R41, Class X1/Y2, 300 VAC, 110°C (Automotive Grade)



Overview

The R41 is constructed of metallized polypropylene film encapsulated with self-extinguishing resin in a box of material meeting the requirements of UL 94 V-0.

Automotive Grade devices (up to 22.5 mm Lead Spacing) meet the demanding Automotive Electronics Council's AEC-Q200 qualification requirements.

Applications

For use in electromagnetic interference (EMI) suppression filter in "line-to-ground" and "across-the-line" applications requiring Y2/X1 safety classification. Suitable for use in situations where failure of the capacitor could lead to danger of electric shock. Not for use in "series with mains" type applications.

Benefits

Approvals: ENEC, UL, cUL, CQC

Class X1 / Y2 (IEC 60384-14)

Rated voltage: 300 VAC 50/60 Hz

- Capacitance range: 0.001 – 1 μF

• Lead spacing: 10 - 37.5 mm

• Capacitance tolerance: ±20%, ±10%

Climatic category: 40/110/56, 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 +110°C

100% screening factory test at 5,000 VDC/2,500 VAC

Self-healing properties

 Automotive (AEC-Q200) grade up to 22.5 mm Lead Spacing



Part Number System

R41	3	I	2330	00	M1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Y2, Metallized Polypropylene	3 = 300	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	00 M1	K = ±10% M = ±20%



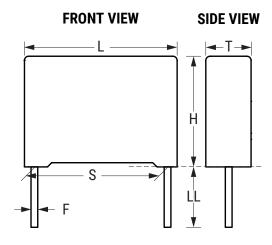
Ordering Options Table

Lead Spacing Nominal (mm)	Type of Leads and Packaging	Lead Length (mm)	Lead and Packaging Code
	Standard Lead and Packaging Options		
	Bulk (Bag) – Short Leads	4 +2/-0	00
	Ammo Pack	H ₀ = 18.5 ±0.5	DQ
	Other Lead and Packaging Options		
10,	Tape & Reel (Large Reel)	H ₀ = 18.5 ±0.5	СК
15,	Bulk (Bag) – Short Leads	3.5 +0.5/-0	JB
22.5	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	Ckaging Options Ckaging Options Ckaging Options	50
			·
	Standard Lead and Packaging Options		
	Bulk (Tray) – Short Leads	4 +2/-0	00
27.5	Tape & Reel (Large Reel)	H ₀ = 18.5 ±0.5	CK ¹
_,,,	Other Lead and Packaging Options		
	Bulk (Tray) – Long Leads	30 +5/-0	40
	Bulk (Tray) – Long Leads	25 +2/-1	50
	Standard Lead and Packaging Options		
		4.07.0	00
37.5	Bulk (Tray) – Short Leads	4 +2/-0	UU
37.3	Other Lead and Packaging Options		
	Bulk (Tray) – Long Leads		
	Bulk (Tray) – Long Leads	25 +2/-1	50

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



Dimensions - Millimeters



	8		Γ		Н		_	F	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
10.0	±0.4	4.0	+0.2/-0.5	9.0	+0.1/-0.5	13.0	+0.3/-0.5	0.6	±0.05
10.0	±0.4	5.0	+0.2/-0.5	11.0	+0.1/-0.5	13.0	+0.3/-0.5	0.6	±0.05
10.0	±0.4	6.0	+0.2/-0.5	12.0	+0.1/-0.5	13.0	+0.3/-0.5	0.6	±0.05
15.0	±0.4	5.0	+0.2/-0.5	11.0	+0.1/-0.5	18.0	+0.3/-0.5	0.6	±0.05
15.0	±0.4	6.0	+0.2/-0.5	12.0	+0.1/-0.5	18.0	+0.3/-0.5	0.6	±0.05
15.0	±0.4	7.5	+0.2/-0.5	13.5	+0.1/-0.5	18.0	+0.3/-0.5	0.6	±0.05
15.0	±0.4	8.5	+0.2/-0.5	14.5	+0.1/-0.5	18.0	+0.3/-0.5	0.6	±0.05
15.0	±0.4	11.0	+0.2/-0.5	19.0	+0.1/-0.5	18.0	+0.3/-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	13.0	+0.2/-0.5	22.0	+0.1/-0.5	26.5	+0.3/-0.5	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	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
37.5	±0.4	13.0	+0.2/-0.7	24.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	16.0	+0.2/-0.7	28.5	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
37.5	±0.4	20.0	+0.2/-0.7	40.0	+0.1/-0.7	41.5	+0.3/-0.7	1.0	±0.05
		Note: Se	e Ordering O	ptions Tabl	e for lead ler	ngth (LL/H ₀)	options.		



