DATAFLASH... LEADING THE SERIAL FLASH REVOLUTION!

SIMPLIFY YOUR DESIGN, REDUCE COSTS AND SPEED YOUR TIME TO MARKET!

SYSTEM FEATURES AND PERFORMANCE REQUIREMENTS ARE CONTINUALLY INCREASING WHEREAS TIME TO MARKET AND PRICE POINTS CONTINUE TO DROP. FOR THE DESIGNER, REDUCING FUNCTIONALITY IS NOT AN OPTION. SOLUTION: LOSE PINS NOT FEATURES.

Serial Flash is Revolutionizing the NOR Flash Market. Atmel pioneered the SPI serial Flash market when it introduced its full-featured **DataFlash®** family back in March 1997. System designers hailed it as ground-breaking and quickly adopted the cost-saving solution. Atmel has maintained its leadership position through continued innovation and by consistently addressing the system-level needs of various end-market applications. Atmel's serial **DataFlash** product offering is now comprised of two families: the high-speed, uniform small block erase AT26F/DFxxxx series and the flagship AT45DBxxxx series of high-speed, page-erasable, and byte-alterable devices.

With the largest portfolio of devices in the industry and with all available in 8-pin packages, Atmel's serial **DataFlash** products have the right densities and features to enable your application to do more with a smaller footprint at the right price.

Advanced Feature Sets. As the industry transition from parallel Flash to serial Flash accelerates, so has the need for more advanced features in the serial Flash devices themselves. Now Atmel is bringing all the features of the parallel NOR Flash world to the 8-pin serial Flash world, starting with the Atmel authored JEDEC standard for Manufacturer and Device ID for serial memory devices.

In addition, the latest generation devices in the AT45DBxxxx family feature a 128-byte security register that includes a unique 64-byte number in every device. Enhanced sector protection is also provided to protect code and data individually on a sector-by-sector basis, allowing applications to safely store boot code in either the top or the bottom portion of the memory array. To take system security to a whole new level, a new lockdown feature has been incorporated to allow any combination of sectors to be permanently made read only (ROM). Designers can now securely and permanently lockdown a boot area and never again worry about unwanted code corruption. With clock rates up to 66 MHz and minimized command overhead, system designers can now implement direct linear execution from serial Flash and eliminate the shadow RAM.

Why Serial Flash? Atmel's serial **DataFlash** devices are the ideal memory solution to help reduce total system costs. The simple 4-wire SPI interface and space saving 8-pin packaging greatly reduce system pin counts and board space as compared to those implemented with traditional parallel Flash devices. Using serial Flash eliminates the need for parallel address and data lines, netting a significant pin-count reduction (28 to 48 fewer pins depending on the memory density). The numerous benefits of a serial Flash system architecture also include simplified routing, reduced switching noise, smaller system footprint, improved system reliability, reduced manufacturing complexity, reduced ASIC pin counts and, of course, reduced system costs.

The AT26F/DFxxxx series of products are pin compatible to our complete offering of AT25xxxx SPI serial EEPROMs. This gives you the flexibility of increasing your memory size from a low-density serial EEPROM device to a serial Flash without any changes to your board layout.

A Growing List of Applications Using Atmel Serial DataFlash

- 802.11a/b/g, Wi-Fi®
- Inkjet and laser printers
- PC BIOS
- PC peripherals: VGA cards, NIC, hard disk drives, CD/DVD+RW
- DSL modems
- Digital and plasma TVs
- Mobile phones
- FPGA configuration
- Industrial controls
- Test equipment
- Data loggers
- Remote controls
- DAB radios
- Electronic toys
- Digital cameras
- VoIP phones
- Network hubs and routers
- Security systems
- Energy meters
- Car infotainment
- Telephone line cards
- Personal voice recorders
- Digital answering machines
- Point-of-sale terminals
- Vending machines

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Serial DataFlash® Selector Guide

