

R47 Series Metallized Polypropylene Film, Class X2, 520 VAC**KEMET**
CHARGED®**Overview**

The R47 Series is constructed of metallized polypropylene film encapsulated with self-extinguishing resin in a box of material meeting the requirements of UL 94 V-0.

Applications

Typical applications include worldwide use in electromagnetic interference suppression in all X2 and across-the-line applications.

Benefits

- Approvals: ENEC, UL, cUL
- Rated voltage: 520 VAC 50/60 Hz
- Capacitance range: 0.0047 – 2.2 μ F
- Lead spacing: 10.0 – 37.5 mm
- Capacitance tolerance: \pm 20%, \pm 10%, \pm 5% on request
- Climatic category: 40/85/56, IEC 60068-1
- Tape and reel in accordance with IEC 60286-2
- RoHS Compliant and lead-free terminations
- Operating temperature range of -40°C to +85°C
- 100% screening factory test at 2,700 VDC/1,700 VAC

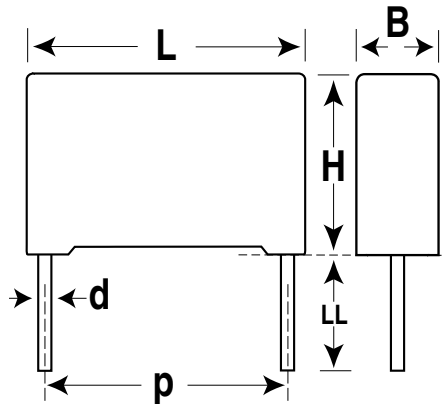
**Part Number System**

| R47 | 5 | F | 1470 | 00 | 01 | M |
|------------------------------|---------------------|--|--|----------------------------|----------------------|--|
| Series | Rated Voltage (VAC) | Lead Spacing (mm) | Capacitance Code (pF) | Lead and Packaging Code | Internal Use | Capacitance Tolerance |
| X2, Metallized Polypropylene | 5 = 520 | F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5 | Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added. | See Ordering Options Table | 01, 02 (Standard) | J = \pm 5% K = \pm 10% M = \pm 20% |

Ordering Options Table

| Lead Spacing Nominal (mm) | Type of Leads and Packaging | Lead Length (mm) | Lead and Packaging Code |
|---------------------------|--|----------------------|-------------------------|
| 10 | Standard Lead and Packaging Options | | |
| | Bulk (Bag) – Short Leads | 4 +2/-0 | 00 |
| | Ammo Pack | $H_0 = 18.5 \pm 0.5$ | DQ |
| | Other Lead and Packaging Options | | |
| | Tape & Reel (Large Reel) | $H_0 = 18.5 \pm 0.5$ | CK |
| | Bulk (Bag) – Long Leads | 25 +2/-1 | 50 |
| | Bulk (Bag) – Max Length Leads | 30 +5/-0 | 40 |
| 15 | Standard Lead and Packaging Options | | |
| | Bulk (Bag) – Short Leads | 4 +2/-0 | 00 |
| | Ammo Pack | $H_0 = 18.5 \pm 0.5$ | DQ |
| | Other Lead and Packaging Options | | |
| | Tape & Reel (Large Reel) | $H_0 = 18.5 \pm 0.5$ | CK |
| | Bulk (Bag) – Long Leads | 25 +2/-1 | 50 |
| | Bulk (Bag) – Max Length Leads | 30 +5/-0 | 40 |
| | Pizza Pack | 4 +2/-0 | BB |
| 22.5 | Standard Lead and Packaging Options | | |
| | Bulk (Tray) – Short Leads | 4 +2/-0 | 00 |
| | Ammo Pack | $H_0 = 18.5 \pm 0.5$ | DQ |
| | Other Lead and Packaging Options | | |
| | Tape & Reel (Large Reel) | $H_0 = 18.5 \pm 0.5$ | CK |
| | Bulk (Tray) – Long Leads | 25 +2/-1 | 50 |
| | Bulk (Tray) – Max Length Leads | 30 +5/-0 | 40 |
| | Pizza Pack | 4 +2/-0 | BB |
| 27.5 | Standard Lead and Packaging Options | | |
| | Bulk (Tray) – Short Leads | 4 +2/-0 | 00 |
| | Other Lead and Packaging Options | | |
| | Tape & Reel (Large Reel) | $H_0 = 18.5 \pm 0.5$ | CK |
| | Bulk (Tray) – Long Leads | 25 +2/-1 | 50 |
| | Bulk (Tray) – Max Length Leads | 30 +5/-0 | 40 |
| 37.5 | Standard Lead and Packaging Options | | |
| | Bulk (Tray) – Short Leads | 4 +2/-0 | 00 |
| | Other Lead and Packaging Options | | |
| | Bulk (Tray) – Long Leads | 25 +2/-1 | 50 |
| | Bulk (Tray) – Max Length Leads | 30 +5/-0 | 40 |