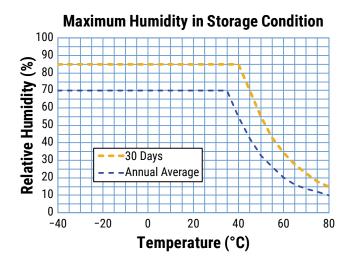
Performance Characteristics

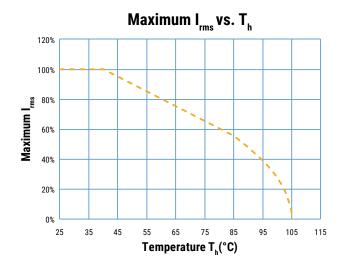
				,		
Dielectric	Polypropylene film					
Plates	Metal layer deposited by	Metal layer deposited by evaporation under vacuum				
Winding	Non-inductive type	Non-inductive type				
Leads	Tinned wire					
Protection	Plastic case, thermosetting	g resin filled. Box material is so	olvent resistant and flame reta	ardant according to UL94.		
Related documents	IEC 60384-14, EN 60384-	14				
Rated Voltage (V _R)	300 VAC (50/60 Hz)					
Recommended DC Voltage	1,000 VDC					
Capacitance Range	0.0010 to 1 μF					
Capacitance Values	E6 series (IEC 60063)					
Capacitance Tolerance	±10%, ±20%					
Operating Temperature Range	-40°C to +110°C					
Rated Temperature	+110°C					
Climatic Category	40/110/56 IEC 60068-1					
	Storage time: ≤ 24 months from the date marked on the label package					
	Average relative humidity per year ≤ 70%					
Storage Conditions	RH ≤ 85% for 30 days randomly distributed throughout the year					
	Dew is absent					
	Temperature: -40 to 80°C (see "Maximum Humidity in Storage Conditions" graph below)					
Approvals	ENEC, UL, cUL, CQC					
Dissipation Factor (tanδ)		Maximum Value	s at +25°C ±5°C			
at 1 kHz		≤ 0.3% (0.2%*) at 1	kHz,+25°C±5°C			
Test Voltage Between Terminals	the requirements in applic	ry test is carried out at 5,000 able equipment standards. Alut this test as there is a risk to	I electrical characteristics a	re checked after the test.		
		Measured at	+25°C ±5°C			
		Minimum Values B	etween Terminals			
Insulation Resistance	Voltage Charge	Voltage Charge Time	C ≤ 0.33 µF	C > 0.33 µF		
	100 VDC	1 minute	$\geq 1 \cdot 10^5 \text{ M}\Omega$ ($\geq 5 \cdot 10^5 \text{ M}\Omega$)*	≥ 30,000 MΩ • µF (≥ 150,000 MΩ • µF)*		
In DC Applications	Recommended voltage ≤	1,000 VDC				

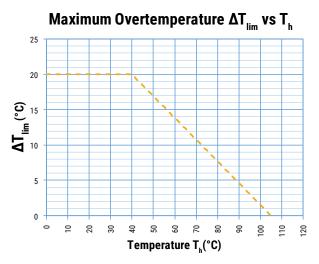
^{*} Typical value



Performance Characteristics cont.



