

## Overview

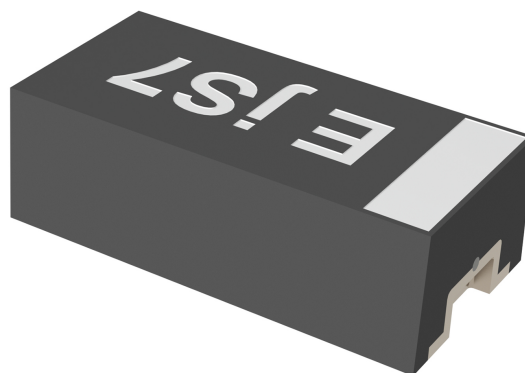
The KEMET Organic Capacitor (KO-CAP) is a solid electrolytic capacitor with a conductive polymer cathode capable of delivering very low ESR and improved capacitance retention at high frequencies. KO-CAP combines the low ESR of multilayer ceramic, the high capacitance of aluminum electrolytic and the volumetric efficiency of tantalum into a single surface mount package. Unlike liquid electrolyte-based capacitors, KO-CAP has a very long operational life and high ripple current capabilities.

## KOCAP Polymer Capacitors

The T527 Miniature Polymer Electrolytic utilizes a facedown terminal technology that combines packaging efficiency with a low profile component. This series offers high capacitance in a 3216–10 (3.2 mm (L) x 1.6 mm (W) x 1.0 mm (H)) package size. The T527 is ideal for use in densely populated circuits such as smart phones and digital cameras where space restrictions do not allow for larger and more commonly available high capacitance case sizes.

## Benefits

- EIA Case Size: 3216 (1206 MLCC Equivalent)
- Low Profile: 1.0 mm maximum
- Lead free 260°C reflow capable
- Improved volumetric efficiency
- Halogen-free Epoxy/RoHS Compliant



## Applications

Typical applications include densely populated circuits where space restrictions do not allow for larger and more commonly available case sizes such as smart phones, digital cameras, MP3 players, GPS navigation systems, WiFi modules, analytical and test equipment, and audio/sound circuits.

## Environmental Compliance

RoHS Compliant (6/6) according to Directive 2002/95/EC. Halogen-free.



## Ordering Information

| T               | 527                             | I         | 476                                                                                                            | M                     | 006                              | A                   | T                  | E200                                                                              |
|-----------------|---------------------------------|-----------|----------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------|---------------------|--------------------|-----------------------------------------------------------------------------------|
| Capacitor Class | Series                          | Case Size | Capacitance Code (pF)                                                                                          | Capacitance Tolerance | Rated Voltage (VDC)              | Failure Rate/Design | Termination Finish | ESR Code                                                                          |
| T = Tantalum    | 527 = Facedown Terminal Polymer | I = 3216  | First two digits represent significant figures. Third digit specifies number of zeros.<br>ex. 476 = 47 $\mu$ F | M = $\pm 20\%$        | 004 = 4<br>006 = 6.3<br>010 = 10 | A = N/A             | T = 100% Tin (Sn)  | E = ESR<br>Last three digits specify ESR in m $\Omega$<br>(200 = 200 m $\Omega$ ) |

## Performance Characteristics

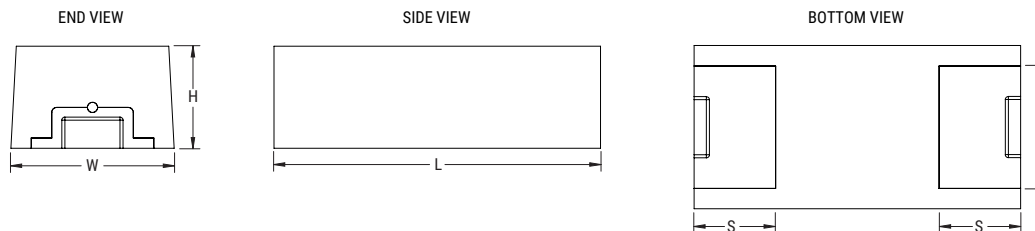
| Item                    | Specifications                                      |
|-------------------------|-----------------------------------------------------|
| Operating Temperature   | -55°C to 105°C                                      |
| Rated Capacitance Range | 22 $\mu$ F to 100 $\mu$ F at 120 Hz/25°C            |
| Capacitance Tolerance   | M Tolerance (20%)                                   |
| Rated Voltage Range     | 4 – 10 V                                            |
| DF (120 Hz)             | Refer to Part Number Electrical Specification Table |
| ESR (100 kHz)           | Refer to Part Number Electrical Specification Table |
| Leakage Current         | Refer to Part Number Electrical Specification Table |