Dimensions – Millimeters



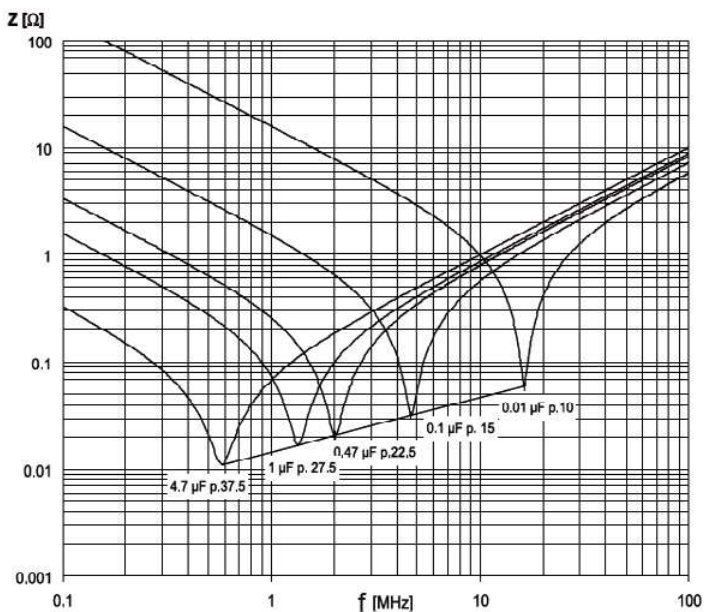
| p | | B | | H | | L | | d | |
|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Nominal | Tolerance | Nominal | Tolerance | Nominal | Tolerance | Nominal | Tolerance | Nominal | Tolerance |
| 10.0 | +/-0.4 | 4.0 | +0.2/-0 | 9.0 | +0.1/-0 | 13.0 | +0.2/-0 | 0.6 | +/-0.05 |
| 10.0 | +/-0.4 | 5.0 | +0.2/-0 | 11.0 | +0.1/-0 | 13.0 | +0.2/-0 | 0.6 | +/-0.05 |
| 10.0 | +/-0.4 | 6.0 | +0.2/-0 | 12.0 | +0.1/-0 | 13.0 | +0.2/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 5.0 | +0.2/-0 | 11.0 | +0.1/-0 | 18.0 | +0.3/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 6.0 | +0.2/-0 | 12.0 | +0.1/-0 | 18.0 | +0.3/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 6.0 | +0.2/-0 | 17.5 | +0.1/-0 | 18.0 | +0.3/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 7.5 | +0.2/-0 | 13.5 | +0.1/-0 | 18.0 | +0.5/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 7.5 | +0.2/-0 | 18.5 | +0.1/-0 | 18.0 | +0.5/-0 | 0.8 | +/-0.05 |
| 15.0 | +/-0.4 | 8.5 | +0.2/-0 | 14.5 | +0.1/-0 | 18.0 | +0.5/-0 | 0.6 | +/-0.05 |
| 15.0 | +/-0.4 | 9.0 | +0.2/-0 | 12.5 | +0.1/-0 | 18.0 | +0.5/-0 | 0.8 | +/-0.05 |
| 15.0 | +/-0.4 | 10.0 | +0.2/-0 | 16.0 | +0.1/-0 | 18.0 | +0.5/-0 | 0.8 | +/-0.05 |
| 15.0 | +/-0.4 | 11.0 | +0.2/-0 | 19.0 | +0.1/-0 | 18.0 | +0.5/-0 | 0.8 | +/-0.05 |
| 15.0 | +/-0.4 | 13.0 | +0.2/-0 | 12.0 | +0.1/-0 | 18.0 | +0.5/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 6.0 | +0.2/-0 | 15.0 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 6.5 | +0.2/-0 | 13.5 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 7.0 | +0.2/-0 | 16.0 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 8.5 | +0.2/-0 | 17.0 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 10.0 | +0.2/-0 | 18.5 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 11.0 | +0.2/-0 | 20.0 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 22.5 | +/-0.4 | 13.0 | +0.2/-0 | 22.0 | +0.1/-0 | 26.5 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 9.0 | +0.2/-0 | 17.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 11.0 | +0.2/-0 | 20.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 13.0 | +0.2/-0 | 22.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 14.0 | +0.2/-0 | 28.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 18.0 | +0.2/-0 | 33.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 27.5 | +/-0.4 | 22.0 | +0.2/-0 | 37.0 | +0.1/-0 | 32.0 | +0.3/-0 | 0.8 | +/-0.05 |
| 37.5 | +/-0.4 | 11.0 | +0.3/-0 | 22.0 | +0.1/-0 | 41.5 | +0.3/-0 | 1 | +/-0.05 |
| 37.5 | +/-0.4 | 13.0 | +0.3/-0 | 24.0 | +0.1/-0 | 41.5 | +0.3/-0 | 1 | +/-0.05 |
| 37.5 | +/-0.4 | 16.0 | +0.3/-0 | 28.5 | +0.1/-0 | 41.5 | +0.3/-0 | 1 | +/-0.05 |
| 37.5 | +/-0.4 | 19.0 | +0.3/-0 | 32.0 | +0.1/-0 | 41.5 | +0.3/-0 | 1 | +/-0.05 |
| 37.5 | +/-0.4 | 20.0 | +0.3/-0 | 40.0 | +0.1/-0 | 41.5 | +0.3/-0 | 1 | +/-0.05 |

