

## PRODUCT PORTFOLIO

### SD/SDHC/SDXC Cards

While SD cards began primarily as a consumer storage medium, the form factor has gained increasing traction in the industrial and OEM sectors due to the small size, low power consumption and ease of integration. Delkin Devices offers a menu of full-size SD cards, allowing the best product selection to match any application. Delkin SD products have many additional benefits over standard retail consumer-grade cards, including BOM control and life cycle management.

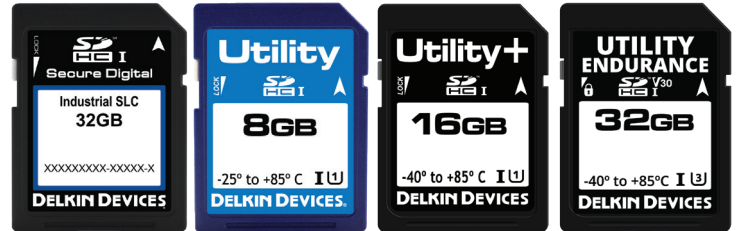
Whether the application calls for a few Megabytes of storage to launch an application, or several Gigabytes to store video data, Delkin has the solution.

For the most demanding applications, in terms of environmental conditions, write-intensive workload or the mission-critical nature of the stored data, Delkin offers true industrial SD controllers, high endurance SLC NAND flash, full industrial temperature range and long life cycles.

For more cost sensitive designs, Delkin offers lines of MLC- & 3D TLC-based cards; the Utility family in standard SD (-25°C to +85°C) as well as and Utility+ and Utility Endurance family offering full industrial (-40°C to +85°C) temperature ranges.

Regardless of the SD product family, Delkin ensures consistent performance and host compatibility through managed configurations. Delkin locks the card configuration down to the specific controller, firmware and flash chips, with a change to any of these components dictating a new part number. When an unavoidable EOL occurs to any of these items, Delkin communicates the discontinuation in advance, providing the opportunity to place a last time buy as well as to qualify the replacement solution.

Additionally, since the Delkin Devices facility in Poway, California is the headquarters for our design, manufacturing and support teams, we can also provide customized SD solutions. Options include custom labels, content or image loading, conformal coating or other mechanical modifications to meet a specific need. Contact us to ask how a card can be customized for your application.



## HIGHLIGHTS

### Three SD Product Families

- SLC, MLC and 3D Flash
- Commercial & Industrial Temp
- SD 3.0 & SD 2.0

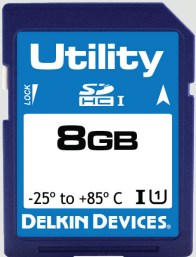
Wide Capacity Ranges from 128MB to 64GB

Support for SD and SPI Modes

Controlled BOM

Life Cycle Management

# SECURE DIGITAL CARDS PRODUCT MATRIX



SD PRODUCT FAMILY	D330 / D400 / D500 SERIES		UTILITY SD	UTILITY+ SD	UTILITY ENDURANCE	
Connector	Standard SD 9 pin					
Outline Dimensions	32 (± 0.10) x 24 (± 0.10) x 2.1 (± 0.15) mm					
Flash Type	SLC		MLC		pSLC	
Density Range	128MB–2GB (SD) 4GB–32GB (SDHC)		8GB–16GB (SDHC)	8GB–16GB (SDHC)	8GB–32GB (SDHC) 64GB (SDXC)	
Data Retention	10 years - up to 10% of P/E cycles 1 year - at end of life / 100% of cycles		5 years - up to 10% of P/E cycles 1 year - at end of life / 100% of cycles			
Endurance (Raw Flash Level)	60,000 P/E Cycles		3,000 P/E Cycles		30,000 P/E Cycles	
Operating Temperature	-40°C to +85°C		-25°C to +85°C	-40°C to +85°C	-40°C to +85°C	
Storage Temperature	-40°C to +85°C					
PERFORMANCE						
Sequential Read (MB/s)	up to 65 (*Random Perf. 8.3MB/s)		up to 95			
Sequential Write (MB/s)	up to 65 (*Random Perf. 4.5MB/s)		up to 85			
MTBF	≥ 3,000,000 hours					
Shock*	10G for 11 msec, Sawtooth Waveform		1,500 G for 0.5msec		1,500 G for 0.5msec	
Vibration*	20Hz ~80Hz/1.52mm Displacement 80Hz~2000Hz / 20G Acceleration					
Humidity	95% RH under 55°C		95% RH under 40°C		95% RH under 55°C	
Voltage	2.7 – 3.6 V Normal					
Power Consumption	Read maximum <400 mA Write maximum < 400 mA Idle maximum < 1000 uA					
Features & Tools	Sophisticated Wear Leveling & Bad Block Management Highest Endurance Long Life Cycle SMART / Dashboard		Robust Power Fail & Firmware Protection Sophisticated Wear Leveling & Bad Block Management SMART Data Reporting & Dashboard Limited Life Cycle Management Cost Effective		Sophisticated Wear Leveling & Bad Block Management High Endurance Auto-Read Refresh	
Part Numbers	<b>D330</b> 128MB SE12TLKFX-1D000-3 256MB SE25TLMFX-1D000-3 512MB SE51TLNFX-1D000-3 1GB SE0GTLNFX-1D000-3 2GB SE02TLNFX-1D000-3 4GB SE04TLNFX-1B000-3 8GB SE08TRZFX-1B000-3 16GB SE16TRZFX-1B000-3  <b>D400</b> 32GB SE32TRDMH-U1000-D  <b>D500*</b> 512MB SE51TLNVE-1D000-3 1GB SE0GTLNVE-1D000-3 2GB SE02TLNVE-1D000-3 8GB SE08TRZVE-1B000-3 16GB SE16TRZVE-1B000-3		8GB SF08APGJP-U1000-3 16GB SF16ANZJP-U1000-3		8GB SE08APGJP-1B000-3 16GB SE16ANZJP-1B000-3	
					8GB SE08FSTL2-3B000-3 16GB SE16FSTL2-3B000-3 32GB SE32FSTL2-3B000-3 64GB SE64FSTL2-3B000-3	

Contact Delkin for other options