NASA-STD-8739.11 Tutorial
Section S3, Switches

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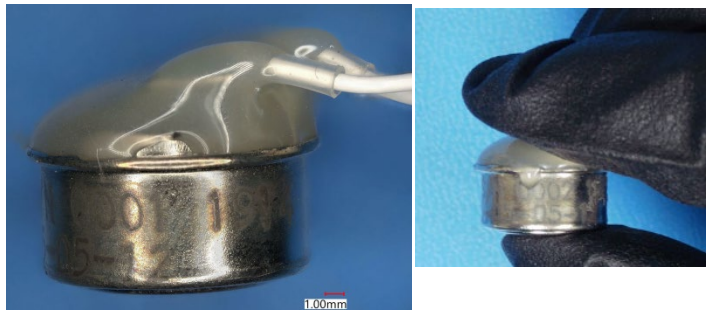
Acronyms

AEC	Automotive Electronics Council
COTS	Commercial-Off-The-Shelf
Cpk	Process Capability Index
CM	Common Mode (Choke)
DLA	Defense Logistics Agency
DoD	Department of Defense
DPPM	Defective Parts Per Million
EEEE	Electrical, Electronic, Electromechanical, Electro-Optical
EOL	End-Of-Line
ETW	Electronics Technology Workshop
FIT	Failure-In-Time
FMEA	Failure Mode and Effects Analysis
GSFC	Goddard Space Flight Center
IL	In-Line
ILPM	Industry Leading Parts Manufacturer
JEDEC	Joint Electron Device Engineering Council
MEAL	Mission Environment, Application, and Lifetime
MIL-SPEC	Military Specification
NASA	National Aeronautics and Space Administration
NEPP	NASA Electronic Parts & Packaging (Program)
NESC	NASA Engineering & Safety Center
PCB	Printed Circuit Board
PPAP	Production Part Approval Process
PSW	Part Submission Warrant
QML	Qualified Manufacturers List
QPL	Qualified Product List
RF	Radio Frequency
RHA	Radiation Hardness Assurance
SCD	Source Control Drawing
SMA	Safety and Mission Assurance
SMD	Standard Microcircuit Drawing
SME	Subject Matter Expert
SPC	Statistical Process Control

Covered Part Types

- Switches in this section include Position Sensing, Thermostatic, Pressure Switches, and RF (Radio Frequency) Transmission Line switches. All are mechanical.



