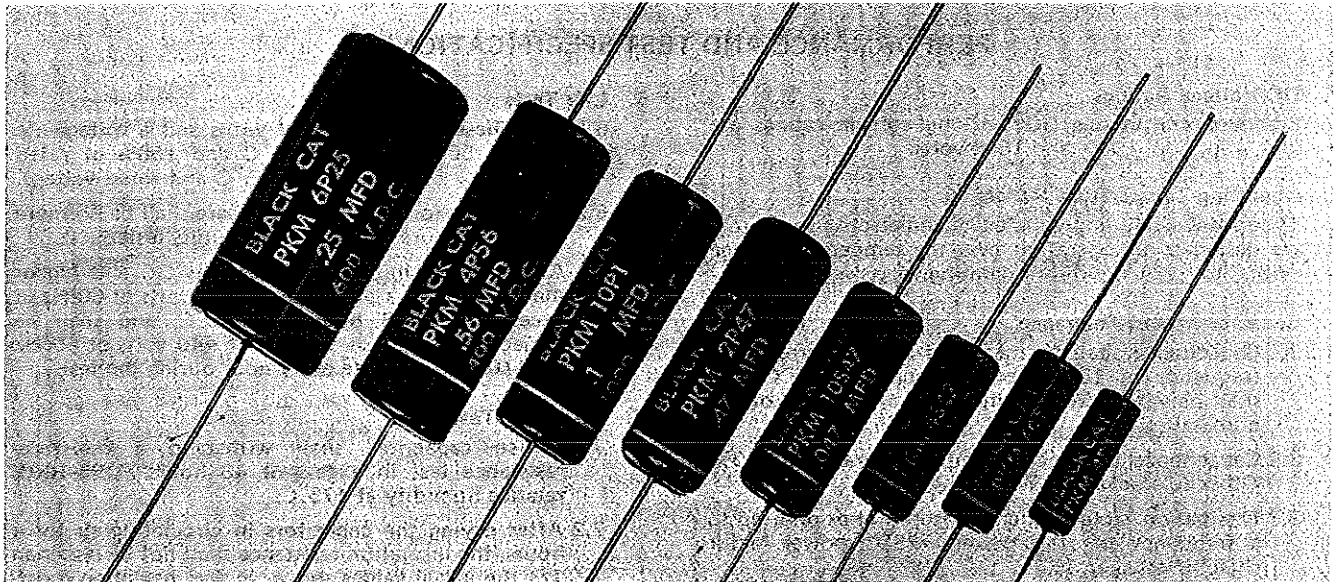


DUAL-DIELECTRIC CAPACITORS, MOLDED TUBULAR-TYPE PKM 200, 400, 600, 1000, 1600 Volts DC Working, +125°C Operation— Established Reliability

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OUTSTANDING FEATURES OF PKM ARE:

1. **High-Temperature Operation without Derating** — Operating over the range -55°C to $+125^{\circ}\text{C}$ at full rated voltage.
2. **Freedom from Impregnant Leakage** — Assured, even at maximum ambient operating temperature, by use of CDE-developed Fixfil* Solid Impregnant.
3. **Excellent Moisture Resistance** — Ability to withstand 95-100% relative humidity at $+75^{\circ}\text{C}$ in excess of 48 hours.
4. **Resistance to Soldering Iron Damage** — Withstands momentary contact with hot soldering iron without damage to case or capacitor section.
5. **Established Reliability** — Based on numerous lot tests extending over several years at maximum rated conditions of both voltage and temperature.

OTHER PKM FEATURES:

Non-inductive extended foil construction. Tinned copper clad steel wire leads attached directly to the capacitor foils provide low-resistance connections and low R.F. impedance to assure low losses and highly dependable circuit performance.

High insulation resistance, low dissipation factor and excellent capacitance stability over the entire operating temperature range — well within the requirements of all-purpose applications, as shown in the temperature characteristics curves, Figures 1, 2 and 3.

Long Shelf-Life — Negligible effect on operating characteristics. The casing affords excellent protection of the capacitor element against variations and extremes of temperature while maintaining inherent stability characteristics. Cornell-Dubilier molding processes assure uniform wall thickness, embedment of the capacitor section without distortion, and firm bonding of the casing material around the leads.