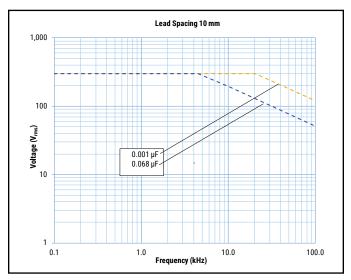


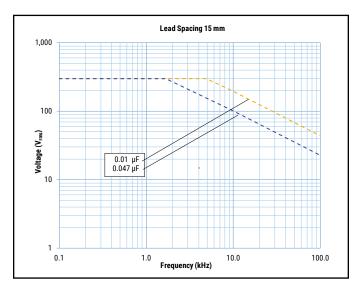


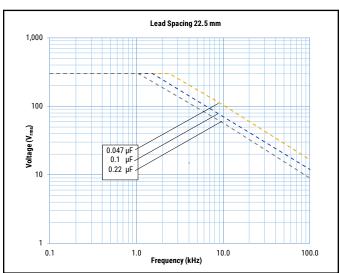
 T_h is the maximum ambient temperature surrounding the capacitor or hottest contact point (e.g. tracks), whichever is higher, in the worst operation conditions in °C.

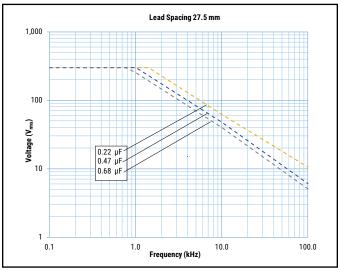


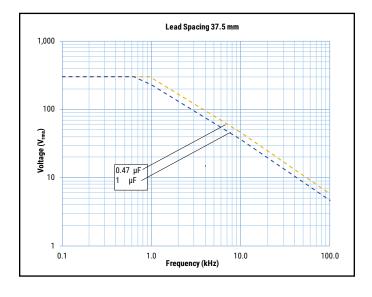
Maximum Voltage (V_{rms}) Versus Frequency (Sinusoidal Waveform/Th ≤ 40 °C)





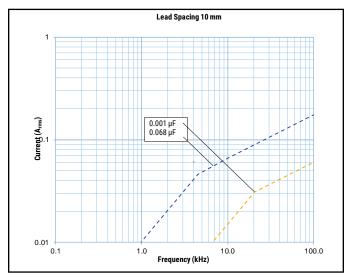


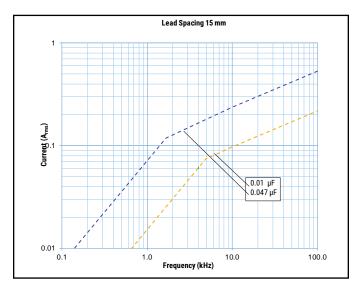


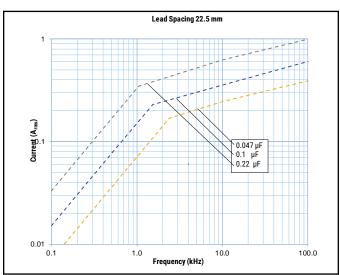


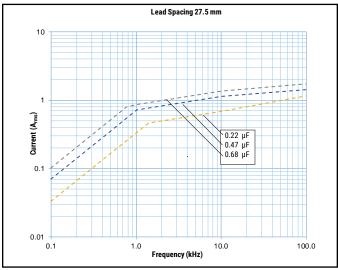


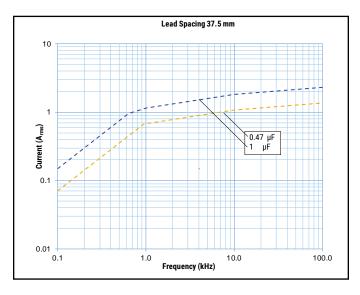
Maximum Current (I_{rms}) Versus Frequency (Sinusoidal Waveform/Th ≤ 40 °C)









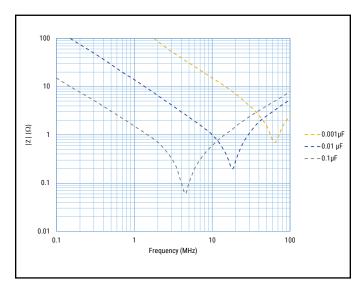




Qualification

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.

