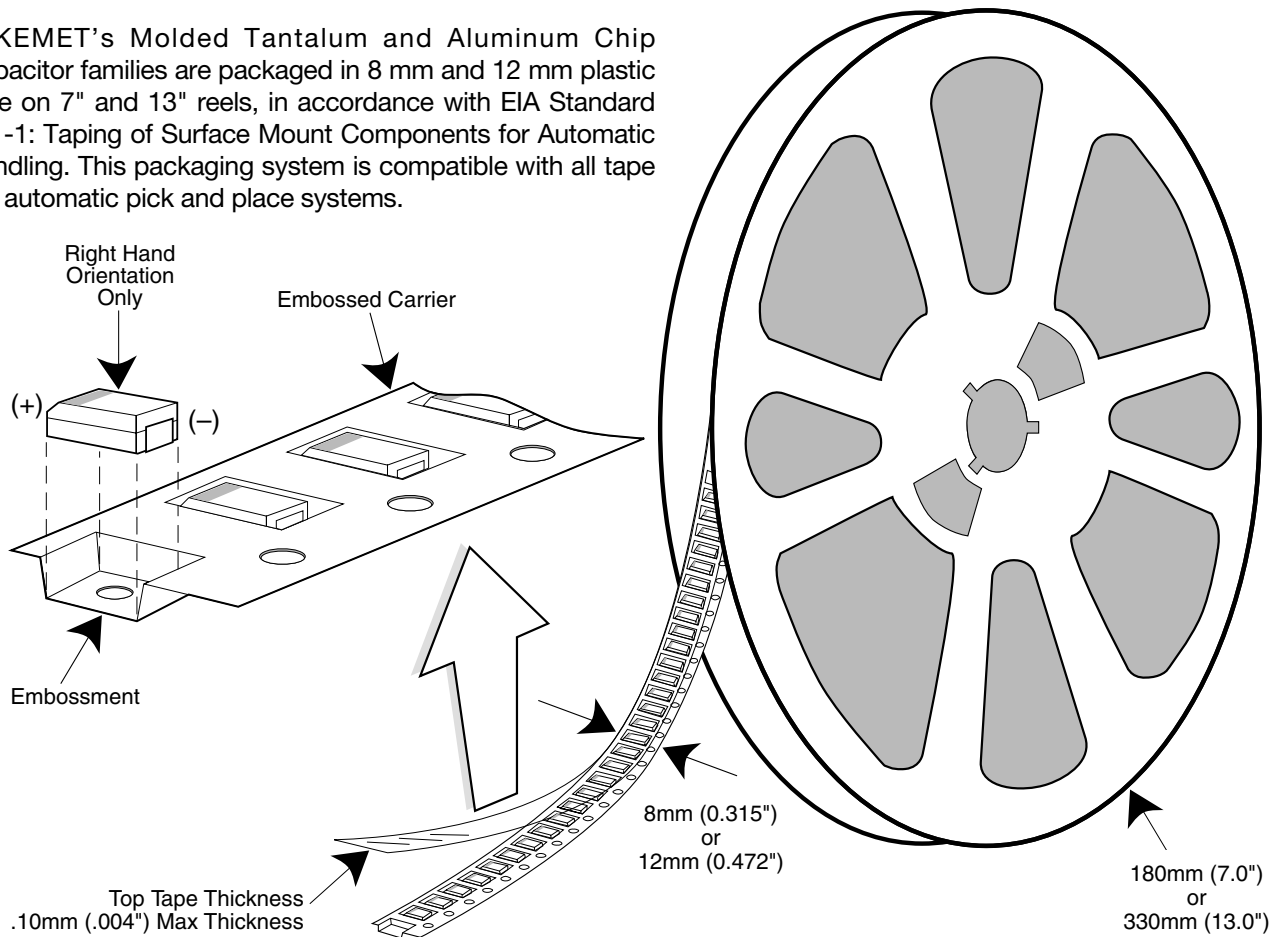


RECOMMENDED TEMPERATURE/VOLTAGE DERATING



Tape & Reel Packaging

KEMET's Molded Tantalum and Aluminum Chip Capacitor families are packaged in 8 mm and 12 mm plastic tape on 7" and 13" reels, in accordance with EIA Standard 481-1: Taping of Surface Mount Components for Automatic Handling. This packaging system is compatible with all tape fed automatic pick and place systems.