Note: See Ordering Options Table for lead length (LL) options.

Performance Characteristics

| | | |
|--------------------------------|--|---|
| Rated Voltage | 520 VAC 50/60 Hz | |
| Capacitance Range | 0.0047 – 2.2 μ F | |
| Capacitance Tolerance | \pm 20%, \pm 10%, \pm 5% on request | |
| Temperature Range | -40°C to +85°C | |
| Climatic Category | 40/85/56 | |
| Approvals | ENEC, UL, cUL, CQC | |
| Dissipation Factor | Maximum Values at +23°C | |
| | 1 kHz | 0.1% |
| Test Voltage Between Terminals | The 100% screening factory test is carried out at 2,700 VDC/1,700 VAC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test. It is not permitted to repeat this test as there is a risk to damage the capacitor. KEMET is not liable in such case for any failures. | |
| Insulation Resistance | Minimum Values Between Terminals | |
| | $C \leq 0.33 \mu$ F | $\geq 50,000 \text{ M}\Omega$ |
| | $C > 0.33 \mu$ F | $\geq 30,000 \text{ M}\Omega \cdot \mu$ F |
| In DC Applications | Recommended Voltage $\leq 1,000 \text{ VDC}$ | |



Impedance Graph



Environmental Test Data

| Test | IEC Publication | Procedure |
|------------------------|-------------------------|---|
| Endurance | EN/IEC 60384-14 | 1.25 x V _R VAC 50 Hz, once every hour increase to 1,000 VAC for 0.1 second, 1,000 hours at upper rated temperature |
| Vibration | IEC 60068-2-6 Test Fc | 3 directions at 2 hours each 10 – 55 Hz at 0.75 mm or 98 m/s ² |
| Bump | IEC 60068-2-29 Test Eb | 1,000 bumps at 390 m/s ² |
| Change of Temperature | IEC 60068-2-14 Test Na | Upper and lower rated temperature 5 cycles |
| Active Flammability | IEC 60384-14 | V _R + 20 surge pulses at 2.5 kV (pulse every 5 seconds) |
| Passive Flammability | IEC 60384-14 | IEC 60384-1, IEC 60695-11-5 Needle flame test |
| Damp Heat Steady State | IEC 60068-2-78 Test Cab | +40°C and 93% RH, 56 days |

Approvals

| Mark | Specification | File Number |
|---|-------------------------------------|-------------|
|  | EN/IEC 60384-14 | CA08.00101 |
|  | UL 1414 (up to 1 µF, 85°C, 250 VAC) | E97797 |
| | UL 1283 (440 VAC 110°C) | E85238 |

Environmental Compliance

All KEMET EMI capacitors are RoHS Compliant.



