Heater Specification Sheet

1. Overview

This document outlines the specifications for surface-mounted Kapton heaters used in the Canadarm2 Thermal Control System. These heaters maintain component temperatures within operational limits during orbital variations.

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2. Heater Type

- **Type:** Polyimide Film Heater (Kapton)
- **Configuration:** Surface mount (flexible)
- **Form Factor:** Flat rectangular film

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3. Performance Specifications

Parameter	Value
Operating Voltage	28 V DC
Power Rating	5–20 W per heater
Temperature Range	-100°C to +150°C
Resistance Tolerance	±10%
Watt Density	0.5–2.0 W/cm^2
Thermal Response	<10 seconds to reach 50°C

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4. Electrical Characteristics

Parameter	Specification
Interface	2-pin or 4-pin harness
Connectors	Micro-D (flight-rated)
EMI Shielding	Integrated via braid
Wire Harness	Teflon-insulated, 26 AWG
Safety Features	Overcurrent cutoff relay

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5. Mechanical Form Factor

- **Dimensions:** 50 × 50 mm to 100 × 100 mm (customizable)
- **Weight:** < 50 grams per unit

- **Adhesive Backing:** Space-rated acrylic adhesive
- **Bend Radius:** >10 mm (flex-tolerant)

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6. Environmental Compliance

Property	Value / Standard
Outgassing	ASTM E595 compliant
Radiation Tolerance	50 krad (total ionizing dose)
Vibration	14.1 g RMS (per NASA GEVS)
Thermal Cycling	±125°C for 200 cycles

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7. Integration Notes

- Mount directly to high thermal mass components
- Use in conjunction with thermal insulation (MLI)
- Routed to heater controller via spacecraft harness
- Controlled via bang-bang or PID logic (refer to control doc)

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8. Compliance & Standards

- NASA GEVS-compliant
- CSA Thermal Component Standards
- RoHS & REACH Certified

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