DURABLE AND DEPENDABLE

Cornell-Dubilier Type PKM is an ideal all-purpose capacitor. It offers molded construction and premium-quality performance characteristics although priced in the range of ordinary capacitors that are limited as to construction, applicability and performance.

PKM's excellent environmental-electrical characteristics, achieved primarily by the combination of molded case, dual-dielectric capacitor element and Fixfil solid impregnant, permit use of these units in a wide range of applications — DC, AC, and pulsed DC.

These applications encompass a wide variety of electronic and electrical products ranging from volume-produced consumer goods to subcritical commercial communications and industrial equipment. This includes television and radio receivers, recorders, amplifiers, instruments, business machines, appliances, etc.

PKM is designed to provide long operating life with trouble-free performance. The dual-dielectric capacitor

element combines the long-life characteristics of impregnated kraft capacitor tissue and the excellent moisture resistance of polyester film. Impregnant leakage is completely eliminated as Fixfil solid impregnant will not melt, soften or flow.

Electrical durability is indicated by the fact that units rated at 600 volts DC and higher will withstand an accelerated life test of 220 volts AC at $+85^{\circ}\text{C}$ for more than 1000 hours, with a flash voltage of 440 volts AC impressed for 1/10 second every hour. The capacitors also withstand a flash test of 1080 volts AC working.

PKM capacitors are molded in an extra-hard, high-impact, non-flammable case that is impervious to moisture, will not track on arcing with excessive voltage, and withstand contact with hot soldering iron or heat up to $+200^{\circ}\text{C}$. The PKM case can withstand considerable rough handling without damage to case or capacitor section.

*Cornell-Dubilier Trademark

DUAL-DIELECTRIC CAPACITORS, MOLDED TUBULAR-TYPE PKM

200, 400, 600, 1000, 1600 Volts DC Working, +125°C Operation - Established Reliability

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PERFORMANCE AND TEST SPECIFICATIONS

1. DC Voltage Ratings

Standard continuous DC working voltage ratings are 200, 400, 600, 1000, and 1600 volts.

2. Operating Temperature Range

Type PKM Fixfil-impregnated dual-dielectric capacitors are designed for operation over the temperature range -55°C to +125°C without derating.

3. Capacitance and Tolerance

3.1 Capacitance shall be measured at or referred to a frequency of 1000 Hz per second at +25°C, and shall be within the specified tolerance limits of the nominal rating.

3.2 Capacitance tolerance. Standard tolerance is ±10%. Other tolerances are available.

3.3 Dissipation factor. When measured at or referred to a frequency of 1000 Hz at +25°C, power factor shall be less than 1%.

4. Temperature Characteristics

4.1 Capacitance change. When measured at or referred to 1000 Hz and +25°C, typical capacitance change for type PKM capacitors is as shown in the capacitance-temperature curve of Figure 1, ranging from -7½% at -55°C to +15% at +125°C.

4.2 Insulation resistance. When measured at the applicable test temperature, after electrification time of two minutes at a charging potential of 200 volts DC, insulation resistance shall be in accordance with the following table:

Test Temp.	Min. Megohms X Mfds.	Megohms/Unit. Need Not Exceed
+ 25°C	20,000	100,000
+ 85°C	300	3,000
+125°C	20	200

5. DC Voltage Test

5.1 These capacitors shall withstand a DC potential of 250% of rated voltage at +25°C applied between the terminals for a period not to exceed five seconds.

5.2 Capacitors rated 600 VDC and higher shall withstand an AC flash voltage test of 1080 volts for a period of less than five seconds.

5.3 The test voltage shall be applied and discharged through a resistor of at least 1 ohm per volt.

6. Life Tests

6.1 DC. These capacitors shall withstand a voltage-life test of 500 hours at +85°C and 150% of rated voltage, or 500 hours at +125°C and rated voltage.

6.2 On completion of either test there shall be no more than one failure for each twelve units tested.

6.3 AC Voltage. Units rated 600 volts DC and higher shall withstand a potential of 220 volts at 60 Hz in excess of 1,008 hours at +85°C, and shall be subjected to a flash voltage of 440 volts at 60 Hz for 1/10 second once every hour during the test.