RoHS Compliant

Table 1 – Ratings & Part Number Reference

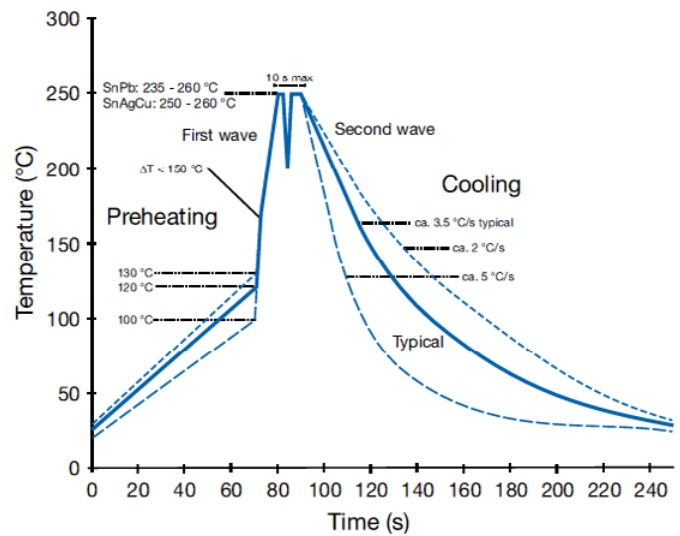
| Cap Value (µF) | Dimensions in mm | | | Lead Spacing (p) | dV/dt (V/µs) | New KEMET Part Number | Legacy Part Number |
|----------------|------------------|--------|--------|------------------|--------------|-----------------------|--------------------|
| | B | H | L | | | | |
| 0.0047 | 4.0 | 9.0 | 13.0 | 10.0 | 750 | 475F1470(1)01(2) | R475F1470(1)01(2) |
| 0.0068 | 5.0 | 11.0 | 13.0 | 10.0 | 750 | 475F1680(1)01(2) | R475F1680(1)01(2) |
| 0.0082 | 6.0 | 12.0 | 13.0 | 10.0 | 750 | 475F1820(1)01(2) | R475F1820(1)01(2) |
| 0.010 | 6.0 | 12.0 | 13.0 | 10.0 | 750 | 475F2100(1)01(2) | R475F2100(1)01(2) |
| 0.010 | 5.0 | 11.0 | 18.0 | 15.0 | 600 | 475I2100(1)01(2) | R475I2100(1)01(2) |
| 0.012 | 5.0 | 11.0 | 18.0 | 15.0 | 600 | 475I2120(1)01(2) | R475I2120(1)01(2) |
| 0.015 | 5.0 | 11.0 | 18.0 | 15.0 | 600 | 475I2150(1)01(2) | R475I2150(1)01(2) |
| 0.018 | 5.0 | 11.0 | 18.0 | 15.0 | 600 | 475I2180(1)01(2) | R475I2180(1)01(2) |
| 0.022 | 6.0 | 12.0 | 18.0 | 15.0 | 600 | 475I2220(1)01(2) | R475I2220(1)01(2) |
| 0.027 | 6.0 | 12.0 | 18.0 | 15.0 | 600 | 475I2270(1)01(2) | R475I2270(1)01(2) |
| 0.033 | 6.0 | 12.0 | 18.0 | 15.0 | 600 | 475I2330(1)01(2) | R475I2330(1)01(2) |
| 0.039 | 7.5 | 13.5 | 18.0 | 15.0 | 600 | 475I2390(1)01(2) | R475I2390(1)01(2) |
| 0.047 | 7.5 | 13.5 | 18.0 | 15.0 | 600 | 475I2470(1)01(2) | R475I2470(1)01(2) |
| 0.047 | 6.0 | 17.5 | 18.0 | 15.0 | 600 | 475I2470(1)02(2) | R475I2470(1)02(2) |
| 0.047 | 9.0 | 12.5 | 18.0 | 15.0 | 600 | 475I2470(1)03(2) | R475I2470(1)03(2) |
| 0.056 | 8.5 | 14.5 | 18.0 | 15.0 | 600 | 475I2560(1)01(2) | R475I2560(1)01(2) |
| 0.068 | 10.0 | 16.0 | 18.0 | 15.0 | 600 | 475I2680(1)01(2) | R475I2680(1)01(2) |
| 0.068 | 7.5 | 18.5 | 18.0 | 15.0 | 600 | 475I2680(1)02(2) | R475I2680(1)02(2) |
| 0.068 | 13.0 | 12.0 | 18.0 | 15.0 | 600 | 475I2680(1)03(2) | R475I2680(1)03(2) |
| 0.082 | 10.0 | 16.0 | 18.0 | 15.0 | 600 | 475I2820(1)01(2) | R475I2820(1)01(2) |
| 0.10 | 11.0 | 19.0 | 18.0 | 15.0 | 600 | 475I3100(1)01(2) | R475I3100(1)01(2) |
| 0.047 | 6.0 | 15.0 | 26.5 | 22.5 | 300 | 475N2470(1)01(2) | R475N2470(1)01(2) |
| 0.047 | 6.5 | 13.5 | 26.5 | 22.5 | 300 | 475N2470(1)02(2) | R475N2470(1)02(2) |
| 0.068 | 6.0 | 15.0 | 26.5 | 22.5 | 300 | 475N2680(1)01(2) | R475N2680(1)01(2) |
| 0.10 | 7.0 | 16.0 | 26.5 | 22.5 | 300 | 475N3100(1)01(2) | R475N3100(1)01(2) |
