



Cypress Roadmap: Flash Memory

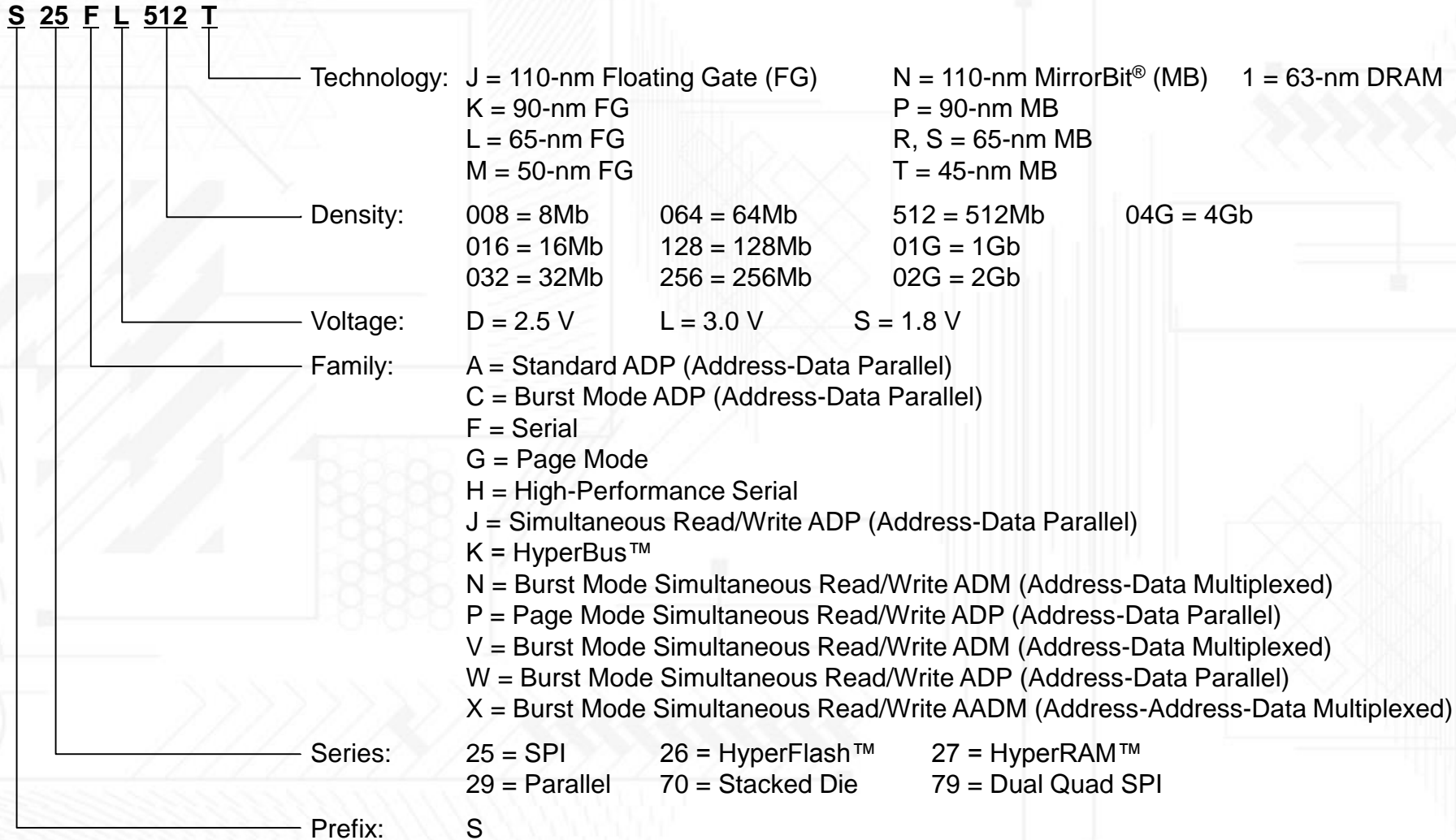
Q4 2017



NOR Flash Memory Family



NOR Flash Memory Family Decoder



NOR Flash Memory Product Portfolio – New Products

Category	Interface	Sector Size	Family	Voltage	Densities	Tech	2017	2018	2019	2020	2021
Serial	Quad SPI	Hybrid	S25FL-S	3.0 V	128Mb–1Gb	65nm MB					
			S25FS-S	1.8 V	64Mb–1Gb	65nm MB					
			S25FL-T	3.0 V	512Mb–4Gb	45nm MB					
			S25FS-T	1.8 V	512Mb–4Gb	45nm MB					
	Dual QSPI	Hybrid	S25FL-L	3.0 V	64Mb–256Mb	65nm FG					
			S79FL-S	3.0 V	256Mb–1Gb	65nm MB					
HyperFlash™	HyperBus™	Hybrid	S26KL-S	3.0 V	128Mb–1Gb	65nm MB					
			S26KS-S	1.8 V	128Mb–1Gb	65nm MB					
			S26KL-T	3.0 V	512Mb–4Gb	45nm MB					
			S26KS-T	1.8 V	512Mb–4Gb	45nm MB					
HyperRAM™	HyperBus	N/A	S27KL-1	3.0 V	64Mb–256Mb	63nm DR					
		N/A	S27KS-1	1.8 V	64Mb–256Mb	63nm DR					
Parallel	Parallel	Hybrid	S29GL-T	3.0 V	512Mb–2Gb	45nm MB					

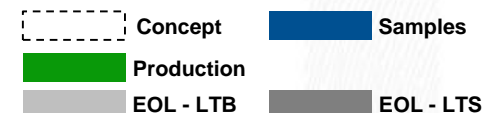
 Concept
 Samples
 Production
 EOL

HyperRAM™ and HyperFlash™ NOR Flash Memory Roadmap

Product Family	Density	(Prod) [EOL]	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S26KS-T 45-nm MB ¹ 1.8 V	4Gb ² 2Gb ² 1Gb 512Mb	(TBD) (TBD) (Q2'19) (Q1'19)																				
S26KS-S 65-nm MB ¹ 1.8 V	1Gb ² 512Mb 256Mb 128Mb	(TBD)																				
S26KL-T 45-nm MB ¹ 3.0 V	4Gb ² 2Gb ² 1Gb 512Mb	(TBD) (TBD) (Q2'19) (Q1'19)																				
S26KL-S 65-nm MB ¹ 3.0 V	1Gb ² 512Mb 256Mb 128Mb	(TBD)																				
S27KS-1 63-nm DRAM 1.8 V	256Mb ² 128Mb ² 64Mb	(TBD) (Q4'17)																				
S27KL-1 63-nm DRAM 3.0 V	256Mb ² 128Mb ² 64Mb	(TBD) (Q4'17)																				