7. Humidity Test

7.1 These capacitors shall withstand a moisture-resistance test in excess of 48 hours at 95-100% relative humidity at +75°C.

7.2 After drying the capacitors in circulating air for 4 hours, the insulation resistance shall not be less than 1/3 the initial values shown in the insulation resistance table, Paragraph 4.2.

8. Terminal Tests

8.1 Pull test. These capacitors shall withstand a continuous, even pull of 5 pounds applied axially to the leads for one minute.

8.2 Lead bending test. The leads shall withstand bending at point of egress, without breakage, first 90 degrees in one direction, returned to the original position, then 90 degrees in the opposite direction.

9. Identification

The capacitors shall be clearly marked with the "Black Cat" name, capacitance in mfd., rated DC voltage, capacitance tolerance (if closer than ±20%) and the CDE identifier.

RELIABILITY DATA

1.1 85°C 150% Rated DC Voltage 500 Hour Test
.035% per 1000 hours at 60% confidence level.
.041% per 1000 hours at 90% confidence level.

1.2 105°C 150% Rated DC Voltage 500 Hour Test
.016% per 1000 hours at 60% confidence level.
.039% per 1000 hours at 90% confidence level.

1.3 Specific data available upon request.

CDE Warranty provides 1 year replacement in case of manufacturing defects. Write for details.

DUAL-DIELECTRIC CAPACITORS, MOLDED TUBULAR-TYPE PKM 200, 400, 600, 1000, 1600 Volts DC Working, +125°C Operation— Established Reliability

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TYPICAL TEMPERATURE CHARACTERISTICS

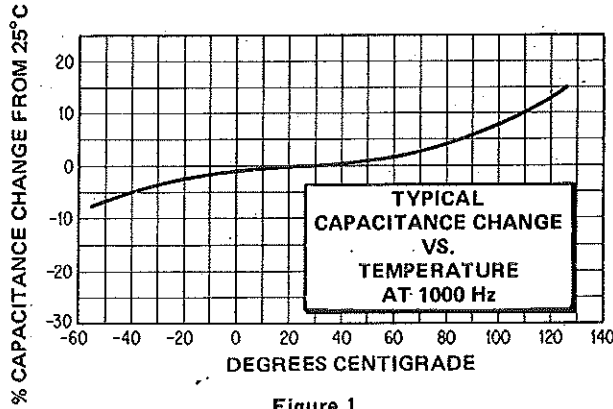


Figure 1

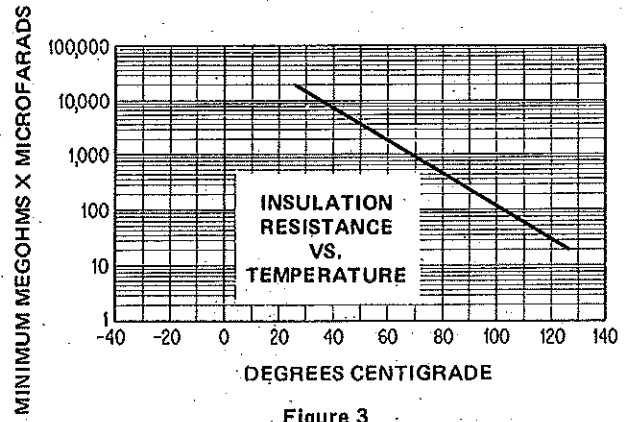


Figure 3

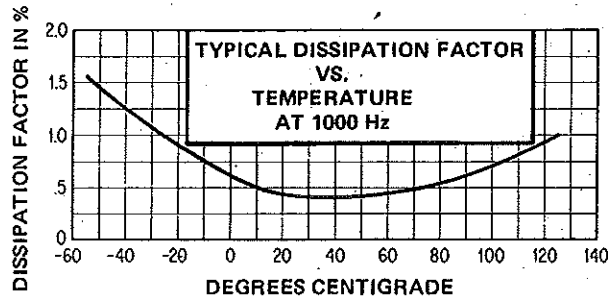


Figure 2

APPLICATION INFORMATION

1.0 AC Operation

PKM capacitors may be operated on AC voltages as shown in Table 1.

AC operation must be limited such that the product of RMS AC volts and amps does not exceed 15 per square inch of case surface.