Labeling: Bar code labeling (standard or custom) shall be on the side of the reel opposite the sprocket holes. Refer to EIA-556.

QUANTITIES PACKAGED PER REEL

| Case Code | | Tape Width-mm | 7" Reel* | 13" Reel* |
|-----------|---------|---------------|----------|-----------|
| KEMET | EIA | | | |
| R | 2012-12 | 8 | 2,500 | 10,000 |
| S | 3216-12 | 8 | 2,500 | 10,000 |
| T | 3528-12 | 8 | 2,500 | 10,000 |
| U | 6032-15 | 12 | 1,000 | 5,000 |
| W | 7343-15 | 12 | 1,000 | 3,000 |
| V | 7343-20 | 12 | 1,000 | 3,000 |
| A | 3216-18 | 8 | 2,000 | 9,000 |
| B | 3528-21 | 8 | 2,000 | 8,000 |
| C | 6032-28 | 12 | 500 | 3,000 |
| D | 7343-31 | 12 | 500 | 2,500 |
| Y | 7343-40 | 12 | 500 | 2,000 |
| X | 7343-43 | 12 | 500 | 2,000 |
| E | 7260-38 | 12 | 500 | 2,000 |

* No c-spec required for 7" reel packaging. C-7280 required for 13" reel packaging.

Packaging Information

Performance Notes

- Cover Tape Break Force:** 1.0 Kg Minimum.
- Cover Tape Peel Strength:** The total peel strength of the cover tape from the carrier tape shall be:

| Tape Width | Peel Strength |
|------------|--|
| 8 mm | 0.1 Newton to 1.0 Newton (10g to 100g) |
| 12 mm | 0.1 Newton to 1.3 Newton (10g to 130g) |

The direction of the pull shall be opposite the direction of the carrier tape travel. The pull angle of the carrier tape shall be 165° to 180° from the plane of the carrier tape. During peeling, the carrier and/or cover tape shall be pulled at a velocity of 300 ±10 mm/minute.

- Reel Sizes:** Molded tantalum capacitors are available on either 180 mm (7") reels (standard) or 330 mm (13") reels (with C-7280). Note that 13" reels are preferred.
- Labeling:** Bar code labeling (standard or custom) shall be on the side of the reel opposite the sprocket holes. Refer to EIA-556.