## Qualification

| Test                   | Condition/Characteristics                                                                                                                    |       |        |                                     |                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------------------------------------|------------------|
| Endurance              | 105°C at rated voltage, 1,000 hours                                                                                                          |       | Δ C/C  | Within initial Δ C/C limits         |                  |
|                        |                                                                                                                                              |       | DF     | Within 1.5 x initial limits         |                  |
|                        |                                                                                                                                              |       | DCL    | Within initial limits               |                  |
| Damp Heat Steady State | 60°C, 90 to 95% RH, 500 hours                                                                                                                |       | Δ C/C  | -20% to +30% of initial Δ C/C limit |                  |
|                        |                                                                                                                                              |       | DF     | Within 1.5 x initial limits         |                  |
|                        |                                                                                                                                              |       | DCL    | Within initial limits               |                  |
| Temperature Stability  | Extreme temperature exposure at -55°C and +105°C                                                                                             | Δ C/C | +25°C  | -55°C                               | +105°C           |
|                        |                                                                                                                                              |       | IL*    | -20% to 0% of Δ C/C                 | +50% -0% of DC/C |
|                        |                                                                                                                                              |       | IL     | IL                                  | 1.5 x IL         |
|                        |                                                                                                                                              |       | IL     | N/A                                 | 10 x IL          |
| Surge Voltage          | 1.3 V <sub>R</sub> , 85°C, 1,000 Ω resistor, 1,000 cycles                                                                                    |       | Δ C/C  | Within initial Δ C/C limits         |                  |
|                        |                                                                                                                                              |       | DF     | Within initial limit                |                  |
|                        |                                                                                                                                              |       | DCL    | Within initial limit                |                  |
| Mechanical Shock       | 100 G, Saw-Tooth wave                                                                                                                        |       | Δ C/C  | Within initial Δ C/C limits         |                  |
|                        |                                                                                                                                              |       | DF     | Within initial limit                |                  |
|                        |                                                                                                                                              |       | DCL    | Within initial limit                |                  |
| Vibration              | Frequency: 10 to 2 kHz, Sweep: 1 minute, Amplitude of vibration: 1.5 mm, Vibration Time: Each plane shall be 2 hours for a total of 4 hours. |       | Δ C/C  | Within initial Δ C/C limits         |                  |
|                        |                                                                                                                                              |       | DF     | Within initial limit                |                  |
|                        |                                                                                                                                              |       | DCL    | Within initial limit                |                  |
| Terminal strength      | Strength: 4.9 N, Time: 10±0.5 seconds (two directions)                                                                                       |       | Visual | No evidence of mechanical damage    |                  |

\*IL = Initial limit

## Dimensions – Millimeters



| Case Size |         | Component Dimensions |         |         |         |         | Weight |
|-----------|---------|----------------------|---------|---------|---------|---------|--------|
| KEMET     | EIA     | L                    | W       | H       | F       | S       | (mg)   |
| I         | 3216-10 | 3.2±0.2              | 1.6±0.2 | 0.9±0.1 | 1.2±0.1 | 0.8±0.2 | 70.12  |

**Table 1 – Ratings & Part Number Reference**

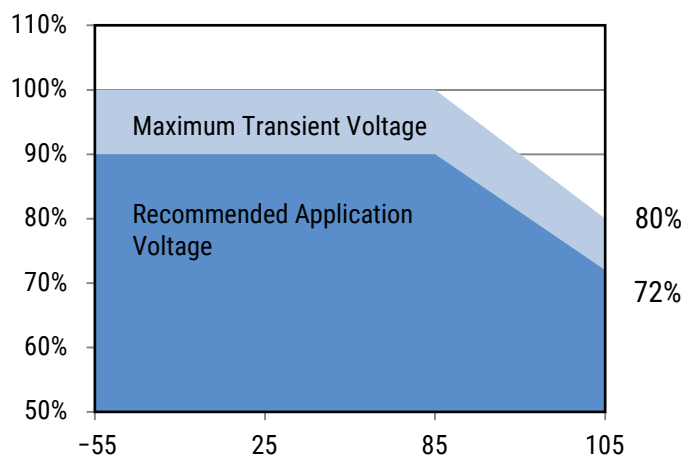
| Rated Voltage | Rated Capacitance | Case Code/<br>Case Size | KEMET Part Number            | DC Leakage                           | DF                              | ESR                               | Maximum Allowable Ripple Current | MSL                    | Maximum Operating Temp |
|---------------|-------------------|-------------------------|------------------------------|--------------------------------------|---------------------------------|-----------------------------------|----------------------------------|------------------------|------------------------|
| VDC at 85°C   | µF                | KEMET/EIA               | (See below for part options) | µA at +25°C<br>Maximum/<br>5 Minutes | % at +25°C<br>120 Hz<br>Maximum | mΩ at +25°C<br>100 kHz<br>Maximum | mA at +45°C<br>100 kHz           | Reflow Temp<br>≤ 260°C | °C                     |
| 4             | 100               | I/3216-10               | T527I107M004ATE200           | 40.0                                 | 8                               | 200                               | 775                              | 3                      | 105                    |
| 6.3           | 47                | I/3216-10               | T527I476M006ATE200           | 29.6                                 | 6                               | 200                               | 548                              | 3                      | 105                    |
| 6.3           | 100               | I/3216-10               | T527I107M006ATE200           | 63.0                                 | 8                               | 200                               | 775                              | 3                      | 105                    |
| 6.3           | 100               | I/3216-10               | T527I107M006ATE100           | 63.0                                 | 8                               | 100                               | 775                              | 3                      | 105                    |
| 6.3           | 100               | I/3216-10               | T527I107M006ATE070           | 63.0                                 | 8                               | 70                                | 1134                             | 3                      | 105                    |
| 10            | 22                | I/3216-10               | T527I226M010ATE200           | 22.0                                 | 8                               | 200                               | 548                              | 3                      | 105                    |
| 10            | 33                | I/3216-10               | T527I336M010ATE200           | 33.0                                 | 6                               | 200                               | 548                              | 3                      | 105                    |
| 10            | 47                | I/3216-10               | T527I476M010ATE200           | 47.0                                 | 6                               | 200                               | 548                              | 3                      | 105                    |

Refer to Ordering Information for additional detail.

