SMART® Modular Technologies

SD Card XL/XL+

SMART Modular Technologies' high performance, industrial grade SD Card XL and XL+ products supports OEM markets such as networking, telecommunications and data communications. SMART's SD products are also ideal for embedded computing, medical, automotive, and industrial applications.

SMART's SD Card XL/XL+ products are offered in both SLC and MLC NAND Flash versions. They contain controllers and flash memory devices. The onboard controller interfaces with a SD Card Host so data can be written to and read from the flash memory device. They are available in capacities from 512MB to 32GB for the SLC version and 8GB to 64GB for the MLC version.

Incorporating onboard error detection and correction algorithms and static and dynamic wear leveling techniques, SMART's SD Card XL products ensure years of reliable operation over a product's life.

Features & Benefits

- Capacities:
  - SLC: 512MB to 32GB
  - MLC: 8GB to 64GB
- Low power dissipation
- Onboard wear leveling
- RoHS compliant
- Optional industrial temperature range -40°C to +85°C

Product Family Overview

	Capacity	Performance Sequential
SD Card XL/XL+		
SLC	512MB to 2GB	R/W up to 24/17MB/s
	4GB to 32GB	R/W up to 98/70MB/s
MLC	8GB to 64GB	R/W up to 98/76MB/s

Applications

- Automotive telematics, navigation and infotainment
- Airline entertainment systems
- Digital commercial camcorders
- Telecom and communications
- Embedded computing
- Defense
- Gaming
- Industrial meters and industrial control
- Networking

Specifications

SD Card XL/XL+	
Performance	
Read (maximum)	SLC (512MB to 2GB): up to 24MB/s SLC (4GB to 32GB): up to 98MB/s MLC (4GB to 128GB): up to 98MB/s
Write (maximum)	SLC (512MB to 2GB): up to 17MB/s SLC (4GB to 32GB): up to 70MB/s MLC (4GB to 128GB): up to 76MB/s
Reliability	
MTBF	> 1,000,000 hours
Data Reliability	< 1 Non-Recoverable Error in 10^{14} bits read
Data Retention	10 years >90% life remaining 1 year at the end of life
Endurance	SLC: TBW up to 6TB per 1GB capacity MLC: TBW up to 0.2TB per 1GB capacity
Power	
VCC 3.3V	(2.7V – 3.6V)
Read	< 200mA at 3.6V
Write	< 200mA at 3.6V
Idle	150µA typical
Environmental	
Shock (operational)	50G max. @ 11ms
Vibration	15G peak to peak
Operating Temperature - Commercial Grade	0°C to +70°C
Operating Temperature - Industrial Grade	-40°C to +85°C
Storage Temperature - Commercial Grade	-25°C to 85°C
Storage Temperature - Industrial Grade	-40°C to 85°C
Humidity	5% to 95%
Altitude	up to 80,000 ft.
Physical	
Length	1.26in. (32.0mm)
Width	0.95in. (24.0mm)
Thickness	0.08in. (2.1mm)
Weight	0.07oz. (2.0g)

Ordering Information

Part Number	Capacity
SD XL MLC Commercial Grade (0°C to +70°C)	
SH9SD008GPHECMC21	8GB
SH9SD016GPHEDMC21	16GB
SH9SD032GPHEDMC21	32GB
SH9SD064GPHEDMC21	64GB
SD XL MLC Industrial Grade (-40°C to +85°C)	
SH9SD008GPHECMI21	8GB
SH9SD016GPHEDMI21	16GB
SH9SD032GPHEDMI21	32GB
SH9SD064GPHEDMI21	64GB
SD XL+ SLC Commercial Grade (0°C to +70°)	
SH9SD512MSBI8SC01	512MB
SH9SD001GSBI9SC01	1GB
SH9SD002GSBIASC01	2GB
SH9SD004GSMIBSC01	4GB
SH9SD008GSNICSC01	8GB
SH9SD016GSNICSC01	16GB
SH9SD032GSNIDSC01	32GB
SD XL+ SLC Industrial Grade (-40°C to +85°C)	
SH9SD512MSBI8SI01	512MB
SH9SD001GSBI9SI01	1GB
SH9SD002GSBIASI01	2GB
SH9SD004GSMIBSI01	4GB
SH9SD008GSNICSI01	8GB
SH9SD016GSNICSI01	16GB
SH9SD032GSNIDSI01	32GB

SMART® Modular Technologies

Mouser Electronics

Authorized Distributor

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SH9SD032GPHEMC11 SH9SD128GSNJFMC01 SH9SD016GPHEMC11 SH9SD064GSNJEMC01
SH9SD032GSNIDSI01 SH9SD032GSNIDSC01 SH9SD008GPHEMC11 SH9SD008GSNICSC01
SH9SD004GPHEMB11 SH9SD016GSNICSC01