

R75, Single Metallized Polypropylene Film, Radial, DC and Pulse Applications (Automotive Grade)

Overview

The R75 Series is constructed of metallized polypropylene film with radial leads of tinned wire. The radial leads are electrically welded to the metal layer on the ends of the capacitor winding. The capacitor is encapsulated in a self-extinguishing solvent resistant plastic case with thermosetting resin material meeting the UL 94 V-0 requirements. Two different winding constructions are used depending on voltage parameters and lead spacing. Please see the Performance Characteristics for more information.

Automotive grade devices (up to lead spacing 22.5 mm) meet the demanding Automotive Electronics Council's AEC-Q200 qualification requirements.

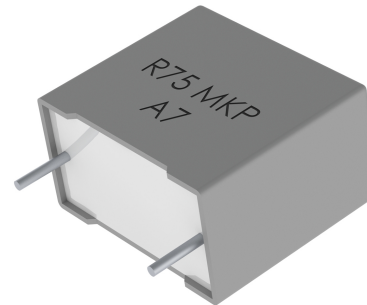
Applications

Typical applications include resonant circuit, high frequency medium to high current, silicon-controlled rectifier (SCR and IGBT) and SiC (e.g. MOSFET) commutation circuits as well as applications with high voltage and medium to high current and DC link.

Not suitable for across-the-line application (see Suppressor Capacitors).

Benefits

- Voltage range: 160 – 2,000 VDC
- Capacitance range: 220 pF – 33 μ F
- Lead Spacing: 7.5 – 37.5 mm
- Capacitance tolerance: \pm 5%, \pm 10%, \pm 20%
- Climatic category: 55/105/56 IEC 60068-1
- Operating temperature range of -55°C to $+105^{\circ}\text{C}$
- RoHS compliance and lead-free terminations
- Tape & Reel packaging in accordance with IEC 60286-2
- Self-healing
- Automotive (AEC-Q200) grades available up to lead spacing 22.5 mm



Part Number System

R75	P	N	2820	AA	30		K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use		Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630 Q = 1,000 R = 1,250 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 20 30 40	50 60 70 80 L0	J = \pm 5% K = \pm 10% M = \pm 20%

Ordering Options Table

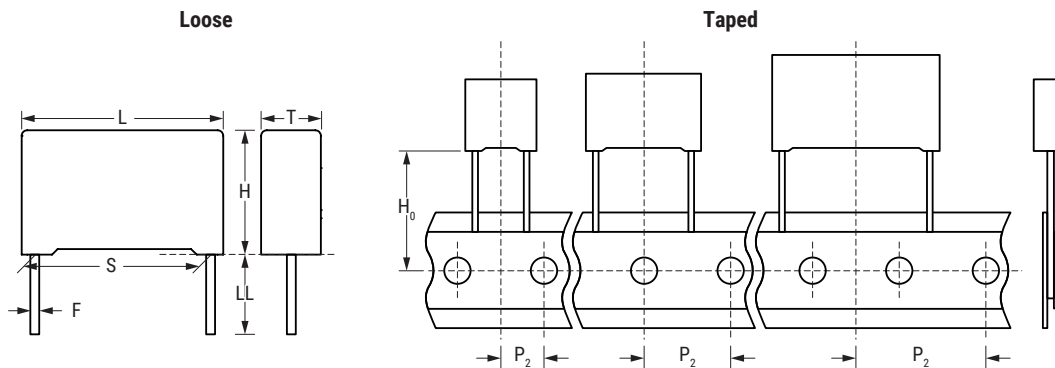
Lead Spacing Nominal (mm)	Type of Leads and Packaging	Lead Length (mm)	Lead and Packaging Code
7.5	Standard Lead and Packaging Options		
	Bulk (Bag) – Short Leads	4 +2/-0	AA
	Ammo Pack	$H_0 = 18.5 \pm 0.5$	DQ
	Other Lead and Packaging Options		
	Tape & Reel (Standard Reel Ø 355 mm)	$H_0 = 18.5 \pm 0.5$	CK
	Bulk (Bag) – Short Leads	2.7 +0.5/-0	JA
	Bulk (Bag) – Short Leads	3.5 +0.5/-0	JB
	Bulk (Bag) – Short Leads	4.0 +0.5/-0	JE
	Bulk (Bag) – Short Leads	3.2 +0.3/-0.2	JH
	Bulk (Bag) – Long Leads	18±1	JM
Bulk (Bag) – Long Leads	17 +1/-2	Z3	
10 15 22.5	Standard Lead and Packaging Options		
	Bulk (Bag) – Short Leads	4 +2/-0	AA
	Ammo Pack	$H_0 = 18.5 \pm 0.5$	DQ
	Other Lead and Packaging Options		
	Tape & Reel (Standard Reel Ø 355 mm)	$H_0 = 18.5 \pm 0.5$	GY
	Tape & Reel (Large Reel Ø 500 mm)	$H_0 = 18.5 \pm 0.5$	CK
	Bulk (Bag) – Short Leads	2.7 +0.5/-0	JA
	Bulk (Bag) – Short Leads	3.5 +0.5/-0	JB
	Bulk (Bag) – Short Leads	10±1	JC
	Bulk (Bag) – Short Leads	4.0 +0.5/-0	JE
	Bulk (Bag) – Short Leads	3.2 +0.3/-0.2	JH
	Bulk (Bag) – Long Leads	18±1	JM
	Bulk (Bag) – Long Leads	30 +5/-0	40
	Bulk (Bag) – Long Leads	25 +2/-1	50
27.5	Standard Lead and Packaging Options		
	Bulk (Tray) – Short Leads	4 +2/-0	AA
	Other Lead and Packaging Options		
	Tape & Reel (Standard Reel Ø 355 mm)	$H_0 = 18.5 \pm 0.5$	GY
	Tape & Reel (Large Reel Ø 500 mm)	$H_0 = 18.5 \pm 0.5$	CK ¹
	Bulk (Tray) – Short Leads	3.5 +0.5/-0	JB
	Bulk (Tray) – Short Leads	4.0 +0.5/-0	JE
	Bulk (Tray) – Short Leads	3.2 +0.3/-0.2	JH
	Bulk (Tray) – Long Leads	30 +5/-0	40
Bulk (Tray) – Long Leads	25 +2/-1	50	

¹ = Not for all sizes, see "Packaging Quantities" table.

Ordering Options Table cont.

Lead Spacing Nominal (mm)	Type of Leads and Packaging	Lead Length (mm)	Lead and Packaging Code
37.5	Standard Lead and Packaging Options		
	Bulk (Tray) – Short Leads	4 +2/-0	AA
	Other Lead and Packaging Options		
	Bulk (Tray) – Short Leads	3.5 +0.5/-0	JB
	Bulk (Tray) – Short Leads	4.0 +0.5/-0	JE
	Bulk (Tray) – Short Leads	3.2 +0.3/-0.2	JH
	Bulk (Tray) – Long Leads	30 +5/-0	40
Bulk (Tray) – Long Leads	25 +2/-1	50	

Dimensions – Millimeters



S		T		H		L		F	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
7.5	±0.4	3.0	+0.1/-0.5	8.0	+0.1/-0.5	10.0	+0.2/-0.5	0.5	±0.05
7.5	±0.4	4.0	+0.1/-0.5	9.0	+0.1/-0.5	10.0	+0.2/-0.5	0.5	±0.05
7.5	±0.4	5.0	+0.1/-0.5	10.5	+0.1/-0.5	10.0	+0.2/-0.5	0.5	±0.05
7.5	±0.4	6.0	+0.1/-0.5	12.0	+0.1/-0.5	10.5	+0.2/-0.5	0.5	±0.05
10.0	±0.4	4.0	+0.2/-0.5	9.0	+0.1/-0.5	13.0	+0.2/-0.5	0.6	±0.05
10.0	±0.4	5.0	+0.2/-0.5	11.0	+0.1/-0.5	13.0	+0.2/-0.5	0.6	±0.05
10.0	±0.4	6.0	+0.2/-0.5	12.0	+0.1/-0.5	13.0	+0.2/-0.5	0.6	±0.05
15.0	±0.4	4.0	+0.2/-0.5	10.0	+0.1/-0.5	18.0	+0.3/-0.5	0.8	±0.05
15.0	±0.4	5.0	+0.2/-0.5	11.0	+0.1/-0.5	18.0	+0.3/-0.5	0.8	±0.05
15.0	±0.4	6.0	+0.2/-0.5	12.0	+0.1/-0.5	18.0	+0.3/-0.5	0.8	±0.05
15.0	±0.4	7.5	+0.2/-0.5	13.5	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05
15.0	±0.4	8.5	+0.2/-0.5	14.5	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05

Note: See Ordering Options Table for lead length (LL/H₀) options.

Dimensions – Millimeters cont.