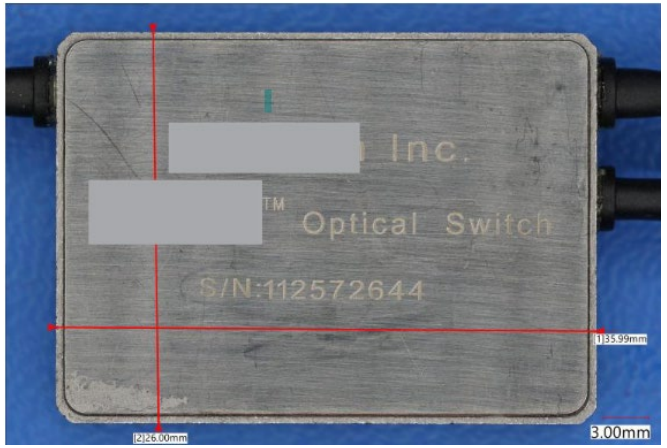
G311P641
Bimetallic
thermostatic switch

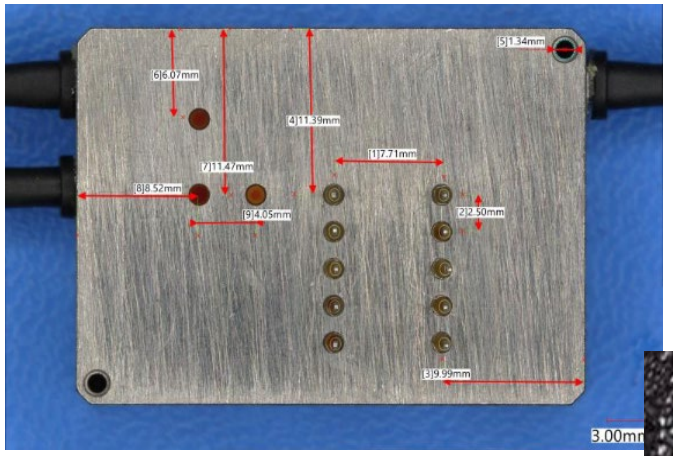


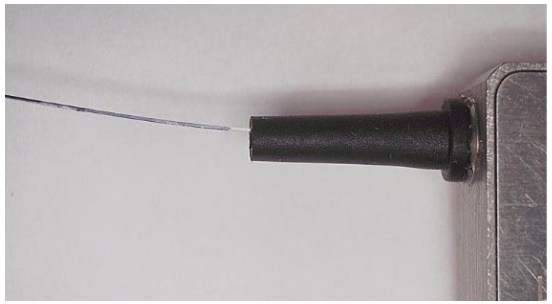
Limit Sensor Switch

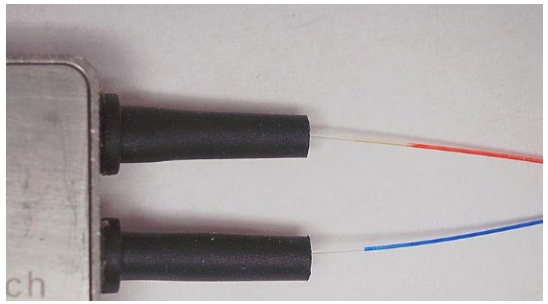
All photos by the Goddard Space Flight Center Physical Analysis Lab

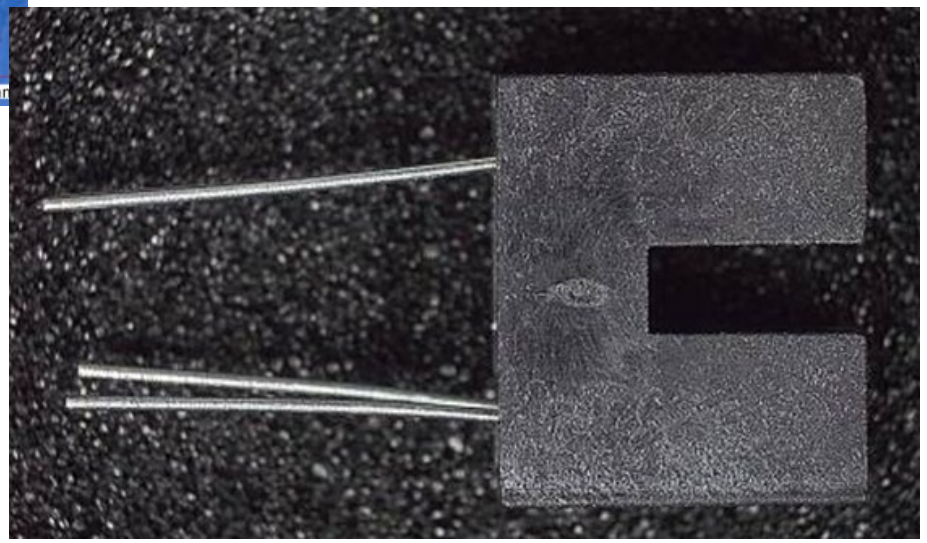
NOT Covered: Optical & Electronic Switches











All photos by the Goddard Space Flight Center Physical Analysis Lab

Key Considerations

- All four covered types are mechanically based, but completely different from each other. LAT Lot Acceptance Testing and Screening are therefore completely different for each.

- Covered devices are only from:
  - MIL-PRF-8805 (snap switches)
  - NASA GSFC S-311-641 and MIL-PRF-24236 (thermostatic)
  - MIL-DTL-9395 (pressure)
  - MIL-DTL-3928 (Radio Frequency)

- All other switch types, whether automotive, COTS, or SCD, shall be tested.

Major Changes from EEE-INST-002

- Switches were section S2 for EEE-INST-002, but are S3 in this spec.
- Like all the other new Sections, all part types are shown with each Assurance Level 1,2,3.
- MIL-DTL- 3928 RF switches were not covered in EEE-INST-002.
- Deratings for Inductive/Motor loads in EEE-INST-002 are now broken out to separate Motor & Inductive load deratings, with slightly different values; similarly for Capacitive/Filament loads.
- There is a new Note for transient surge applications, limiting max allowable surge current.

Send email to address below for questions

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