INCH-POUND

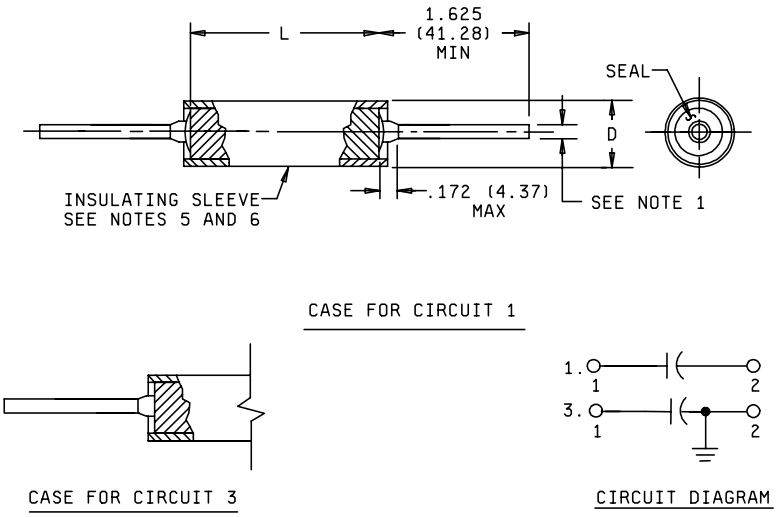
MIL-PRF-39022/1F
30 June 2006
SUPERSEDING
MIL-PRF-39022/1E
25 May 2001

PERFORMANCE SPECIFICATION SHEET

CAPACITORS, FIXED, METALLIZED, PAPER-PLASTIC FILM, OR PLASTIC FILM DIELECTRIC, DIRECT CURRENT, (HERMETICALLY SEALED IN METAL CASES), ESTABLISHED RELIABILITY, STYLE CHR09 (INSULATED)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-39022.



NOTES:

1. Number 24 AWG wire .020 ± .002 inch (0.51 ± 0.05 mm) for case diameters of .175 inch (4.45 mm) and .195 inch (4.95 mm).
   Number 22 AWG wire .025 ± .002 inch (0.64 ± 0.05 mm) for case diameters of .235 inch (5.97 mm) and .312 inch (7.92 mm).
   Number 20 AWG wire .032 ± .002 inch (0.81 ± 0.05 mm) for case diameters of .400 inch (10.16 mm) and over.
2. See table I for additional dimensions.
3. Dimensions are in inches.
4. Metric equivalents are given for general information only.
5. Insulating sleeve shall extend beyond the capacitor body but shall not exceed .031 inch (0.79 mm) on either end. Insulating sleeve thickness shall not exceed .016 inch (0.41 mm).
6. Plastic insulating sleeve shall be transparent; marking shall be applied to the capacitor case.
7. Metric equivalents are in parentheses.
8. Lead length may be a minimum of one inch (25.4 mm) long for use in tape and reel packaging when specified in the ordering data.

FIGURE 1. Dimensions and configuration.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

Case material: Nonmagnetic.

Capacitance value: See table I

Capacitance tolerance: See table I.

Rated voltage: See table I.

Dielectric material:

50 volt units normally polyethylene-terephthalate.

200, 400, and 600 volt units normally paper polyethylene-terephthalate.

Operating temperature range:

50 volt units: -55°C to +85°C.

200, 400, and 600 volts units: -55°C to +125°C.

Failure rate level: M (1.0 percent), P (0.1 percent), R (0.01 percent), and S (0.001 percent).

Radiographic inspection (X-ray): Method 209 of MIL-STD-202.

Thermal shock: Method 107 of MIL-STD-202, condition A except step 3 shall be at applicable high test temperature.

Seal: Method 112 of MIL-STD-202, condition B, or (for liquid-filled units only) 1 hour at applicable high test temperature with no evidence of leakage.

Dielectric withstanding voltage (DWV): Method 301 of MIL-STD-202.

Terminal to terminal: 200 percent of rated voltage.

Terminals to case (when case is not a terminal): 200 percent of rated voltage.

For 100 percent inspection:

250 percent for not less than 5 seconds, or

200 percent for not less than 15 seconds.

Insulation resistance (IR): Method 302 of MIL-STD-202.

Terminal to terminal: See table II.

Terminal to case (when case is not a terminal): 10,000 megohms, minimum.

Capacitance: Method 305 of MIL-STD-202.

Dissipation factor (DF): 1 percent.

TABLE I. Electrical characteristics, dimensions, and dash numbers.

