DELKIN DEVICES
Rugged Controlled Storage.

PRODUCT PROFILE

Secure Digital 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, life cycle management and even Extended Life Cycle (ELC) configurations that will be in production through 2021.

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-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.

HIGHLIGHTS

Five SD Product Families
- SLC and MLC 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

Customization Options

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.

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SECURE DIGITAL CARDS PRODUCT MATRIX

SD Product Family	D300 Series	D200 Series	D200 ELC Series	Utility SD	Utility+ SD
Interface	SD3.0, Class 10, UHS-I	SD 2.0, Class 6	SD 2.0, Class 6	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	MLC
Density Range	1GB–2GB (SD) 4GB–32GB (SDHC)	128MB–2GB (SD) 4GB–16GB (SDHC)	512MB–2GB (SD)	4GB–32GB (SDHC) 64GB–128GB (SDXC)	4GB–32GB (SDHC) 64GB–128GB (SDXC
Data Retention	10 years - up to 10% of P/E cycles			5 years - up to 10% of P/E cycles	
	1 year - at end of life / 100% of cycles			1 year - at end of life / 100% of cycles	
Endurance (Raw Flash Level)	60,000 P/E cycles	100,000 P/E Cycles (≤ 512MB) 60,000 P/E cycles (1 - 16GB)	100,000 P/E Cycles	3,000 P/E Cycles	
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 24	up to 24	up to 95	
Sequential Write (MB/s)	up to 22	up to 21	up to 20	up to 90	
MTBF	≥ 2,000,000 hours (0 - 25°C)			≥ 3,000,000 hours (0 - 30°C)	
Shock*	10G for 11 msec, Sawtooth Waveform			1,500 G for 0.5msec	
Vibration*	7.7GRMS 20Hz – 1000Hz @ 0.04 G^2/Hz, 1000Hz – 2000Hz @ 0.01 G^2/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 <30 mA Write typically < 55 mA Idle typically < 500 uA		Read typically <190 mA Write typically < 140 mA Idle typically < 300 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				
Part Numbers	1GB SE0GTQH7G-C1000-D 2GB SE02TQH7G-C1000-D 4GB SE04TGP7G-U1000-D 8GB SE08TGP7G-U1000-D 16GB SE16TNK7G-U1000-D 32GB SE32TNJ7G-U1000-D	128MB SE12TFJHL-C1000-D 256MB SE25TFKHL-C1000-D 512MB SE51TFLHL-C1000-D 1GB SE0GTFHHL-C1000-D 2GB SE02TFNHL-C1000-D 4GB SE04TFPHL-C6000-D 8GB SE08TFPHL-C6000-D Contact Delkin for other options	512MB SE51MHVHL-C1000-5 1GB SE0GMHWHL-C1000-5 2GB SE02MHWHL-C1000-5	4GB SF04APY5Q-U1000-3 8GB SF08APG49-U1000-3 16GB SF16ANZ49-U1000-3 32GB SF32ANZ49-U3000-3 64GB SF64ANZ5S-U3000-3 128GB SF1HANZ5S-U3000-3 Contact Delkin for other options, including pSLC cards	4GB SE04APY5Q-1B000-3 8GB SE08APG49-1B000-3 16GB SE16ANZ49-1B000-3 32GB SE32ANZ49-3B000-3 64GB SE64ANZ5S-3B000-3 128GB SE1HANZ5S-3B000-3 Contact Delkin for other options, including pSLC cards

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