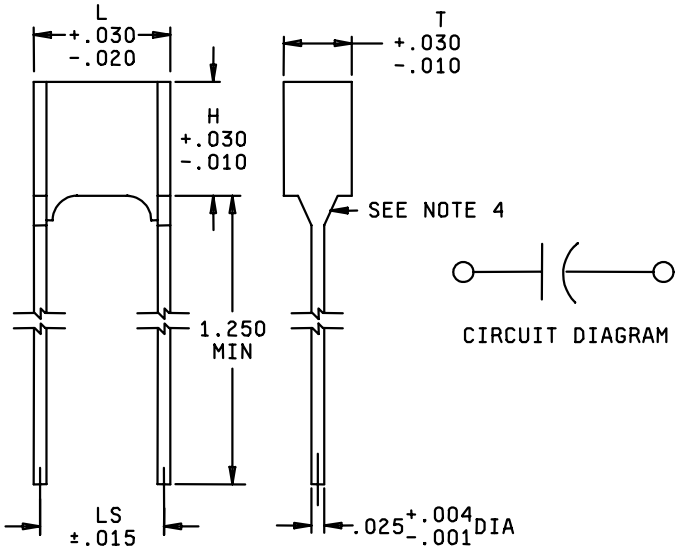
PERFORMANCE SPECIFICATION SHEET
CAPACITORS, FIXED, METALLIZED PLASTIC DIELECTRIC,
DIRECT-CURRENT, HERMETICALLY SEALED,
STYLES CHR30, CHR31, CHR32, CHR33, CHR34, and CHR35

This specification sheet 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 and MIL-PRF-39022.



Inches	mm
.001	0.03
.004	0.10
.010	0.25
.015	0.38
.020	0.51
.025	0.64
.030	0.76
1.250	31.75

Styles CHR30, CHR31, CHR32, CHR33, CHR34, and CHR35

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.010 (0.25 mm).
4. The maximum solder meniscus on the leads shall be .050 (1.27 mm).
5. Lead length may be a minimum of 1 inch long for use in tape and reel packaging, when specified in the ordering data.

FIGURE 1. Capacitor configuration.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

Case: Hermetically sealed.

Insulating tubing: When specified on the purchase order, insulating tubing shall cover the top and sides of the capacitor. The insulating tubing is not required to cover the bottom of the capacitor.

Capacitance value: See table I.

Capacitance tolerance: See table I.

Rated voltage: See table I for +85°C ratings. For +125°C operation, linearly derate +85°C rating to 50 percent.

Operating temperature range: -55°C to +125°C.

Failure rate (FR) level: M, P, R, S.

Dielectric material: Polyphenylene sulfide.

Preconditioning: Not applicable.

Flash point of impregnant: Not applicable.

Radiographic inspection (x ray): Not applicable.

Thermal shock: Method 107 of MIL-STD-202, condition B.

Seal: Method 112 of MIL-STD-202, test condition C, procedure IIIa, followed by test condition A. Leakage rate sensitivity 10^{-6} atm cm^3/s.

Dielectric withstanding voltage (DWV): In accordance with MIL-PRF-39022, except the charge time shall be 60 seconds minimum, 120 seconds maximum.

Insulation resistance (IR): In accordance with MIL-PRF-39022. When measured at the applicable test temperature and rated voltage, the insulation resistance shall equal or exceed the following values:

Terminal to terminal:

Temperature	+25°C	+85°C	+125°C
Megohm x Microfarads	100,000	7,000	700
Except the insulation resistance in megohms need not exceed:	200,000	70,000	7,000

Terminal to case: Not applicable.

Capacitance: Method 305 of MIL-STD-202.

Test frequency: 1 kHz ±100 Hz.

Limit of accuracy: Within ±0.05 percent.

Dissipation factor (DF): Shall not exceed .3 percent at 1 kHz. Limit of accuracy shall be within ±0.05 percent.

Barometric pressure (reduced) (qualification only): 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.

TABLE I. Electrical characteristics and dimensions.

Part or Identifying Number (PIN) 1/	DC rated voltage	Capacitance value in µF	Capacitance tolerance	Dimensions 2/			
				T 3/	H 3/	L 3/	LS
CHR30							
M39022/14G333--	30	0.0330	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14G393--	30	0.0390	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14G473--	30	0.0470	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14G563--	30	0.0560	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14G683--	30	0.0680	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14G823--	30	0.0820	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14G184--	30	0.1800	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14G224--	30	0.2200	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14G274--	30	0.2700	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14G334--	30	0.3300	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14G394--	30	0.3900	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14G474--	30	0.4700	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14G564--	30	0.5600	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14G684--	30	0.6800	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14G824--	30	0.8200	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14G105--	30	1.0000	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
CHR31							
M39022/14H103--	50	0.0100	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H123--	50	0.0120	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H153--	50	0.0150	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H183--	50	0.0180	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H223--	50	0.0220	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H273--	50	0.0270	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14H333--	50	0.0330	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14H393--	50	0.0390	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14H473--	50	0.0470	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14H683--	50	0.0680	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14H823--	50	0.0820	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14H104--	50	0.1000	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14H124--	50	0.1200	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14H154--	50	0.1500	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14H184--	50	0.1800	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14H224--	50	0.2200	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14H274--	50	0.2700	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14H334--	50	0.3300	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14H394--	50	0.3900	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14H474--	50	0.4700	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14H564--	50	0.5600	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14H684--	50	0.6800	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
CHR32							
M39022/14J562--	100	0.0056	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14J682--	100	0.0068	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14J822--	100	0.0082	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14J103--	100	0.0100	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14J123--	100	0.0120	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14J153--	100	0.0150	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14J333--	100	0.0330	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14J393--	100	0.0390	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14J473--	100	0.0470	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14J563--	100	0.0560	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14J683--	100	0.0680	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14J823--	100	0.0820	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)