## Derating Guidelines

| Voltage Rating | -55°C to 85°C                            |                                                     | 85°C to 105°C                            |                                                     |
|----------------|------------------------------------------|-----------------------------------------------------|------------------------------------------|-----------------------------------------------------|
|                | Maximum Recommended Steady State Voltage | Maximum Recommended Transient Voltage (1 ms – 1 µs) | Maximum Recommended Steady State Voltage | Maximum Recommended Transient Voltage (1 ms – 1 µs) |
| ≤ 10 V         | 90% of $V_R$                             | $V_R$                                               | See Chart                                | See Chart                                           |

$V_R$  = Rated Voltage



## Ripple Current/Ripple Voltage

Permissible AC ripple voltage and current are related to equivalent series resistance (ESR) and the power dissipation capabilities of the device. Permissible AC ripple voltage which may be applied is limited by two criteria:

1. The positive peak AC voltage plus the DC bias voltage, if any, must not exceed the DC voltage rating of the capacitor.
2. The negative peak AC voltage in combination with bias voltage, if any, must not exceed the allowable limits specified for reverse voltage. See the Reverse Voltage section for allowable limits.

The maximum power dissipation by case size can be determined using the table at right. The maximum power dissipation rating stated in the table must be reduced with increasing environmental operating temperatures. Refer to the table below for temperature compensation requirements.

| Temperature Compensation Multipliers<br>for Maximum Ripple Current |                                                  |                                                   |
|--------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|
| $T \leq 45^{\circ}\text{C}$                                        | $45^{\circ}\text{C} < T \leq 85^{\circ}\text{C}$ | $85^{\circ}\text{C} < T \leq 105^{\circ}\text{C}$ |
| 1.00                                                               | 0.90                                             | 0.40                                              |

$T$  = Environmental Temperature

The maximum power dissipation rating must be reduced with increasing environmental operating temperatures. Refer to the Temperature Compensation Multiplier table for details.

| Case Code | EIA Case Code | Maximum Power Dissipation (P max)<br>mWatts at 45°C with<br>+30°C Rise |
|-----------|---------------|------------------------------------------------------------------------|
| I         | 3216          | 60                                                                     |

Using the P max of the device, the maximum allowable rms ripple current or voltage may be determined.

$$I(\text{max}) = \sqrt{P \text{ max} / R}$$

$$E(\text{max}) = Z \sqrt{P \text{ max} / R}$$

$I$  = rms ripple current (amperes)

$E$  = rms ripple voltage (volts)

$P \text{ max}$  = maximum power dissipation (watts)

$R$  = ESR at specified frequency (ohms)

$Z$  = Impedance at specified frequency (ohms)

## Reverse Voltage

Polymer electrolytic capacitors are polar devices and may be permanently damaged or destroyed if connected in the wrong polarity. These devices will withstand a small degree of transient voltage reversal for short periods as shown in the below table.

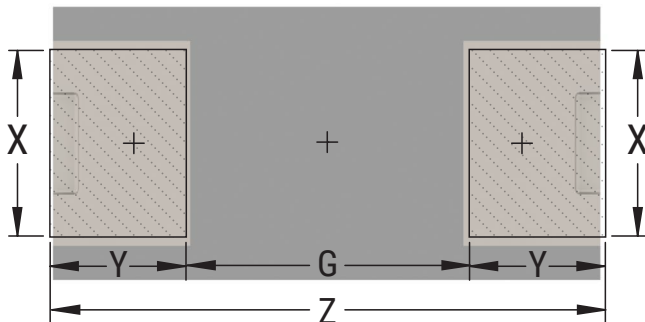
| Temperature | Permissible Transient Reverse Voltage |
|-------------|---------------------------------------|
| 25°C        | 15% of Rated Voltage                  |
| 55°C        | 10% of Rated Voltage                  |
| 85°C        | 5% of Rated Voltage                   |
| 105°C       | 3% of Rated Voltage                   |
| 125°C*      | 1% of Rated Voltage                   |

\*For Series Rated to 125°C

### Table 2 – Land Dimensions/Courtyard

| KEMET | Metric Size Code | Dimensions (mm)<br>Minimum – Maximum |           |          |          |
|-------|------------------|--------------------------------------|-----------|----------|----------|
| Case  | EIA              | G                                    | Z         | X        | Y        |
| I     | 3216-10          | 1.00–1.65                            | 3.25–3.80 | 1.1–1.30 | 0.8–1.40 |

(JEITA RC-2371 is recommended for reference)



## Soldering Process

KEMET's families of surface mount capacitors are compatible with wave (single or dual), convection, IR, or vapor phase reflow techniques. Preheating of these components is recommended to avoid extreme thermal stress. KEMET's recommended profile conditions for convection and IR reflow reflect the profile conditions of the IPC/J-STD-020D standard for moisture sensitivity testing. The devices can safely withstand a maximum of three reflow passes at these conditions.

Please note that although the X/7343-43 case size can withstand wave soldering, the tall profile (4.3 mm maximum) dictates care in wave process development.

