CHR26

MIL-PRF-39022/12

Type 859P

Capacitor,
Fixed,
Metallized plastic film dielectric,
Alternating current (RMS),
Hermetically sealed in metal cases,
Nonmagnetic (end seal may be of magnetic material)
Established reliability.

GENERAL CHARACTERISTICS

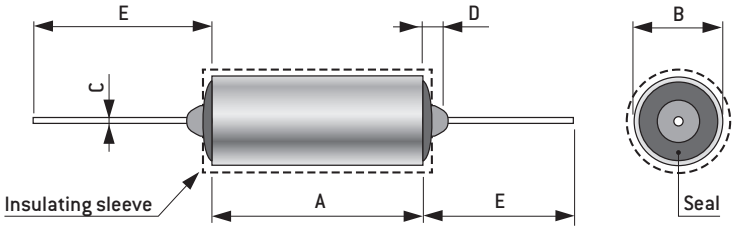
Dielectric material	Normally polyphenylene sulfide
Rated temperature	–55°C to +85°C.
Capacitance range	0.010μF to 10 μF
Voltage range	80 V to 400 V
Capacitance tolerance	±5%, ±10%
Failure rate level (% per 1,000 hours)	**M** (1%), **P** (0.1%), **R** (0.01%), and **S** (0.001%).

Full details and most up to date information found at government website.

DIMENSIONS

A	B
See tables on the next pages	

C		D		E	
Inches	(mm)	Inches	(mm)	Inches	(mm)
See note 1		0.172 max	(4.37 max)	1.50^{+1}_{-0}	$(38.10^{+25.4}_{-0})$



CIRCUIT DIAGRAM

NOTES

1. Number 20 AWG wire 0.032"$\pm$0.002 (0.81$\pm$0.05 mm) for case diameters of 0.312" (7.92 mm). Number 18 AWG wire 0.040"$\pm$0.002 (1.02$\pm$0.05 mm) for case diameters of 0.400" (10.16 mm) and over.
2. See table below for additional dimensions.
3. Dimensions are in inches.
4. Metric equivalents are given for general information only.
5. Metric equivalents are in parentheses.
6. Lead length may be a minimum of 1.0 inch (25.4 mm) long for use in tape and reel packaging when specified in the ordering data.

INSULATION RESISTANCE

In megohms: At +25°C ±3°C (need not exceed) At +125°C +4°C, –0°C (need not exceed)	 50,000 10,000
In megohms x microfarads (minimum): At +25°C ±3°C At +125°C +4°C, –0°C	 25,000 5,000

HOW TO ORDER

M39022	/12-	1171
Performance Specification number	Specification sheet number	Nonsignificant dash number

