

Thermochron iButton

General Description

The DS1921G Thermochron® iButton® is a rugged, self-sufficient system that measures temperature and records the result in a protected memory section. The recording is done at a user-defined rate, both as a direct storage of temperature values as well as in the form of a histogram. Up to 2048 temperature values taken at equidistant intervals ranging from 1 to 255min can be stored. The histogram provides 63 data bins with a resolution of 2.0°C. If the temperature leaves a user-programmable range, the DS1921G also records when this happened, for how long the temperature stayed outside the permitted range, and if the temperature was too high or too low. An additional 512 bytes of battery-backed SRAM allow storing information pertaining to the object to which the DS1921G is associated. Data is transferred serially through the 1-Wire® protocol, which requires only a single data lead and a ground return. Every DS1921G is factory lasered with a guaranteed unique, electrically readable, 64-bit registration number that allows for absolute traceability. The durable stainless steel package is highly resistant to environmental hazards such as dirt, moisture, and shock. Accessories permit the DS1921G to be mounted on almost any object including containers, pallets, and bags.

Applications

Temperature Logging in Cold Chain, Food Safety, Pharmaceutical, and Medical Products

PART	TEMP RANGE	PIN-PACKAGE
DS1921G-F5#	-40°C to +85°C	F5 iButton
DS1921G-F5N#	-40°C to +85°C	F5 iButton

#Denotes a RoHS-compliant device that may include lead(Pb) that is exempt under the RoHS requirements.

A NIST traceability certificate is available for the DS1921G-F5N. See Application Note 4629 for details.

Examples of Accessories

PART	ACCESSORY
DS9096P	Self-Stick Adhesive Pad
DS9101	Multipurpose Clip
DS9093RA	Mounting Lock Ring
DS9093A	Snap-In Fob
DS9092	iButton Probe

Pin Configuration appears at end of data sheet.

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Features

- ◆ Digital Thermometer Measures Temperature in 0.5°C Increments
- ◆ Accuracy $\pm 1^\circ\text{C}$ from -30°C to $+70^\circ\text{C}$ (See the *Electrical Characteristics* for Accuracy Specification)
- ◆ Built-In Real-Time Clock (RTC) and Timer Has Accuracy of ± 2 Minutes per Month from 0°C to $+45^\circ\text{C}$
- ◆ Water Resistant or Waterproof if Placed Inside DS9107 iButton Capsule (Exceeds Water Resistant 3 ATM Requirements)
- ◆ Automatically Wakes Up and Measures Temperature at User-Programmable Intervals from 1 Minute to 255 Minutes
- ◆ Logs Consecutive Temperature Measurements in 2KB of Data-Log Memory
- ◆ Records a Long-Term Temperature Histogram with 2.0°C Resolution
- ◆ Programmable Temperature High and Temperature Low Alarm Trip Points
- ◆ Records Up to 24 Timestamps and Durations When Temperature Leaves the Range Specified by the Trip Points
- ◆ 512 Bytes of General-Purpose Battery-Backed SRAM
- ◆ Communicates to Host with a Single Digital Signal at 15.4kbps or 125kbps Using 1-Wire Protocol

Common iButton Features

- ◆ Digital Identification and Information by Momentary Contact
- ◆ Unique, Factory-Lasered, and Tested 64-Bit Registration Number (8-Bit Family Code + 48-Bit Serial Number + 8-Bit CRC Tester) Assures Absolute Traceability Because No Two Parts are Alike
- ◆ Multidrop Controller for 1-Wire Net
- ◆ Chip-Based Data Carrier Compactly Stores Information
- ◆ Data Can Be Accessed While Affixed to Object
- ◆ Button Shape is Self-Aligning with Cup-Shaped Probes
- ◆ Durable Stainless-Steel Case Engraved with Registration Number Withstands Harsh Environments
- ◆ Easily Affixed with Self-Stick Adhesive Backing, Latched by Its Flange, or Locked with a Ring Pressed Onto Its Rim
- ◆ Presence Detector Acknowledges When Reader First Applies Voltage
- ◆ Meets UL 913, 5th Ed., Rev. 1997-02-24; Intrinsically Safe Apparatus: Approved Under Entity Concept for Use in Class I, Division 1, Group A, B, C, and D Locations

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maximintegrated.com.