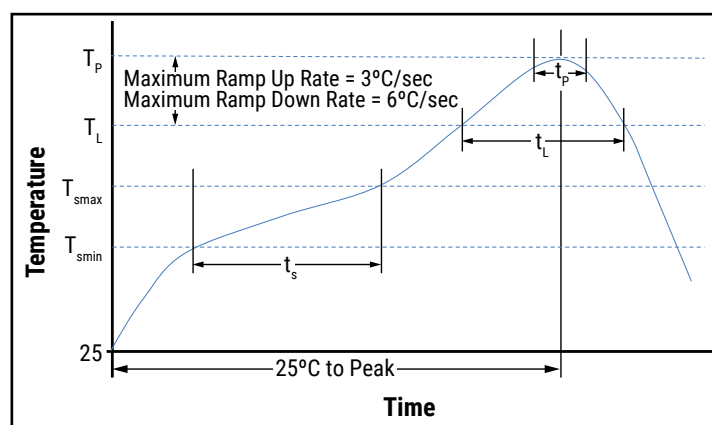
Hand soldering should be performed with care due to the difficulty in process control. If performed, care should be taken to avoid contact of the soldering iron to the molded case. The iron should be used to heat the solder pad, applying solder between the pad and the termination, until reflow occurs. Once reflow occurs, the iron should be removed immediately. "Wiping" the edges of a chip and heating the top surface is not recommended.

| Profile Feature                                       | SnPb Assembly       | Pb-Free Assembly    |
|-------------------------------------------------------|---------------------|---------------------|
| <b>Preheat/Soak</b>                                   |                     |                     |
| Temperature Minimum ( $T_{smin}$ )                    | 100°C               | 150°C               |
| Temperature Maximum ( $T_{smax}$ )                    | 150°C               | 200°C               |
| Time ( $t_s$ ) from $T_{smin}$ to $T_{smax}$          | 60 – 120 seconds    | 60 – 120 seconds    |
| Ramp-up Rate ( $T_L$ to $T_p$ )                       | 3°C/seconds maximum | 3°C/seconds maximum |
| Liquidous Temperature ( $T_L$ )                       | 183°C               | 217°C               |
| Time Above Liquidous ( $t_L$ )                        | 60 – 150 seconds    | 60 – 150 seconds    |
| Peak Temperature ( $T_p$ )                            | 220°C*<br>235°C**   | 250°C*<br>260°C**   |
| Time within 5°C of Maximum Peak Temperature ( $t_p$ ) | 20 seconds maximum  | 30 seconds maximum  |
| Ramp-down Rate ( $T_p$ to $T_L$ )                     | 6°C/seconds maximum | 6°C/seconds maximum |
| Time 25°C to Peak Temperature                         | 6 minutes maximum   | 8 minutes maximum   |

*Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.*

\*Case Size D, E, P, Y, and X

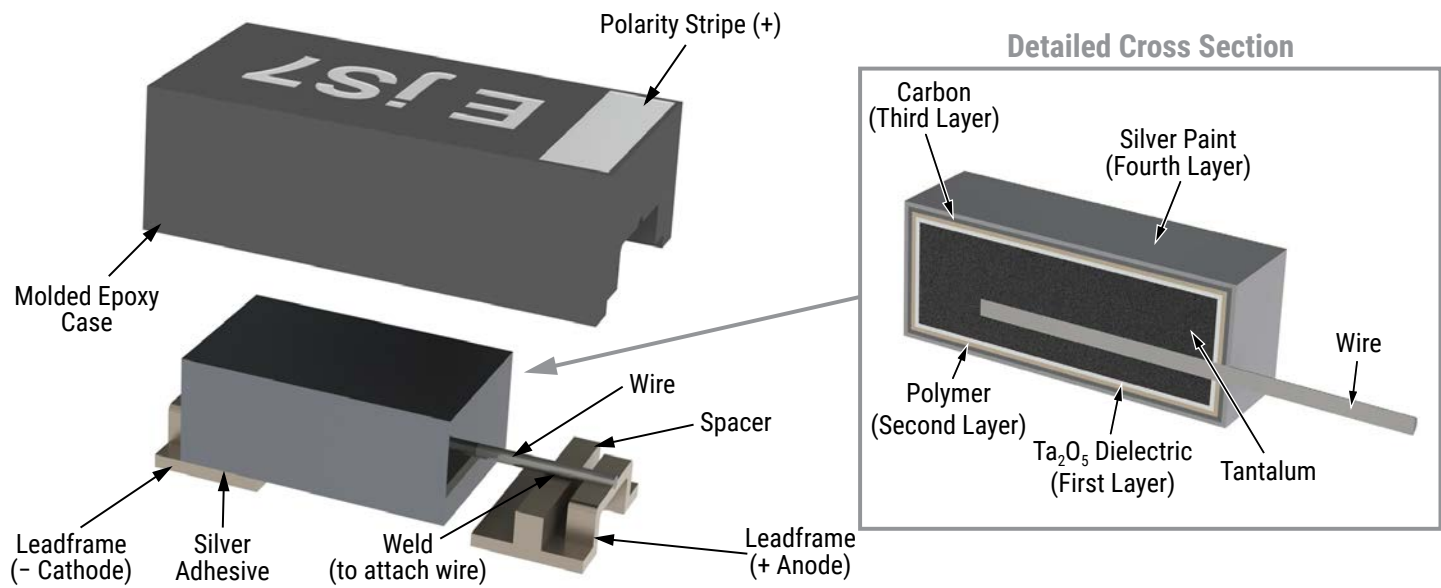
\*\*Case Size A, B, C, H, I, K, M, R, S, T, U, V, W, and Z