DC rated voltage (Volts)	Capacitance value (μF)	Circuit diagram	Capacitance tolerance (Percent ±)	Dimension, nominal (inches) 1/ 2/		Dash number Failure rate level for (%/1,000 hr)			
				L ± 0.062	D ± 0.031	M(1.0)	P(0.1)	R(0.01)	S(0.001)
50	0.018	1	5	0.750	0.175	1261	1521	1781	2041
50	0.018	1	10	0.750	0.175	1262	1522	1782	2042
50	0.018	3	5	0.688	0.175	1263	1523	1783	2043
50	0.018	3	10	0.688	0.175	1264	1524	1784	2044
50	0.022	1	5	0.750	0.175	1265	1525	1785	2045
50	0.022	1	10	0.750	0.175	1266	1526	1786	2046
50	0.022	3	5	0.688	0.175	1267	1527	1787	2047
50	0.022	3	10	0.688	0.175	1268	1528	1788	2048
50	0.027	1	5	0.750	0.175	1269	1529	1789	2049
50	0.027	1	10	0.750	0.175	1270	1530	1790	2050
50	0.027	3	5	0.688	0.175	1271	1531	1791	2051
50	0.027	3	10	0.688	0.175	1272	1532	1792	2052
50	0.033	1	5	0.750	0.175	1273	1533	1793	2053
50	0.033	1	10	0.750	0.175	1274	1534	1794	2054
50	0.033	3	5	0.688	0.175	1275	1535	1795	2055
50	0.033	3	10	0.688	0.175	1276	1536	1796	2056
50	0.039	1	5	0.750	0.195	1277	1537	1797	2057
50	0.039	1	10	0.750	0.195	1278	1538	1798	2058
50	0.039	3	5	0.688	0.195	1279	1539	1799	2059
50	0.039	3	10	0.688	0.195	1280	1540	1800	2060
50	0.047	1	5	0.750	0.195	1281	1541	1801	2061
50	0.047	1	10	0.750	0.195	1282	1542	1802	2062
50	0.047	3	5	0.688	0.195	1283	1543	1803	2063
50	0.047	3	10	0.688	0.195	1284	1544	1804	2064
50	0.056	1	5	0.750	0.235	1285	1545	1805	2065
50	0.056	1	10	0.750	0.235	1286	1546	1806	2066
50	0.056	3	5	0.688	0.235	1287	1547	1807	2067
50	0.056	3	10	0.688	0.235	1288	1548	1808	2068
50	0.068	1	5	0.750	0.235	1289	1549	1809	2069
50	0.068	1	10	0.750	0.235	1290	1550	1810	2070
50	0.068	3	5	0.688	0.235	1291	1551	1811	2071
50	0.068	3	10	0.688	0.235	1292	1552	1812	2072
50	0.082	1	5	0.750	0.235	1293	1553	1813	2073
50	0.082	1	10	0.750	0.235	1294	1554	1814	2074
50	0.082	3	5	0.688	0.235	1295	1555	1815	2075
50	0.082	3	10	0.688	0.235	1296	1556	1816	2076
50	0.10	1	5	0.750	0.235	1297	1557	1817	2077
50	0.10	1	10	0.750	0.235	1298	1558	1818	2078
50	0.10	3	5	0.688	0.235	1299	1559	1819	2079
50	0.10	3	10	0.688	0.235	1300	1560	1820	2080
50	0.12	1	5	0.750	0.235	1301	1561	1821	2081
50	0.12	1	10	0.750	0.235	1302	1562	1822	2082
50	0.12	3	5	0.688	0.235	1303	1563	1823	2083
50	0.12	3	10	0.688	0.235	1304	1564	1824	2084
50	0.15	1	5	0.875	0.312	1305	1565	1825	2085
50	0.15	1	10	0.875	0.312	1306	1566	1826	2086
50	0.15	3	5	0.812	0.312	1307	1567	1827	2087
50	0.15	3	10	0.812	0.312	1308	1568	1828	2088
50	0.18	1	5	0.875	0.312	1309	1569	1829	2089
50	0.18	1	10	0.875	0.312	1310	1570	1830	2090
50	0.18	3	5	0.812	0.312	1311	1571	1831	2091
50	0.18	3	10	0.812	0.312	1312	1572	1832	2092
50	0.22	1	5	0.875	0.312	1313	1573	1833	2093
50	0.22	1	10	0.875	0.312	1314	1574	1834	2094
50	0.22	3	5	0.812	0.312	1315	1575	1835	2095
50	0.22	3	10	0.812	0.312	1316	1576	1836	2096

See footnotes at end of table.

TABLE I. Electrical characteristics, dimensions, and dash numbers - Continued.

DC rated voltage (Volts)	Capacitance value (μF)	Circuit diagram	Capacitance tolerance (Percent ±)	Dimension, nominal (inches) 1/ 2/		Dash number Failure rate level for (%/1,000 hr)			
				L ± 0.062	D ± 0.031	M(1.0)	P(0.1)	R(0.01)	S(0.001)
50	0.27	1	5	0.875	0.312	1317	1577	1837	2097
50	0.27	1	10	0.875	0.312	1318	1578	1838	2098
50	0.27	3	5	0.812	0.312	1319	1579	1839	2099
50	0.27	3	10	0.812	0.312	1320	1580	1840	2100
50	0.33	1	5	0.875	0.312	1321	1581	1841	2101
50	0.33	1	10	0.875	0.312	1322	1582	1842	2102
50	0.33	3	5	0.812	0.312	1323	1583	1843	2103
50	0.33	3	10	0.812	0.312	1324	1584	1844	2104
50	0.39	1	5	1.125	0.312	1325	1585	1845	2105
50	0.39	1	10	1.125	0.312	1326	1586	1846	2106
50	0.39	3	5	1.062	0.312	1327	1587	1847	2107
50	0.39	3	10	1.062	0.312	1328	1588	1848	2108
50	0.47	1	5	1.125	0.312	1329	1589	1849	2109
50	0.47	1	10	1.125	0.312	1330	1590	1850	2110
50	0.47	3	5	1.062	0.312	1331	1591	1851	2111
50	0.47	3	10	1.062	0.312	1332	1592	1852	2112
50	0.56	1	5	1.125	0.400	1333	1593	1853	2113
50	0.56	1	10	1.125	0.400	1334	1594	1854	2114
50	0.56	3	5	1.062	0.400	1335	1595	1855	2115
50	0.56	3	10	1.062	0.400	1336	1596	1856	2116
50	0.68	1	5	1.125	0.400	1337	1597	1857	2117
50	0.68	1	10	1.125	0.400	1338	1598	1858	2118
50	0.68	3	5	1.062	0.400	1339	1599	1859	2119
50	0.68	3	10	1.062	0.400	1340	1600	1860	2120
50	0.82	1	5	1.125	0.400	1341	1601	1861	2121
50	0.82	1	10	1.125	0.400	1342	1602	1862	2122
50	0.82	3	5	1.062	0.400	1343	1603	1863	2123
50	0.82	3	10	1.062	0.400	1344	1604	1864	2124
50	1.0	1	5	1.125	0.400	1345	1605	1865	2125
50	1.0	1	10	1.125	0.400	1346	1606	1866	2126
50	1.0	3	5	1.062	0.400	1347	1607	1867	2127
50	1.0	3	10	1.062	0.400	1348	1608	1868	2128
50	1.2	1	5	1.375	0.400	1349	1609	1869	2129
50	1.2	1	10	1.375	0.400	1350	1610	1870	2130
50	1.2	3	5	1.312	0.400	1351	1611	1871	2131
50	1.2	3	10	1.312	0.400	1352	1612	1872	2132
50	1.5	1	5	1.125	0.500	1353	1613	1873	2133
50	1.5	1	10	1.125	0.500	1354	1614	1874	2134
50	1.5	3	5	1.062	0.500	1355	1615	1875	2135
50	1.5	3	10	1.062	0.500	1356	1616	1876	2136
50	1.8	1	5	1.375	0.500	1357	1617	1877	2137
50	1.8	1	10	1.375	0.500	1358	1618	1878	2138
50	1.8	3	5	1.312	0.500	1359	1619	1879	2139
50	1.8	3	10	1.312	0.500	1360	1620	1880	2140
50	2.2	1	5	1.125	0.562	1361	1621	1881	2141
50	2.2	1	10	1.125	0.562	1362	1622	1882	2142
50	2.2	3	5	1.062	0.562	1363	1623	1883	2143
50	2.2	3	10	1.062	0.562	1364	1624	1884	2144
50	2.7	1	5	1.375	0.562	1365	1625	1885	2145
50	2.7	1	10	1.375	0.562	1366	1626	1886	2146
50	2.7	3	5	1.312	0.562	1367	1627	1887	2147
50	2.7	3	10	1.312	0.562	1368	1628	1888	2148
50	3.3	1	5	1.375	0.562	1369	1629	1889	2149
50	3.3	1	10	1.375	0.562	1370	1630	1890	2150
50	3.3	3	5	1.312	0.562	1371	1631	1891	2151
50	3.9	3	10	1.312	0.562	1372	1632	1892	2152