S		T		H		L		F	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
15.0	±0.4	9.0	+0.2/-0.5	12.5	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05
15.0	±0.4	10.0	+0.2/-0.5	16.0	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05
15.0	±0.4	11.0	+0.2/-0.5	19.0	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05
15.0	±0.4	13.0	+0.1/-0.5	12.0	+0.1/-0.5	18.0	+0.5/-0.5	0.8	±0.05
22.5	±0.4	6.0	+0.2/-0.5	15.0	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	7.0	+0.2/-0.5	16.0	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	8.5	+0.2/-0.5	17.0	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	10.0	+0.2/-0.5	18.5	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	11.0	+0.2/-0.5	20.0	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	13.0	+0.2/-0.5	22.0	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
22.5	±0.4	14.5	+0.2/-0.5	29.5	+0.1/-0.5	26.5	+0.3/-0.5	0.8	±0.05
27.5	±0.4	9.0	+0.2/-0.7	17.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	11.0	+0.2/-0.7	20.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	13.0	+0.2/-0.7	22.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	13.0	+0.2/-0.7	25.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	14.0	+0.2/-0.7	28.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	18.0	+0.2/-0.7	33.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	21.0	+0.2/-0.7	12.5	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	22.0	+0.2/-0.7	37.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
27.5	±0.4	24.0	+0.2/-0.7	15.0	+0.1/-0.7	32.0	+0.3/-0.7	0.8	±0.05
37.5	±0.4	11.0	+0.3/-0.7	22.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	13.0	+0.3/-0.7	24.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	16.0	+0.3/-0.7	28.5	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	19.0	+0.3/-0.7	32.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	20.0	+0.3/-0.7	40.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	24.0	+0.3/-0.7	44.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	24.0	+0.3/-0.7	15.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	24.0	+0.3/-0.7	19.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	30.0	+0.3/-0.7	45.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05

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

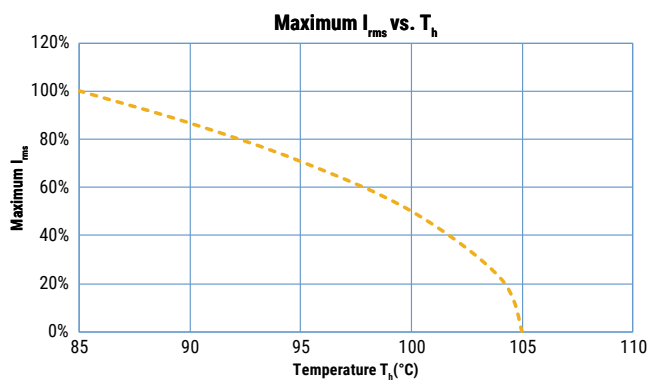
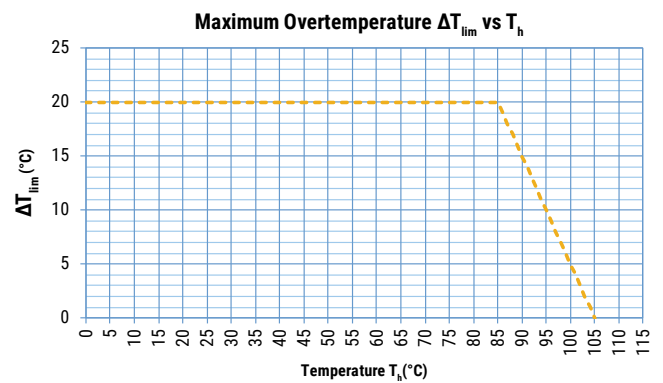
Performance Characteristics

Dielectric	Polypropylene film												
Plates	Metal layer deposited by evaporation under vacuum												
Winding	Non-inductive type												
Leads	Tinned wire												
Protection	Plastic case, thermosetting resin filled. Box material is solvent resistant and flame retardant according to UL94.												
Related Documents	IEC 60384-16												
Sections	1									3			
Rated Voltage V_R (VDC)	160	160	250	250	400	400	630	630	1,000	1,000	1,250	1,600	2,000
Rated Voltage V_R (VAC)	70	90	140	160	200	220	220	250	250	400	450/600	650	700
Capacitance Range (μF)	0.1 - 0.33	0.068 - 33	0.068 - 0.22	0.027 - 33	0.027 - 0.068	0.01 - 15	0.01 - 0.027	0.001 - 8.2	0.012 - 3.9	0.00022 - 0.0082	0.0082 - 2.2	0.0039 - 1.5	0.001 - 1
Capacitance Values	E12 series (IEC 60063) measured at 1 kHz and +20 \pm 1°C												
Capacitance Tolerance	\pm 5%, \pm 10%, \pm 20%												
Operating Temperature Range	-55°C to +105°C												
Rated Temperature T_R	+85°C												
Voltage Derating	Above +85°C DC voltage derating is 2%/°C and AC voltage derating is 1.25%/°C												
Climatic Category	55/105/56 IEC 60068-1												
Storage Conditions	Storage time: \leq 24 months from the date marked on the label package												
	Average relative humidity per year \leq 70%												
	RH \leq 85% for 30 days randomly distributed throughout the year												
	Dew is absent												
	Temperature: -40 to 80°C (see "Maximum Humidity in Storage Conditions" graph above)												
Test Voltage	1.6 x V_R VDC for 2 seconds (between terminations) at +25°C \pm 5°C												
Capacitance Drift	Maximum 0.5% after a 2 year storage period at a temperature of +10°C to +40°C and a relative humidity of 40% to 60%												
Maximum Pulse Steepness	dV/dt according to Table 1. For working voltages lower than rated voltage ($V < V_R$), the specified dV/dt can be multiplied by the factor V_R/V .												
Reliability (Reference IEC 61709)	Operational life > 200,000 hours at 85°C Failure rate \leq 1 FIT, $T = +40^\circ\text{C}$, $V = 0.5 \times V_R$ Failure criteria: open or short circuit, capacitance change > 10%, DF 2 times the catalog limits, IR < 0.005 x initial limit												
Temperature Coefficient	-(200 \pm 100) ppm/°C at 1 kHz												
Self Inductance (Lead Length ~ 2 mm)	Lead Spacing (mm)	7.5	10	15	22.5	27.5	37.5						
	L (nH) \approx	8	9	10	16	18	20						
	Maximum 1 nH per 1 mm lead and capacitor length.												

Performance Characteristics cont.

Dissipation Factor $\tan\delta$	Maximum Values at 25°C ±5°C				
	Frequency	C ≤ 0.1 μF	0.1 μF < C ≤ 1.0 μF	1.0 μF < C ≤ 4.7 μF	C > 4.7 μF
	1 kHz	0.04%	0.05%	0.06%	0.10%
	10 kHz	0.06%	0.08%	-	-
100 kHz	0.25%	-	-	-	
Insulation Resistance	Measured at +25°C ±5°C, 100 VDC 60 seconds				
	Minimum Values Between Terminals				
	C ≤ 0.33 μF		C > 0.33 μF		
	≥ 100,000 MΩ (≥ 500,000 MΩ)*		≥ 30,000 MΩ · μF (≥ 150,000 MΩ · μF)*		

* Typical value

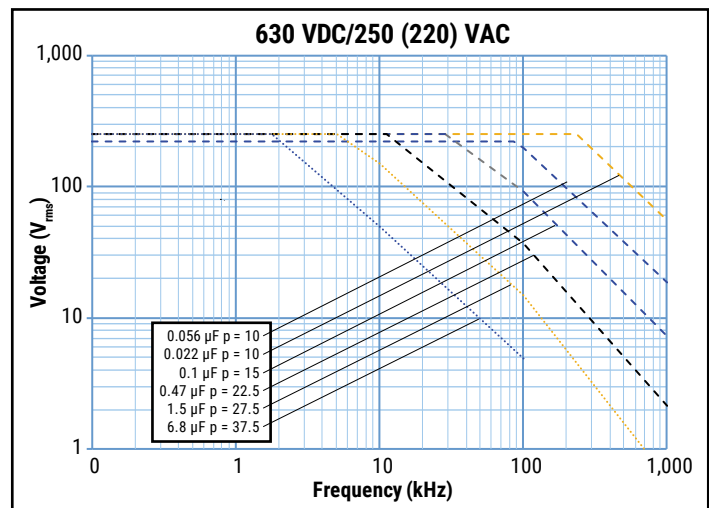
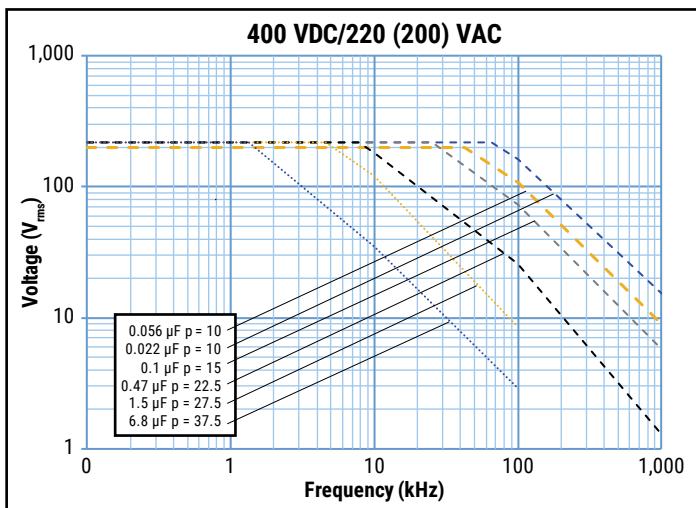
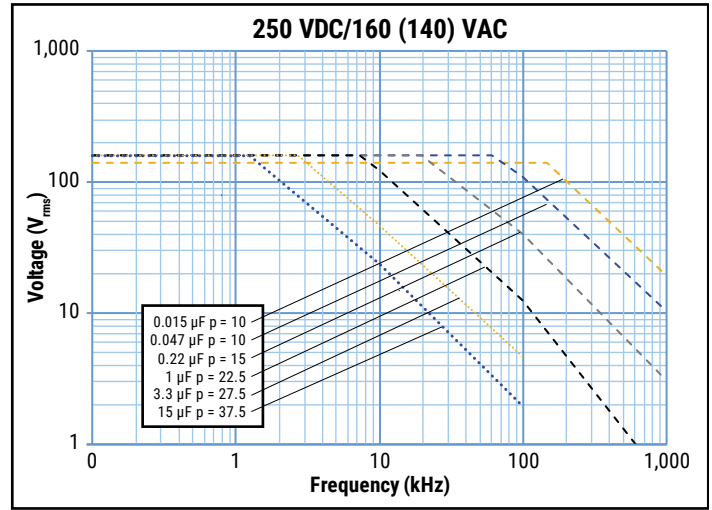
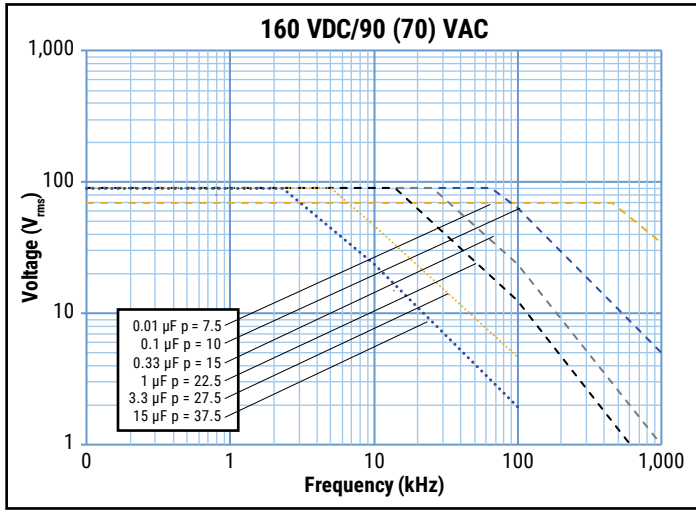