¹ Hybrid Sector ² S70 Series

Products supported by
Longevity Program unless noted



HyperRAM™ and HyperFlash™ NOR Flash Memory Portfolio

	HyperRAM S27KL-1 63-nm DRAM, 3.0 V	HyperRAM S27KS-1 63-nm DRAM, 1.8 V	HyperFlash S26KL-S 65-nm MB, 3.0 V	HyperFlash S26KL-T 45-nm MB, 3.0 V	HyperFlash S26KS-S 65-nm MB, 1.8 V	HyperFlash S26KS-T 45-nm MB, 1.8 V
≥256Mb	Density Initial Access/DDR Clock * Temperature Range All parts supported by Longevity Program unless noted			4Gb¹ 80 ns/200 MHz * I, A, V, B, M 2Gb¹ 80 ns/200 MHz * I, A, V, B, M 1Gb Q418 80 ns/200 MHz * I, A, V, B, M 512Mb Q218 80 ns/200 MHz * I, A, V, B, M	4Gb¹ 80 ns/200 MHz * I, A, V, B, M 2Gb¹ 80 ns/200 MHz * I, A, V, B, M 1Gb Q418 80 ns/200 MHz * I, A, V, B, M 512Mb Q218 80 ns/200 MHz * I, A, V, B, M	4Gb¹ 80 ns/200 MHz * I, A, V, B, M 2Gb¹ 80 ns/200 MHz * I, A, V, B, M 1Gb Q418 80 ns/200 MHz * I, A, V, B, M 512Mb Q218 80 ns/200 MHz * I, A, V, B, M
			1Gb^{1,2} 96 ns/100 MHz * I, A, V, B, N, M 512Mb 96 ns/100 MHz * I, A, V, B, N ² , M ² 256Mb 96 ns/100 MHz * I, A, V, B, N ² , M ²		1Gb^{1,2} 96 ns/166 MHz * I, A, V, B, N, M 512Mb 96 ns/166 MHz * I, A, V, B, N ² , M ² 256Mb 96 ns/166 MHz * I, A, V, B, N ² , M ²	1Gb^{1,2} 96 ns/166 MHz * I, A, V, B, N, M 512Mb 96 ns/166 MHz * I, A, V, B, N ² , M ² 256Mb 96 ns/166 MHz * I, A, V, B, N ² , M ²
64–128Mb	256Mb¹ Contact Sales 128Mb¹ Q417 36 ns/100 MHz * I, A, V, B 64Mb 36 ns/100 MHz * I, A, V, B	256Mb¹ Contact Sales 128Mb¹ Q417 36 ns/166 MHz * I, A, V, B 64Mb 36 ns/166 MHz * I, A, V, B	128Mb 96 ns/100 MHz * I, A, V, B, N ² , M ²		128Mb 96 ns/166 MHz * I, A, V, B, N ² , M ²	