See footnotes at end of table.

TABLE I. Electrical characteristics, dimensions, and dash numbers - Continued.

DC rated voltage (Volts)	Capacitance value (μF)	Circuit diagram	Capacitance tolerance (Percent ±)	Dimension, nominal (inches) 1/ 2/		Dash number Failure rate level for (%/1,000 hr)			
				L ± 0.062	D ± 0.031	M(1.0)	P(0.1)	R(0.01)	S(0.001)
50	3.9	1	5	1.625	0.562	1373	1633	1893	2153
50	3.9	1	10	1.625	0.562	1374	1634	1894	2154
50	3.9	3	5	1.562	0.562	1375	1635	1895	2155
50	3.9	3	10	1.562	0.562	1376	1636	1896	2156
50	4.7	1	5	1.750	0.562	1377	1637	1897	2157
50	4.7	1	10	1.750	0.562	1378	1638	1898	2158
50	4.7	3	5	1.688	0.562	1379	1639	1899	2159
50	4.7	3	10	1.688	0.562	1380	1640	1900	2160
50	5.6	1	5	1.875	0.562	1381	1641	1901	2161
50	5.6	1	10	1.875	0.562	1382	1642	1902	2162
50	5.6	3	5	1.812	0.562	1383	1643	1903	2163
50	5.6	3	10	1.812	0.562	1384	1644	1904	2164
50	6.8	1	5	1.625	0.672	1385	1645	1905	2165
50	6.8	1	10	1.625	0.672	1386	1646	1906	2166
50	6.8	3	5	1.562	0.672	1387	1647	1907	2167
50	6.8	3	10	1.562	0.672	1388	1648	1908	2168
50	8.2	1	5	1.875	0.672	1389	1649	1909	2169
50	8.2	1	10	1.875	0.672	1390	1650	1910	2170
50	8.2	3	5	1.812	0.672	1391	1651	1911	2171
50	8.2	3	10	1.812	0.672	1392	1652	1912	2172
50	10.0	1	5	1.875	0.750	1393	1653	1913	2173
50	10.0	1	10	1.875	0.750	1394	1654	1914	2174
50	10.0	3	5	1.812	0.750	1395	1655	1915	2175
50	10.0	3	10	1.812	0.750	1396	1656	1916	2176
50	12.0	1	5	2.375	0.750	1397	1657	1917	2177
50	12.0	1	10	2.375	0.750	1398	1658	1918	2178
50	12.0	3	5	2.312	0.750	1399	1659	1919	2179
50	12.0	3	10	2.312	0.750	1400	1660	1920	2180
200	0.10	1	10	0.844	0.312	1401	1661	1921	2181
200	0.10	1	20	0.844	0.312	1402	1662	1922	2182
200	0.10	3	10	0.781	0.312	1403	1663	1923	2183
200	0.10	3	20	0.781	0.312	1404	1664	1924	2184
200	0.22	1	10	1.125	0.312	1405	1665	1925	2185
200	0.22	1	20	1.125	0.312	1406	1666	1926	2186
200	0.22	3	10	1.062	0.312	1407	1667	1927	2187
200	0.22	3	20	1.062	0.312	1408	1668	1928	2188
200	0.47	1	10	1.125	0.400	1409	1669	1929	2189
200	0.47	1	20	1.125	0.400	1410	1670	1930	2190
200	0.47	3	10	1.062	0.400	1411	1671	1931	2191
200	0.47	3	20	1.062	0.400	1412	1672	1932	2192
200	1.0	1	10	1.125	0.562	1413	1673	1933	2193
200	1.0	1	20	1.125	0.562	1414	1674	1934	2194
200	1.0	3	10	1.062	0.562	1415	1675	1935	2195
200	1.0	3	20	1.062	0.562	1416	1676	1936	2196
200	1.5	1	10	1.844	0.562	1417	1677	1937	2197
200	1.5	1	20	1.844	0.562	1418	1678	1938	2198
200	1.5	3	10	1.781	0.562	1419	1679	1939	2199
200	1.5	3	20	1.781	0.562	1420	1680	1940	2200
200	2.2	1	10	1.844	0.562	1421	1681	1941	2201
200	2.2	1	20	1.844	0.562	1422	1682	1942	2202
200	2.2	3	10	1.781	0.562	1423	1683	1943	2203
200	2.2	3	20	1.781	0.562	1424	1684	1944	2204
200	3.3	1	10	1.875	0.670	1425	1685	1945	2205
200	3.3	1	20	1.875	0.670	1426	1686	1946	2206
200	3.3	3	10	1.812	0.670	1427	1687	1947	2207
200	3.3	3	20	1.812	0.670	1428	1688	1948	2208

See footnotes at end of table.

