

INCH-POUND

MIL-PRF-23419/10A

15 May 1998

SUPERSEDING

MIL-PRF-23419/10

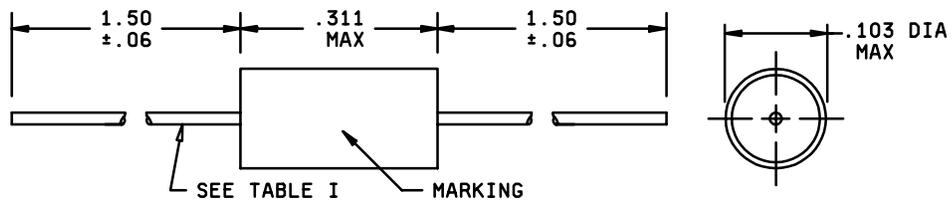
23 June 1987

### PERFORMANCE SPECIFICATION SHEET

#### FUSES, CARTRIDGE, INSTRUMENT TYPE, STYLE FM10, (NONINDICATING)

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

The complete requirements for acquiring the fuses described herein shall consist of this document and the latest issue of MIL-PRF-23419.



| Inches | mm   |
|--------|------|
| .06    | 1.5  |
| .103   | 2.62 |
| .311   | 7.90 |
| 1.50   | 38.1 |

#### NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Style FM10 fuses.

REQUIREMENTS:

Interface and physical dimensions: See figure 1.

Applicable fuseholder: Grayhill Type 2-42, miniature test clip or equivalent. For 7, 10, and 15 ampere fuses, use Grayhill Push-post number 29YY2126-0 or equivalent.

Case material: Ceramic or glass.

Finish: Epoxy coating.

Outgassing: When tested as specified in ASTM E595, the polymer sample shall meet the following requirements:

Total mass loss (TML): Shall not exceed 1.0 percent.

Volatile condensable material (VCM): Shall not exceed 0.1 percent.

Samples of any polymeric materials used shall be cut into pieces having 0.38 inch (9.65 mm) maximum dimension. A sample of 100 to 300 milligrams of material shall be weighed and then placed in a vacuum chamber under the following conditions:

Pressure:  $10^6$  torr or less.

Temperature of specimen: Maximum operating temperature of device.

Exposure time: 24 hours.

During this exposure, a collector plate 9.7 inches (246.4 mm) in diameter shall be held at  $25\text{C} \pm 1^\circ \text{C}$  near the sample. Immediately upon removal of the specimen and the collector plate from the chamber, they shall be weighed. The total mass loss (TML) is sample mass before exposure minus the sample mass after exposure divided by the initial sample mass (expressed in percent change). The volatile condensable material (VCM) is the increase in the weight of the collector plate divided by the mass of sample (expressed in percent).

Outgassing (option): As an option for inspection to outgassing requirements (as stated above), a minimum of 10 grams of each polymeric material in its final processed condition may be submitted to the following NASA installation for outgassing test: Director, Material and Processes Laboratory, EH41, Marshall Space Flight Center, Huntsville, AL 35812. As an alternate, a minimum of a single device utilizing each material may be submitted to the Marshall Space Flight Center for outgassing tests.

Terminals:

Material: Caps, 90/10, commercial brass; leads, copper.

Finish: Caps, silver or bright alloy plate; leads solder coated.

Strength: 7 pounds along terminal axis.

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Current rating, nominal: See table I.

Characteristic: See table I.

Voltage rating: See table I.

Current-carrying capacity: 100 percent at +25° C; 110 percent at -55° C; 80 percent at +125° C. The temperature of the case, body, or terminals, at no point, shall rise more than 70°C above the ambient air temperature. For 10 and 15 ampere fuses, the maximum temperature rise shall be 85°C.

Resistance: See table I. Cold resistance is measured at 10 percent or less of rated current.

