

GX28E01 1Kb Protected 1-Wire EEPROM with SHA-1 Engine

Features

- 1024 Bits of EEPROM Memory Partitioned Into Four Pages of 256 Bits
- On-Chip 512-Bit SHA-1 Engine to Compute 160- Bit Message Authentication Codes (MACs) and to Generate Secrets
- Dedicated 64-Bit Write-Only Secret with a Feature to Extend the Secret Size to 320 Bits by Setting a 256-Bit Page as Both Read and Write Protected
- 5-Byte Challenge Size for Read Authenticated Page with Optional “Anonymous” Mode
- Write Access Requires Knowledge of the Secret and the Capability of Computing and Transmitting a 160-Bit MAC as Authorization
- User-Programmable Page Write Protection for Page 0, Page 3, or All Four Pages Together
- User-Programmable OTP EPROM Emulation Mode for Page 1 (“Write to 0”)
- Communicates to Host with a Single Digital Signal at 15.3kbps or 90.9kbps Using 1-Wire Protocol
- Switch-point Hysteresis and Filtering to Optimize Performance in the Presence of Noise
- Reads and Writes Over 2.8V to 5.25V Voltage Range from -55°C to +125°C
- 6-Lead DFN and 3-Lead TO-92 Packages

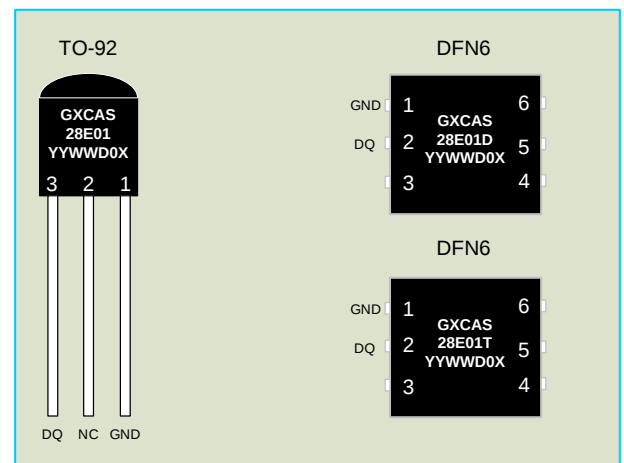
Applications

- Printer Cartridge Configuration
- Monitoring Medical Sensor Authentication
- Calibration System Intellectual Property Protection

General Description

The GX28E01 combines 1024 bits of EEPROM with challenge-and-response authentication security implemented with the ISO/IEC 10118-3 Secure Hash Algorithm (SHA-1). The device can process SHA-1 input block secrets of 64 bits and 320 bits in

conjunction with a 40-bit random challenge and additional device data to provide a high degree of authentication security between a host system and slave accessories. The 1024-bit EEPROM array is configured as four pages of 256 bits with a 64-bit scratchpad to perform write operations. All memory pages can be write protected, and one page can be put in EPROM-emulation mode, where bits can only be changed from a 1 to a 0 state. Each GX28E01 has its own guaranteed unique 64-bit ROM registration number that is factory lasered into the chip. The GX28E01 communicates over the single-contact 1-Wire® bus. The communication follows the standard 1-Wire protocol with the registration number acting as the node address in the case of a multidevice 1-Wire network.



Common Package Diagram

Ordering Information

PART NUMBER	PACKAGE	SPQ
GX28E01	T092	2000
GX28E01D	DFN6 (3*3)	4000
GX28E01T	DFN6 (4*4)	4000

17 Order Information

Purchase Number	Device	Package	SPQ	Note
GX28E01-2F-Bu	GX28E01-2F	TO92	2000	Bulk
GX28E01D2F-T&R	GX28E01D2F	DFN6	4000	Tape and reel
GX28E01T2F-T&R	GX28E01T2F	DFN6	4000	Tape and reel