T_h is the maximum ambient temperature surrounding the capacitor or hottest contact point (e.g. tracks), whichever is higher, in the worst operation conditions in °C.

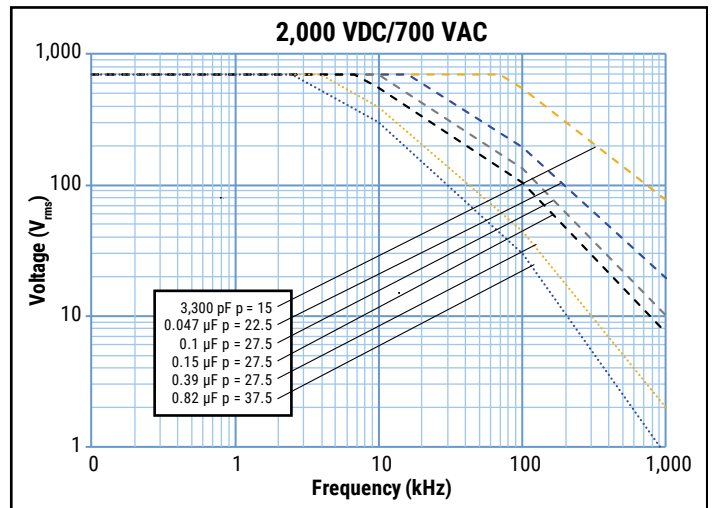
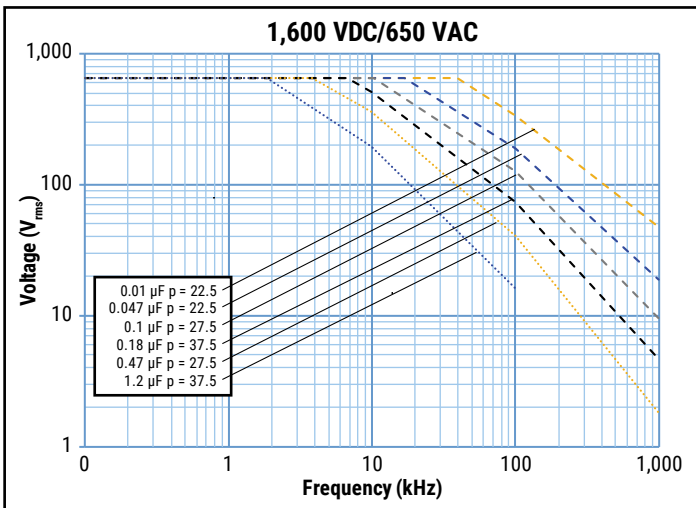
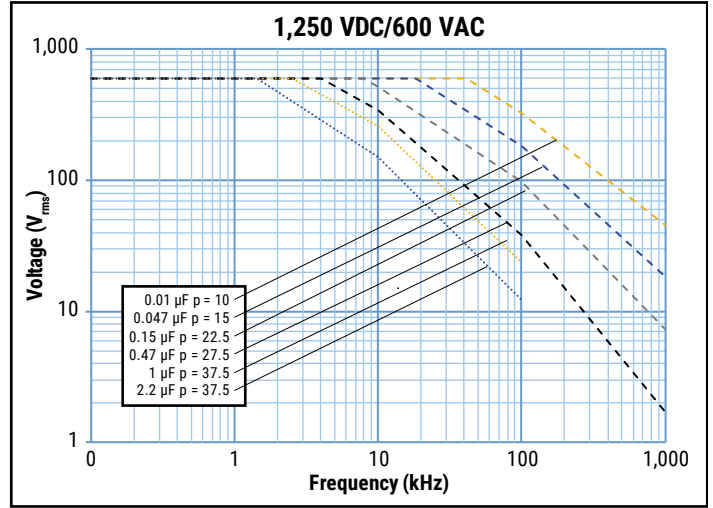
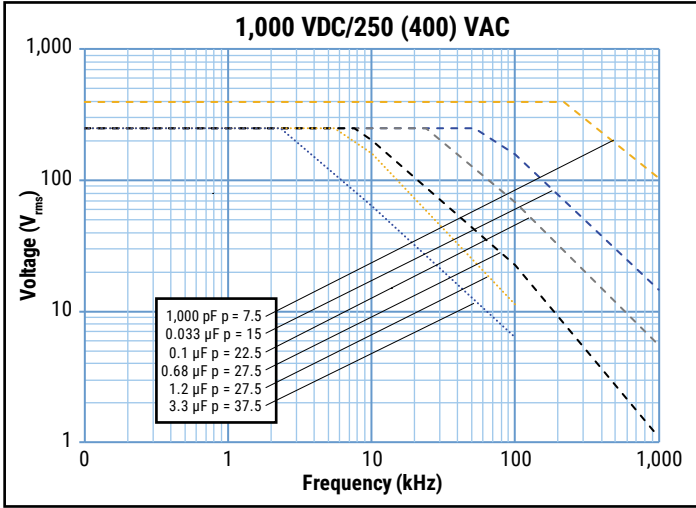
Qualification

Automotive Grade products meet or exceed the requirements outlined by the Automotive Electronics Council. Details regarding test methods and conditions are referenced in document AEC-Q200, Stress Test Qualification for Passive Components. For additional information regarding the Automotive Electronics Council and AEC-Q200, please visit their website at www.aecouncil.com.