DCWV	VOLTS AC RMS			
	60Hz	400Hz	1KHz	15KHz
200	125	105	65	35
400	200	165	110	60
600*	250	210	150	90
1000*	300	240	190	120
1600*	400	—	—	—

*All values below 0.1 μ F.

TABLE 1

2.0 Pulse Operation

For pulse operation, derate VA product according to pulse width as shown in Figure 4.

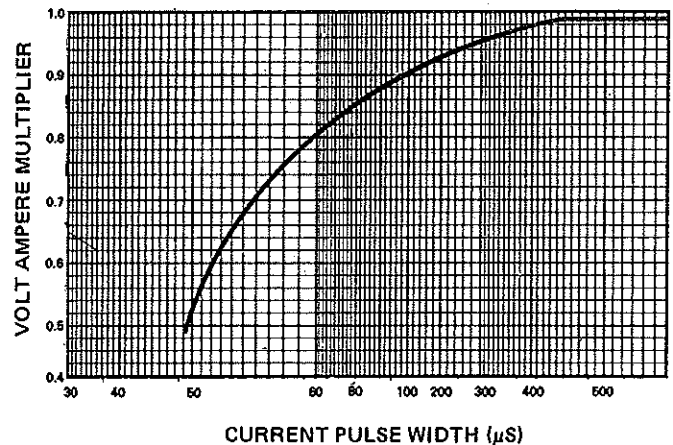


Figure 4

DUAL-DIELECTRIC CAPACITORS, MOLDED TUBULAR-TYPE PKM

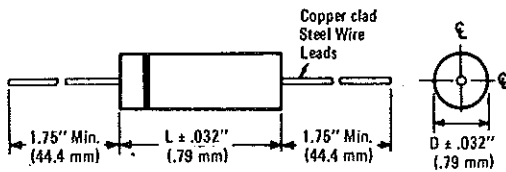
200, 400, 600, 1000, 1600 Volts DC Working,
+125°C Operation - Established Reliability