Impedance Graph



Environmental Test Data

Test	IEC Publication	Procedure
Endurance	EN/IEC 60384-14	1.7 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/s²
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 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

Certification Body	Mark	Specification	File Number
IMQ S.p.A.		EN/IEC 60384-14	V4160
UL	c FNO US	UL 60384-14 and CAN/CSA E60384-14 (300 VAC)	E97797
cqc	Cec	IEC 60384-14	CQC13001101264 CQC15001128704 CQC19001218777 CQC13001087758

Environmental Compliance

All KEMET EMI capacitors are RoHS Compliant.





Table 1 - Ratings & Part Number Reference

Capacitance	Dimensions in mm			Lead Spacing	dV/dt	KEMET	Customer
Value (μF)	Т	Н	L	(S)	(V/µs)	Part Number	Part Number
0.0010	4.0	9.0	13.0	10.0	800	413F1100(1)00(2)	R413F1100(1)00(2)
0.0015	4.0	9.0	13.0	10.0	800	413F1150(1)00(2)	R413F1150(1)00(2)
0.0022	4.0	9.0	13.0	10.0	800	413F1220(1)00(2)	R413F1220(1)00(2)
0.0033	4.0	9.0	13.0	10.0	800	413F1330(1)M1(2)	R413F1330(1)M1(2)
0.0047	5.0	11.0	13.0	10.0	800	413F1470(1)M1(2)	R413F1470(1)M1(2)
0.0068	6.0	12.0	13.0	10.0	800	413F1680(1)00(3)	R413F1680(1)00(3)
0.010	6.0	12.0	13.0	10.0	800	413F2100(1)M1(3)	R413F2100(1)M1(3)
0.0033	5.0	11.0	18.0	15.0	600	41311330(1)00(2)	R413I1330(1)00(2)
0.0047	5.0	11.0	18.0	15.0	600	41311470(1)00(2)	R413I1470(1)00(2)
0.0068	5.0	11.0	18.0	15.0	600	41311680(1)00(2)	R413I1680(1)00(2)
0.010	5.0	11.0	18.0	15.0	600	41312100(1)00(2)	R413I2100(1)00(2)
0.015	5.0	11.0	18.0	15.0	600	413I2150(1)M1(2)	R413I2150(1)M1(2)
0.022	6.0	12.0	18.0	15.0	600	413I2220(1)M1(2)	R413I2220(1)M1(2)
0.033	7.5	13.5	18.0	15.0	600	413I2330(1)M1(2)	R413I2330(1)M1(2)
0.047	8.5	14.5	18.0	15.0	600	413I2470(1)M1(2)	R413I2470(1)M1(2)
0.068	11.0	19.0	18.0	15.0	600	41312680(1)00(2)	R413I2680(1)00(2)
0.047	6.0	15.0	26.5	22.5	500	413N2470(1)00(2)	R413N2470(1)00(2)
0.068	6.0	15.0	26.5	22.5	500	413N2680(1)M1(3)	R413N2680(1)M1(3)
0.068	7.0	16.0	26.5	22.5	500	413N2680(1)00(2)	R413N2680(1)00(2)
0.10	8.5	17.0	26.5	22.5	500	413N3100(1)M1(2)	R413N3100(1)M1(2)
0.15	10.0	18.5	26.5	22.5	500	413N3150(1)M1(2)	R413N3150(1)M1(2)
0.22	13.0	22.0	26.5	22.5	500	413N3220(1)00(2)	R413N3220(1)00(2)
0.22	13.0	22.0	32.0	27.5	400	413R3220(1)00(2)	R413R3220(1)00(2)
0.33	14.0	28.0	32.0	27.5	400	413R3330(1)00(2)	R413R3330(1)00(2)
0.33	13.0	22.0	32.0	27.5	400	413R3330(1)M1(2)	R413R3330(1)M1(2)
0.47	18.0	33.0	32.0	27.5	400	413R3470(1)00(2)	R413R3470(1)00(2)
0.68	18.0	33.0	32.0	27.5	400	413R3680(1)00(2)	R413R3680(1)00(2)
0.47	13.0	24.0	41.5	37.5	300	413W3470(1)00(2)	R413W3470(1)00(2)
0.68	16.0	28.5	41.5	37.5	300	413W3680(1)00(2)	R413W3680(1)00(2)
1.0	20.0	40.0	41.5	37.5	300	413W4100(1)00(2)	R413W4100(1)00(2)
Capacitance Value (µF)	T (mm)	H (mm)	L (mm)	Lead Spacing (S)	dV/dt (V/μs)	KEMET Part Number	Customer Part Number

