DS28C22DEMOK Authentication Demo Stick

The DS28C22 Authentication Demo Stick comprises a host board, a slave DUT board, and a USB cable. The host board contains a MAXQ622 power microcontroller and a DS2465 secure coprocessor. The microcontroller communicates over the I²C interface to the DS2465 and the DS28C22 slave. On one side of the slave DUT board is an authentic DS28C22 IC. The reverse side contains an unauthentic DS28C22 IC. The USB connection is used for power only.

The DS28C22 demo stick is not intended to be a fully functional evaluation kit. For the full evaluation kit, order the DS28C22EVKIT#.

Quick Start Guide

1. Take the Authentication Demo Stick out of its packaging and ensure that the two circuit boards are connected as shown.
2. Using the provided micro-USB cable (or equivalent), connect the demo board to a USB power source such as a computer or a USB wall charger. **Note:** USB is used only as a source for power (5V). No PC software is required.
3. Every time that power is applied, the LEDs flash to indicate that the demo is initializing. **Note:** At the Maxim factory, the secret was already preprogrammed onto the top side authenticator. The bottom side authenticator is intentionally not programmed.
4. Once initialization is completed, the demo repeatedly cycles through authentication sequence. If the secrets match, then the LED labeled **Authentic** illuminates.
5. While keeping the USB cable connected, gently disconnect the small authenticator board, flip it 180° horizontally, and reconnect it so that the backside is now on top. Since the second authenticator is not programmed, it does not have the correct secret, and the LED labeled **Counterfeit** illuminates.
6. (Optional) If the USB cable is removed and reconnected, return to step 2. Regardless of previous usage, only one side is authentic.

DS28C22DEMOKIT Features

- Simple, yet powerful demonstration of symmetric SHA-256 secure authentication
- Easy integration onto breadboards
- Uses USB only for power

DS28C22 IC Features

- Symmetric key-based bidirectional secure authentication and encryption model Using SHA-256
- Safeguards the secret using advanced die level protections
- Strong authentication with a 256-bit, user-programmable secret, input challenge, and dedicated hardware-accelerated SHA engine for generating SHA-256 MACs
- 3072 bits of user EEPROM with various protection modes partitioned into 12 pages of 256 bits with 1000 write cycles
- Supports 100kHz and 400kHz I²C communication speeds
- Supports power-saving sleep mode at 0.5µA (typ)
- Unique factory-programmed 64-bit ROM ID number
- Operating range: 3.3V ±10%, -40°C to +85°C
- 8-pin TDFN package

DS2465 Coprocessor Features

- Secure storage for host symmetric authentication secret
- Offloads SHA-256 processing
- 6-pin TSOC package

Contents

- Host board with the MAXQ622 and the DS2465
- DUT board with 2 DS28C22 ICs—one on the front and one on the back
- USB cable

For additional information, visit: http://www.maximintegrated.com/DS28C22DEMOK
If you have trouble with this demo board, open a support ticket here: http://support.maxim-ic.com/1-wire

Revised 6/14