| 0.12 | 8.5 | 17.0 | 26.5 | 22.5 | 300 | 475N3120(1)01(2) | R475N3120(1)01(2) |
| 0.15 | 10.0 | 18.5 | 26.5 | 22.5 | 300 | 475N3150(1)01(2) | R475N3150(1)01(2) |
| 0.18 | 10.0 | 18.5 | 26.5 | 22.5 | 300 | 475N3180(1)01(2) | R475N3180(1)01(2) |
| 0.22 | 11.0 | 20.0 | 26.5 | 22.5 | 300 | 475N3220(1)01(2) | R475N3220(1)01(2) |
| 0.27 | 13.0 | 22.0 | 26.5 | 22.5 | 300 | 475N3270(1)01(2) | R475N3270(1)01(2) |
| 0.33 | 13.0 | 22.0 | 26.5 | 22.5 | 300 | 475N3330(1)01(2) | R475N3330(1)01(2) |
| 0.15 | 9.0 | 17.0 | 32.0 | 27.5 | 225 | 475R3150(1)01(2) | R475R3150(1)01(2) |
| 0.18 | 9.0 | 17.0 | 32.0 | 27.5 | 225 | 475R3180(1)01(2) | R475R3180(1)01(2) |
| 0.22 | 9.0 | 17.0 | 32.0 | 27.5 | 225 | 475R3220(1)01(2) | R475R3220(1)01(2) |
| 0.27 | 9.0 | 17.0 | 32.0 | 27.5 | 225 | 475R3270(1)02(2) | R475R3270(1)02(2) |
| 0.33 | 11.0 | 20.0 | 32.0 | 27.5 | 225 | 475R3330(1)02(2) | R475R3330(1)02(2) |
| 0.39 | 11.0 | 20.0 | 32.0 | 27.5 | 225 | 475R3390(1)01(2) | R475R3390(1)01(2) |
| 0.47 | 13.0 | 22.0 | 32.0 | 27.5 | 225 | 475R3470(1)01(2) | R475R3470(1)01(2) |
| 0.56 | 13.0 | 22.0 | 32.0 | 27.5 | 225 | 475R3560(1)01(2) | R475R3560(1)01(2) |
| 0.68 | 14.0 | 28.0 | 32.0 | 27.5 | 225 | 475R3680(1)01(2) | R475R3680(1)01(2) |
| 0.82 | 18.0 | 33.0 | 32.0 | 27.5 | 225 | 475R3820(1)01(2) | R475R3820(1)01(2) |
| 1.0 | 18.0 | 33.0 | 32.0 | 27.5 | 225 | 475R4100(1)01(2) | R475R4100(1)01(2) |
| 1.2 | 18.0 | 33.0 | 32.0 | 27.5 | 225 | 475R4120(1)01(2) | R475R4120(1)01(2) |
| 1.5 | 22.0 | 37.0 | 32.0 | 27.5 | 225 | 475R4150(1)01(2) | R475R4150(1)01(2) |
| 0.47 | 11.0 | 22.0 | 41.5 | 37.5 | 150 | 475W3470(1)01(2) | R475W3470(1)01(2) |
| 0.56 | 11.0 | 22.0 | 41.5 | 37.5 | 150 | 475W3560(1)01(2) | R475W3560(1)01(2) |
| 0.68 | 13.0 | 24.0 | 41.5 | 37.5 | 150 | 475W3680(1)01(2) | R475W3680(1)01(2) |
| 0.82 | 16.0 | 28.5 | 41.5 | 37.5 | 150 | 475W3820(1)01(2) | R475W3820(1)01(2) |
| 1.0 | 16.0 | 28.5 | 41.5 | 37.5 | 150 | 475W4100(1)01(2) | R475W4100(1)01(2) |
| 1.2 | 19.0 | 32.0 | 41.5 | 37.5 | 150 | 475W4120(1)01(2) | R475W4120(1)01(2) |
| 1.5 | 19.0 | 32.0 | 41.5 | 37.5 | 150 | 475W4150(1)01(2) | R475W4150(1)01(2) |
| 1.8 | 20.0 | 40.0 | 41.5 | 37.5 | 150 | 475W4180(1)01(2) | R475W4180(1)01(2) |
| 2.2 | 20.0 | 40.0 | 41.5 | 37.5 | 150 | 475W4220(1)01(2) | R475W4220(1)01(2) |
| Cap Value (µF) | B (mm) | H (mm) | L (mm) | Lead Spacing (p) | dV/dt (V/µs) | New KEMET Part Number | Legacy Part Number |