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

⁽²⁾ $M = \pm 20\%$, $K = \pm 10\%$

⁽³⁾ M = ±20% (only available tolerance).



Soldering Process

The implementation of the RoHS directive has resulted in the selection of SnAgCu (SAC) alloys or SnCu alloys as 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.

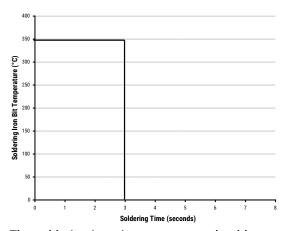
Reflow soldering is not recommended for through-hole film capacitors. Exposing capacitors to a soldering profile in excess of the above the recommended limits may result to degradation or permanent damage to the capacitors.

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

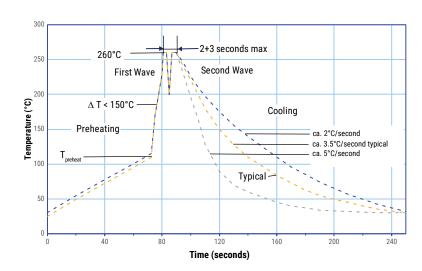
The following is the recommendation for manual soldering with a soldering iron.

Recommended Soldering Temperature



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.

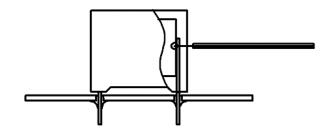
1. The table indicates the maximum set-up temperature of the soldering process Figure 1

Dielectric	Pre	mum heat erature	Maximum Peak Soldering Temperature		
Film Material	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, and great care must be taken so that the parts are not overheated.



Mounting

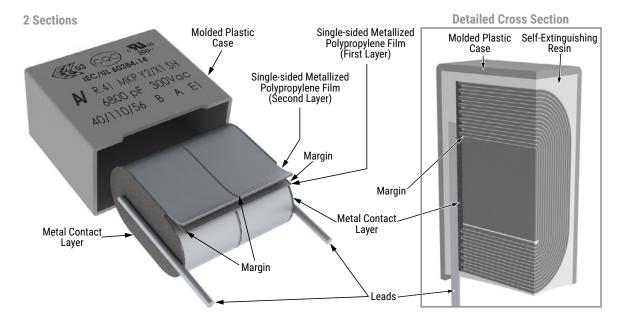
Resistance to Vibration and Mechanical Shock

AEC-Q200 Rev. E Mechanical Stress Tests:

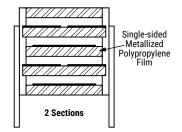
Mechanical Shock	MIL-STD-202 Method 213	Figure 1 of Method 213 • THT: Condition C • SMD: Condition C • Tested per the Supplier's recommended mounting method
Vibration	MIL-STD-202 Method 204	 5 g for 20 minutes, 12 cycles each of 3 orientations Tested per the Supplier's recommended mounting method Verification of transfer load: during setup, verify that with the selected PCB design (size, thickness and secure points), or an alternative mount, that the transferred load onto the component corresponds to the requested load. This verification can be achieved using a laser vibrometer or other adequate measuring device Test from 10 Hz - 2,000 Hz.

