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DS9107 iButton Capsule

www.maxim-ic.com

DESCRIPTION

The iButton® Capsule is a mechanical enclosure to protect Temperature Logger iButtons (DS1921 and DS1922 series) from moisture, solvents and pressure. It provides IP68 protection to the iButton inside (refer to Application Note 4126: *Understanding the IP (Ingress Protection) Ratings of iButton Data Loggers and Capsule*). The protection level exceeds the “Water Resistant 3 ATM” requirements.

The DS9107 consists of a base with the cavity for a F5 iButton, a screw-in plug with O-ring to seal the enclosure, and a top with two stainless-steel screws to mount the iButton Capsule to a cable, e.g., to measure temperature at different levels within a liquid. The cable is inserted into the notch of the plug where it is held in place by the matching protrusion of the top piece.

Base, plug, and top are made of polyphenylene sulfide (PPS). This material is chosen for its mechanical properties (remains stable during both long and short-term exposure to high temperatures), inherent flame resistance, and outstanding chemical resistance (inert to steam, strong bases, fuels and acids). Although PPS is virtually insoluble below 200°C, it can be attacked by chlorinated hydrocarbons. The silicone O-ring matches the temperature and chemical qualities of the PPS. In addition, it is resistant to sunlight, ozone, oxygen, and UV light. The chemical stability of the screws does not compromise that of the PPS and the silicone.

APPLICATIONS

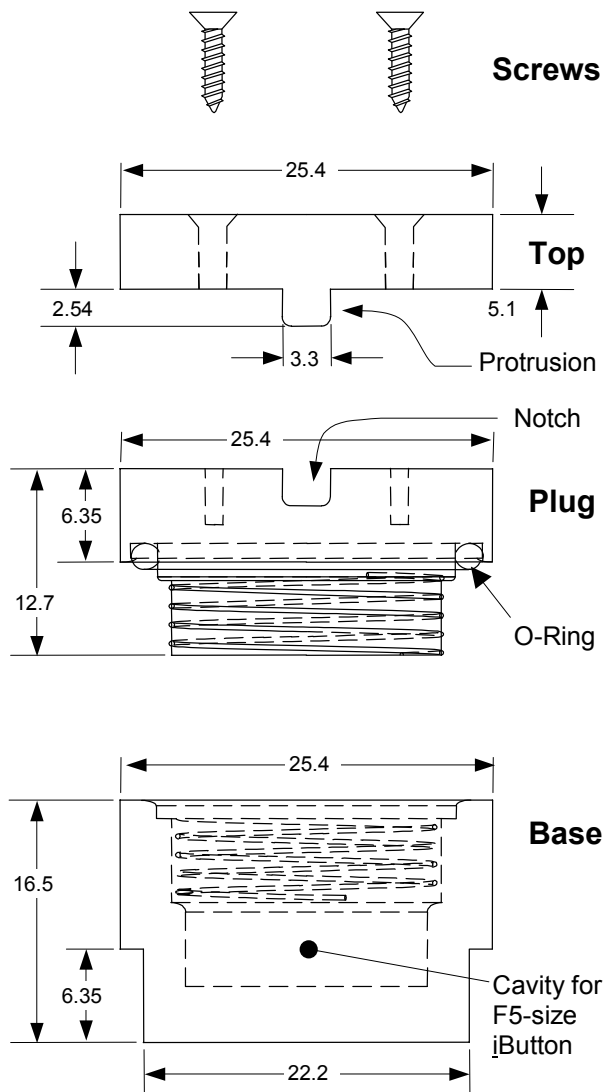
- Autoclave Sterilization
- Seawater temperature profiling
- Monitoring of beverage production
- Scientific research

ORDERING INFORMATION

PART	DESCRIPTION
DS9107+	iButton Capsule

+Denotes a lead(Pb)-free/RoHS-compliant product.

TECHNICAL DRAWING



All dimensions are in millimeters.

ABSOLUTE MAXIMUM RATINGS

Temperature Range

-40°C to +140°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to the absolute maximum rating conditions for extended periods may affect device.

SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Weight	Empty		18.4		grams
Physical Dimensions		See technical drawing			mm
Torque for Tightening the Plug	(Note 1)			36.5	Nm
Number of Open/Close Cycles	Maximum torque applied		500		—
Number of Autoclave Cycles	From 25°C @ 101.3kPa (14.7psia) to 121°C @ 205kPa (29.7psia), tightened to maximum torque (Note 2)	100			—
Thermal Response Time Constant	(Note 3)		150		s

Note 1: Equivalent to 2.5ft/lbs.

Note 2: Absolute pressure is specified; the autoclave peak pressure is 103.4 kPa (15 psig) above the standard atmospheric pressure.

Note 3: The value was derived from submerging an iButton capsule with DS1922T inside into 55°C water. The initial temperature of iButton and capsule was 23.5°C. Without capsule, the response time constant is approximately 30s. Do not drop an unprotected iButton into water or any other liquid.

Top, Plug, Base

Material: Polyphenylene sulfide (PPS Ryton) with black flat finish, electrically non-conductive.

The injection molding compounds (Ryton® PPS) used in the DS9107 are subject to the general safety provisions of the U.S. Food, Drug and Cosmetic Act. It is the responsibility of the purchaser/user of the DS9107 iButton Capsule to determine the safety and suitability of the injection molding compounds for their specific application.

O-Ring

Material: S500-70 Silicone Compound, orange, FDA approved.

Replacement O-Rings: Size AS568-019, inner diameter 13/16 inch, outer diameter 15/16 inch, cross section 1/16 inch, nominal values.

Screws

Material: Type 303 austenitic stainless-steel.

Replacement Screws: flat-head Phillips countersunk, self-tapping, M2.3, 9mm long.

APPLICATIONS INFORMATION

The iButton is inserted into the base part with the data contact towards the bottom of the base. The plug is then placed into the base and initially tightened by hand. Then the base is held with a wrench, and using a metal stick inserted horizontally into the notch of the plug, the plug is tightened until its head touches the top of the base. It is important not to exceed the maximum permissible torque.

The iButton Capsule does not provide electrical contact to the iButton inside. Therefore it is necessary to setup (mission) the temperature logger first before inserting it into the iButton Capsule. To download the logged temperature data, the logger needs to be taken out of the iButton Capsule.

Ryton is a registered trademark of Chevron Phillips Chemical Company LP.

REVISION HISTORY

REVISION DATE	DESCRIPTION	PAGES CHANGED
8/09	Added the + sign to the PART number in the <i>Ordering Information</i> table, indicating a lead(Pb)-free/RoHS-compliant package.	1
11/09	Added a reference to the device's ingress protection rating and Application Note 4126.	1
	Added statement to Note 3: "Do not drop an unprotected iButton into water or any other liquid."	2