

## 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 Industrial -based cards – the Utility family in standard SD (-25°C to +85°C) and Utility+ 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

### Four SD Product Families

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

Wide Range of Capacities from 128MB to 128GB

Support for SD and SPI Modes

Controlled BOM

Life Cycle Management

# SECURE DIGITAL CARDS PRODUCT MATRIX



SD Product Family	D300 Series		D330 Series		Utility SD		Utility+ SD	
Interface	SD 3.0, Class 10, UHS-I		SD 3.0, Class 10, UHS-I		SD 3.0, Class 10, UHS-I			
Connector	Standard SD 9 pin							
Outline Dimensions	32 (± 0.10) x 24 (± 0.10) x 2.1 (± 0.15) mm							
Flash Type	SLC				MLC/3D Industrial			
Density Range	1GB–2GB (SD) 4GB–32GB (SDHC)		128MB–2GB (SD) 4GB–32GB (SDHC)		4GB–32GB (SDHC) 64GB–128GB (SDXC)		4GB–32GB (SDHC) 64GB–128GB (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 MLC 1,500 – 3,000 P/E Cycles 3D Industrial			
Operating Temperature	-40°C to +85°C				-25°C to +85°C		-40°C to +85°C	
Storage Temperature	-50°C to +90°C				-40°C to +85°C			
Performance								
Sequential Read (MB/s)	up to 23		up to 65		up to 95			
Sequential Write (MB/s)	up to 22		up to 65		up to 85			
MTBF	≥ 2,000,000 hours (0 - 25°C)				≥ 3,000,000 hours (0 - 25°C)			
Shock*	10G for 11 msec, Sawtooth Waveform				1,500 G for 0.5msec			
Vibration*	7.7GRMS 20Hz – 1000Hz @ 0.04 G <sup>2</sup> /Hz, 1000Hz – 2000Hz @ 0.01 G <sup>2</sup> /Hz				20Hz ~80Hz/1.52mm displacement 80Hz~2000Hz / 20G Acceleration			
Humidity	5 - 95% RH				95% RH under 40°C			
Voltage	2.7 – 3.6 V Normal							
Power Consumption	Read typically <70 mA Write typically < 80 mA Idle typically < 2 mA		Read typically <400 mA Write typically < 400mA Idle typically < 1 mA		Read typically <400 mA Write typically < 400 mA Idle typically < 1000 uA			
Features & Tools	Proven Power Fail Safety Sophisticated Wear Leveling & Bad Block management Highest Endurance Longest Life Cycle				Robust Power Fail & Firmware Protection Sophisticated Wear Leveling & Bad Block management SMART Data Reporting & Dashboard Limited Life Cycle Management Cost Effective			
	SMART / Dashboard AES Encryption		SMART / Dashboard					
Part Numbers	1GB SE0GTQH7G-C1000-D 2GB SE02TQH7G-C1000-D 4GB SE04TQJ7G-U1000-D 8GB SE08TQJ7G-U1000-D 16GB SE16TNK7G-U1000-D 32GB SE32TNJ7G-U1000-D		128MB SE12TLKFX-1D000-3 256MB SE25TLMFX-1D000-3 512MB SE25TLMFX-1D000-3 1GB SE0GTLNFX-1D000-3 2GB SE02TLNFX-1D000-3 4GB SE04TLNFX-1B000-3 8GB SE08TRZFX-1B000-3 16GB SE16TRZFX-1B000-3 32GB SE32TRZFX-1B000-3		4GB SF04APYJP-U1000-3 8GB SF08APGJP-U1000-3 16GB SF16ANZJP-U1000-3 32GB SF32FQYFA-U1000-3 64GB SF64FQYFA-U1000-3 128GB SF1HFQYFA-U1000-3		4GB SE04APYJP-1B000-3 8GB SE08APGJP-1B000-3 16GB SE16ANZJP-1B000-3 32GB SE32FQYFA-1B000-3 64GB SE64FQYFA-1B000-3 128GB SE1HFQYFA-1B000-3	
Contact Delkin for other options, including pSLC cards								