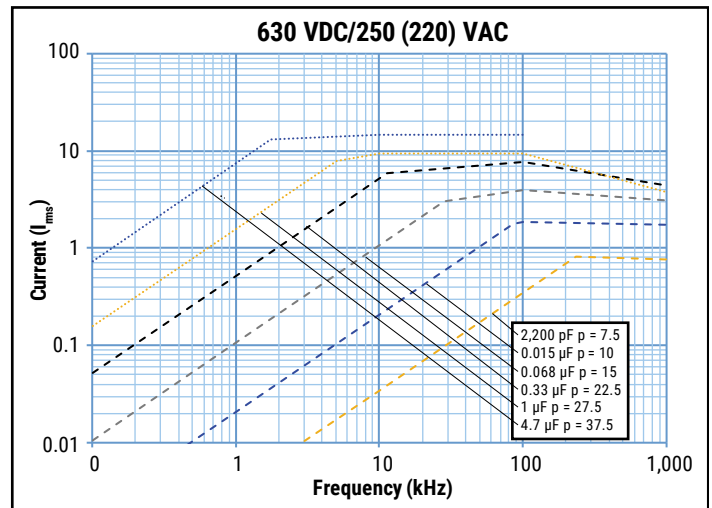
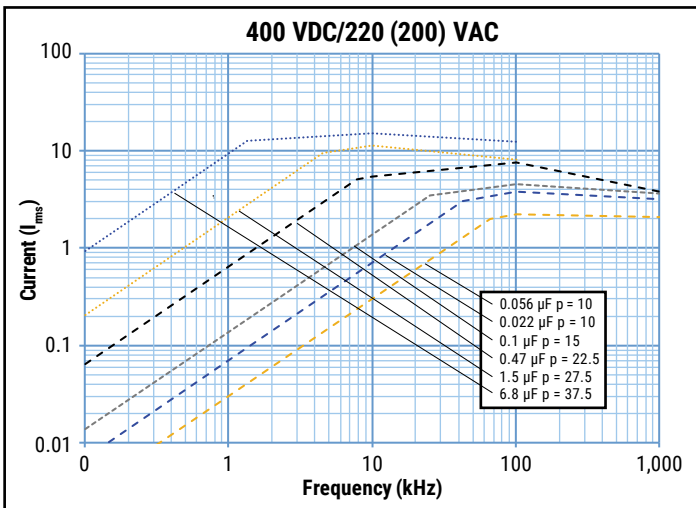
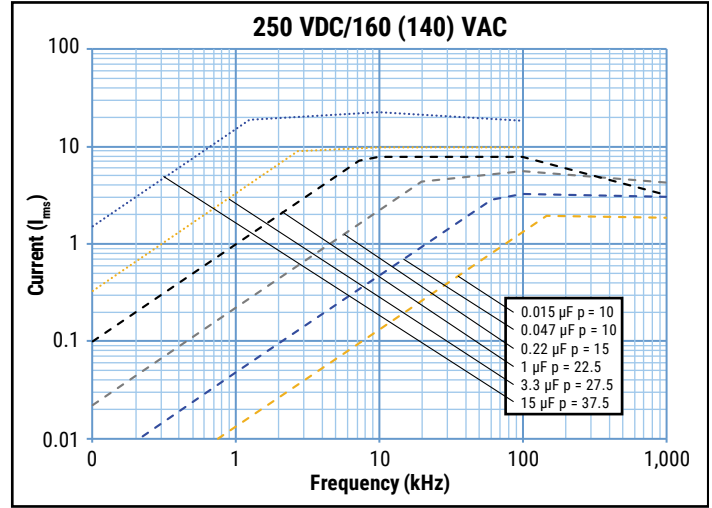
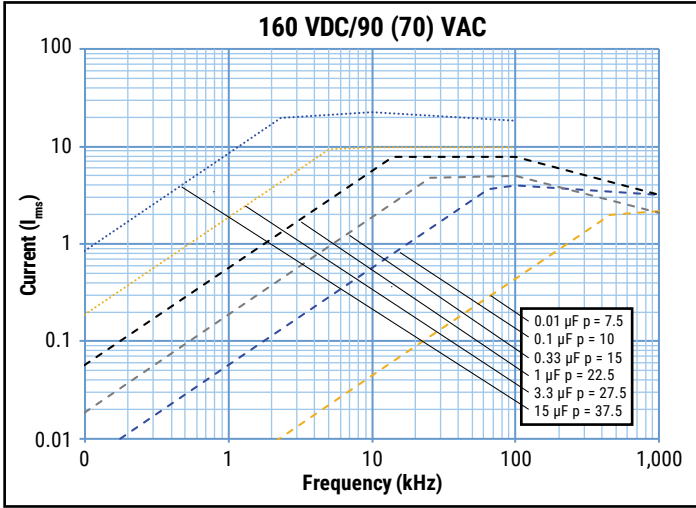
Maximum Voltage (V_{rms}) vs. Frequency (Sinusoidal Waveform/ $Th \leq 85^\circ C$)



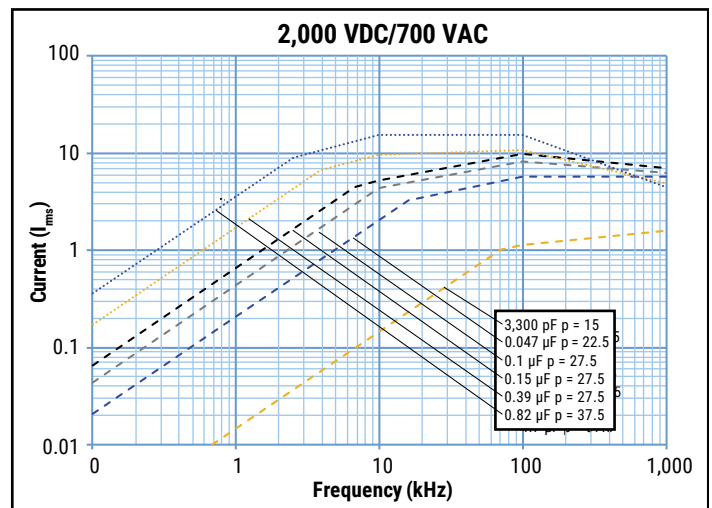
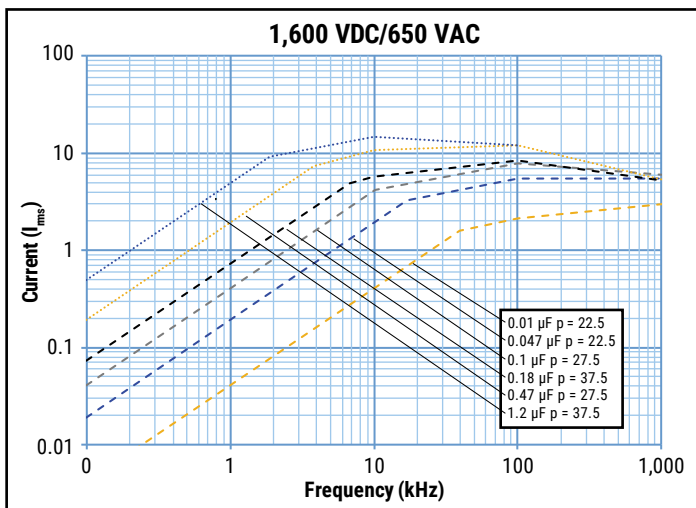
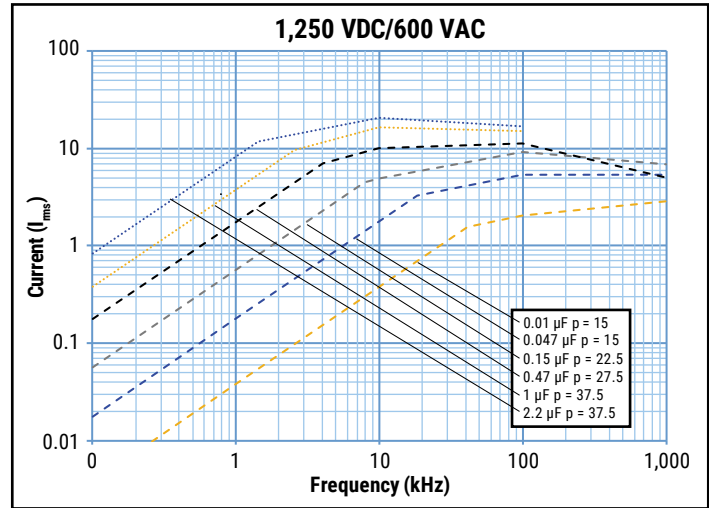
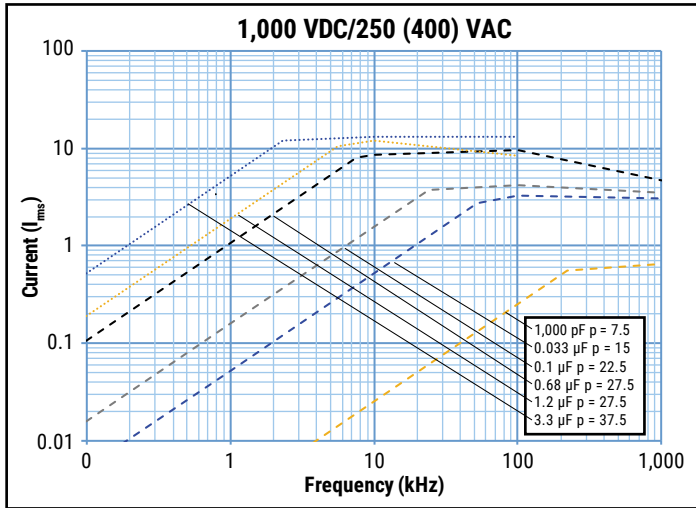
Maximum Voltage (V_{rms}) vs. Frequency (Sinusoidal Waveform/ $T_h \leq 85^\circ C$) cont.



Maximum Current (I_{rms}) vs. Frequency (Sinusoidal Waveform/ $T_h \leq 85^\circ\text{C}$)



Maximum Current (I_{rms}) vs. Frequency (Sinusoidal Waveform/ $T_h \leq 85^\circ\text{C}$) cont.



Environmental Test Data

Damp Heat, Steady State Test	Test Conditions:		Performances
	Temperature: Relative humidity (RH): Test duration:	+40°C ±2°C 93% ±2% 56 days	$\Delta C/C$ ≤ 2%, $\Delta \tan\delta \leq 0.001$ at 1 kHz IR after test ≥ 50% of initial limit
Endurance Test	Test Conditions		Performances
	Temperature: Voltage applied: Test duration:	+85°C ±2°C 1.25 x V _R (DC) 2,000 hours	$\Delta C/C$ ≤ 3%, $\Delta \tan\delta \leq 0.001$ at 10 kHz for C ≤ 1 μF $\Delta \tan\delta \leq 0.001$ at 1 kHz for C > 1 μF IR after test ≥ 50% of initial limit
Resistance to Soldering Heat Test	Test Conditions		Performances
	Solder bath temperature: Dipping time (with heat screen):	260°C ±5°C 10 seconds ±1 second	$\Delta C/C$ ≤ 1%, $\Delta \tan\delta \leq 0.001$ at 10 kHz for C ≤ 1 μF $\Delta \tan\delta \leq 0.001$ at 1 kHz for C > 1 μF IR after test ≥ initial limit

Environmental Compliance

All KEMET pulse capacitors are RoHS Compliant.