TABLE I. Electrical characteristics, dimensions, and dash numbers - Continued.

DC rated voltage (Volts)	Capacitance value (μF)	Circuit diagram	Capacitance tolerance (Percent ±)	Dimension, nominal (inches) 1/ 2/		Dash number Failure rate level for (%/1,000 hr)			
				L ± 0.062	D ± 0.031	M(1.0)	P(0.1)	R(0.01)	S(0.001)
200	4.7	1	10	1.875	1.000	1429	1689	1949	2209
200	4.7	1	20	1.875	1.000	1430	1690	1950	2210
200	4.7	3	10	1.812	1.000	1431	1691	1951	2211
200	4.7	3	20	1.812	1.000	1432	1692	1952	2212
200	6.8	1	10	1.875	1.000	1433	1693	1953	2213
200	6.8	1	20	1.875	1.000	1434	1694	1954	2214
200	6.8	3	10	1.812	1.000	1435	1695	1955	2215
200	6.8	3	20	1.812	1.000	1436	1696	1956	2216
200	10.0	1	10	2.375	1.000	1437	1697	1957	2217
200	10.0	1	20	2.375	1.000	1438	1698	1958	2218
200	10.0	3	10	2.312	1.000	1439	1699	1959	2219
200	10.0	3	20	2.312	1.000	1440	1700	1960	2220
200	12.0	1	10	2.625	1.000	1441	1701	1961	2221
200	12.0	1	20	2.625	1.000	1442	1702	1962	2222
200	12.0	3	10	2.562	1.000	1443	1703	1963	2223
200	12.0	3	20	2.562	1.000	1444	1704	1964	2224
400	0.047	1	10	1.125	0.312	1445	1705	1965	2225
400	0.047	1	20	1.125	0.312	1446	1706	1966	2226
400	0.047	3	10	1.062	0.312	1447	1707	1967	2227
400	0.047	3	20	1.062	0.312	1448	1708	1968	2228
400	0.10	1	10	1.125	0.400	1449	1709	1969	2229
400	0.10	1	20	1.125	0.400	1450	1710	1970	2230
400	0.10	3	10	1.062	0.400	1451	1711	1971	2231
400	0.10	3	20	1.062	0.400	1452	1712	1972	2232
400	0.22	1	10	1.125	0.562	1453	1713	1973	2233
400	0.22	1	20	1.125	0.562	1454	1714	1974	2234
400	0.22	3	10	1.062	0.562	1455	1715	1975	2235
400	0.22	3	20	1.062	0.562	1456	1716	1976	2236
400	0.47	1	10	1.625	0.562	1457	1717	1977	2237
400	0.47	1	20	1.625	0.562	1458	1718	1978	2238
400	0.47	3	10	1.562	0.562	1459	1719	1979	2239
400	0.47	3	20	1.562	0.562	1460	1720	1980	2240
400	1.0	1	10	1.875	0.750	1461	1721	1981	2241
400	1.0	1	20	1.875	0.750	1462	1722	1982	2242
400	1.0	3	10	1.812	0.750	1463	1723	1983	2243
400	1.0	3	20	1.812	0.750	1464	1724	1984	2244
400	2.2	1	10	1.875	1.000	1465	1725	1985	2245
400	2.2	1	20	1.875	1.000	1466	1726	1986	2246
400	2.2	3	10	1.812	1.000	1467	1727	1987	2247
400	2.2	3	20	1.812	1.000	1468	1728	1988	2248
400	3.3	1	10	2.625	1.000	1469	1729	1989	2249
400	3.3	1	20	2.625	1.000	1470	1730	1990	2250
400	3.3	3	10	2.625	1.000	1471	1731	1991	2251
400	3.3	3	20	2.625	1.000	1472	1732	1992	2252
400	3.3	1	10	2.625	1.000	1469	1729	1989	2249
400	3.3	1	20	2.625	1.000	1470	1730	1990	2250
400	3.3	3	10	2.562	1.000	1471	1731	1991	2251
400	3.3	3	20	2.562	1.000	1472	1732	1992	2252
600	0.01	1	10	0.812	0.312	1473	1733	1993	2253
600	0.01	1	20	0.812	0.312	1474	1734	1994	2254
600	0.01	3	10	0.750	0.312	1475	1735	1995	2255
600	0.01	3	20	0.750	0.312	1476	1736	1996	2256
600	0.022	1	10	0.812	0.312	1477	1737	1997	2257
600	0.022	1	20	0.812	0.312	1478	1738	1998	2258
600	0.022	3	10	0.750	0.312	1479	1739	1999	2259
600	0.022	3	20	0.750	0.312	1480	1740	2000	2260

See footnotes at end of table.

TABLE I. Electrical characteristics, dimensions, and dash numbers - Continued.