Embossed Carrier Tape Configuration: Figure 1

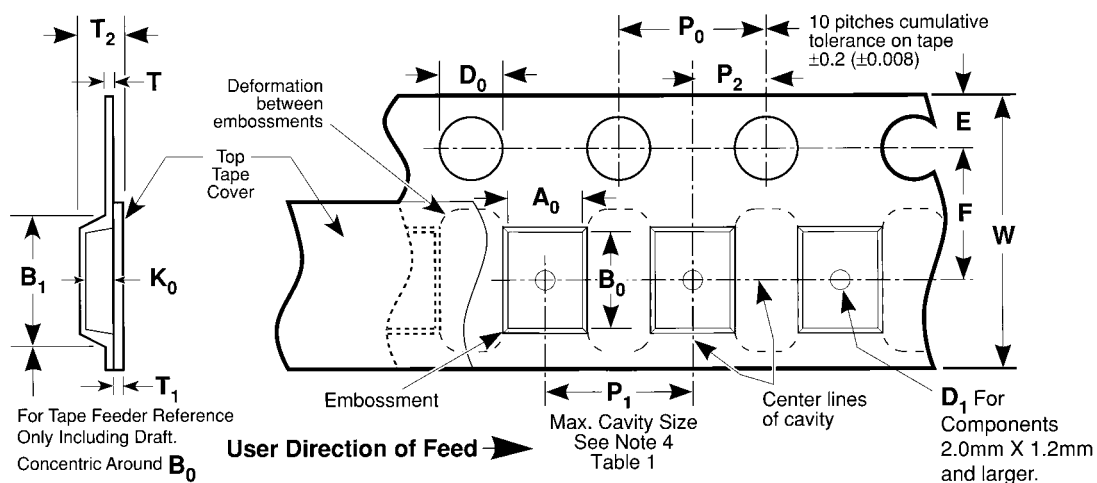


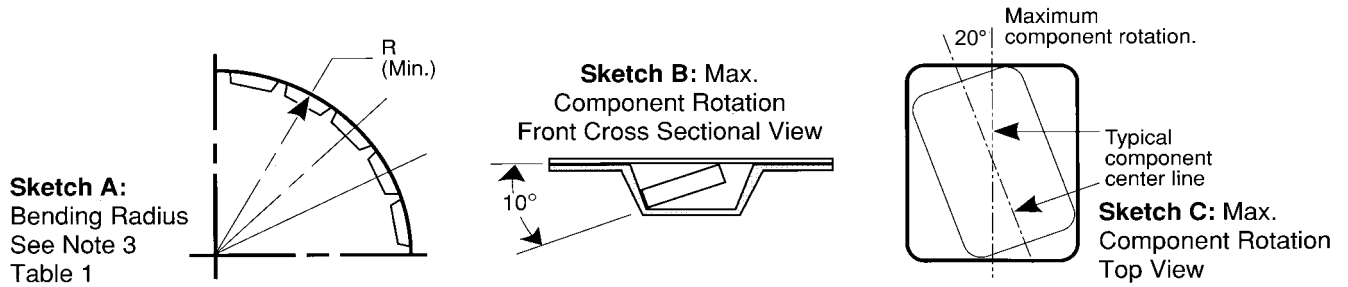
Table 1 — EMBOSSED TAPE DIMENSIONS (Metric will govern)

| Constant Dimensions — Millimeters (Inches) | | | | | | | | | |
|--|--|-------------------------------|-------------------------------|-----------------------------|-----------------------------|--------------------|--------------------|------------------------------|--|
| Tape Size | D ₀ | E | P ₀ | P ₂ | T Max | T ₁ Max | | | |
| 8 mm and 12 mm | 1.5 +0.10 -0.0 (0.059 +0.004, -0.0) | 1.75 ±0.10 (0.069 ±0.004) | 4.0 ±0.10 (0.157 ±0.004) | 2.0 ±0.05 (0.079 ±0.002) | 0.600 (0.024) | 0.100 (0.004) | | | |
| Variable Dimensions — Millimeters (Inches) | | | | | | | | | |
| Tape Size | Pitch | B ₁ Max. Note 1 | D ₁ Min. Note 2 | F | P ₁ | R Min. Note 3 | T ₂ Max | W | A ₀ B ₀ K ₀ Note 4 |
| 8 mm | Single (4 mm) | 4.4 (0.173) | 1.0 (0.039) | 3.5 ±0.05 (0.138 ±0.002) | 4.0 ±0.10 (0.157 ±0.004) | 25.0 (0.984) | 2.5 (0.098) | 8.0 ±0.30 (.315 ±0.012) | |
| 12 mm | Double (8 mm) | 8.2 (0.323) | 1.5 (0.059) | 5.5 ±0.05 (0.217 ±0.002) | 8.0 ±0.10 (0.315 ±0.004) | 30.0 (1.181) | 4.6 (0.181) | 12.0 ±0.30 (0.472 ±0.012) | |

NOTES

- B₁ dimension is a reference dimension for tape feeder clearance only.
- The embossment hole location shall be measured from the sprocket hole controlling the location of the embossment. Dimensions of embossment location and hole location shall be applied independent of each other.
- Tape with components shall pass around radius "R" without damage (see sketch A). The minimum trailer length (Fig. 2) may require additional length to provide R min. for 12 mm embossed tape for reels with hub diameters approaching N min. (Table 2)
- The cavity defined by A₀, B₀, and K₀ shall be configured to surround the part with sufficient clearance such that the chip does not protrude beyond the sealing plane of the cover tape, the chip can be removed from the cavity in a vertical direction without mechanical restriction, rotation of the chip is limited to 20 degrees maximum in all 3 planes, and lateral movement of the chip is restricted to 0.5 mm maximum in the pocket (not applicable to vertical clearance.)

Embossed Carrier Tape Configuration (cont.)