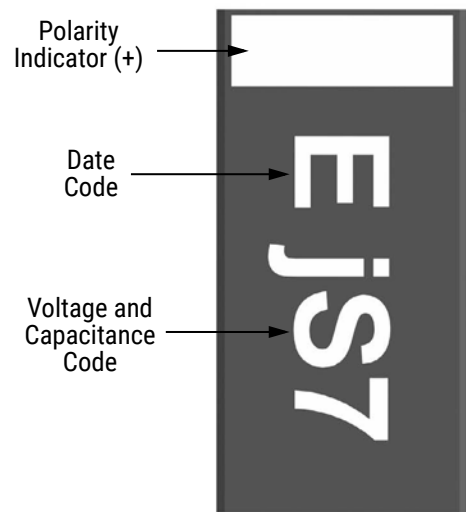
## Storage

All KO-CAP Series are shipped in moisture barrier bags with a desiccant and moisture indicator card. These series are classified as MSL3 (Moisture Sensitivity Level 3). Product contained within the moisture barrier bags should be stored in normal working environments with temperatures not to exceed 30°C and humidity not in excess of 60% RH.

Construction



Capacitor Marking



| Code          | g   | j   | A    |
|---------------|-----|-----|------|
| Rated Voltage | 4 V | 6 V | 10 V |

| Code        | J7 | N7 | S7 | W7 | A8  |
|-------------|----|----|----|----|-----|
| Capacitance | 22 | 33 | 47 | 68 | 100 |

| Date Code * |     |     |     |     |     |     |     |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|             | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2013        | A   | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
| 2014        | N   | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |
| 2015        | a   | b   | c   | d   | e   | f   | g   | h   | j   | k   | l   | m   |
| 2016        | n   | p   | q   | r   | s   | t   | u   | v   | w   | x   | y   | z   |



Tape & Reel Packaging Information

KEMET’s molded chip capacitor families are packaged in 8 and 12 mm plastic tape on 7" and 13" reels in accordance with *EIA Standard 481: Embossed Carrier Taping of Surface Mount Components for Automatic Handling*. This packaging system is compatible with all tape-fed automatic pick-and-place systems.

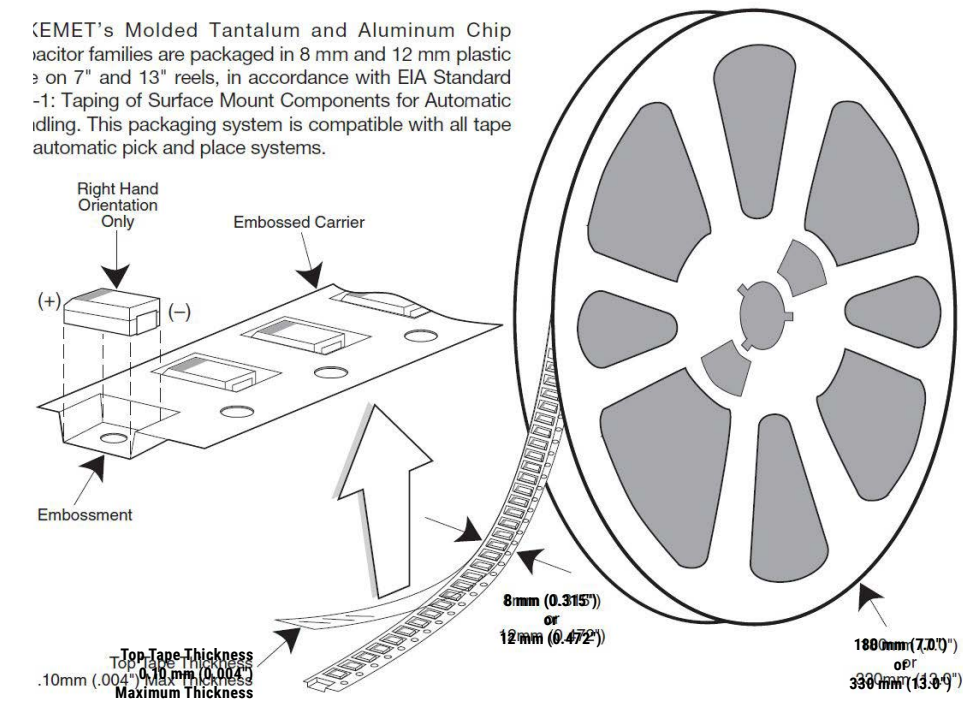
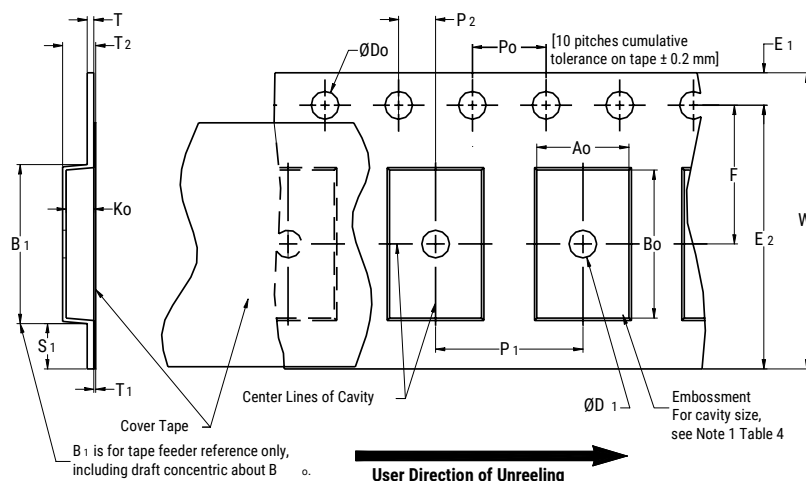