(1) Insert ordering code for lead type and packaging. See Ordering Options Table for available options.

(2) M = ±20%, K = ±10%, J = ±5% on request.

Soldering Process

The implementation of the RoHS Directive has required the use of SnAuCu (SAC) or SnCu alloys as primary solder. These alloys require a higher liquidus temperature (217°C – 221°C) as compared to SnPb eutectic alloy (183°C). Due to the higher pre-heat and wave temperatures, the heat stress to components has increased considerably. Polypropylene capacitors are especially sensitive to soldering temperature due to the relatively low melting point of polypropylene material (160°C – 170°C). As a result, wave soldering can be destructive, especially to mechanically small polypropylene capacitors with lead spacings of 5 – 10 mm. For more information, please refer to KEMET's Recommended Soldering Profiles or contact a KEMET representative. IEC Publication 61760–1 Edition 2 may also be consulted for general guidelines.



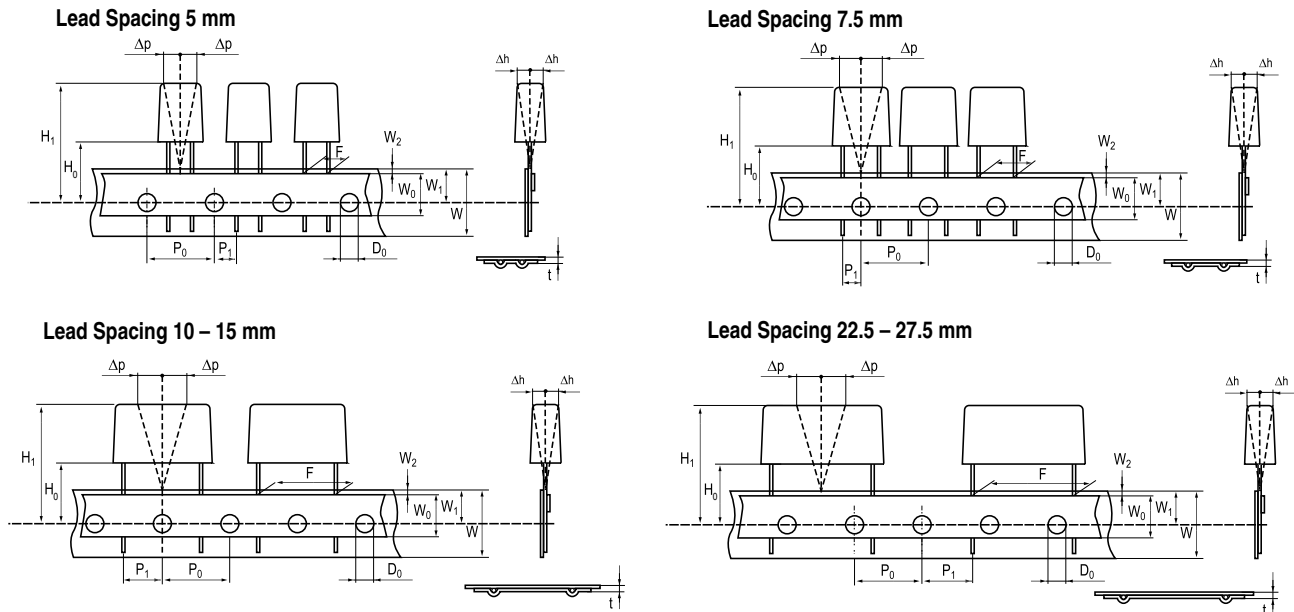
Marking

- KEMET's logo
- Series
- Capacitance
- Capacitance tolerance
- Rated voltage
- Capacitor class
- Approval marks
- Manufacturing date code
- IEC climatic category
- Passive flammability class
- Manufacturing plant