	Part Number	Density (Mbits)	V_{CC} Min (V)	Interface Architecture	Speed (MHz)	SRAM Buffers	Sector Lockdown	Serial Number	Packages	Availability
Serial DataFlash	***Page-Erase, Byte-Alterable, 2.7 to 3.6V — Commercial/Industrial Temperature Grades***									
	AT45DB011B	1	2.7	Serial (SPI Bus)	20	1 (264 Bytes)			**C**(9C1)-**S**(8S2)-**X**(14X)	Now
	AT45DB021B	2	2.7	Serial (SPI Bus)	20	2 (264 Bytes Each)			**C**(9C1)-**S**(8S2)-**T**(28T)-**R**(28R)	Now
	AT45DB041B	4	2.7	Serial (SPI Bus)	20	2 (264 Bytes Each)			**C**(14C1)-**CN**(8CN3)-**S**(8S2)-**T**(28T)-**R**(28R)	Now
	AT45DB041D	4	2.7	Serial (SPI Bus)	66	2 (256/264 Bytes Each)	•	•	**S**(8S2)-**SS**(8S1)-**M**(8M1-A)	2Q06
	AT45DB081B	8	2.7	Serial (SPI Bus)	20	2 (264 Bytes Each)			**C**(14C1)-**CN**(8CN3)-**T**(28T)-**R**(28R)	Now
	AT45DB081D	8	2.7	Serial (SPI Bus)	66	2 (256/264 Bytes Each)	•	•	**S**(8S2)-**SS**(8S1)-**M**(8M1-A)	3Q06
	AT45DB161D	16	2.7	Serial (SPI Bus)	66	2 (512/528 Bytes Each)	•	•	**S**(8S2)-**M**(8M1-A)-**T**(28T)	Now
	AT45DB321C	32	2.7	Serial (SPI Bus)	40	2 (528 Bytes Each)		•	**C**(24C3)-**CN**(8CN3)-**T**(28T)	Now
	AT45DB321D	32	2.7	Serial (SPI Bus)	66	2 (512/528 Bytes Each)	•	•	**CN**(8CN3)-**M**(8M1-A)**T**(28T)	2Q06
	AT45DB642D	64	2.7	Dual, SPI, Rapid8™	66/50	2 (1024/1056 Bytes Each)	•	•	**CN**(8CN3)-**T**(28T)	Now
	AT45DB1282D	128	2.7	Dual, SPI, Rapid8	66/50	2 (1024/1056 Bytes Each)	•	•	**CN**(8CN3)-**T**(28T)	4Q06
	Page-Erase, Byte-Alterable, Low Battery Voltage, 2.5 to 3.6V — Commercial Temperature Grades									
	AT45DB041B-2.5	4	2.5	Serial (SPI Bus)	15	2 (264 Bytes Each)			**C**(14C1)-**CN**(8CN3)-**S**(8S2)-**T**(28T)-**R**(28R)	Now
	AT45DB041D-2.5	4	2.5	Serial (SPI Bus)	50	2 (256/264 Bytes Each)	•	•	**S**(8S2)-**SS**(8S1)-**M**(8M1-A)	2Q06
	AT45DB081B-2.5	8	2.5	Serial (SPI Bus)	15	2 (264 Bytes Each)			**C**(14C1)-**CN**(8CN3)-**T**(28T)-**R**(28R)	Now
	AT45DB081D-2.5	8	2.5	Serial (SPI Bus)	50	2 (256/264 Bytes Each)	•	•	**S**(8S2)-**SS**(8S1)-**M**(8M1-A)	3Q06
	AT45DB161D-2.5	16	2.5	Serial (SPI Bus)	50	2 (512/528 Bytes Each)	•	•	**S**(8S2)-**M**(8M1-A)-**T**(28T)	Now
DataFlash Cards	***Page-Erase, Byte-Alterable, 2.7 to 3.6V — Industrial Temperature Grades***									
	AT45DCB002D	2	2.7	Serial (SPI Bus)	66	2 (528 Bytes Each)	•	•	7DF1	Now
	AT45DCB004C	4	2.7	Serial (SPI Bus)	40	2 (528 Bytes Each)		•	7DF1	Now
	AT45DCB008D	8	2.7	Serial (SPI Bus)	66	2 (1056 Bytes Each)	•	•	7DF1	Now
Serial Firmware DataFlash	***Uniform Block Erase Serial Flash, 2.7 to 3.6 — Industrial Temperature Grades***									
	AT26F004	4	2.7	Serial (SPI Bus)	33				**S**(8S2)-**SS**(8S1)-**M**(8M1-A)	Now
	AT26DF081A	8	2.7	Serial (SPI Bus)	70				**S**(8S2)-**SS**(8S1)	1Q06
	AT26DF161	16	2.7	Serial (SPI Bus)	66				**S**(8S2)-**M**(8M1-A)	Now
	AT26F032	32	2.7	Serial (SPI Bus)	33				**M**(8M1-A, 8M2)	2Q06

Package Designator

- **C** – CBGA: **9C1**, 9-ball, 5 x 5 x 1.2 mm; **14C1**, 14-ball, 4.5 x 7 x 1.4 mm; **24C3**, 24-ball, 6 x 8 x 1.2 mm (Not Recommended for New Designs).
- **CN** – CASON: **8CN3**, 8-pad, 6 x 8 mm (Footprint Compatible with 8-pin SOIC, EIAJ).
- **M** – MLF: **8M1-A**, 8-pad, 5 x 6 mm (Footprint Compatible to 8-pin SOIC, JEDEC); **8M2**, 8-pad, 6 x 8 mm (Footprint Compatible to 8-pin EIAJ SOIC).
- **R** – SOIC: **28R**, 28-lead, 0.330 Wide (Not Recommended for New Designs).
- **SS** – SOIC (JEDEC): **8S1**, 8-lead, 0.150 Wide .
- **S** – SOIC (EIAJ): **8S2**, 8-lead, 0.209 Wide.
- **T** – TSOP (Type 1): **28T**, 28-lead, 8 x 13.4 mm.
- **X** – TSSOP: **14X**, 14-lead, 4.4 mm Body
- **7DF1** – 7-pad, 2.5 mm Pitch, 24 x 32 x 1.4 mm Body DataFlash Card

Green Packaging Available.

To learn more about the complete line of serial DataFlash products, visit www.atmel.com/dataflash