



# BGAE240 | eMMC | 153-ball/100-ball

SMART's BGAE240 eMMC is an embedded memory solution that combines NAND Flash memory, an embedded MMC (MultiMediaCard) controller, and advanced firmware in a small BGA (Ball Grid Array) package that provides stable, yet cost effective high-density embedded storage.

SMART's BGAE240 eMMC solution is available in the standard JEDEC 0.5mm pitch, 153-ball package, as well as an eMMC interposer module which has a footprint and pin-out compatible with the JEDEC Standard 1.0mm pitch, 100-ball package. The 100-ball package offers a solution with large ball pitch and ball diameter which enables lower cost PCB designs, simplifies PCB routing with wider metal traces, resulting in better thermal dissipation.

**Wide Temp**

(-40°C to +105°C)



## Features & Benefits

- Compliant to JEDEC v5.0 Standard
- Capacities from 4GB to 32GB
- Pre-Configurable to pSLC Enhanced Storage Media Mode
- Wide Temp (-40°C to +105°C)
- VCC = 3.3V and VCCQ = 3.3V or 1.8V

## Applications

- Factory Automation
- Medical Devices
- Networking Appliances
- POS Terminals
- RFID Scanners
- Single-Board Computers
- VoIP

## Product Family Overview

Form Factor	Capacity	Sequential Performance
BGAE240 (MLC)	8GB to 32GB	Up to 540MB/s Read
BGAE240 (pSLC)	4GB to 16GB	Up to 460MB/s Write

## Specifications (BGAE240 MLC)

BGAE240 MLC   100-ball	
NAND Type	MLC
<b>Performance</b>	
Host Interface Rate (maximum)	eMMC v5.0 (HS400)
Capacities	8GB to 32GB
Sequential Read (maximum)	Up to 260 MB/s
Sequential Write (maximum)	Up to 130 MB/s
Random Read (maximum)	Up to 6000 IOPS
Random Write (maximum)	Up to 2200 IOPS
<b>Reliability</b>	
Endurance	32GB: 56 TBW
(Sequential Workload)	16GB: 24 TBW
	8GB: 10 TBW
Data Retention	10 years
Error Correction	BCH
<b>Power</b>	
Input Voltage	3.3V ± 10%
<b>Environmental</b>	
Operating Shock	1500 g half-sine, 0.5 msec, 1 shock along each axis, X, Y, Z in each direction
Operating Vibration	20G 80-2000Hz, 1.52mm 20-80Hz, 3 axis
Operating Temperature	Wide: -40°C to +105°C
Storage Temperature	-40°C to +105°C
<b>Physical</b>	
Length	14 mm
Width	18 mm
Height	2.45 mm

## Ordering Information (BGAE240 MLC)

Part Number	Density
<b>BGAE240 MLC   eMMC   100-ball</b>	
<b>Wide Operating Temperature (-40°C to +105°C)</b>	
SPQBG1CWW01	32GB
SPQAG1CWW01	16GB
SPQ8G1CWW01	8GB

(Page 2 of 3 - Continued on next page)

## Specifications (BGAE240 pSLC)

	BGAE240 pSLC   153-ball	BGAE240 pSLC   100-ball
<b>NAND Type</b>	pSLC	
<b>Performance</b>		
Host Interface Rate (maximum)	eMMC v5.0 (HS400)	
Capacities	4GB to 16GB	
Sequential Read (maximum)	Up to 260 MB/s	
Sequential Write (maximum)	Up to 160 MB/s	
Random Read (maximum)	Up to 5500 IOPS	
Random Write (maximum)	Up to 2200 IOPS	
<b>Reliability</b>		
Endurance (Sequential Workload)	16GB: 215 TBW 8GB: 91 TBW 4GB: 35 TBW	
Data Retention	10 years	
Error Correction	BCH	
<b>Power</b>		
Input Voltage	3.3V ± 10%	
<b>Environmental</b>		
Operating Shock	1500 g half-sine, 0.5 msec, 1 shock along each axis, X, Y, Z in each direction	
Operating Vibration	20G 80-2000Hz, 1.52mm 20-80Hz, 3 axis	
Operating Temperature	Wide: -40°C to +105°C	
Storage Temperature	-40°C to +105°C	
<b>Physical</b>		
Length	11.5 mm	14 mm
Width	13 mm	18 mm
Height	1 mm	2.45 mm

## Ordering Information (BGAE240 pSLC)

Part Number	Density
<b>BGAE240 pSLC   eMMC   153-ball</b> <b>Wide Operating Temperature (-40°C to +105°C)</b>	
SPMBGP1CWW11	16GB
SPMAGP1CWW11	8GB
SPM8GP1CWW11	4GB
<b>BGAE240 pSLC   eMMC   100-ball</b> <b>Wide Operating Temperature (-40°C to +105°C)</b>	
SPQBG1CWW11	16GB
SPQAGP1CWW11	8GB
SPQ8GP1CWW11	4GB



For more information, please visit: [www.smartm.com](http://www.smartm.com)

*\*Product images are for promotional purposes only. Labels may not be representative of the actual product.*

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