Packaging Quantities

| Lead Spacing (mm) | Thickness (mm) | Height (mm) | Length (mm) | Bulk Short Leads | Bulk Long Leads | Standard Reel ø 355 mm | Large Reel ø 500 mm | Ammo | Pizza |
|-------------------|----------------|-------------|-------------|------------------|-----------------|------------------------|---------------------|------|-------|
| 10 | 4 | 9 | 13 | 2000 | 2200 | 750 | 1500 | 1000 | |
| | 5 | 11 | 13 | 1300 | 2000 | 600 | 1250 | 800 | |
| | 6 | 12 | 13 | 1000 | 1800 | 500 | 1000 | 680 | |
| 15 | 4 | 10 | 18 | 2500 | 1500 | 750 | 1500 | 1000 | 1411 |
| | 5 | 11 | 18 | 1000 | 1250 | 600 | 1250 | 800 | 1139 |
| | 6 | 12 | 18 | 1750 | 1000 | 500 | 1000 | 680 | 935 |
| | 7.5 | 13.5 | 18 | 1000 | 800 | 350 | 800 | 500 | 748 |
| | 6 | 17.5 | 18 | 1000 | 800 | 500 | 1000 | 680 | 935 |
| | 7.5 | 14.5 | 18 | 1000 | 750 | 350 | 800 | 500 | 748 |
| | 8.5 | 14.5 | 18 | 1000 | 650 | 300 | 700 | 440 | 663 |
| | 9 | 12.5 | 18 | 1000 | 700 | 270 | 650 | 410 | 629 |
| | 7.5 | 18.5 | 18 | 900 | 600 | 350 | 800 | 500 | 748 |
| | 10 | 16 | 18 | 750 | 550 | 300 | 600 | 380 | 561 |
| | 13 | 12 | 18 | 750 | 520 | 200 | 480 | 280 | 425 |
| 11 | 19 | 18 | 450 | 400 | 250 | 500 | 340 | 510 | |
| 22.5 | 6 | 15 | 26.5 | 1404 | 702 | 300 | 700 | 464 | 660 |
| | 7 | 16 | 26.5 | 1188 | 594 | 250 | 550 | 380 | 564 |
| | 8.5 | 17 | 26.5 | 972 | 486 | 250 | 450 | 280 | 468 |
| | 10 | 18.5 | 26.5 | 810 | 405 | 160 | 350 | 235 | 396 |
| | 11 | 20 | 26.5 | 630 | 378 | 190 | 350 | 217 | 360 |
| | 13 | 22 | 26.5 | 540 | 324 | 150 | 300 | 200 | 300 |
| 27.5 | 9 | 17 | 32 | 816 | 408 | | 450 | | |
| | 10 | 20 | 32 | 600 | 360 | | 350 | | |
| | 11 | 20 | 32 | 560 | 336 | | 350 | | |
| | 13 | 22 | 32 | 480 | 288 | | 300 | | |
| | 13 | 25 | 32 | 480 | 288 | | | | |
| | 14 | 28 | 32 | 352 | 176 | | | | |
| | 15 | 24.5 | 32 | 400 | 240 | | | | |
| | 18 | 33 | 32 | 256 | 128 | | | | |
| | 22 | 37 | 32 | 168 | 112 | | | | |
| 37.5 | 11 | 22 | 41.5 | 420 | 252 | | | | |
| | 13 | 24 | 41.5 | 360 | 216 | | | | |
| | 16 | 28.5 | 41.5 | 216 | 108 | | | | |
| | 19 | 32 | 41.5 | 192 | 96 | | | | |
| | 20 | 40 | 41.5 | 126 | 84 | | | | |
| | 24 | 44 | 41.5 | 108 | 72 | | | | |
| | 30 | 45 | 41.5 | 90 | 60 | | | | |

Lead Taping & Packaging (IEC 60286–2)



Taping Specification

| Dimensions in mm | | | | | | | | | Standard IEC 60286–2 |
|---------------------------|-----------------------|-------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
| Lead spacing | +6/-0.1 | F | 5 | 7.5 | 10 | 15 | 22.5 | 27.5 | F |
| Carrier tape width | +1/-0.5 | W | 18 | 18 | 18 | 18 | 18 | 18 | 18 ^{+1/-0.5} |
| Hold-down tape width | Minimum | W ₀ | 6 | 6 | 9 | 10 | 10 | 10 | |
| Position of sprocket hole | +/-0.5 | W ₁ | 9 | 9 | 9 | 9 | 9 | 9 | 9 ^{+0.75/-0.5} |
| Distance between tapes | Maximum | W ₂ | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Sprocket hole diameter | +/-0.2 | D ₀ | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Feed hole lead spacing | +/-0.2 ⁽¹⁾ | P ₀ ⁽³⁾ | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 |
| Distance lead – feed hole | +/-0.7 | P ₁ | 3.85 | 3.75 | 7.7 | 5.2 | 7.8 | 5.3 | P ¹ |
| Deviation tape – plane | Maximum | Δp | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Lateral deviation | +/-2 | Δh | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Total thickness | +/-0.2 | t | 0.7 | 0.7 | 0.7 | 0.7 | 0.9 ^{MAX} | 0.9 ^{MAX} | 0.9 ^{MAX} |
| Sprocket hole/cap body | +/-0.5 | H ₀ ⁽²⁾ | 18.5 ^{+/-0.5} | 18.5 ^{+/-0.5} | 18.5 ^{+/-0.5} | 18.5 ^{+/-0.5} | 18.5 ^{+/-0.5} | 18.5 ^{+/-0.5} | 18 ^{+2/-0} |

(1) Maximum cumulative feed hole error, 1 mm per 20 parts.

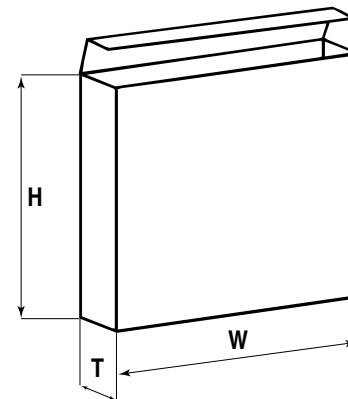
(2) 16.5 mm available on request.

(3) 15 mm available on request ($F \geq 10$ mm).