The capacitors are designed for PCB mounting. The stand-off pipes must be in good contact with the printed circuit board. The capacitor body has to be properly fixed (e.g. clamped or glued).

Construction



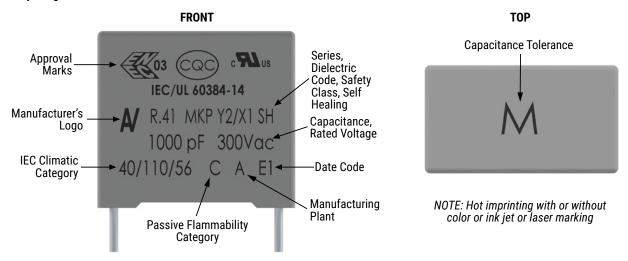
Winding Scheme



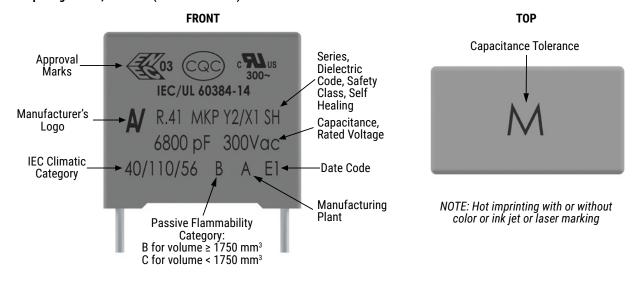


Marking

Lead Spacing 10 mm



Lead Spacing 15 mm, 22.5 mm (small case sizes)



^{*} Differences caused by technology (clichee, laser or ink jet) and production line

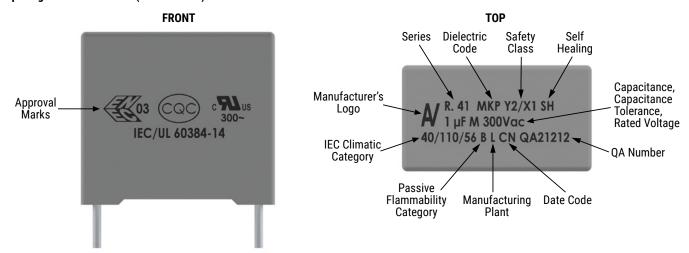
Slight change in the layout can be possible but this does not affect the content of the information of the current marking.

This change will be achieved without impact to product form, fit or function, as the products are equivalent with respect to physical, mechanical, quality and reliability characteristics.



Marking cont.

Lead Spacing 22.5 and 27.5 mm (alternatives*) and 37.5 mm



^{*} Differences caused by technology (clichee, laser or ink jet) and production line

Slight change in the layout can be possible but this does not affect the content of the information of the current marking.

This change will be achieved without impact to product form, fit or function, as the products are equivalent with respect to physical, mechanical, quality and reliability characteristics.

	Manufacturing Date Code (IEC 60062)										
Year	Code	Year	Code	Year	Code	Month	Code	Month	Code		
2020	М	2027	V	2034	E	January	1	July	7		
2021	N	2028	W	2035	F	February	2	August	8		
2022	Р	2029	Χ	2036	Н	March	3	September	9		
2023	R	2030	Α	2037	J	April	4	October	0		
2024	S	2031	В	2038	K	May	5	November	N		
2025	Т	2032	С	2039	L	June	6	December	D		
2026	U	2033	D	2040	М						