Type 859P

MIL-PRF-39022/12

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ELECTRICAL CHARACTERISTICS, DIMENSIONS, AND DASH NUMBERS

AC rated voltage (Vrms)	Nominal capacitance (µF)	Dimensions				Dash number in			
		A ±0.062(±1.57 mm)		B +0.031/–0.05(+0.79 / –1.30 mm)		Failure rate level (%/1,000 hr)			
		Inches	(mm)	Inches	(mm)	M (1.0)	P (0.1)	R (0.01)	S (0.001)
400	0.010	1.125	(28.58)	0.312	(7.92)	1171	1191	1211	1231
400	0.012	1.125	(28.58)	0.400	(10.16)	1270	1290	1310	1330
400	0.015	1.125	(28.58)	0.400	(10.16)	1172	1192	1212	1232
400	0.018	1.125	(28.58)	0.400	(10.16)	1271	1291	1311	1331
400	0.022	1.125	(28.58)	0.400	(10.16)	1173	1193	1213	1233
400	0.027	1.375	(34.93)	0.400	(10.16)	1272	1292	1312	1332
400	0.033	1.375	(34.93)	0.400	(10.16)	1174	1194	1214	1234
400	0.039	1.125	(28.58)	0.562	(14.27)	1273	1293	1313	1333
400	0.047	1.125	(28.58)	0.562	(14.27)	1175	1195	1215	1235
400	0.056	1.375	(34.93)	0.562	(14.27)	1274	1294	1314	1334
400	0.068	1.375	(34.93)	0.562	(14.27)	1176	1196	1216	1236
400	0.082	1.625	(41.28)	0.562	(14.27)	1275	1295	1315	1336
400	0.10	1.625	(41.28)	0.562	(14.27)	1177	1197	1217	1237
390	0.12	1.625	(41.28)	0.670	(17.02)	1178	1198	1218	1238
390	0.15	1.625	(41.28)	0.670	(17.02)	1179	1199	1219	1239
385	0.18	1.875	(47.63)	0.670	(17.02)	1276	1296	1316	1336
385	0.22	1.875	(47.63)	0.670	(17.02)	1180	1200	1220	1240
380	0.27	2.375	(60.33)	0.750	(19.05)	1277	1297	1317	1337
380	0.33	2.375	(60.33)	0.750	(19.05)	1183	1203	1223	1243
370	0.39	1.875	(47.63)	1.000	(25.40)	1278	1298	1318	1338
370	0.47	1.875	(47.63)	1.000	(25.40)	1181	1201	1221	1241
350	0.56	2.375	(60.33)	1.000	(25.40)	1279	1299	1319	1339
350	0.68	2.375	(60.33)	1.000	(25.40)	1182	1202	1222	1242
300	0.10	1.125	(28.58)	0.500	(12.70)	1044	1074	1104	1134
300	0.12	1.375	(34.93)	0.562	(14.27)	1340	1360	1380	1400
300	0.15	1.375	(34.93)	0.562	(14.27)	1045	1075	1105	1135
300	0.18	1.625	(41.28)	0.562	(14.27)	1341	1361	1381	1401
300	0.22	1.625	(41.28)	0.562	(14.27)	1046	1076	1106	1136
300	0.27	1.875	(47.63)	0.562	(14.27)	1342	1362	1382	1402
300	0.33	1.875	(47.63)	0.562	(14.27)	1047	1077	1107	1137
300	0.39	1.625	(41.28)	0.670	(17.02)	1343	1363	1383	1403
300	0.47	1.625	(41.28)	0.670	(17.02)	1048	1078	1108	1138
295	0.56	1.875	(47.63)	0.750	(19.05)	1344	1364	1384	1404
290	0.68	1.875	(47.63)	0.750	(19.05)	1049	1079	1109	1139
280	0.82	2.125	(53.98)	0.750	(19.05)	1345	1365	1385	1405
270	1.00	2.125	(53.98)	0.750	(19.05)	1050	1080	1110	1140
235	1.50	1.875	(47.63)	1.000	(25.40)	1051	1081	1111	1141
200	2.20	2.625	(66.68)	1.000	(25.40)	1052	1082	1112	1142
165	0.10	.875	(22.23)	0.312	(7.92)	1031	1061	1091	1121
165	0.12	1.125	(28.58)	0.312	(7.92)	1346	1366	1386	1406
165	0.15	1.125	(28.58)	0.312	(7.92)	1032	1062	1092	1122
165	0.18	0.875	(22.23)	0.400	(10.16)	1347	1367	1387	1407
165	0.22	0.875	(22.23)	0.400	(10.16)	1033	1063	1093	1123
165	0.27	1.125	(28.58)	0.400	(10.16)	1348	1368	1388	1408
165	0.33	1.125	(28.58)	0.400	(10.16)	1034	1064	1094	1124
165	0.39	1.375	(34.93)	0.400	(10.16)	1349	1369	1389	1409
165	0.47	1.375	(34.93)	0.400	(10.16)	1035	1065	1095	1125
165	0.56	1.125	(28.58)	0.562	(14.27)	1350	1370	1390	1410
165	0.68	1.125	(28.58)	0.562	(14.27)	1036	1066	1096	1126
165	0.82	1.375	(34.93)	0.562	(14.27)	1351	1371	1391	1411
165	1.00	1.375	(34.93)	0.562	(14.27)	1037	1067	1097	1127
155	1.50	1.625	(41.28)	0.562	(14.27)	1038	1068	1098	1128
150	2.20	1.625	(41.28)	0.670	(17.02)	1039	1069	1099	1129
145	2.50	1.875	(47.63)	0.670	(17.02)	1352	1372	1392	1412
140	3.30	1.875	(47.63)	0.750	(19.05)	1040	1070	1100	1130
135	4.00	2.125	(53.98)	0.750	(19.05)	1353	1373	1393	1413
130	4.70	2.375	(60.33)	0.750	(19.05)	1041	1071	1101	1131
110	6.80	1.875	(47.63)	1.000	(25.40)	1042	1072	1102	1132
100	8.00	2.125	(53.98)	1.000	(25.40)	1354	1374	1394	1414
90	9.00	2.375	(60.33)	1.000	(25.40)	1355	1375	1395	1415
80	10.00	2.625	(66.68)	1.000	(25.40)	1043	1073	1103	1133

Technical Informations

TERMINAL

The terminal is identified by a single letter in accordance with table below.

