UNI/O™ Serial EEPROMs
Single I/O Bus Interface

UNI/O™ Serial EEPROM

MCU

One I/O

www.microchip.com/UNIO
**Introducing the UNI/O EEPROM Family**

**Need more microcontroller pins for new features?**

*Want to stay with a low pin-count microcontroller rather than switching to a more expensive one?*

Microchip’s new UNI/O serial EEPROM uses only ONE connection to the host microcontroller. This compares to two or three pins for I²C™, and three to six pins for Microwire or SPI buses. This new, proprietary bus offers advanced features like a status register and write protection on demand, along with all I/O, memory array and command functions through a single pin.

### Advanced Features

- Single I/O Interface
- 1-16 Kbit Memory Densities
- 1.8-5.5V Operating Voltage
- 10-100 KHz Operating Frequency
- 1 Million Erase/Write Cycles
- Software Write Protect – ¼, ½ or Full Array
- Status Register
- Set/Erase entire memory with a single command
- ESD Protection > 4 KV
- Noise Filtration Circuitry
- Packaging: 3-pin SOT-23
  - 8-pin SOIC, MSOP & TDFN
- Temperature: Industrial (-40ºC to +85ºC)
  - Extended (-40ºC to +125ºC)

### Benefits

**A single I/O EEPROM can simplify your design and reduce system cost**

- Free up pins on the MCU
  - Add a new feature to your application
  - Move to a smaller MCU
- Free up pins on your connector
  - Smaller connector = lower cost
- More compact design

### Get Started With a Simple Evaluation

**Use your existing hardware**

- UNI/O EEPROMs can fit in existing sockets
  - Pin-out similar to I²C and SPI EEPROMs
  - 8-pin packages share Vcc, Vss and Data Line

**Use Microchip’s software drivers**

- UNI/O software drivers available for many popular microcontrollers
- New drivers coming

### Current EEPROM 8-lead Pin Outs

- **I²C™**
  - A0
  - Vcc
  - A1
  - WP
  - A2
  - SCL
  - Vss
  - SDA

- **UNI/O™**
  - NC
  - Vcc
  - NC
  - NC
  - Vss
  - SCIO

- **SPI**
  - CS
  - Vcc
  - SO
  - HOLD
  - WP
  - SCK
  - Vss
  - SI

[www.microchip.com/UNIO](http://www.microchip.com/UNIO)
Inside the UNI/O EEPROM

Robust Interface
- Current limited
- Protection during short circuits and bus conflicts
- Superior EMI performance

EEPROM Memory
- Density: 1K, 2K, 4K, 8K & 16K
- Endurance > 1 Million Cycles
- Data Retention > 200 Years

I/O Communication
- Manchester encoding/decoding
- Synchronization circuitry
- Software addressing

Status Register
- Write In Process (WIP) bit
- Write Enable Latch (WEL) bit
- Block protection bits
  - Write protect for ¼, ½ or full array

Memory Control Logic
- Controls for internal clock and data
- Byte or page write
- Erase all or set all

EEPROM Memory
- Density: 1K, 2K, 4K, 8K & 16K
- Endurance > 1 Million Cycles
- Data Retention > 200 Years

Page Buffer
- 16 byte page

GND

Vcc

SCIO

www.microchip.com/UNIO
Designing with the UNI/O Serial EEPROM

Resources to help you get started quickly ...

**MPLAB® Starter Kit for Serial Memory Products**
(Part Number DV243003)

Increase productivity, reduce time to market and create a rock-solid design using this sophisticated development system. The MPLAB Starter Kit includes everything necessary to quickly program and develop a robust and reliable Serial EEPROM design, and reduce the time required for system integration and hardware/software debug.

- Windows® 2000, XP and Vista™ operating systems
- Total Endurance™ software model
- MPLAB Starter Kit board and user interface software
- Quick start guide
- Serial EEPROM sample pack

**Additional Resources**
Over 50 different application notes, many with source code options can be found at: [www.microchip.com/appnotes](http://www.microchip.com/appnotes)
Get started with Microchip’s Serial EEPROMs in four easy steps: [www.microchip.com/eeprom](http://www.microchip.com/eeprom)

**UNI/O Bus Software Drivers**

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</table>

Microchip’s Total Endurance Software provides you with unprecedented visibility into Serial EEPROM based applications. Describe your system to an advanced mathematical model (with a friendly human interface), and it will predict the performance and reliability of the Serial EEPROM within that environment. Design trade-off analysis that formerly consumed days or weeks can now be accomplished in minutes with a level of accuracy that delivers a truly robust design.
UNI/O Product Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Density (bits)</th>
<th>Organization</th>
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<td>1K</td>
<td>128 x 8</td>
<td>16</td>
<td>1.8-5.5V</td>
<td>I</td>
<td>TT, SN, MNY, MS, P</td>
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<tr>
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<td>1K</td>
<td>128 x 8</td>
<td>16</td>
<td>2.5-5.5V</td>
<td>I, E</td>
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<td>2K</td>
<td>256 x 8</td>
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<tr>
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<tr>
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<td>16</td>
<td>2.5-5.5V</td>
<td>I, E</td>
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</tr>
</tbody>
</table>

Note: All devices are Pb-Free and RoHS compliant.

Part Number Suffix Designations
Ordering information for Microchip UNI/O Memory products.

11 LC 01 0 T -I /TT

Package Type:

- TT: 3-SOT-23
- SN: 8-SOIC (150 mil)
- MS: 8-MSOP
- MNY: 8-TDFN (2x3)
- P: 8-PDIP

Operating Temperature Range:

- I: Industrial (-40°C to +85°C)
- E: Extended Industrial Range (-40°C to +125°C)

Tape and Reel:

- T: Tape and Reel
- blank: Tube

Custom Addressing

Memory Size:

- 01: 1 Kbit
- 02: 2 Kbit
- 04: 4 Kbit
- 08: 8 Kbit
- 16: 16 Kbit

Voltage:

- LC: 2.5V-5.5V
- AA: 1.8V-5.5V

Product Prefix:

11 UNI/O™ EEPROM

Packages Available for UNI/O EEPROM Memory

- 3-SOT23 (TT): 3 x 3 mm
- 8-TDFN (MNY): 2 x 3 mm
- 8-MSOP (MS): 3 x 5 mm
- 8-SOIC (SN): 5 x 6 mm
- 8-PDIP (P): 8 x 9.5 mm

Shown approximate size.
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Microchip Technology Inc.
2355 W. Chandler Blvd.
Chandler, AZ 85224-6199