Packaging Quantities

Lead Spacing (mm)	Thickness (mm)	Height (mm)	Length (mm)	Bulk Short Leads		ılk Leads	Standard Reel ø 355 mm	Large Reel ø 500 mm	Ammo Taped
Lea	d And Packag	ing Code:		00 - JB JE - JH	40 - 50	JM	GY	СК	DQ
	4.0	9.0	13.0	2,000	1,800	2,200	750	1,500	1000
10	5.0	11.0	13.0	1,300	1,500	2,000	600	1,250	800
	6.0	12.0	13.0	1,000	1,200	1,800	500	1,000	680
	5.0	11.0	18.0	2,000	1,000	1,250	600	1,250	800
	6.0	12.0	18.0	1,750	900	1,000	500	1,000	680
15	7.5	13.5	18.0	1,730	700	800	350	800	500
เอ	8.5	14.5	18.0	1,000	500	650	270	700	440
	11.0	19.0	18.0	450	350	400	270	500	340
	11.0	19.0	10.0	430	330	400	270	300	340
	6.0	15.0	26.5	805	500	450	300	700	464
	7.0	16.0	26.5	700	500	450	250	550	380
22.5	8.5	17.0	26.5	468	300	350	250	450	280
	10.0	18.5	26.5	396	300	350	160	350	235
	13.0	22.0	26.5	300	200	150	130	300	-
	10.0	22.0	22.0	400	200	200		200	
07.5	13.0	22.0	32.0	480	288	288	-	300	
27.5	14.0	28.0	32.0	352	176	176	-	-	-
	18.0	33.0	32.0	256	128	128	_	-	
	13.0	24.0	41.5	360	216	216	_	-	_
37.5	16.0	28.5	41.5	216	108	108	_	-	-
	20.0	40.0	41.5	126	84	84	-	-	_

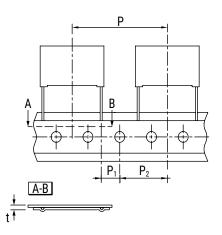


Lead Taping & Packaging (IEC 60286-2)

Figure 1 Lead Spacing 10 mm

Figure 2 Lead Spacing 15 mm

Figure 3 Lead Spacing 22.5 – 27.5 mm



Taping Specification

	Symbol	Dimensions (mm)				
Description		Lead Space				
		10	15	22.5	27.5	Tol.
		Fig. 1	Fig. 2	Fig. 3	Fig. 3	
Lead wire diameter	d	0.6	0.6-0.8	0.8	0.8	±0.05
Taping lead space	Р	25.4	25.4	38.1	38.1	±1
Feed hole lead space *	P_0	12.7	12.7	12.7	12.7	±0.2 **
Centering of the lead wire	P ₁	7.7	5.2	7.8	5.3	±0.7
Centering of the body	P ₂	12.7	12.7	19.05	19.05	±1.3
Lead spacing (pitch) ***	F	10	15	22.5	27.5	+0.6/-0.1
Component alignment	Δh	0	0	0	0	±2
Height of component from tape center	H ₀ ****	18.5	18.5	18.5	18.5	±0.5
Carrier tape width	W	18	18	18	18	+1/-0.5
Hold down tape width	W _o	9	10	10	10	Minimum
Hole position	W ₁	9	9	9	9	±0.5
Hold down tape position	W ₂	3	3	3	3	Maximum
Feed hole diameter	D ₀	4	4	4	4	±0.2
Total tape thickness	t	0.7	0.7	0.7	0.7	±0.2

^{* 15} mm also available

^{**} Maximum of 1 mm on 20 lead spaces

^{***} Pitches 15 mm and 10 mm taped to 7.5 mm (crimped leads) available upon request

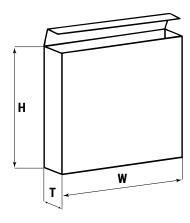
^{****} H_0 = 16.5 mm is available upon request



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

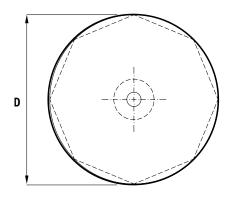
Ammo Specifications

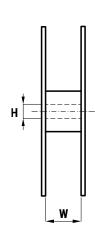
Dimensions (mm)						
Н	W	T				
360	340	59				



Reel Specifications

Reel Size	Dimensions (mm)			
Reel Size	D	Н	W	
Standard	355	30	55 Maximum	
Large	500	25		







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