Table 3 – Packaging Quantity

| KEMET Case Codes |      | Tape and Reel Dimensions |                      |
|------------------|------|--------------------------|----------------------|
|                  |      | Tape Width (mm)          | 180 mm (7" diameter) |
| I                | 3216 | 8                        | 3,000                |

(Quantity per reel)

**Figure 1 – Embossed (Plastic) Carrier Tape Dimensions**



**Table 4 – Embossed (Plastic) Carrier Tape Dimensions**

Metric will govern

| Constant Dimensions – Millimeters (Inches) |                                     |                                  |                            |                           |                           |                       |                                  |                  |                           |
|--------------------------------------------|-------------------------------------|----------------------------------|----------------------------|---------------------------|---------------------------|-----------------------|----------------------------------|------------------|---------------------------|
| Tape Size                                  | D <sub>0</sub>                      | D <sub>1</sub> Minimum<br>Note 1 | E <sub>1</sub>             | P <sub>0</sub>            | P <sub>2</sub>            | R Reference<br>Note 2 | S <sub>1</sub> Minimum<br>Note 3 | T Maximum        | T <sub>1</sub><br>Maximum |
| 8 mm                                       | 1.5+0.10/-0.0<br>(0.059+0.004/-0.0) | 1.0<br>(0.039)                   | 1.75±0.10<br>(0.069±0.004) | 4.0±0.10<br>(0.157±0.004) | 2.0±0.05<br>(0.079±0.002) | 25.0<br>(0.984)       | 0.600<br>(0.024)                 | 0.600<br>(0.024) | 0.100<br>(0.004)          |
| 12 mm                                      |                                     | 1.5<br>(0.059)                   |                            |                           | 2.0±0.1<br>(0.079±0.059)  | 30<br>(1.181)         |                                  |                  |                           |
| 16 mm                                      |                                     |                                  |                            |                           |                           |                       |                                  |                  |                           |

| Variable Dimensions – Millimeters (Inches) |                                  |                                  |                        |                           |                                                                                   |                        |                 |                                                  |  |
|--------------------------------------------|----------------------------------|----------------------------------|------------------------|---------------------------|-----------------------------------------------------------------------------------|------------------------|-----------------|--------------------------------------------------|--|
| Tape Size                                  | Pitch                            | B <sub>1</sub> Maximum<br>Note 4 | E <sub>2</sub> Minimum | F                         | P <sub>1</sub>                                                                    | T <sub>2</sub> Maximum | W Maximum       | A <sub>0</sub> , B <sub>0</sub> & K <sub>0</sub> |  |
| 8 mm                                       | Single (4 mm)                    | 4.35<br>(0.171)                  | 6.25<br>(0.246)        | 3.5±0.05<br>(0.138±0.002) | 2.0±0.05 or 4.0±0.10<br>(0.079±0.002 or 0.157±0.004)                              | 2.5<br>(0.098)         | 8.3<br>(0.327)  | Note 5                                           |  |
| 12 mm                                      | Single (4 mm)<br>& Double (8 mm) | 8.2<br>(0.323)                   | 10.25<br>(0.404)       | 5.5±0.05<br>(0.217±0.002) | 2.0±0.05 (0.079±0.002) or<br>4.0±0.10 (0.157±0.004) or<br>8.0±0.10 (0.315 ±0.004) | 4.6<br>(0.181)         | 12.3<br>(0.484) |                                                  |  |
| 16 mm                                      | Triple (12 mm)                   | 12.1<br>(0.476)                  | 14.25<br>(0.561)       | 7.5±0.10<br>(0.295±0.004) | 4.0±0.10 (0.157±0.004)<br>to 12.0±0.10 (0.472±0.004)                              | 8.0 (0.315)            | 16.3<br>(0.642) |                                                  |  |

1. 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.
2. The tape, with or without components, shall pass around R without damage (see Figure 4).
3. If S<sub>1</sub> < 1.0 mm, there may not be enough area for cover tape to be properly applied (see EIA Standard 481–D, paragraph 4.3, section b).
4. B<sub>1</sub> dimension is a reference dimension for tape feeder clearance only.
5. 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:
  - (a) the component does not protrude above the top surface of the carrier tape.
  - (b) the component can be removed from the cavity in a vertical direction without mechanical restriction, after the top cover tape has been removed.
  - (c) rotation of the component is limited to 20° maximum for 8 and 12 mm tapes and 10° maximum for 16 mm tapes (see Figure 2).
  - (d) 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 tape (see Figure 3).
  - (e) see Addendum in EIA Standard 481–D for standards relating to more precise taping requirements.