DC rated voltage (Volts)	Capacitance value (μF)	Circuit diagram	Capacitance tolerance (Percent ±)	Dimension, nominal (inches) 1/ 2/		Dash number Failure rate level for (%/1,000 hr)			
				L ± 0.062	D ± 0.031	M(1.0)	P(0.1)	R(0.01)	S(0.001)
600	0.047	1	10	1.125	0.400	1481	1741	2001	2261
600	0.047	1	20	1.125	0.400	1482	1742	2002	2262
600	0.047	3	10	1.062	0.400	1483	1743	2003	2263
600	0.047	3	20	1.062	0.400	1484	1744	2004	2264
600	0.10	1	10	1.125	0.500	1485	1745	2005	2265
600	0.10	1	20	1.125	0.500	1486	1746	2006	2266
600	0.10	3	10	1.062	0.500	1487	1747	2007	2267
600	0.10	3	20	1.062	0.500	1488	1748	2008	2268
600	0.15	1	10	1.125	0.562	1509	1769	2029	2289
600	0.15	1	20	1.125	0.562	1510	1770	2030	2290
600	0.15	3	10	1.062	0.562	1511	1771	2031	2291
600	0.15	3	20	1.062	0.562	1512	1772	2032	2292
600	0.22	1	10	1.375	0.562	1489	1749	2009	2269
600	0.22	1	20	1.375	0.562	1490	1750	2010	2270
600	0.22	3	10	1.312	0.562	1491	1751	2011	2271
600	0.22	3	20	1.312	0.562	1492	1752	2012	2272
600	0.47	1	10	1.625	0.670	1493	1753	2013	2273
600	0.47	1	20	1.625	0.670	1494	1754	2014	2274
600	0.47	3	10	1.562	0.670	1495	1755	2015	2275
600	0.47	3	20	1.562	0.670	1496	1756	2016	2276
600	1.0	1	10	1.844	1.000	1497	1757	2017	2277
600	1.0	1	20	1.844	1.000	1498	1758	2018	2278
600	1.0	3	10	1.781	1.000	1499	1759	2019	2279
600	1.0	3	20	1.781	1.000	1500	1760	2020	2280
600	1.5	1	10	1.875	1.000	1501	1761	2021	2281
600	1.5	1	20	1.875	1.000	1502	1762	2022	2282
600	1.5	3	10	1.812	1.000	1503	1763	2023	2283
600	1.5	3	20	1.812	1.000	1504	1764	2024	2284
600	2.2	1	10	2.625	1.000	1505	1765	2025	2285
600	2.2	1	20	2.625	1.000	1506	1766	2026	2286
600	2.2	3	10	2.562	1.000	1507	1767	2027	2287
600	2.2	3	20	2.562	1.000	1508	1768	2028	2288

1/ Dimensions shown are bare case sizes (see figure 1).
2/ Metric equivalents, see table III.

TABLE II. Characteristics.

Dielectric material	Paper-polyethylene-terephthalate		Polyethylene-terephthalate
Operating temperature range	-55°C to +125°C		-55°C to +85°C
DC voltage rating (volts)	200 V	400 V, 600 V	50
High ambient test temperature Low ambient test temperature	125°C +4°C, -0°C -55°C +0°C, -3°C	125°C +4°C, -0°C -55°C +0°C, -3°C	85°C +4°C, -0°C -55°C +0°C, -3°C
Megohms x microfarads (minimum) At 25°C At high ambient test temperature	 2,000 10	 2,000 40	 25,000 3,000
Insulation resistance (megohms) (need not exceed) At 25°C At high ambient test temperature	 12,000 150	 12,000 600	 50,000 6,000
Capacitance change with temperature (maximum) At -55°C At high ambient test temperature	 -10 +20	 -10 +20	 -8 percent +8 percent

TABLE III. Metric equivalents of decimal inches. 1/

Inches	mm	Inches	mm	Inches	mm
.031	0.79	.750	19.05	1.688	42.88
.062	1.57	.781	19.84	1.750	44.45
.175	4.45	.812	20.62	1.781	45.24
.195	4.95	.844	21.44	1.812	46.02
.235	5.97	.875	22.23	1.844	46.84
.312	7.92	1.000	25.40	1.875	47.63
.400	10.16	1.062	26.97	2.312	58.72
.500	12.70	1.125	28.58	2.375	60.33
.562	14.27	1.312	33.32	2.562	65.07
.670	17.02	1.375	34.93	2.625	66.68
.672	17.07	1.562	39.67		
.688	17.48	1.625	41.28		

1/ Metric equivalents are given for general information only.

Barometric pressure (reduced): Method 105 of MIL-STD-202, condition D (100,000 feet).

125 percent of dc rated voltage applied: See MIL-PRF-39022 for voltage limitations.

Vibration, high frequency: Method 204 of MIL-STD-202, condition D (20 g's peak).

50 percent of rated voltage applied.

Salt spray (corrosion): Method 101 of MIL-STD-202, condition B (48 hours).

Salt solution: 5 percent.

Immersion: Method 104 of MIL-STD-202, condition C.

DWV:

Insulating sleeves: Greater than 4,000 volts, dc.

Terminal to terminal: 200 percent of rated voltage.

Terminals to case (when case is not a terminal): 200 percent of rated voltage.

IR:

Insulating sleeves: 100 megohms, minimum.

Terminal to terminal: Not less than 50 percent of value specified in table II.

Terminals to case (when case is not a terminal): 5,000 megohms, minimum.

Capacitance: Within $\pm$ 10 percent of initial value.

DF: Not more than 1.1 percent.

Solderability: Method 208 of MIL-STD-202.

Shock (specified pulse): Method 213 of MIL-STD-202, condition I.

50 percent of rated voltage applied.

Moisture resistance: Method 106 of MIL-STD-202.

DWV, IR, Capacitance, and DF: Same as for immersion.

Terminal strength: Method 211 of MIL-STD-202, conditions A and D.

Condition A: Applied force 5 pounds.

Condition D: 3 rotations of 360 degrees.

Low temperature and capacitance change with temperature:

Low temperature: -55°C +0°C, -3°C for 48 hours ± 4 hours with rated voltage applied.

Capacitance change with temperature:

-55°C +0°C, -3°C: See table II.

At applicable high test temperature: See table II.

Fungus: Method 508 of MIL-STD-810.

Resistance to soldering heat: Method 210 of MIL-STD-202, condition C, except the time shall be 10 seconds ± 1 second.

IR: See table II.

Capacitance: Within ± 5 percent of initial value.

DF: Not more than 1.0 percent.

Life: Method 108 of MIL-STD-202.

Qualification:

Accelerated conditions: 140 percent of rated voltage for 2,000 +72, -0 hours.

Rated conditions: 100 percent of rated voltage for 10,000 +96, -0 hours.

DF (at applicable high test temperature) between 24 and 48 hours of test: 2 percent, maximum.

During last 48 hours of test: 2.5 percent, maximum.

IR:

Insulating sleeves: 100 megohms, minimum.

Terminal to terminal: Not less than 33.3 percent of initial requirement.

Terminals to case (when case is not a terminal): 5,000 megohms, minimum.

Capacitance: Within ± 10 percent of initial value.

DF (at +25°C ± 3°C) after life: 1.25 percent.

Quality conformance: 240 hours at accelerated conditions and meet the requirements for qualification test.