¹ S70 series (stacked die)
² Contact Sales

* I = Industrial: -40°C to +85°C
 A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
 V = Industrial-plus: -40°C to +105°C
 B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C
 N = Extended: -40°C to +125°C
 M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

Status Availability EOL (Last-Time-Ship)

Concept	Development	Sampling	Production
			
		QQYY	QQYY
			QQYY



Serial NOR Flash Memory Roadmap

Product Family	Density	(Prod) [EOL]	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S25FS-T 45-nm MB ¹ 1.8 V	4Gb ³ 2Gb ³ 1Gb 512Mb	(TBD) (TBD) (Q2'19) (Q1'19)																				
S25FS-S 65-nm MB ¹ 1.8 V	1Gb ³ 512Mb 256Mb 128Mb 64Mb																					
S25FL-T 45-nm MB ¹ 3.0 V	4Gb ³ 2Gb ³ 1Gb 512Mb	(TBD) (TBD) (Q2'19) (Q1'19)																				
S79FL-S 65-nm MB ¹ 3.0 V	1Gb ⁴ 512Mb ⁴ 256Mb ⁴																					
S25FL-S 65-nm MB ¹ 3.0 V	1Gb ³ 512Mb 256Mb 128Mb ⁵																					
S25FL-P 90-nm MB ¹ 3.0 V	256Mb ³ 128Mb ⁶ 64Mb 32Mb	[Q4'17] [Q3'18] [Q1'18] [Q1'18]																				
S25FL-L 65-nm FG ² 3.0 V	256Mb 128Mb 64Mb																					
S25FL1-K 90-nm FG ² 3.0 V	64Mb 32Mb 16Mb	[Q1'18] [Q1'18] [Q1'18]																				

¹ Hybrid Sector ³ S70 Series ⁵ S25FL127S & S25FL128S
² Uniform Sector ⁴ S79 Dual Quad SPI ⁶ S25FL128P & S25FL129P

Products supported by
Longevity Program unless noted



SPI NOR Flash Memory Portfolio

	S25FL1-K 90-nm FG, 3.0 V Uniform Sector ¹	S25FL-L 65-nm FG, 3.0 V Uniform Sector	S25FL-P 90-nm MB, 3.0 V Hybrid Sector ¹	S25FL-S 65-nm MB, 3.0 V Hybrid Sector	S79FL-S ² 65-nm MB, 3.0 V Hybrid Sector	S25FL-T 45-nm MB, 3.0 V Hybrid Sector	S25FS-S 65-nm MB, 1.8 V Hybrid Sector	S25FS-T 45-nm MB, 1.8 V Hybrid Sector
≥256Mb	Density SDR Clock/DDR Clock * Temperature Range All parts supported by Longevity Program unless noted					4Gb⁴ 166 MHz/100 MHz * I, A, V, B, M 2Gb⁴ 166 MHz/100 MHz * I, A, V, B, M 1Gb ^{Q418} 166 MHz/100 MHz * I, A, V, B, M 512Mb ^{Q218} 166 MHz/100 MHz * I, A, V, B, M		4Gb⁴ 166 MHz/100 MHz * I, A, V, B, M 2Gb⁴ 166 MHz/100 MHz * I, A, V, B, M 1Gb ^{Q418} 166 MHz/100 MHz * I, A, V, B, M 512Mb ^{Q218} 166 MHz/100 MHz * I, A, V, B, M
		256Mb 133 MHz/66 MHz * I, A, V, B, M	256Mb⁴ ^{Q417} 104 MHz/-- * I, A	1Gb⁴ 133 MHz/80 MHz * I, A, V, B, N, M 512Mb 133 MHz/80 MHz * I, A, V, B, N, M 256Mb 133 MHz/80 MHz * I, A, V, B, N, M	1Gb 133 MHz/80 MHz * I, A, V, B 512Mb 133 MHz/80 MHz * I, A, V, B 256Mb 133 MHz/80 MHz * I, A, V, B		1Gb⁴ 133 MHz/80 MHz * I, A, V, B, N, M 512Mb 133 MHz/80 MHz * I, A, V, B, N, M 256Mb 133 MHz/80 MHz * I, A, V, B, M	
		128Mb 133 MHz/66 MHz * I, A, V, B, M	128Mb⁵ ^{Q318} 104 MHz/-- * I, A, V, B 128Mb⁶ ^{Q318} 104 MHz/-- * I, A, V, B	128Mb⁷ 133 MHz/80 MHz * I, A, V, B, N, M 128Mb⁸ 108 MHz/-- * I, A, V, B			128Mb 133 MHz/80 MHz * I, A, V, B, M	
64–128Mb	64Mb ^{Q118} 108 MHz/-- * I, A, V, B, N ³ , M ³	64Mb 108 MHz/54 MHz * I, A, V, B, M	64Mb ^{Q118} 104 MHz/-- * I, A, V, B				64Mb 133 MHz/80 MHz * I, A, V, B, N, M	
≤32Mb	32Mb ^{Q118} 108 MHz/-- * I, A, V, B, N ³ , M ³		32Mb ^{Q118} 104 MHz/-- * I, A, V, B					
	16Mb ^{Q118} 108 MHz/-- * I, A, V, B, N ³ , M ³							