Lead Taping & Packaging (IEC 60286–2) cont'd

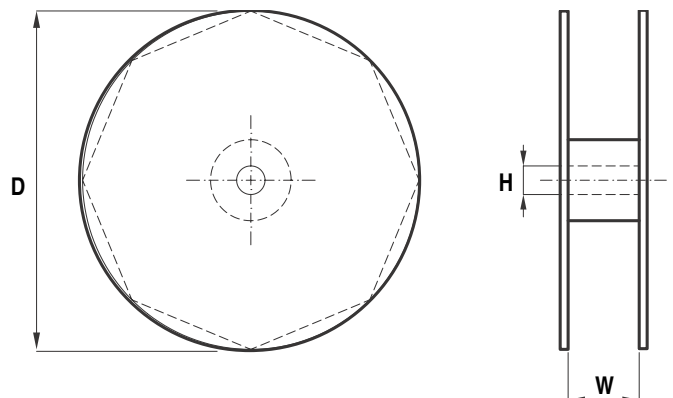
Ammo Specifications

| Series | Dimensions (mm) | | |
|------------------------|-----------------|-----|----|
| | H | W | T |
| R4x, R4x+R, R7x, RSB | 360 | 340 | 59 |
| F5A, F5B, F5D | | | |
| F6xx, F8xx | | | |
| PHExxx, PMExxx, PMRxxx | 330 | 330 | 50 |



Reel Specifications

| Series | Dimensions (mm) | | |
|------------------------|-----------------|----|----------|
| | D | H | W |
| R4x, R4x+R, R7x, RSB | 355 500 | 30 | 55 (Max) |
| F5A, F5B, F5D | | 25 | |
| F6xx, F8xx | | | |
| PHExxx, PMExxx, PMRxxx | 360 500 | 30 | 46 (Max) |



Manufacturing Date Code (IEC–60062)

| Y = Year, Z = Month | | | |
|---------------------|------|-----------|------|
| Year | Code | Month | Code |
| 2000 | M | January | 1 |
| 2001 | N | February | 2 |
| 2002 | P | March | 3 |
| 2003 | R | April | 4 |
| 2004 | S | May | 5 |
| 2005 | T | June | 6 |
| 2006 | U | July | 7 |
| 2007 | V | August | 8 |
| 2008 | W | September | 9 |
| 2009 | X | October | 0 |
| 2010 | A | November | N |
| 2011 | B | December | D |
| 2012 | C | | |
| 2013 | D | | |
| 2014 | E | | |
| 2015 | F | | |
| 2016 | H | | |
| 2017 | J | | |
| 2018 | K | | |
| 2019 | L | | |
| 2020 | M | | |

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Milan, Italy
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Rome, Italy
Tel: 39-06-23231718

Madrid, Spain
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Tel: 49-8191-3350800

Dortmund, Germany
Tel: 49-2307-3619672

Kwidzyn, Poland
Tel: 48-55-279-7025

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Weymouth, United Kingdom
Tel: 44-1305-830747

Coatbridge, Scotland
Tel: 44-1236-434455

Färjestaden, Sweden
Tel: 46-485-563934

Espoo, Finland
Tel: 358-9-5406-5000

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Northeast Asia

Hong Kong
Tel: 852-2305-1168

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Tel: 86-755-2518-1306

Beijing, China
Tel: 86-10-5829-1711

Shanghai, China
Tel: 86-21-6447-0707

Taipei, Taiwan
Tel: 886-2-27528585

Southeast Asia

Singapore
Tel: 65-6586-1900

Penang, Malaysia
Tel: 60-4-6430200

Bangalore, India
Tel: 91-806-53-76817

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Other KEMET Resources

| Tools | |
|--------------------------------|---|
| Resource | Location |
| Configure A Part: CapEdge | http://capacitoredge.kemet.com |
| SPICE & FIT Software | http://www.kemet.com/spice |
| Search Our FAQs: KnowledgeEdge | http://www.kemet.com/keask |

| Product Information | |
|--|---|
| Resource | Location |
| Products | http://www.kemet.com/products |
| Technical Resources (Including Soldering Techniques) | http://www.kemet.com/technicalpapers |
| RoHS Statement | http://www.kemet.com/rohs |
| Quality Documents | http://www.kemet.com/qualitydocuments |

| Product Request | |
|-------------------------|---|
| Resource | Location |
| Sample Request | http://www.kemet.com/sample |
| Engineering Kit Request | http://www.kemet.com/kits |

| Contact | |
|--------------------|---|
| Resource | Location |
| Website | www.kemet.com |
| Contact Us | http://www.kemet.com/contact |
| Investor Relations | http://www.kemet.com/ir |
| Call Us | 1-877-MyKEMET |
| Twitter | http://twitter.com/kemetcapacitors |

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Although we design and manufacture our 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.



Digitally signed by: Marcy Brand
DN: o=KEMET Corporation
Location: Fort Lauderdale, FL
Date: D:2012.07.30
10:24:42-05'00'