Extended life:

Accelerated conditions: 2,000 +72, -0 hours.

Rated conditions: 10,000 +96, -0 hours.

Substitutability: See table IV.

Marking: In accordance with MIL-PRF-39022.

Part or Identifying Number (PIN): M39022/01- (dash number from table I).

TABLE IV. Substitutability data.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1001	1261	1521	1781	2041	CHR09A1RA183--	0001
1002	1262	1522	1782	2042	CHR09A1RA183--	0002
1003	1263	1523	1783	2043	CHR09A3RA183--	0003
1004	1264	1524	1784	2044	CHR09A3RA183--	0004
1005	1265	1525	1785	2045	CHR09A1RA223--	0005
1006	1266	1526	1786	2046	CHR09A1RA223--	0006
1007	1267	1527	1787	2047	CHR09A3RA223--	0007
1008	1268	1528	1788	2048	CHR09A3RA223--	0008
1009	1269	1529	1789	2049	CHR09A1RA273--	0009
1010	1270	1530	1790	2050	CHR09A1RA273--	0010
1011	1271	1531	1791	2051	CHR09A3RA273--	0011
1012	1272	1532	1792	2052	CHR09A3RA273--	0012
1013	1273	1533	1793	2053	CHR09A1RA333--	0013
1014	1274	1534	1794	2054	CHR09A1RA333--	0014
1015	1275	1535	1795	2055	CHR09A3RA333--	0015
1016	1276	1536	1796	2056	CHR09A3RA333--	0016
1017	1277	1537	1797	2057	CHR09A1RA393--	0017
1018	1278	1538	1798	2058	CHR09A1RA393--	0018
1019	1279	1539	1799	2059	CHR09A3RA393--	0019
1020	1280	1540	1800	2060	CHR09A3RA393--	0020
1021	1281	1541	1801	2061	CHR09A1RA473--	0021
1022	1282	1542	1802	2062	CHR09A1RA473--	0022
1023	1283	1543	1803	2063	CHR09A3RA473--	0023
1024	1284	1544	1804	2064	CHR09A3RA473--	0024
1025	1285	1545	1805	2065	CHR09A1RA563--	0025
1026	1286	1546	1806	2066	CHR09A1RA563--	0026
1027	1287	1547	1807	2067	CHR09A3RA563--	0027
1028	1288	1548	1808	2068	CHR09A3RA563--	0028
1029	1289	1549	1809	2069	CHR09A1RA683--	0029
1030	1290	1550	1810	2070	CHR09A1RA683--	0030
1031	1291	1551	1811	2071	CHR09A3RA683--	0031
1032	1292	1552	1812	2072	CHR09A3RA683--	0032
1033	1293	1553	1813	2073	CHR09A1RA823--	0033
1034	1294	1554	1814	2074	CHR09A1RA823--	0034

See footnotes at end of table.

TABLE IV. Substitutability data - Continued.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1035	1295	1555	1815	2075	CHR09A3RA823--	0035
1036	1296	1556	1816	2076	CHR09A3RA823--	0036
1037	1297	1557	1817	2077	CHR09A1RA104--	0037
1038	1298	1558	1818	2078	CHR09A1RA104--	0038
1039	1299	1559	1819	2079	CHR09A3RA104--	0039
1040	1300	1560	1820	2080	CHR09A3RA104--	0040
1041	1301	1561	1821	2081	CHR09A1RA124--	
1042	1302	1562	1822	2082	CHR09A1RA124--	
1043	1303	1563	1823	2083	CHR09A3RA124--	
1044	1304	1564	1824	2084	CHR09A3RA124--	
1045	1305	1565	1825	2085	CHR09A1RA154--	
1046	1306	1566	1826	2086	CHR09A1RA154--	
1047	1307	1567	1827	2087	CHR09A3RA154--	
1048	1308	1568	1828	2088	CHR09A3RA154--	
1049	1309	1569	1829	2089	CHR09A1RA184--	0041
1050	1310	1570	1830	2090	CHR09A1RA184--	0042
1051	1311	1571	1831	2091	CHR09A3RA184--	0043
1052	1312	1572	1832	2092	CHR09A3RA184--	0044
1053	1313	1573	1833	2093	CHR09A1RA224--	0045
1054	1314	1574	1834	2094	CHR09A1RA224--	0046
1055	1315	1575	1835	2095	CHR09A3RA224--	0047
1056	1316	1576	1836	2096	CHR09A3RA224--	0048
1057	1317	1577	1837	2097	CHR09A1RA274--	0049
1058	1318	1578	1838	2098	CHR09A1RA274--	0050
1059	1319	1579	1839	2099	CHR09A3RA274--	0051
1060	1320	1580	1840	2100	CHR09A3RA274--	0052
1061	1321	1581	1841	2101	CHR09A1RA334--	0053
1062	1322	1582	1842	2102	CHR09A1RA334--	0054
1063	1323	1583	1843	2103	CHR09A3RA334--	0055
1064	1324	1584	1844	2104	CHR09A3RA334--	0056
1065	1325	1585	1845	2105	CHR09A1RA394--	0057
1066	1326	1586	1846	2106	CHR09A1RA394--	0058
1067	1327	1587	1847	2107	CHR09A3RA394--	0059
1068	1328	1588	1848	2108	CHR09A3RA394--	0060
1069	1329	1589	1849	2109	CHR09A1RA474--	0061
1070	1330	1590	1850	2110	CHR09A1RA474--	0062
1071	1331	1591	1851	2111	CHR09A3RA474--	0063
1072	1332	1592	1852	2112	CHR09A3RA474--	0064
1073	1333	1593	1853	2113	CHR09A1RA564--	0065
1074	1334	1594	1854	2114	CHR09A1RA564--	0066
1075	1335	1595	1855	2115	CHR09A3RA564--	0067
1076	1336	1596	1856	2116	CHR09A3RA564--	0068
1077	1337	1597	1857	2117	CHR09A1RA684--	0069
1078	1338	1598	1858	2118	CHR09A1RA684--	0070
1079	1339	1599	1859	2119	CHR09A3RA684--	0071
1080	1340	1600	1860	2120	CHR09A3RA684--	0072

See footnote at end of table.