## Packaging Information Performance Notes

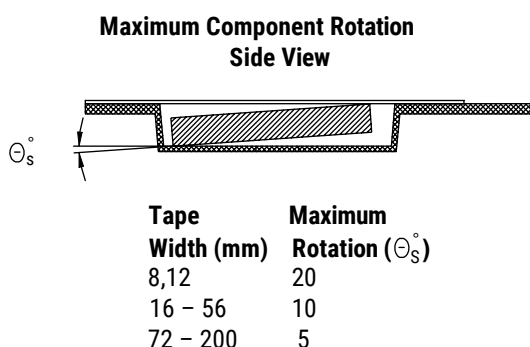
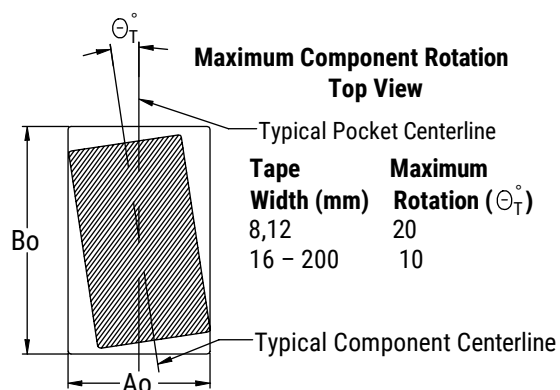
- 1. Cover Tape Break Force:** 1.0 Kg minimum.
- 2. Cover Tape Peel Strength:** The total peel strength of the cover tape from the carrier tape shall be:

| Tape Width   | Peel Strength                    |
|--------------|----------------------------------|
| 8 mm         | 0.1 to 1.0 Newton (10 to 100 gf) |
| 12 and 16 mm | 0.1 to 1.3 Newton (10 to 130 gf) |

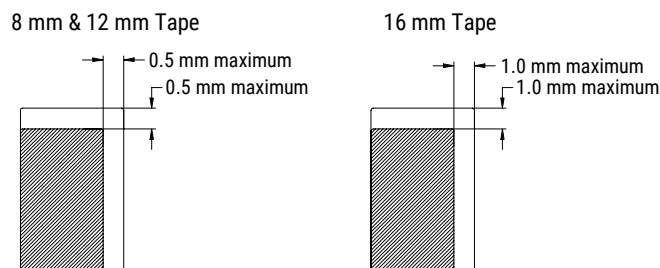
The direction of the pull shall be opposite the direction of the carrier tape travel. The pull angle of the carrier tape shall be 165° to 180° from the plane of the carrier tape. During peeling, the carrier and/or cover tape shall be pulled at a velocity of 300 ±10 mm/minute.

- 3. Labeling:** Bar code labeling (standard or custom) shall be on the side of the reel opposite the sprocket holes. Refer to EIA Standards 556 and 624.

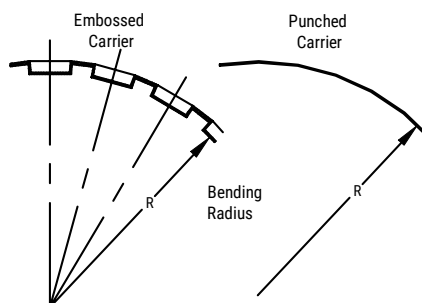
## Figure 2 – Maximum Component Rotation