Sketch D: Tape Camber (Top View)

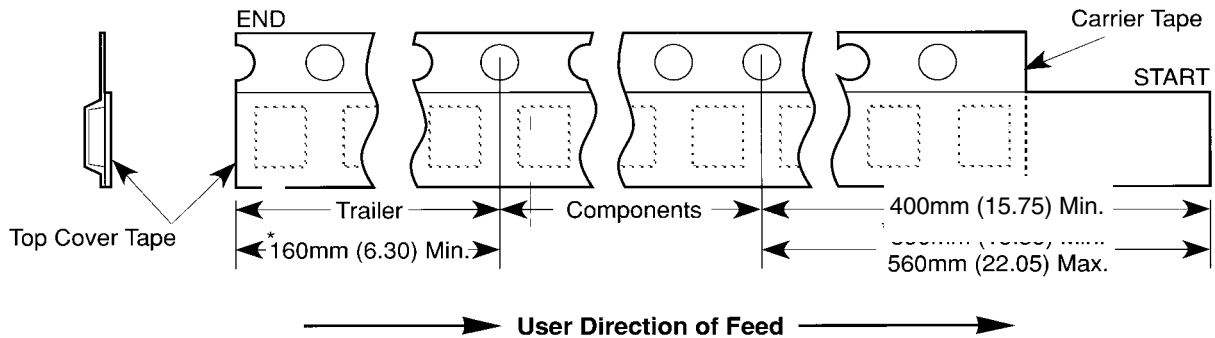
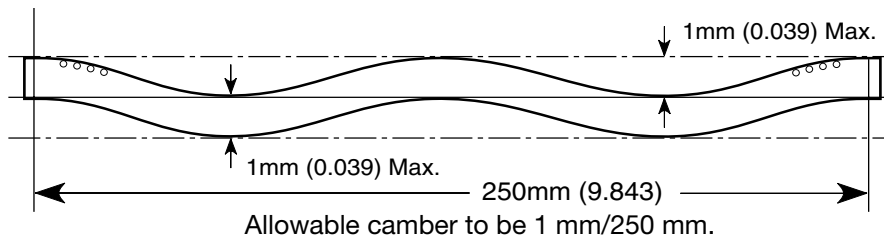


Figure 2: Tape Leader & Trailer Dimensions (Metric Dimensions Will Govern)

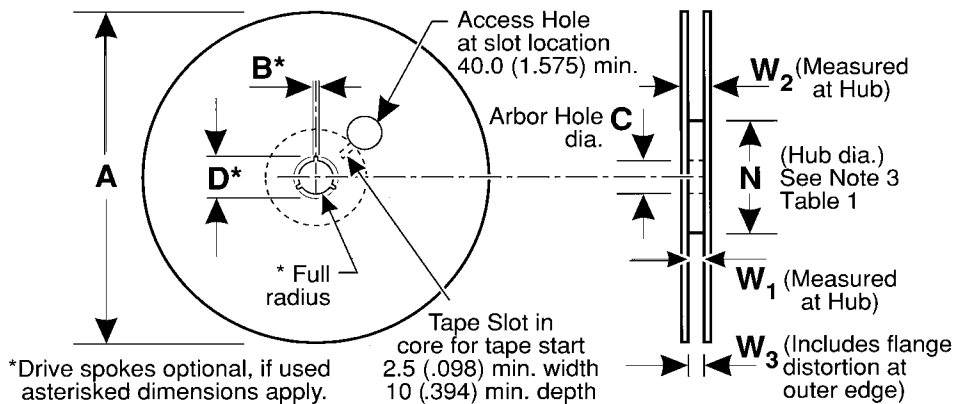


Figure 3: Reel Dimensions (Metric Dimensions will govern)

Table 2 – REEL DIMENSIONS (Metric will govern)

| Tape Size | A Max | B* Min | C | D* Min | N Min | W_1 | W_2 Max | W_3 |
|-----------|-------------------|----------------|--------------------------------|-----------------|-------------------------------|---|-----------------|--|
| 8 mm | 330.0 (12.992) | 1.5 (0.059) | 13.0 ± 0.20 (0.512 ± 0.008) | 20.2 (0.795) | 50.0 (1.969) See Note 3 | 8.4 +1.5, -0.0 (0.331 +0.059, -0.0) | 14.4 (0.567) | 7.9 Min (0.311) 10.9 Max (0.429) |
| 12 mm | 330.0 (12.992) | 1.5 (0.059) | 13.0 ± 0.20 (0.512 ± 0.008) | 20.2 (0.795) | Table 1 | 12.4 +2.0, -0.0 (0.488 +0.078, -0.0) | 18.4 (0.724) | 11.9 Min (0.469) 15.4 Max (0.606) |