Table 1 – Ratings & Part Number Reference cont.

VDC	VAC	Cap Value (µF)	Dimensions in mm			Lead Spacing (S)	dV/dt (V/µs)	Max K ₀ (V ² /µs)	I _{pk}	ESL	ESR	I _{rms} max (*)	R _{th}	KEMET Internal Part Number	Customer Part Number
			Lead Length 2x 4 mm	at 100 kHz	at 100 kHz, 85°C										
										A _{pk}	nH	mΩ			
T	H	L	A _{pk}	nH	mΩ	A _{rms}	(°C/W)								
2000	700	0.056	11.0	20.0	26.5	22.5	4,000	16,000,000	224	16	19.9	5.44	34	75UN2560(1)30(2)	R75UN2560(1)30(2)
2000	700	0.068	13.0	22.0	26.5	22.5	4,000	16,000,000	272	16	16.4	6.24	31	75UN2680(1)30(2)	R75UN2680(1)30(2)
2000	700	0.022	9.0	17.0	32.0	27.5	2,000	8,000,000	44	18	36.2	3.98	35	75UR2220(1)30(2)	R75UR2220(1)30(2)
2000	700	0.033	9.0	17.0	32.0	27.5	2,000	8,000,000	66	18	24.1	4.87	35	75UR2330(1)30(2)	R75UR2330(1)30(2)
2000	700	0.047	9.0	17.0	32.0	27.5	2,000	8,000,000	94	18	16.9	5.81	35	75UR2470(1)30(2)	R75UR2470(1)30(2)
2000	700	0.056	9.0	17.0	32.0	27.5	2,000	8,000,000	112	18	19.9	5.36	35	75UR2560(1)30(2)	R75UR2560(1)30(2)
2000	700	0.068	9.0	17.0	32.0	27.5	2,000	8,000,000	136	18	16.4	5.91	35	75UR2680(1)40(2)	R75UR2680(1)40(2)
2000	700	0.082	11.0	20.0	32.0	27.5	2,000	8,000,000	164	18	13.6	6.85	31	75UR2820(1)40(2)	R75UR2820(1)40(2)
2000	700	0.1	11.0	20.0	32.0	27.5	2,000	8,000,000	200	18	11.1	7.56	31	75UR3100(1)30(2)	R75UR3100(1)30(2)
2000	700	0.1	24.0	15.0	32.0	27.5	2,000	8,000,000	200	18	11.1	8.13	27	75UR3100(1)L3(2)	R75UR3100(1)L3(2)
2000	700	0.12	13.0	22.0	32.0	27.5	2,000	8,000,000	240	18	9.3	8.61	29	75UR3120(1)30(2)	R75UR3120(1)30(2)
2000	700	0.15	13.0	25.0	32.0	27.5	2,000	8,000,000	300	18	7.4	9.85	28	75UR3150(1)40(2)	R75UR3150(1)40(2)
2000	700	0.15	24.0	15.0	32.0	27.5	2,000	8,000,000	300	18	7.4	9.96	27	75UR3150(1)L4(2)	R75UR3150(1)L4(2)
2000	700	0.18	13.0	25.0	32.0	27.5	2,000	8,000,000	360	18	6.2	10.79	28	75UR3180(1)40(2)	R75UR3180(1)40(2)
2000	700	0.22	14.0	28.0	32.0	27.5	2,000	8,000,000	440	18	5.1	12.30	26	75UR3220(1)40(2)	R75UR3220(1)40(2)
2000	700	0.27	18.0	33.0	32.0	27.5	2,000	8,000,000	540	18	10.0	9.33	23	75UR3270(1)30(2)	R75UR3270(1)30(2)
2000	700	0.33	18.0	33.0	32.0	27.5	2,000	8,000,000	660	18	8.2	10.31	23	75UR3330(1)40(2)	R75UR3330(1)40(2)
2000	700	0.39	22.0	37.0	32.0	27.5	2,000	8,000,000	780	18	8.2	10.86	21	75UR3390(1)30(2)	R75UR3390(1)30(2)
2000	700	0.47	22.0	37.0	32.0	27.5	2,000	8,000,000	940	18	6.8	11.93	21	75UR3470(1)40(2)	R75UR3470(1)40(2)
2000	700	0.068	11.0	22.0	41.5	37.5	700	2,800,000	48	20	16.4	6.71	27	75UW2680(1)30(2)	R75UW2680(1)30(2)
2000	700	0.1	11.0	22.0	41.5	37.5	700	2,800,000	70	20	11.1	8.14	27	75UW3100(1)30(2)	R75UW3100(1)30(2)
2000	700	0.1	24.0	15.0	41.5	37.5	700	2,800,000	70	20	11.1	8.58	24	75UW3100(1)L3(2)	R75UW3100(1)L3(2)
2000	700	0.12	11.0	22.0	41.5	37.5	700	2,800,000	84	20	9.3	8.91	27	75UW3120(1)30(2)	R75UW3120(1)30(2)
2000	700	0.12	24.0	15.0	41.5	37.5	700	2,800,000	84	20	9.3	9.40	24	75UW3120(1)L3(2)	R75UW3120(1)L3(2)
2000	700	0.15	11.0	22.0	41.5	37.5	700	2,800,000	105	20	7.4	9.97	27	75UW3150(1)30(2)	R75UW3150(1)30(2)
2000	700	0.15	24.0	15.0	41.5	37.5	700	2,800,000	105	20	7.4	10.51	24	75UW3150(1)L3(2)	R75UW3150(1)L3(2)
2000	700	0.18	13.0	24.0	41.5	37.5	700	2,800,000	126	20	6.2	11.31	25	75UW3180(1)30(2)	R75UW3180(1)30(2)
2000	700	0.18	24.0	15.0	41.5	37.5	700	2,800,000	126	20	6.2	11.51	24	75UW3180(1)L3(2)	R75UW3180(1)L3(2)
2000	700	0.22	13.0	24.0	41.5	37.5	700	2,800,000	154	20	5.1	12.50	25	75UW3220(1)30(2)	R75UW3220(1)30(2)
2000	700	0.22	24.0	15.0	41.5	37.5	700	2,800,000	154	20	5.1	12.73	24	75UW3220(1)L3(2)	R75UW3220(1)L3(2)
2000	700	0.27	16.0	28.5	41.5	37.5	700	2,800,000	189	20	10.0	9.41	23	75UW3270(1)30(2)	R75UW3270(1)30(2)
2000	700	0.27	24.0	19.0	41.5	37.5	700	2,800,000	189	20	10.0	9.34	23	75UW3270(1)L3(2)	R75UW3270(1)L3(2)
2000	700	0.33	16.0	28.5	41.5	37.5	700	2,800,000	231	20	8.2	10.40	23	75UW3330(1)30(2)	R75UW3330(1)30(2)
2000	700	0.33	24.0	19.0	41.5	37.5	700	2,800,000	231	20	8.2	10.33	23	75UW3330(1)L3(2)	R75UW3330(1)L3(2)
2000	700	0.39	19.0	32.0	41.5	37.5	700	2,800,000	273	20	8.2	10.89	21	75UW3390(1)30(2)	R75UW3390(1)30(2)
2000	700	0.47	19.0	32.0	41.5	37.5	700	2,800,000	329	20	6.8	11.95	21	75UW3470(1)30(2)	R75UW3470(1)30(2)
2000	700	0.56	20.0	40.0	41.5	37.5	700	2,800,000	392	20	5.7	13.70	19	75UW3560(1)40(2)	R75UW3560(1)40(2)
2000	700	0.68	20.0	40.0	41.5	37.5	700	2,800,000	476	20	4.7	15.09	19	75UW3680(1)30(2)	R75UW3680(1)30(2)
2000	700	0.82	24.0	44.0	41.5	37.5	700	2,800,000	574	20	3.9	17.29	17	75UW3820(1)40(2)	R75UW3820(1)40(2)
2000	700	1	24.0	44.0	41.5	37.5	700	2,800,000	700	20	3.2	19.10	17	75UW4100(1)30(2)	R75UW4100(1)30(2)
VDC	VAC	Cap Value	T	H	L	Lead Spacing (S)	dV/dt (V/µs)	Max K ₀ (V ² /µs)	A _{pk}	nH	mΩ	A _{rms}	R _{th}	KEMET Internal Part Number	Customer Part Number
										Lead Length 2x 4 mm	at 100 kHz	at 100 kHz, 85°C			
			I _{pk}	ESL	ESR				I _{rms} max (*)	(°C/W)					
			Dimensions						I _{pk}	ESL	ESR	I _{rms} max (*)	R _{th}		