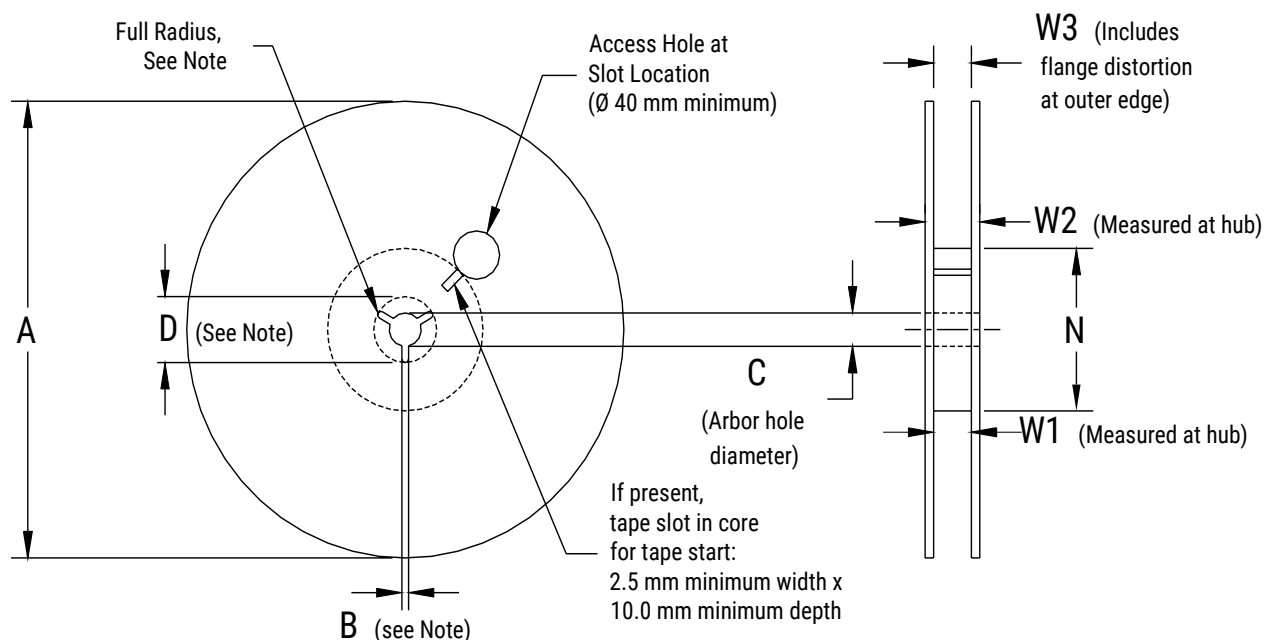
## Figure 3 – Maximum Lateral Movement



## Figure 4 – Bending Radius



**Figure 5 – Reel Dimensions**



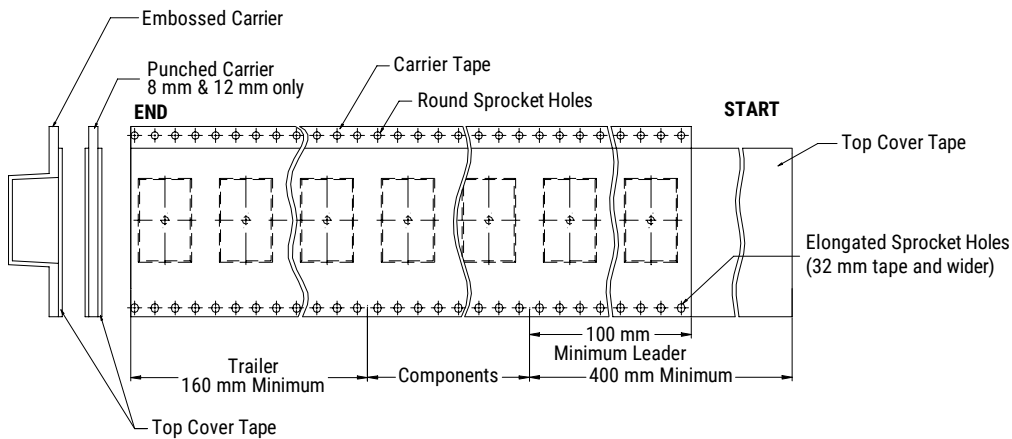
Note: Drive spokes optional; if used, dimensions B and D shall apply.

**Table 5 – Reel Dimensions**

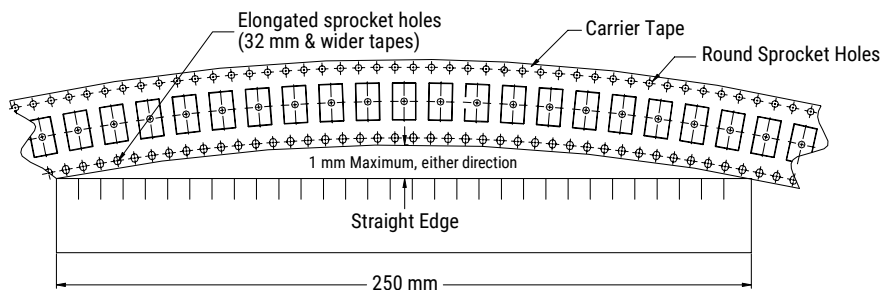
Metric will govern

| Constant Dimensions – Millimeters (Inches) |                                                               |                                     |                                      |                                                   |
|--------------------------------------------|---------------------------------------------------------------|-------------------------------------|--------------------------------------|---------------------------------------------------|
| Tape Size                                  | A                                                             | B Minimum                           | C                                    | D Minimum                                         |
| 8 mm                                       | 178±0.20<br>(7.008±0.008)<br>or<br>330±0.20<br>(13.000±0.008) | 1.5<br>(0.059)                      | 13.0+0.5/-0.2<br>(0.521+0.02/-0.008) | 20.2<br>(0.795)                                   |
| 12 mm                                      |                                                               |                                     |                                      |                                                   |
| 16 mm                                      |                                                               |                                     |                                      |                                                   |
| Variable Dimensions – Millimeters (Inches) |                                                               |                                     |                                      |                                                   |
| Tape Size                                  | N Minimum                                                     | W <sub>1</sub>                      | W <sub>2</sub> Maximum               | W <sub>3</sub>                                    |
| 8 mm                                       | 50<br>(1.969)                                                 | 8.4+1.5/-0.0<br>(0.331+0.059/-0.0)  | 14.4<br>(0.567)                      | Shall accommodate tape width without interference |
| 12 mm                                      |                                                               | 12.4+2.0/-0.0<br>(0.488+0.078/-0.0) | 18.4<br>(0.724)                      |                                                   |
| 16 mm                                      |                                                               | 16.4+2.0/-0.0<br>(0.646+0.078/-0.0) | 22.4<br>(0.882)                      |                                                   |

**Figure 6 – Tape Leader & Trailer Dimensions**



**Figure 7 – Maximum Camber**



## KEMET Electronic Corporation Sales Offices

For a complete list of our global sales offices, please visit [www.kemet.com/sales](http://www.kemet.com/sales).

---

## Disclaimer

All product specifications, statements, information and data (collectively, the "Information") in this datasheet are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed.

All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

Statements of suitability for certain applications are based on KEMET Electronics Corporation's ("KEMET") knowledge of typical operating conditions for such applications, but are not intended to constitute – and KEMET specifically disclaims – any warranty concerning suitability for a specific customer application or use. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by KEMET with reference to the use of KEMET's products is given gratis, and KEMET assumes no obligation or liability for the advice given or results obtained.

Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.