Overload interrupt: Percentage of nominal rating, interrupt time -55° C through +125° C, 200 percent in 0 to 5 seconds; 300 percent in 0 to 0.1 second. Interrupt time for 15 ampere fuse shall be 10 seconds maximum at 200 percent of rated current and 0.3 second maximum at 300 percent of rated current.

Short circuit interrupt: 300 amperes at maximum voltage dc, minimum insulation resistance 10,000 ohms. Fifty amperes at a power factor of 1.0 at maximum voltage ac.

Shock: Method I.

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

Marking: Fuses shall be marked with the manufacturer's name or trademark, current rating and FM10A.

TABLE I. Type designation identification

| Style | Characteristic | Maximum voltage<br>(volts) | Current rating<br>(amperes) | Maximum cold resistance<br>(ohms) | Lead diameter     |              |
|-------|----------------|----------------------------|-----------------------------|-----------------------------------|-------------------|--------------|
|       |                |                            |                             |                                   | inches<br>(±.002) | mm<br>(±.05) |
| FM10  | A              | 125V                       | 1/16A                       | 9.10                              | .025              | .64          |
| FM10  | A              | 125V                       | 1/8A                        | 2.700                             | .025              | .64          |
| FM10  | A              | 125V                       | 1/4A                        | .960                              | .025              | .64          |
| FM10  | A              | 125V                       | 3/8A                        | .560                              | .025              | .64          |
| FM10  | A              | 125V                       | 1/2A                        | .365                              | .025              | .64          |
| FM10  | A              | 125V                       | 3/4A                        | .215                              | .025              | .64          |
| FM10  | A              | 125V                       | 1A                          | .165                              | .025              | .64          |
| FM10  | A              | 125V                       | 1-1/2A                      | .105                              | .025              | .64          |
| FM10  | A              | 125V                       | 2A                          | .072                              | .025              | .64          |
| FM10  | A              | 125V                       | 3A                          | .047                              | .025              | .64          |
| FM10  | A              | 125V                       | 4A                          | .029                              | .025              | .64          |
| FM10  | A              | 125V                       | 5A                          | .019                              | .025              | .64          |
| FM10  | A              | 125V                       | 7A                          | .013                              | .025              | .64          |
| FM10  | A              | 125V                       | 10A                         | .008                              | .025              | .64          |
| FM10  | A              | 32V                        | 15A                         | .0053                             | .032              | .82          |

Qualification and group C inspection:

Inspection routine: The number of group II samples for qualification, and subgroup 2 samples for group C inspection, shall be as shown in table II.

TABLE II. Group II and subgroup 2 samples

| Inspection              | Number of sample fuses |
|-------------------------|------------------------|
| Group II and subgroup 2 | 16                     |
| Terminal strength       | 4                      |
| Overload interrupt      |                        |
| 200% at -55 C           | 4                      |
| 200% at +125 C          | 4                      |
| 300% at -55 C           | 4                      |
| 300% at +125 C          | 4                      |
| Insulation resistance   | 16                     |

The number of group III samples for qualification (or first article) and subgroup 1 for group C inspection, shall consist of four sample fuses of each of the current ratings as shown in table III. Short circuit interrupt tests shall be conducted at the direct current voltage indicated, and the fuses shall be capable of withstanding a minimum short circuit current as shown in table III. Insulation resistance test shall be as specified in MIL-PRF-23419.

TABLE III. Short circuit tests

| Fuse type | Current rating | Short circuit current (dc) | Voltage | Short circuit current (ac) |
|-----------|----------------|----------------------------|---------|----------------------------|
| FM10      | 10A            | 300A                       | 125V    | 50A                        |
| FM10      | 15A            | 300A                       | 32V     | 50A                        |

Custodians:  
 Army - CR  
 Navy - EC  
 Air Force - 85

Preparing activity:  
 DLA - CC  
 (Project: 5920-0565)

Review activities:  
 Army; - AL, AR, CR4, MI  
 Navy - AS, MC, OS, SH  
 Air Force: - 11, 17, 19, 99