(1) Insert lead and packaging code. See Ordering Options Table for available options.
(2) J = 5%, K = 10%, M = 20%
(3) K = 10%, M = 20%
(*) I_{rms} value that leads to a ΔT of ≈ 20°C on the box surface > T_{BOX} = T_{AMB} + ΔT = 85°C + 20°C = 105°C

Soldering Process

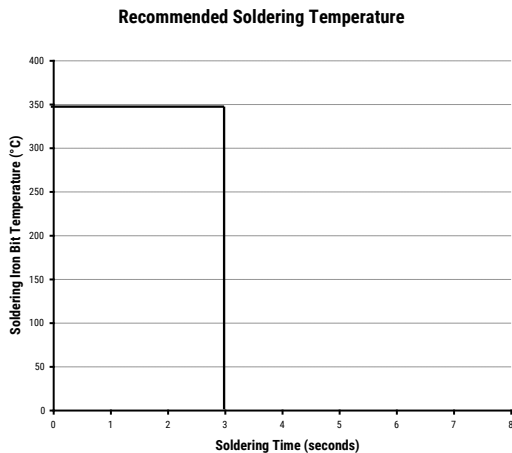
The implementation of the RoHS directive has resulted in the selection of SnAgCu (SAC) alloys or SnCu alloys as a primary solder. This has increased the liquidus temperature from that of 183°C for SnPb eutectic alloy to 217 – 221°C for the new alloys. As a result, the heat stress to the components, even in wave soldering, has increased considerably due to higher pre-heat and wave temperatures. Polypropylene capacitors are especially sensitive to heat (the melting point of polypropylene is 160 – 170°C). Wave soldering can be destructive, especially for mechanically small polypropylene capacitors (with lead spacing of 5 mm to 15 mm), and great care has to be taken during soldering. The recommended solder profiles from KEMET should be used. Please consult KEMET with any questions. In general, the wave soldering curve from IEC Publication 61760–1 Edition 2 serves as a solid guideline for successful soldering. Please see Figure 1.

Reflow soldering is not recommended for through-hole film capacitors. Exposing capacitors to a soldering profile in excess of the above recommended limits may result in degradation or permanent damage to the capacitors.

Do not place the polypropylene capacitor through an adhesive curing oven to cure resin for surface mount components. Insert through-hole parts after the curing of surface mount parts. Consult KEMET to discuss the actual temperature profile in the oven, if through-hole components must pass through the adhesive curing process. A maximum two soldering cycles is recommended. Please allow time for the capacitor surface temperature to return to a normal temperature before the second soldering cycle.

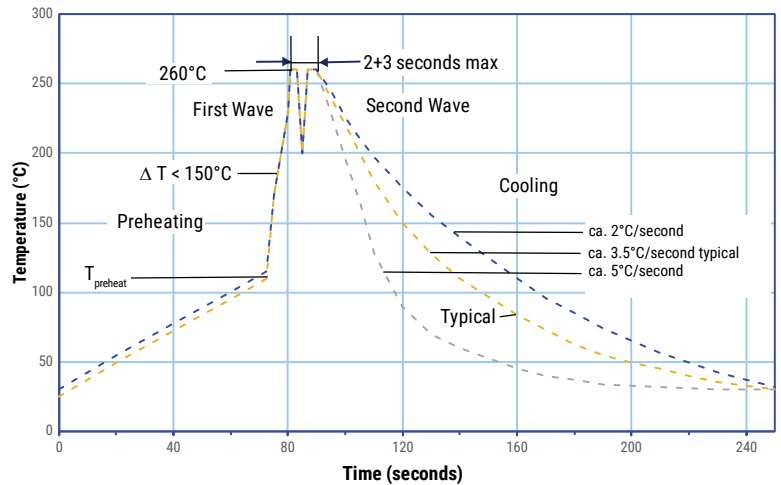
Manual Soldering Recommendations

The following is recommended for manual soldering with a soldering iron.



The soldering iron tip temperature should be set at 350°C (+10°C maximum) with the soldering duration not to exceed more than 3 seconds.

Wave Soldering Recommendations



Soldering Process cont.

Wave Soldering Recommendations cont.

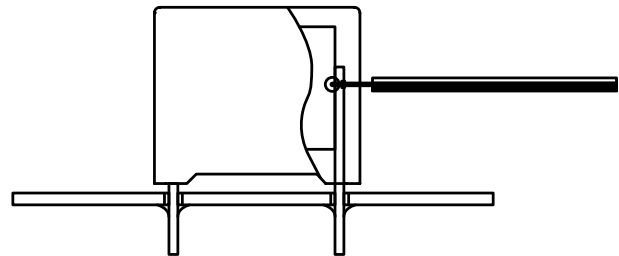
1. The table indicates the maximum set-up temperature of the soldering process
Figure 1.

Dielectric Film Material	Maximum Preheat Temperature		Maximum Peak Soldering Temperature	
	Capacitor Pitch ≤ 15 mm	Capacitor Pitch > 15 mm	Capacitor Pitch ≤ 15 mm	Capacitor Pitch > 15 mm
Polyester	130°C	130°C	270°C	270°C
Polypropylene	110°C	130°C	260°C	270°C
Paper	130°C	140°C	270°C	270°C
Polyphenylene Sulphide	150°C	160°C	270°C	270°C

2. The maximum temperature measured inside the capacitor:

Set the temperature so that inside the element the maximum temperature is below the limit:

Dielectric Film Material	Maximum temperature measured inside the element
Polyester	160°C
Polypropylene	110°C
Paper	160°C
Polyphenylene Sulphide	160°C



Temperature monitored inside the capacitor.

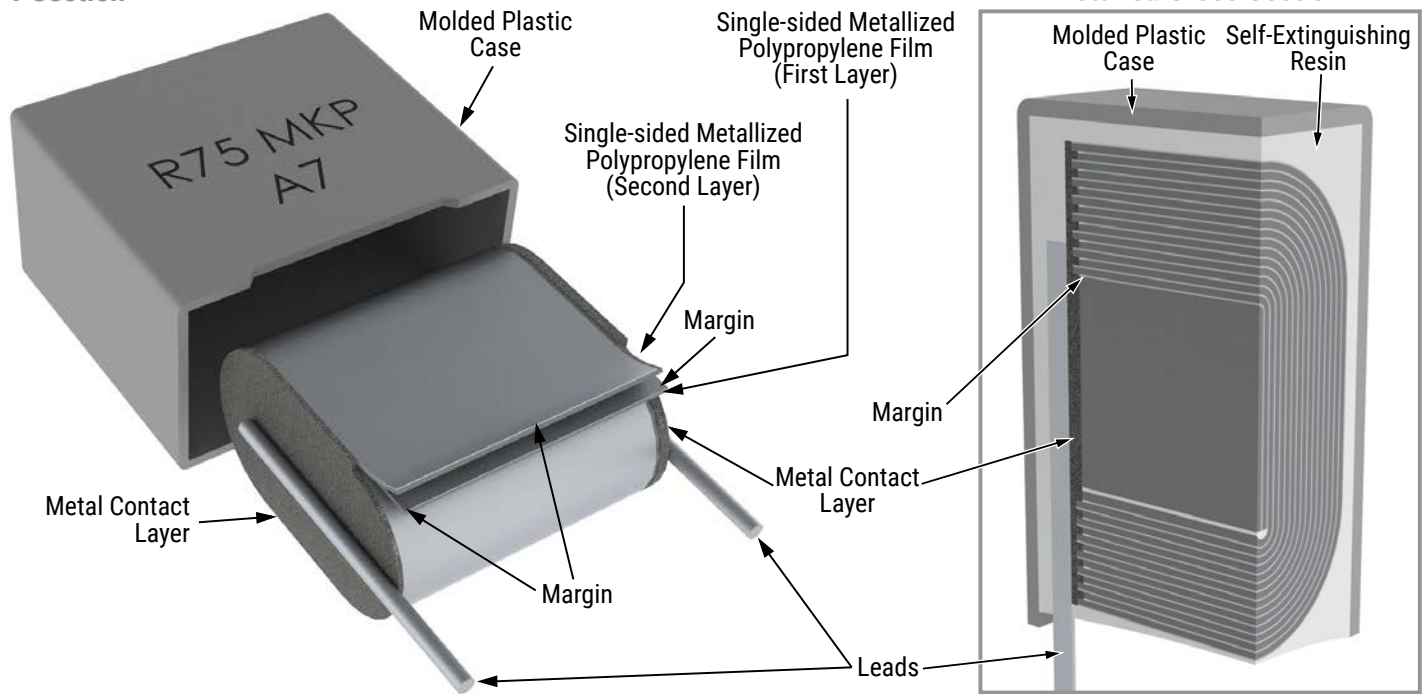
Selective Soldering Recommendations

Selective dip soldering is a variation of reflow soldering. In this method, the printed circuit board with through-hole components to be soldered is preheated and transported over the solder bath as in normal flow soldering without touching the solder. When the board is over the bath, it is stopped and pre-designed solder pots are lifted from the bath with molten solder only at the places of the selected components, and pressed against the lower surface of the board to solder the components.