Symbol	Type of terminal
A	Axial wire lead
B	Solder lug (nonremovable)
C	Threaded stud and nuts
D and H	Pillar insulator for use at altitudes up to 7,500 feet (22.8 inches of mercury)
E	Pillar insulator for use at altitudes up to 50,000 feet (3.4 inches of mercury)
R	Radial wire-lead
L	Lugs

CHARACTERISTIC

The characteristic is identified by a single letter in accordance with table below.

Characteristic	Values of characteristics								
	E	F	G	K [2]	M	P	Q [4]	T	V
High ambient test temperature ±3°C [1]	+85°C	+85°C	+85°C	+125°C	+85°C	+65°C	+125°C	+170°C	+125°C
Low ambient test temperature +0°C, −5°C	−65°C	−55°C	−55°C	−65°C	−65°C	−65°C	−55°C	−65°C	−55°C

Life-test dc voltage, percent of the dc voltage rating: Watt-second group:									
I (0.5 watt-second and less)	140	140	140	140	140	140	150	140	150
II (0.5+ to 5 watt-seconds)	140	130	130	140 [3]	–	–	–	–	–
III (5+ to 50 watt-seconds)	140	110	110	140	–	–	–	–	–
IV (greater than 50 watt-seconds)	140	90	90	140	–	–	–	–	–
Flashpoint of impregnant of filling compound (°C)	+142°C	+135°C	+135°C	+142°C	+142°C	+142°C	+142°C	+217°C	+142°C

[1] For characteristic K, voltage derating may be necessary at the high ambient test temperature.
[2] For tubular units of characteristic K rated at 1,000 volts dc, life test voltage is 1,200 volts.
[3] For tubular units of characteristic K in watt-seconds group II, use 130 percent of the dc voltage at +40°C for the life-test dc voltage.
[4] Characteristic Q capacitors are no longer available

Characteristic	Construction		Operating temperature range
	Dielectric material	Electrode	
K	Polypropylene	Foil	−55°C to +105°C
L	Polypropylene	Metallized polypropylene	−55°C to +105°C
M	Polyethylene terephthalate	Foil	−55°C to +85°C
N	Polyethylene terephthalate	Metallized polyethylene terephthalate	−55°C to +85°C
Q	Polycarbonate	Foil	−55°C to +125°C [1]
R	Polycarbonate	Metallized polycarbonate	−55°C to +125°C [1]
U	Polyphenylene sulfide	Metallized polyphenylene sulfide	−55°C to +125°C [1]
V	Polyphenylene sulfide	Foil	−55°C to +125°C [1]

[1] For operation at +125°C, characteristics Q, R, U and V capacitors are voltage derated (see table below)

Symbol	DC voltage rating at +85°C [1]	Characteristics Q and V DC voltage rating at +125°C	Characteristics R and U DC voltage rating at +125°C
A	50 V	33.3 V	25 V
B	100 V	66.7 V	50 V
C	200 V	133.3 V	100 V
D	300 V	200.0 V	150 V
E	400 V	266.7 V	200 V
F	600 V	400.0 V	300 V
G	75 V	50.0 V	37.5 V
H	150 V	100.0 V	75 V
J	25 V	16.7 V	12.5 V
K	250 V	166.7 V	125 V
L	800 V	533.3 V	400 V

[1] DC voltage rating for characteristics K and L at +105°C are the same as those at +85°C.

VOLTAGE

The dc voltage rating for continuous operation at the high ambient test temperature specified in table III (except for characteristic K which is for +85°C operation), is identified by a single letter in accordance with table below.

Symbol	DC voltage rating (Volts)	Symbol	DC voltage rating (Volts)
Z	30 V	K	2,500 V
A	50 V	L	3,000 V
B	100 V	M	4,000 V
C	200 V	N	5,000 V
D	300 V	P	6,000 V
E	400 V	R	7,500 V
F	600 V	S	10,000 V
G	1,000 V	T	12,500 V
H	1,500 V	U	15,000 V
J	2,000 V		

CAPACITANCE TOLERANCE

The capacitance tolerance in percent is identified by a single letter in accordance with table below.

