DALLAS SEMICONDUCTOR

www.dalsemi.com

SPECIAL FEATURES

- 1024 bits, 16K bits or 64K bits Electrically Programmable Read Only Memory (EPROM) communicates with the economy of one signal plus ground
- Unique, factory lasered and tested 64–bit registration number (8–bit family code, 36–bit serialization, 12–bit UniqueWare Identifier 5E7H, 8–bit CRC tester) assures absolute traceability because no two parts are alike
- EPROM partitioned into 256–bit pages for randomly accessing packetized data records
- Each memory page can be permanently write–protected to prevent tampering
- Device is an "add only" memory where additional data can be programmed into EPROM without disturbing existing data
- Reduces control, address, data, power and programming signals to a single pin
- 8–bit family code specifies device communications requirements to reader
- Presence detector acknowledges when reader first applies voltage
- Reads over a wide voltage range of 2.8V to 6.0V from –40°C to +85°C

COMMON iButton FEATURES

- Multidrop controller for MicroLAN
- Digital identification and information by momentary contact
- Chip–based data carrier compactly stores information
- Data can be accessed while affixed to object
- Economically communicates to bus master with a single digital signal at 16.3k bits per second
- Standard 16 mm diameter and 1–Wire protocol ensure compatibility with iButton family
- 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 (4th edit.); Intrinsically Safe Apparatus, Approved under Entity Concept for use in Class I, Division 1, Group A, B, C and D Locations (application pending)

iButton DESCRIPTION

UniqueWare iButtons are factory programmed versions of the DS1982 (1024 bit), the DS1985 (16K bit) and the DS1986 (64K bit) Add–Only iButtons, respectively. They differ from the regular devices in their custom ROM family codes (see Ordering Information) and the UniqueWare Identifier 5E7 in place of the upper 12 bits of the standard serialization field. For technical details on the devices please refer to the DS1982, DS1985 and DS1986 data sheets.

UniqueWare Add–Only iButtons are only available preprogrammed with customer–specific and write–protected data. UniqueWare data fills at least one but no more than the first four pages of a device, depending on the length of the customer–supplied data. This leaves up to three (DS1982U), 63 (DS1985U) or 255 (DS1986U) memory pages available for programming in the application.

For more details on UniqueWare and how to set up data files, please refer to the UniqueWare Project Setup Manual, available as Application Note 99 from Dallas Semiconductor. The UniqueWare Project Setup Software is available from the Dallas Semiconductor FTP Site at ftp://ftp.dalsemi.com/pub/auto_id, file name "unwsetup.exe".

ORDERING INFORMATION

Memory Size	Family Code	Package	Ordering Part Number
1024 bits (4 pages)	89h	F3 MicroCan F5 MicroCan	DS1982U–F3–pppp DS1982U–F5–pppp
16K bits (64 pages)	8Bh	F3 MicroCan F5 MicroCan	DS1985U–F3–pppp DS1985U–F5–pppp
64K bits (256 pages)	8Fh	F3 MicroCan F5 MicroCan	DS1986U–F3–pppp DS1986U–F5–pppp

pppp stands for the Project ID assigned to each individual data pattern at the time of the first order.

Sample UniqueWare Data Structures

SAMPLE 1: ETHERNET NODE ADDRESS Figure 1a

(unused)	CRC16		Company ID Value		Extension ID Value		Project ID		Length
	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB	
19 bytes FFH	2 bytes		3 bytes constant assigned by IEEE		3 bytes serialization		4 bytes constant		1 byte 0AH

high address   low address

PHYSICAL ADDRESS AND DATA MAPPING Figure 1b

Address	0C	0B	0A	09	08	07	06	05	04	03	02	01	00
Data	xx	xx	ch	cm	cl	hh	mm	ll	00	00	pp	pp	0A

xx xx = CRC16, value depends on actual data

ch cm cl = high, medium and low byte of the IEEE assigned "Company ID"

hh mm ll = high, medium and low byte of the "Extension ID" or serialization

pp pp = Project ID assigned by Dallas Semiconductor

SAMPLE 2: EUI–64 FireWire^TM NODE ADDRESS Figure 2a

(unused)	CRC16		Company ID Value		Extension ID Value		Project ID		Length
	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB	
17 bytes FFH	2 bytes		3 bytes constant assigned by IEEE		5 bytes serialization		4 bytes constant		1 byte 0CH

high address   low address

PHYSICAL ADDRESS AND DATA MAPPING Figure 2b

Address	0E	0D	0C	0B	0A	09	08	07	06	05	04	03	02	01	00
Data	xx	xx	ch	cm	cl	hh	hm	mm	ml	ll	00	00	pp	pp	0C

xx xx = CRC16, value depends on actual data

ch cm cl = high, medium and low byte of the IEEE assigned "Company ID"

hh hm mm ml ll = high, medium and low byte of the "Extension ID" or serialization

pp pp = Project ID assigned by Dallas Semiconductor

FireWire^TM is a trademark of Apple Computer, Inc.