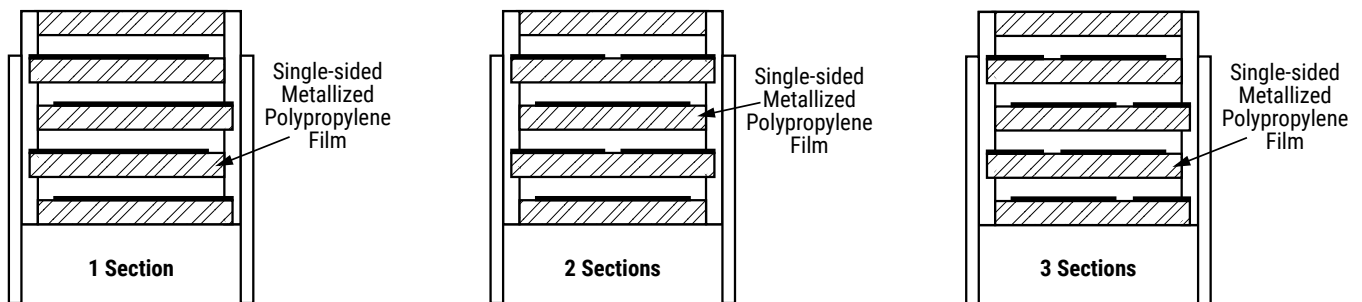
The temperature profile for selective soldering is similar to the double wave flow soldering outlined in this document, **however, instead of two baths, there is only one bath with a time from 3 to 10 seconds.** In selective soldering, the risk of overheating is greater than in double wave flow soldering. Great care must be taken so that the parts are not overheated.

Construction

1 Section



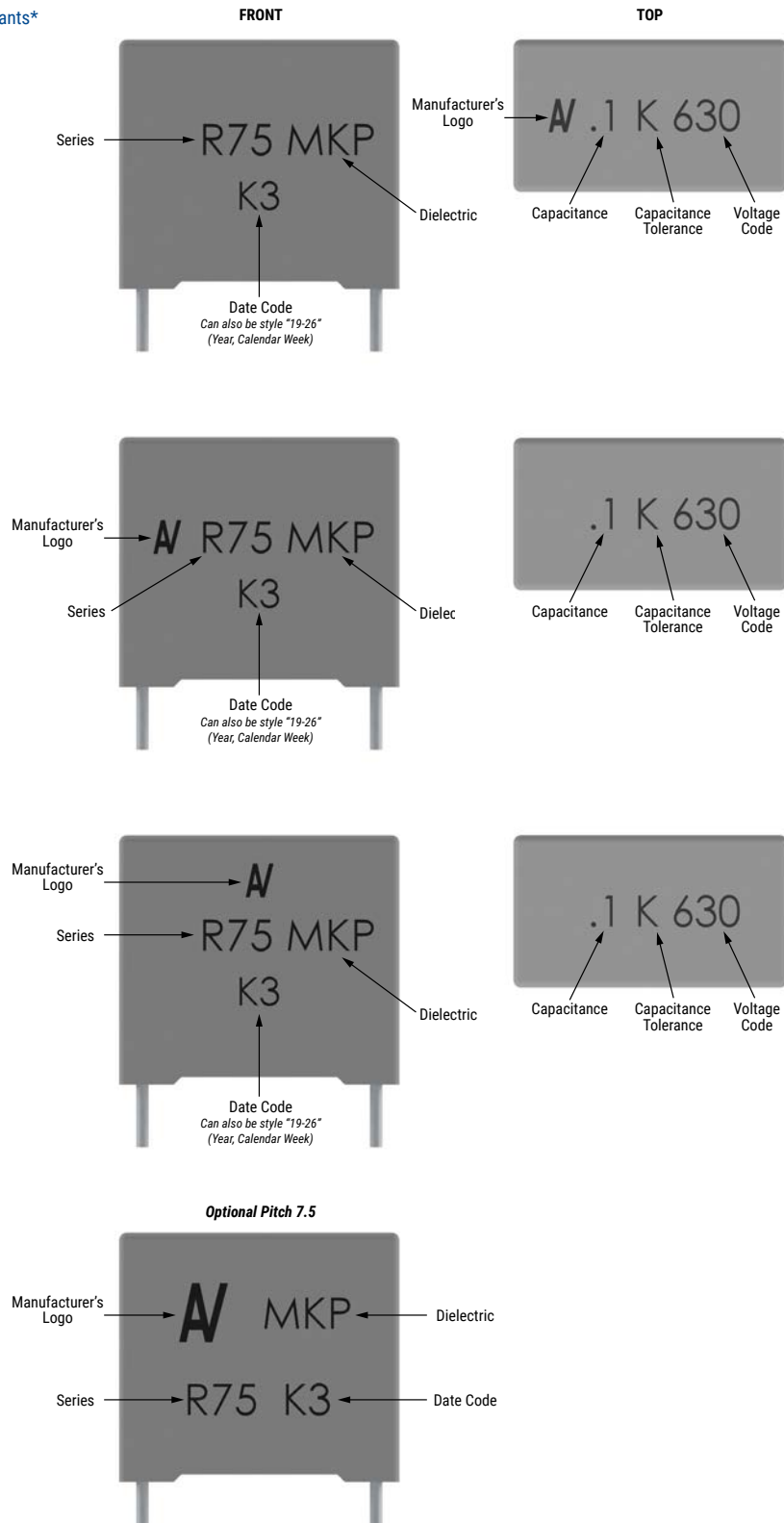
Winding Scheme



Marking

Pitch – 7.5, 10, 15 & 22.5

Marking Variants*

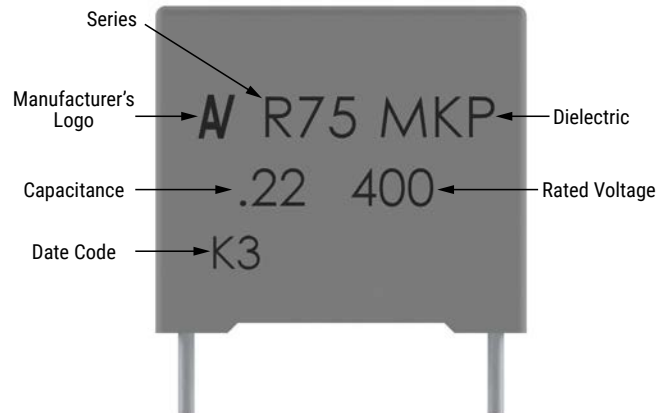
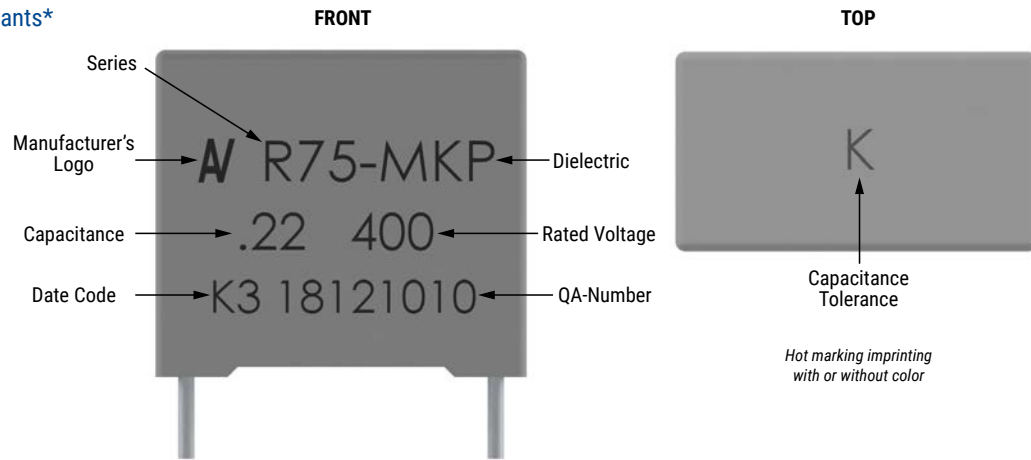


* Differences are caused by technology (clichee, laser or ink jet) and technic (production line)

Marking cont.

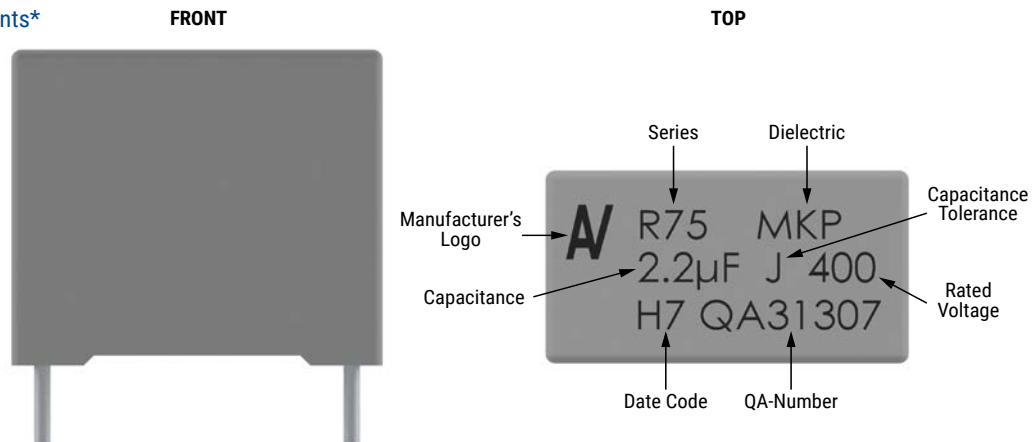
Pitch – 7.5, 10, 15, 22.5, 27.5 & 37.5

Marking Variants*



Pitch – 22.5, 27.5 & 37.5

Marking Variants*



* Differences are caused by technology (clichee, laser or ink jet) and technic (production line)

Marking cont.