Symbol	Capacitance tolerance
C	±0.25%
D	±0.5%
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%

CIRCUIT AND VOLTAGE CODES

Code	Circuit	Voltage (V)
A	1	50
B	3	50
C	1	100
D	3	100
E	1	200
F	3	200
G	1	400
H	3	400
J	1	600
K	3	600
L	1	300
M	3	300

Government Documents

Specifications. standards. and handbooks.
The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

FEDERAL STANDARDS

FED-STD-H28 - Screw-Thread Standards for Federal Services

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-C-18312 - Capacitors, Fixed, Metallized (Paper, Paper-Plastic, or Plastic Film) Dielectric, Direct Current (Hermetically Sealed in Metal Cases), General Specification for

MIL-PRF-83421/1 - Capacitors, Fixed, Metallized, Plastic Film Dielectric, DC and AC, Hermetically Sealed In Metal Cases, Established Reliability,

MIL-PRF-83421/2 - Capacitor, Fixed, Metallized Plastic Film, Dielectric, (DC, AC, or DC and AC), Hermetically Sealed in Metal Cases, Established Reliability,

MIL-PRF-83421/6 - Capacitor, Fixed, Metallized Plastic Film Dielectric, DC and AC, Hermetically Sealed in Metal Cases, Established Reliability,

MIL-PRF-11693/7 - Capacitors, Feed Through, Radio-Interference Reduction, DC (Hermetically Sealed in Metal Cases), Established and Non-Established Reliability,

MIL-PRF-83421/6 - Capacitors, Fixed, Metallized Plastic Film Dielectric, DC and AC, Hermetically Sealed In Metal Cases, Established Reliability.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-202 - Test Methods Standard Electronic and Electrical Component Parts
MIL-STD-202-101 - Method 101, Salt Atmosphere (Corrosion)
MIL-STD-202-104 - Method 104, Immersion
MIL-STD-202-105 - Method 105, Barometric Pressure (Reduced)
MIL-STD-202-106 - Method 106, Moisture Resistance
MIL-STD-202-107 - Method 107, Thermal Shock
MIL-STD-202-108 - Method 108, Life (at Elevated Ambient Temperature)
MIL-STD-202-112 - Method 112, Seal
MIL-STD-202-201 - Method 201, Vibration
MIL-STD-202-204 - Method 204, Vibration, High Frequency
MIL-STD-202-208 - Method 208, Solderability
MIL-STD-202-209 - Method 209, Radiographic Inspection
MIL-STD-202-210 - Method 210, Resistance to Soldering Heat
MIL-STD-202-211 - Method 211, Terminal Strength
MIL-STD-202-213 - Method 213, Shock (Specified Pulse)
MIL-STD-202-214 - Method 214, Random Vibration
MIL-STD-202-215 - Method 215, Resistance to Solvents
MIL-STD-202-301 - Method 301, Dielectric Withstanding Voltage
MIL-STD-202-302 - Method 302, Insulation Resistance
MIL-STD-202-305 - Method 305, Capacitance
MIL-STD-220 - Method of Insertion Loss Measurement
MIL-STD-690 - Failure Rate Sampling Plans and Procedures
MIL-STD-790 - Standard Practice for Established Reliability and High Reliability Qualified Products List (QPL) Systems for Electrical, Electronic, and Fiber Optic Parts Specifications
MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests
MIL-STD-1276 - Leads for Electronic Component Parts
MIL-STD-1285 - Marking of Electrical and Electronic Parts

Government Documents

Non-Government publications.
The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those listed in the solicitation or contract.

ASTM INTERNATIONAL (ASTM)

ASTM D92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester

SAE INTERNATIONAL (SAE)

SAE EIA-554-1 - Assessment of Average Outgoing Quality Levels in Parts Per Million (PPM)

ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES (IPC)

IPC/JEDEC J-STD-002 - Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO/IEC 17025 - General Requirements for the Competence of Testing and Calibration laboratories

ISO 10012 - Measurement Management Systems - Requirements for Measurement Processes and Measuring Equipment

NATIONAL CONFERENCE OF STANDARDS LABORATORIES (NCSL)

NCSL Z540.3 - Requirements for the Calibration of Measuring and Test Equipment

SAE INTERNATIONAL (SAE)

SAE EIA-554-1 - Assessment of Average Outgoing Quality Levels in Parts per Million (PPM)

SOLID STATE TECHNOLOGY ASSOCIATION (JEDEC)

JEDEC JESD557 - Statistical Process Control Systems

Order of precedence.
Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.