e·tag

contact memory tags

Features

- 2, 4, 8, 16, 32 or 64 k bytes of non-volatile EEPROM

- Rugged construction to military standards

- Asynchronous UART/RS232 compatible

- Unique 32 bit serial number

- Secure 64 bit password

- Selective memory write protection

- 16 bit CRC error correction

Oxley e-tags are contact memory tags containing up-to 64 k bytes of EEPROM non-volatile memory housed in small rugged metal cans. e-tags are intended for permanent attachment to host assets in order store any kind of digital information relevant to the asset, creating a secure portable micro-database co-resident with the asset itself.

When interfaced to a host controller an e-tag is capable of having its memory read-from or written-to virtually an unlimited number of times. When disconnected from a host controller the data stored can be retained for over 100 years. e-tags are passive containing no battery or internal power source to retain data.

Physical protocol
Physical signalling between e-tag and a host controller uses

asynchronous serial data compatible with common integrated circuit UARTs (universal asynchronous receiver transmitter) operating in 'simplex' bi-directional mode at 57.6k bits per second.

Unique serial number
Each e-tag has a unique 32 bit serial number stored in ROM which cannot be altered or erased but can be read by a host device.

Secure password protection
e-tag contact memory has a true password protection function whereby a 64 bit password can be set and stored securely in EEPROM. If enabled, the password must be supplied, for each tag, to access the data. Prior to a password being set a host device can access full read/write functionality. Once a password has been set on an e-tag the host must provide a matching password before further reading or writing of EEPROM is permitted. A previously set password can be cleared by supplying a matching existing password.

Memory write protection
Areas of EEPROM can be permanently locked preventing further writing of data but allowing continued reading of the data from

this area. This can be used to lock just a few bytes of EEPROM or the whole e-tag. Once a lock has been set it cannot be reversed. A lock can be extended allowing data to be protected as it is added.

Error correction
All host communications to and from an e-tag contain a 16 bit cyclic redundancy check (CRC) stored within the communication packet. For command messages sent by the host controller, the host must calculate the CRC value. On receipt of the command packet the e-tag will perform its own CRC calculation and compare it to the contents of the received packet CRC value. If the two do not match then an error code will be returned by the e-tag.

Conversely, for response messages the e-tag calculates the CRC and places it in the response packet. On receipt of the response packet the host should perform its own CRC calculation and compare it to the contents of the received packet CRC. If the two do not match then it is the responsibility of the host to take appropriate action.

A detailed interface specification is available to integrators on request.

Characteristics

EEPROM write cycles: 100,000 max

EEPROM Data Retention:
100 years @ 25°C

Weight: <1g

Baud rate: 57.6 k bits/sec

Maximum ratings

Operating temperature range
(read/write):
-55°C to +125°C

Storage temperature range:
-60°C to +150°C

Stresses above maximum ratings may cause permanent damage. Exposure to maximum rating conditions for extended periods may affect reliability.

Environmental characteristics

Change of temperature:
IEC 68-2-14 BS2011 Test Na
Ta = -55°C, Tb = +125°C, T1 =30 mins

Damp heat:
MIL-STD-810E Method 507.3
Procedure III Agravated test

Bump:
IEC 68-2-9 BS2011 Test Eb
4000 bumps +/- 10 bumps
400m/S^2 (40g)

Mechanical shock:
IEC 68-6-27 BS2011 Test Ea
1000m/S^2 (100g), 6mSec
Half sinewave pulse

Vibration:
IEC 68-2-6 BS2011 Test Fc
10-2000Hz 200m/S^2 (20g)

Low air pressure:
IEC 68-2-13 BS2011 Test M
40mBar, 30 minutes

Sealing:
IEC 68-2-17 BS EN 60068-2-17
Test Qc
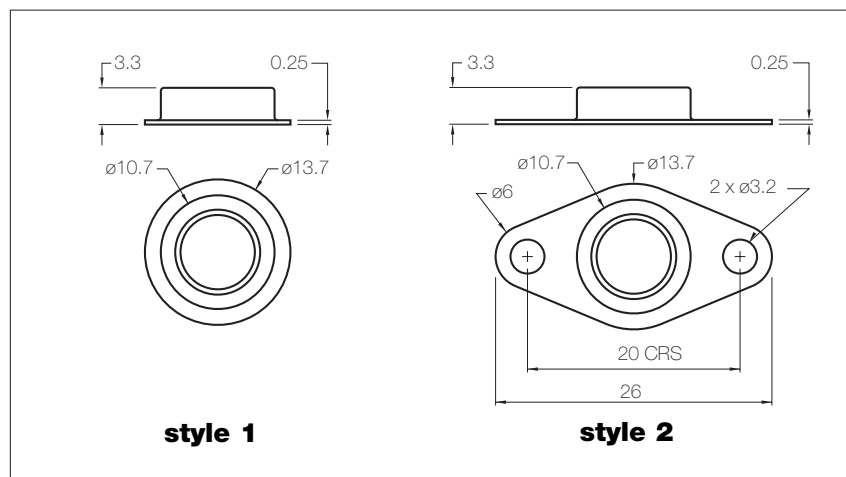Method 2, t = 20 min liquid temp 125°C

Salt mist:
IEC 68-2-52 Test Kb severity 3

Solvent resistance:
IEC69-2-45 BSEN60069-2-45 Test Xa

EMC: Def- Stan 59-41

ESD: MIL-STD-883E

Dimensions (mm)

style 1   **style 2**

Ordering

When ordering please specify quantity and the following type number

OX/ETAG/ __*__/ __**__ kB

*Package option:
1 - Style 1, adhesive mount
2 - Style 2, mechanical mount

**Data memory size:
2 - 2kB,
4 - 4KB,
8 - 8kB,
16 - 16kB,
32 - 32kB,
64 - 64kB,

For example:
Type number OX/ETAG/1/32kB specifies a memory capacity of 32 k bytes in an adhesive mounting style.

Company Approvals: BS EN 9001:1994 and QAS/34/61 REG No. FM 01759
CECC Approval No. M/0022, BS 9000
Approval No. 1048/M

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