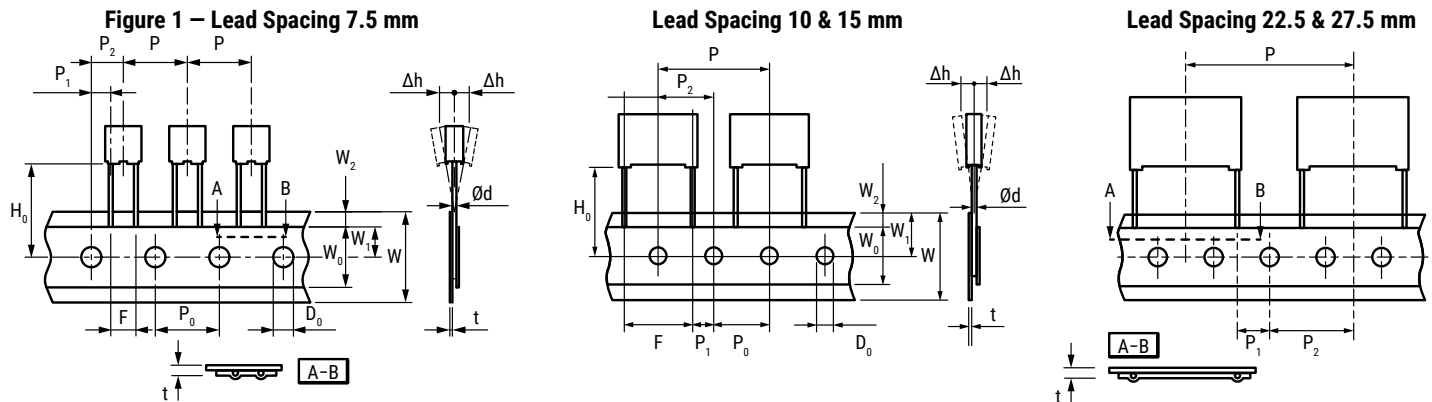
Manufacturing Date Code (IEC-60062)			
Year	Code	Month	Code
2010	A	January	1
2011	B	February	2
2012	C	March	3
2013	D	April	4
2014	E	May	5
2015	F	June	6
2016	H	July	7
2017	J	August	8
2018	K	September	9
2019	L	October	0
2020	M	November	N
2021	N	December	D
2022	P		
2023	R		
2024	S		
2025	T		
2026	U		
2027	V		
2028	W		
2029	X		
2030	A		

Packaging Quantities

Lead Spacing	Thickness (mm)	Height (mm)	Length (mm)	Bulk Short Leads	Bulk Long Leads		Standard Reel ø 355 mm	Large Reel ø 500 mm	Ammo Taped
	Lead and Packaging Code			AA - JA - JB JE - JH	Z3 ¹ - JM ²	40 - 50	GY - CK ¹	CK	DQ
7.5	3.0	8.0	10.0	1,500	1,750	-	2,100	-	2,800
	4.0	9.0	10.0	2,000	1,500	-	1,500	-	2,100
	5.0	10.5	10.0	1,500	1,000	-	1,200	-	1,600
	6.0	12.0	10.5	1,000	800	-	1,000	-	1,350
10	4.0	9.0	13.0	2,000	2,200	1,800	750	1,500	1,000
	5.0	11.0	13.0	1,300	2,000	1,500	600	1,250	800
	6.0	12.0	13.0	1,000	1,800	1,200	500	1,000	680
15	4.0	10.0	18.0	2,500	1,500	1,500	750	1,500	1,000
	5.0	11.0	18.0	2,000	1,250	1,000	600	1,250	800
	6.0	12.0	18.0	1,750	1,000	900	500	1,000	680
	7.5	13.5	18.0	1,000	800	700	350	800	500
	8.5	14.5	18.0	1,000	650	500	300	700	440
	9.0	12.5	18.0	1,000	700	520	270	650	410
	10.0	16.0	18.0	750	550	500	270	600	380
	11.0	19.0	18.0	450	400	350	270	500	340
13.0	12.0	18.0	750	520	490	200	480	280	
22.5	6.0	15.0	26.5	805	450	500	300	700	464
	7.0	16.0	26.5	700	450	500	250	550	380
	8.5	17.0	26.5	468	350	300	250	450	280
	10.0	18.5	26.5	396	350	300	160	350	235
	11.0	20.0	26.5	360	200	250	190	350	217
	13.0	22.0	26.5	300	150	200	130	300	-
	14.5	29.5	26.5	264	120	-	-	-	-
27.5	9.0	17.0	32.0	816	-	408	230	450	-
	11.0	20.0	32.0	560	-	336	190	350	-
	13.0	12.0	32.0	672	-	288	-	-	-
	13.0	22.0	32.0	480	-	288	150	300	-
	13.0	25.0	32.0	480	-	288	-	300	-
	14.0	28.0	32.0	352	-	176	-	-	-
	18.0	33.0	32.0	256	-	128	-	-	-
	22.0	37.0	32.0	168	-	112	-	-	-
24.0	15.0	32.0	336	-	144	-	-	-	
37.5	11.0	22.0	41.5	420	-	252	-	-	-
	13.0	24.0	41.5	360	-	216	-	-	-
	16.0	28.5	41.5	216	-	108	-	-	-
	19.0	32.0	41.5	192	-	96	-	-	-
	20.0	40.0	41.5	126	-	84	-	-	-
	24.0	15.0	41.5	252	-	108	-	-	-
	24.0	19.0	41.5	216	-	108	-	-	-
	24.0	44.0	41.5	108	-	72	-	-	-
30.0	45.0	41.5	90	-	60	-	-	-	

- 1 Only for 7.5 mm lead spacing.
- 2 Only for > 7.5 mm lead spacing.

Lead Taping & Packaging (IEC 60286-2)



Taping Specification

Description	Symbol	Dimensions (mm)					Tolerance
		Lead Spacing					
		7.5 Figure 1	10.0 Figure 2	15.0 Figure 2	22.5 Figure 3	27.5 Figure 3	
Lead wire diameter	d	0.5 – 0.6	0.6	0.6 – 0.8	0.8	0.8	±0.05
Taping lead space	P	12.7	25.4	25.4	38.1	38.1	±1
Feed hole lead space *	P ₀	12.7	12.7	12.7	12.7	12.7	±0.2 **
Centering of the lead wire	P ₁	2.6	7.7	5.2	7.8	5.3	±0.7
Centering of the body	P ₂	6.35	12.7	12.7	19.05	19.05	±1.3
Lead spacing ***	F	7.5	10.0	15.0	22.5	27.5	+0.6/-0.1
Component alignment	Δh	0	0	0	0	0	±2
Component deviation	Δp	0	0	0	0	0	±1
Height of component from tape center	H ₀ ****	18.5	18.5	18.5	18.5	18.5	±0.5
Carrier tape width	W	18	18	18	18	18	+1/-0.5
Hold down tape width	W ₀	6	9	10	10	10	Minimum
Hole position	W ₁	9	9	9	9	9	±0.5
Hold down tape position	W ₂	3	3	3	3	3	Maximum
Feed hole diameter	D ₀	4	4	4	4	4	±0.2
Total tape thickness	t	0.7	0.7	0.7	0.7	0.7	±0.2

* Available also 15 mm.

** Maximum 1 mm on 20 lead spacing.

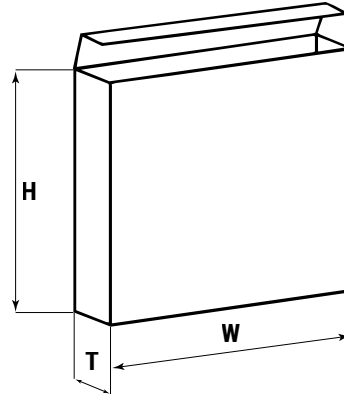
*** 15 mm and 10 mm taped to 7.5 mm (crimped leads) available upon request.

**** H₀ = 16.5 mm is available upon request.

Lead Taping & Packaging (IEC 60286-2) cont.

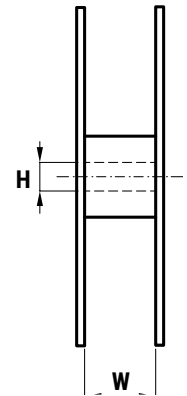
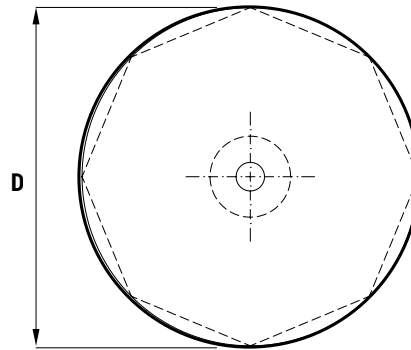
Ammo Specifications

Dimensions (mm)		
H	W	T
360	340	59



Reel Specifications

Dimensions (mm)		
D	H	W
355	30	55 Maximum
500	25	



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