STANDARD RATINGS AND DIMENSIONS

Cap. Mfd.	200 VOLTS DC WORKING		400 VOLTS DC WORKING		600 VOLTS DC WORKING		1000 VOLTS DC WORKING		1600 VOLTS DC WORKING	
	CDE Cat. No.	Case Code	CDE Cat. No.	Case Code	CDE Cat. No.	Case Code	CDE Cat. No.	Case Code	CDE Cat. No.	Case Code
.001	PKM2D1	A	PKM4D1	A	PKM6D1	A	PKM10D1*	A	PKM16D1*	A
.0012	PKM2D12	A	PKM4D12	A	PKM6D12*	A	PKM10D12	A	PKM16D12	B
.0015	PKM2D15	A	PKM4D15	A	PKM6D15*	A	PKM10D15	A	PKM16D15*	B
.0018	PKM2D18	A	PKM4D18	A	PKM6D18*	A	PKM10D18	A	PKM16D18*	B
.0022	PKM2D22	A	PKM4D22	A	PKM6D22*	A	PKM10D22	B	PKM16D22*	B
.0025	—	—	—	—	PKM6D25*	A	—	—	—	—
.0027	PKM2D27	A	PKM4D27	A	PKM6D27*	A	PKM10D27	B	PKM16D27	B
.0033	PKM2D33	A	PKM4D33	A	PKM6D33*	A	PKM10D33	B	PKM16D33*	B
.0039	PKM2D39	A	PKM4D39*	A	PKM6D39*	B	PKM10D39	B	PKM16D39	B
.0047	PKM2D47	A	PKM4D47*	A	PKM6D47	B	PKM10D47	B	PKM16D47*	B
.0050	—	—	PKM4D5*	A	PKM6D5*	B	PKM10D5*	B	PKM16D5*	B
.0056	PKM2D56	A	PKM4D56*	A	PKM6D56*	B	PKM10D56	B	PKM16D56	B
.0068	PKM2D68	A	PKM4D68*	A	PKM6D68*	B	PKM10D68*	C	PKM16D68*	C
.0082	PKM2D82	A	PKM4D82*	A	PKM6D82*	B	PKM10D82	C	PKM16D82*	C
.01	PKM2S1	A	PKM4S1*	A	PKM6S1*	B	PKM10S1*	C	PKM16S1*	D
.012	PKM2S12	A	PKM4S12*	A	PKM6S12*	B	PKM10S12	C	PKM16S12	D
.015	PKM2S15	B	PKM4S15	B	PKM6S15*	B	PKM10S15*	D	PKM16S15*	D
.018	PKM2S18	B	PKM4S18	B	PKM6S18*	B	PKM10S18	D	PKM16S18	D
.022	PKM2S22	B	PKM4S22	B	PKM6S22*	B	PKM10S22*	D	PKM16S22*	F
.025	—	—	PKM4S25*	B	PKM6S25*	C	—	—	—	—
.027	PKM2S27	B	PKM4S27*	B	PKM6S27*	C	PKM10S27	D	PKM16S27	F
.033	PKM2S33	B	PKM4S33*	B	PKM6S33*	C	PKM10S33*	D	PKM16S33*	F
.039	PKM2S39	B	PKM4S39*	B	PKM6S39*	D	PKM10S39	E	PKM16S39	F
.047	PKM2S47	C	PKM4S47*	C	PKM6S47*	D	PKM10S47*	E	PKM16S47*	F
.050	—	—	PKM4S5*	C	PKM6S5*	D	—	—	—	—
.056	PKM2S56	C	PKM4S56*	C	PKM6S56*	D	PKM10S56	F	PKM16S56	G
.068	PKM2S68	C	PKM4S68*	C	PKM6S63*	D	PKM10S68*	F	PKM16S68	H
.082	PKM2S82	D	PKM4S82*	D	PKM6S82*	E	PKM10S82	G	PKM16S82	H
.1	PKM2P1	D	PKM4P1*	D	PKM6P1*	E	PKM10P1*	G	PKM16P1	H
.12	PKM2P12	D	PKM4P12*	D	PKM6P12*	F	PKM10P12	H	PKM16P12	J
.15	PKM2P15	D	PKM4P15*	D	PKM6P15*	F	PKM10P15	H	PKM16P15	J
.18	PKM2P18	E	PKM4P18*	E	PKM6P18*	G	PKM10P18	H	PKM16P18	J
.22	PKM2P22	F	PKM4P22*	F	PKM6P22*	G	PKM10P22	J	—	—
.25	—	—	PKM4P25*	F	PKM6P25*	G	—	—	—	—
.27	PKM2P27	F	PKM4P27*	F	PKM6P27*	G	PKM10P27	J	—	—
.33	PKM2P33	G	PKM4P33*	G	PKM6P33*	H	—	—	—	—
.39	PKM2P39	G	PKM4P39*	G	PKM6P39*	H	—	—	—	—
.47	PKM2P47	G	PKM4P47*	G	PKM6P47*	J	—	—	—	—
.50	—	—	PKM4P5*	G	PKM6P5*	J	—	—	—	—
.56	PKM2P56	H	PKM4P56*	H	PKM6P56*	J	—	—	—	—
.68	PKM2P68	H	PKM4P68*	H	PKM6P68*	J	—	—	—	—
.82	PKM2P82	J	PKM4P82*	J	—	—	—	—	—	—
1.0	PKM2W1	J	PKM4W1*	J	—	—	—	—	—	—

* Available from stock in 10% tolerance
Order by complete type number; eg. PKM4D39

CASE DIMENSIONS



LEAD WIRE SIZES

Case Diameter	Inches	(mm)	A.W.G. No.
.312"	(7.9)		22
.375 to .500"	(9.5 to 12.7)		20
.562" and larger	(14.3)		18

Case Code	D X L	
	Inches	(mm)
A	.312 x 1.00	(7.9 x 25.4)
B	.375 x 1.25	(9.5 x 31.8)
C	.437 x 1.25	(11.1 x 31.8)
D	.500 x 1.50	(12.7 x 38.1)
E	.562 x 1.562	(14.3 x 39.7)
F	.625 x 1.875	(15.9 x 47.6)
G	.687 x 1.937	(17.4 x 49.2)
H	.750 x 2.250	(19.0 x 57.2)
J	1.000 x 2.125	(25.4 x 54.0)