TABLE IV. Substitutability data - Continued.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1081	1341	1601	1861	2121	CHR09A1RA824--	0073
1082	1342	1602	1862	2122	CHR09A1RA824--	0074
1083	1343	1603	1863	2123	CHR09A3RA824--	0075
1084	1344	1604	1864	2124	CHR09A3RA824--	0076
1085	1345	1605	1865	2125	CHR09A1RA105--	0077
1086	1346	1606	1866	2126	CHR09A1RA105--	0078
1087	1347	1607	1867	2127	CHR09A3RA105--	0079
1088	1348	1608	1868	2128	CHR09A3RA105--	0080
1089	1349	1609	1869	2129	CHR09A1RA125--	
1090	1350	1610	1870	2130	CHR09A1RA125--	
1091	1351	1611	1871	2131	CHR09A3RA125--	
1092	1352	1612	1872	2132	CHR09A3RA125--	
1093	1353	1613	1873	2133	CHR09A1RA155--	0081
1094	1354	1614	1874	2134	CHR09A1RA155--	0082
1095	1355	1615	1875	2135	CHR09A3RA155--	0083
1096	1356	1616	1876	2136	CHR09A3RA155--	0084
1097	1357	1617	1877	2137	CHR09A1RA185--	
1098	1358	1618	1878	2138	CHR09A1RA185--	
1099	1359	1619	1879	2139	CHR09A3RA185--	
1100	1360	1620	1880	2140	CHR09A3RA185--	
1101	1361	1621	1881	2141	CHR09A1RA225--	
1102	1362	1622	1882	2142	CHR09A1RA225--	
1103	1363	1623	1883	2143	CHR09A3RA225--	
1104	1364	1624	1884	2144	CHR09A3RA225--	
1105	1365	1625	1885	2145	CHR09A1RA275--	
1106	1366	1626	1886	2146	CHR09A1RA275--	
1107	1367	1627	1887	2147	CHR09A3RA275--	
1108	1368	1628	1888	2148	CHR09A3RA275--	
1109	1369	1629	1889	2149	CHR09A1RA335--	
1110	1370	1630	1890	2150	CHR09A1RA335--	
1111	1371	1631	1891	2151	CHR09A3RA335--	
1112	1372	1632	1892	2152	CHR09A3RA335--	
1113	1373	1633	1893	2153	CHR09A1RA395--	
1114	1374	1634	1894	2154	CHR09A1RA395--	
1115	1375	1635	1895	2155	CHR09A3RA395--	
1116	1376	1636	1896	2156	CHR09A3RA395--	
1117	1377	1637	1897	2157	CHR09A1RA475--	
1118	1378	1638	1898	2158	CHR09A1RA475--	
1119	1379	1639	1899	2159	CHR09A3RA475--	
1120	1380	1640	1900	2160	CHR09A3RA475--	
1121	1381	1641	1901	2161	CHR09A1RA565--	
1122	1382	1642	1902	2162	CHR09A1RA565--	
1123	1383	1643	1903	2163	CHR09A3RA565--	
1124	1384	1644	1904	2164	CHR09A3RA565--	
1125	1385	1645	1905	2165	CHR09A1RA685--	
1126	1386	1646	1906	2166	CHR09A1RA685--	

See footnote at end of table.

TABLE IV. Substitutability data - Continued.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1127	1387	1647	1907	2167	CHR09A3RA685--	
1128	1388	1648	1908	2168	CHR09A3RA685--	
1129	1389	1649	1909	2169	CHR09A1RA825--	
1130	1390	1650	1910	2170	CHR09A1RA825--	
1131	1391	1651	1911	2171	CHR09A3RA825--	
1132	1392	1652	1912	2172	CHR09A3RA825--	
1133	1393	1653	1913	2173	CHR09A1RA106--	0113
1134	1394	1654	1914	2174	CHR09A1RA106--	0114
1135	1395	1655	1915	2175	CHR09A3RA106--	0115
1136	1396	1656	1916	2176	CHR09A3RA106--	0116
1137	1397	1657	1917	2177	CHR09A1RA126--	0117
1138	1398	1658	1918	2178	CHR09A1RA126--	0118
1139	1399	1659	1919	2179	CHR09A3RA126--	0119
1140	1400	1660	1920	2180	CHR09A3RA126--	0120
1141	1401	1661	1921	2181	CHR09A1NC104--	
1142	1402	1662	1922	2182	CHR09A1NC104--	
1143	1403	1663	1923	2183	CHR09A3NC104--	
1144	1404	1664	1924	2184	CHR09A3NC104--	
1145	1405	1665	1925	2185	CHR09A1NC224--	
1146	1406	1666	1926	2186	CHR09A1NC224--	
1147	1407	1667	1927	2187	CHR09A3NC224--	
1148	1408	1668	1928	2188	CHR09A3NC224--	
1149	1409	1669	1929	2189	CHR09A1NC474--	
1150	1410	1670	1930	2190	CHR09A1NC474--	
1157	1417	1677	1937	2197	CHR09A1NC155--	
1158	1418	1678	1938	2198	CHR09A1NC155--	
1159	1419	1679	1939	2199	CHR09A3NC155--	
1160	1420	1680	1940	2200	CHR09A3NC155--	
1161	1421	1681	1941	2201	CHR09A1NC225--	
1162	1422	1682	1942	2202	CHR09A1NC225--	
1163	1423	1683	1943	2203	CHR09A3NC225--	
1164	1424	1684	1944	2204	CHR09A3NC225--	
1165	1425	1685	1945	2205	CHR09A1NC335--	
1166	1426	1686	1946	2206	CHR09A1NC335--	
1167	1427	1687	1947	2207	CHR09A3NC335--	
1168	1428	1688	1948	2208	CHR09A3NC335--	
1169	1429	1689	1949	2209	CHR09A1NC475--	
1170	1430	1690	1950	2210	CHR09A1NC475--	
1171	1431	1691	1951	2211	CHR09A3NC475--	
1172	1432	1692	1952	2212	CHR09A3NC475--	
1173	1433	1693	1953	2213	CHR09A1NC685--	
1174	1434	1694	1954	2214	CHR09A1NC685--	
1175	1435	1695	1955	2215	CHR09A3NC685--	
1176	1436	1696	1956	2216	CHR09A3NC685--	
1177	1437	1697	1957	2217	CHR09A1NC106--	
1178	1438	1698	1958	2218	CHR09A1NC106--	

See footnote at end of table.