See footnotes at end of table.

TABLE I. Electrical characteristics and dimensions - Continued.

PIN 1/	DC rated voltage	Capacitance value in µF	Capacitance tolerance	Dimensions 2/			
				T 3/	H 3/	L 3/	LS
CHR32							
M39022/14J104--	100	0.1000	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14J124--	100	0.1200	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14J154--	100	0.1500	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14J184--	100	0.1800	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14J224--	100	0.2200	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
CHR33							
M39022/14K332--	150	0.0033	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14K392--	150	0.0039	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14K472--	150	0.0047	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14K562--	150	0.0056	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14K682--	150	0.0068	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14K223--	150	0.0220	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14K273--	150	0.0270	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14K333--	150	0.0330	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14K393--	150	0.0390	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14K563--	150	0.0560	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14K683--	150	0.0680	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14K823--	150	0.0820	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14K104--	150	0.1000	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
CHR34							
M39022/14L222--	200	0.0022	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14L272--	200	0.0027	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14L332--	200	0.0033	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14L392--	200	0.0039	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14L472--	200	0.0047	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14L123--	200	0.0120	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14L153--	200	0.0150	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14L183--	200	0.0180	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14L223--	200	0.0220	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14L273--	200	0.0270	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14L333--	200	0.0330	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14L393--	200	0.0390	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14L473--	200	0.0470	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14L563--	200	0.0560	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14L683--	200	0.0680	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
CHR35							
M39022/14M102--	300	0.0010	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14M122--	300	0.0012	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14M152--	300	0.0015	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14M182--	300	0.0018	F, G, J, K	.110 (2.79)	.210 (5.33)	.240 (6.10)	.200 (5.08)
M39022/14M222--	300	0.0022	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14M272--	300	0.0027	F, G, J, K	.170 (4.32)	.270 (6.86)	.240 (6.10)	.200 (5.08)
M39022/14M332--	300	0.0033	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M392--	300	0.0039	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M472--	300	0.0047	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M562--	300	0.0056	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M682--	300	0.0068	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M822--	300	0.0082	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M103--	300	0.0100	F, G, J, K	.170 (4.32)	.270 (6.86)	.340 (8.64)	.300 (7.62)
M39022/14M123--	300	0.0120	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14M153--	300	0.0150	F, G, J, K	.190 (4.83)	.380 (9.65)	.340 (8.64)	.300 (7.62)
M39022/14M183--	300	0.0180	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)

See footnotes at end of table.

TABLE I. Electrical characteristics and dimensions - Continued.

PIN 1/	DC rated voltage	Capacitance value in µF	Capacitance tolerance	Dimensions 2/			
				T 3/	H 3/	L 3/	LS
CHR35							
M39022/14M223--	300	0.0220	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14M273--	300	0.0270	F, G, J, K	.190 (4.83)	.380 (9.65)	.450 (11.43)	.400 (10.16)
M39022/14M333--	300	0.0330	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)
M39022/14M393--	300	0.0390	F, G, J, K	.220 (5.59)	.500 (12.70)	.450 (11.43)	.400 (10.16)

1/ Complete PIN shall include additional symbols to indicate capacitance tolerance (see table II) and failure rate level (see table IV), as applicable.
2/ Metric equivalents are in parentheses.
3/ T, H, and L are bare case dimensions (see figure 1). When specified on the purchase order, insulating covering for both "L" and "T" dimensions shall not exceed .025 inch (0.64 mm), nor shall the insulating covering for "H" dimension exceed .040 inch (1.02 mm).

Burn-in: DC: 48 hours at 125°C at 1.4 times the derated 125°C dc voltage rating. The current to each capacitor shall be limited to 1 ampere maximum by a series resistor.

AC: Not applicable.

Vibration, high frequency: Method 204 of MIL-STD-202, condition D (20 g's), 50 percent of dc rated voltage applied.

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

Salt solution: Five percent.

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

DWV: Terminal to terminal: 200 percent of rated voltage.

IR: Terminal to terminal: Not less than 50 percent of value specified for insulation resistance.

Capacitance: Within ±1 percent of initial value.

DF: Not more than .3 percent.