TABLE IV. Substitutability data - Continued.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1179	1439	1699	1959	2219	CHR09A3NC106--	
1180	1440	1700	1960	2220	CHR09A3NC106--	
1181	1441	1701	1961	2221	CHR09A1NC126--	
1182	1442	1702	1962	2222	CHR09A1NC126--	
1183	1443	1703	1963	2223	CHR09A3NC126--	
1184	1444	1704	1964	2224	CHR09A3NC126--	
1185	1445	1705	1965	2225	CHR09A1NE473--	
1186	1446	1706	1966	2226	CHR09A1NE473--	
1187	1447	1707	1967	2227	CHR09A3NE473--	
1188	1448	1708	1968	2228	CHR09A3NE473--	
1189	1449	1709	1969	2229	CHR09A1NE104--	
1190	1450	1710	1970	2230	CHR09A1NE104--	
1191	1451	1711	1971	2231	CHR09A3NE104--	
1192	1452	1712	1972	2232	CHR09A3NE104--	
1193	1453	1713	1973	2233	CHR09A1NE224--	
1194	1454	1714	1974	2234	CHR09A1NE224--	
1195	1455	1715	1975	2235	CHR09A3NE224--	
1196	1456	1716	1976	2236	CHR09A3NE224--	
1197	1457	1717	1977	2237	CHR09A1NE474--	
1198	1458	1718	1978	2238	CHR09A1NE474--	
1199	1459	1719	1979	2239	CHR09A3NE474--	
1200	1460	1720	1980	2240	CHR09A3NE474--	
1201	1461	1721	1981	2241	CHR09A1NE105--	
1202	1462	1722	1982	2242	CHR09A1NE105--	
1203	1463	1723	1983	2243	CHR09A3NE105--	
1204	1464	1724	1984	2244	CHR09A3NE105--	
1205	1465	1725	1985	2245	CHR09A1NE125--	
1206	1466	1726	1986	2246	CHR09A1NE125--	
1207	1467	1727	1987	2247	CHR09A3NE125--	
1208	1468	1728	1988	2248	CHR09A3NE125--	
1209	1469	1729	1989	2249	CHR09A1NE335--	
1210	1470	1730	1990	2250	CHR09A1NE335--	
1211	1471	1731	1991	2251	CHR09A3NE335--	
1212	1472	1732	1992	2252	CHR09A3NE335--	
1213	1473	1733	1993	2253	CHR09A1NF103--	
1214	1474	1734	1994	2254	CHR09A1NF103--	
1215	1475	1735	1995	2255	CHR09A3NF103--	
1216	1476	1736	1996	2256	CHR09A3NF103--	
1217	1477	1737	1997	2257	CHR09A1NF223--	
1218	1478	1738	1998	2258	CHR09A1NF223--	
1219	1479	1739	1999	2259	CHR09A3NF223--	
1220	1480	1740	2000	2260	CHR09A3NF223--	
1221	1481	1741	2001	2261	CHR09A1NF473--	
1222	1482	1742	2002	2262	CHR09A1NF473--	
1223	1483	1743	2003	2263	CHR09A3NF473--	
1224	1484	1744	2004	2264	CHR09A3NF473--	

See footnote at end of table.

TABLE IV. Substitutability data - Continued.

Dash number in MIL-C-39022/1C thru MIL-PRF-39022/1F 1/					Type designation in MIL-C-39022/1B 2/	Dash number in MIL-C-39022/1A and /1
L (5.0)	M (1.0)	P (0.1)	R (0.01)	S (0.001)		
1225	1485	1745	2005	2265	CHR09A1NF104--	
1226	1486	1746	2006	2266	CHR09A1NF104--	
1227	1487	1747	2007	2267	CHR09A3NF104--	
1228	1488	1748	2008	2268	CHR09A3NF104--	
1249	1509	1769	2029	2289		
1250	1510	1770	2030	2290		
1251	1511	1771	2031	2291		
1252	1512	1772	2032	2292		
1229	1489	1749	2009	2269	CHR09A1NF224--	
1231	1490	1750	2010	2270	CHR09A1NF224--	
1230	1491	1751	2011	2271	CHR09A3NF224--	
1232	1492	1752	2012	2272	CHR09A3NF224--	
1233	1493	1753	2013	2273	CHR09A1NF474--	
1234	1494	1754	2014	2274	CHR09A1NF474--	
1235	1495	1755	2015	2275	CHR09A3NF474--	
1236	1496	1756	2016	2276	CHR09A3NF474--	
1237	1497	1757	2017	2277	CHR09A1NF105--	
1238	1498	1758	2018	2278	CHR09A1NF105--	
1239	1499	1759	2019	2279	CHR09A3NF105--	
1240	1500	1760	2020	2280	CHR09A3NF105--	
1241	1501	1761	2021	2281	CHR09A1NF155--	
1242	1502	1762	2022	2282	CHR09A1NF155--	
1243	1503	1763	2023	2283	CHR09A3NF155--	
1244	1504	1764	2024	2284	CHR09A3NF155--	
1245	1505	1765	2025	2285	CHR09A1NF225--	
1246	1506	1766	2026	2286	CHR09A1NF225--	
1247	1507	1767	2027	2287	CHR09A3NF225--	
1248	1508	1768	2028	2288	CHR09A3NF225--	

1/ FRL L for revision C only.
2/ Complete type designation will include additional symbols for capacitance tolerance and failure rate level.

Changes form previous issue: The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Referenced Documents: In addition to MIL-PRF-39022, this document also references MIL-STD-202 and MIL-STD-810.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5910-2006-028)

Review activities:
Army - AR
Navy - AS, CG, MC, OS, SH
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.