Solderability: Method 208 of MIL-STD-202, the following details shall apply:

Number of terminations of each capacitor to be tested: Two.

Depth of immersion in flux and solder: Both terminals shall be immersed to within .050 inch (1.27 mm) of the capacitor body.

Shock (specified pulse): Method 212 of MIL-STD-202, condition I, 50 percent of dc rated voltage applied. No arcing or other evidence of electrical breakdown.

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 C.

Condition A: Applied force 5 pounds.

Condition C: Applied force 5 pounds.

Low temperature: In accordance with MIL-PRF-39022.

Capacitance change with temperature (maximum):

At -55°C: -1.7 percent to +2.5 percent.

At +25°C (retrace): ±0.25 percent.

At +125°C: +1.2 percent to -0.7 percent.

Fungus: Method 508 of MIL-STD-810.

Resistance to soldering heat: Method 210 of MIL-STD-202, condition B (260°C ±5°C for 10 ±1 seconds).

IR: See initial value.

ΔCapacitance: Within ±0.25 percent of initial value.

DF: See initial value.

Resistance to solvents: Method 215 of MIL-STD-202, condition B.

ΔCapacitance: Maximum of ±0.25 percent.

Life (at +100°C): Method 108 of MIL-STD-202.

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

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

DF: (At +100°C) between 24 and 48 hours of test - see initial requirement.

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

Capacitance: Within ± 5 percent of initial value.

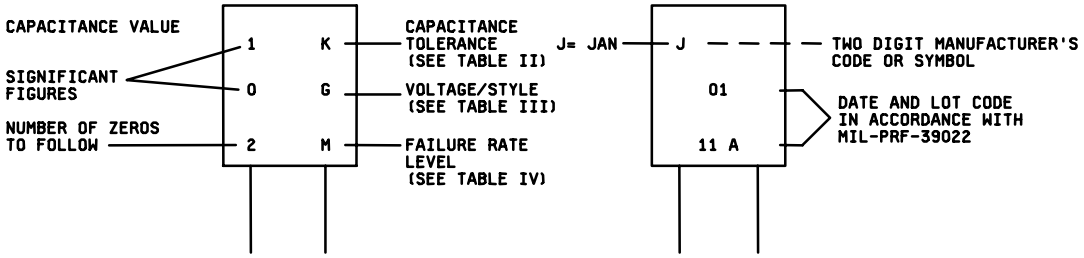
The current to each capacitor will be limited to 1 ampere maximum by a series resistor.

Samples for complete qualification submission of CHR30 through CHR35 styles are as follows:

Style	Qualification group	Types to be submitted	Quantity for complete qualification groups
CHR30	30	M39022/14G333FM	38
CHR30	30	M39022/14G105FM	38
CHR31	50	M39022/14H103FM	38
CHR31	50	M39022/14H684FM	38
CHR32	100	M39022/14J562FM	38
CHR32	100	M39022/14J224FM	38
CHR33	150	M39022/14K332FM	38
CHR33	150	M39022/14K104FM	38
CHR34	200	M39022/14L222FM	38
CHR34	200	M39022/14L683FM	38
CHR35	300	M39022/14M102FM	38
CHR35	300	M39022/14M393FM	38

Marking: Marking shall be in accordance with MIL-PRF-39022, except the Part or Identifying Number (PIN) example shall be M39022/14G102KM for bare case and M39022S14G102KM for sleeved units and minimum marking as shown in the following example will be permitted. The term PIN is equivalent to the term part number that was previously used in this specification. Full marking shall be included on the package.

EXAMPLE OF MINIMUM MARKING



Capacitance: The nominal capacitance value expressed in picofarads (pF) is identified by a three-digit number; the first two digits represent significant figures and the last digit specifies the number of zeros to follow.

Capacitance tolerance: The capacitance tolerance in percent is identified by a single letter in accordance with table II.

TABLE II. Capacitance tolerance.

Symbol	Capacitance tolerance (±)
F	1 percent
G	2 percent
J	5 percent
K	10 percent

Rated voltage / style: The rated voltage / style is identified by a single letter in accordance with table III.

TABLE III. Rated voltage / style.

Symbol	DC rated voltage (V)	Style
G	30	CHR30
H	50	CHR31
J	100	CHR32
K	150	CHR33
L	200	CHR34
M	300	CHR35

Failure rate level: The failure rate level in percent per 1,000 hours is identified by a single letter in accordance with table I of MIL-PRF-39022.

Substitutability for capacitance tolerance shall be as follows:

Capacitance tolerance	Will replace capacitance tolerance
F	G, J, K
G	J, K
J	K
K	

Substitutability for voltage shall be as follows:

Volts dc	Will replace voltages
300	200, 150, 100, 50, 30
200	150, 100, 50, 30
150	100, 50, 30
100	50, 30
50	30
30	

Substitutability for failure rate levels shall be as follows:

Failure rate level	Will replace failure rate level
S	R, P, M
R	P, M
P	M
M	

Custodians:
Army - CR
Navy - EC
DLA - CC

Preparing activity:
DLA - CC

(Project 5910-2153)