¹ Logical sector size

² S79 series, Dual Quad SPI (stacked die)

³ Contact Sales

⁴ S70 series (stacked die)

⁵ S25FL129P Quad SPI

⁶ S25FL128P Dual SPI

⁷ S25FL128S 133-MHz SDR 80-MHz DDR

⁸ S25FL127S 108-MHz SDR

* I = Industrial: -40°C to +85°C

A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C

V = Industrial-plus: -40°C to +105°C

B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C

N = Extended: -40°C to +125°C

M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

EOL (Last-Time-Ship)

Concept	Development	Sampling	Production
		QQYY	QQYY
			QQYY

Status
Availability
EOL (Last-Time-Ship)

Parallel NOR Flash Memory Roadmap

Product Family	Density	(Prod) [EOL]	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S29GL-T 45-nm MB ¹ 3.0 V	2Gb ³ 1Gb 512Mb		Production																			
S29GL-S 65-nm MB ¹ 3.0 V	2Gb ³ 1Gb 512Mb 256Mb 128Mb 64Mb		Production																			
S29GL-P 90-nm MB ¹ 3.0 V	2Gb ³ 1Gb 512Mb	[Q3'17]	EOL - LTB		Production																	
S29GL-P 90-nm MB ¹ 3.0 V	256Mb 128Mb		Production																			
S29GL-N 110-nm MB ¹ 3.0 V	64Mb 32Mb		Production																			
S29PL-J 110-nm FG ^{1,2} 3.0 V	128Mb 64Mb 32Mb		Production																			
S29JL-J 110-nm FG ² 3.0 V	64Mb 32Mb		Production																			
S29AL-J 110-nm FG 3.0 V	16Mb 8Mb		Production																			
S29AS-J 110-nm FG 1.8 V	16Mb 8Mb		Production																			

¹ Supports Page Mode

² Supports simultaneous read/write operation

³ S70 series (stacked die)

Products supported by
Longevity Program unless noted



Parallel NOR Flash Memory Portfolio

	S29AS-J 110-nm FG, 1.8 V	S29AL-J 110-nm FG, 3.0 V	S29JL-J ¹ 110-nm FG, 3.0 V	S29PL-J ^{1, 2} 110-nm FG, 3.0 V	S29GL-N ² 110-nm MB, 3.0 V	S29GL-P ² 90-nm MB, 3.0 V	S29GL-S ² 65-nm MB, 3.0 V	S29GL-T ² 45-nm MB, 3.0 V
≥256Mb	Density Initial/Page Access * Temperature Range All parts supported by Longevity Program unless noted					2Gb³ Q317 110 ns/25 ns * I	2Gb³ 110 ns/20 ns * I, A, V, B	2Gb³ 110 ns/20 ns * I, A, V, B, N
						1Gb Q317 110 ns/25 ns * I	1Gb 100 ns/15 ns * I, A, V, B	1Gb 100 ns/15 ns * I, A, V, B, N
						512Mb Q317 100 ns/25 ns * I	512Mb 100 ns/15 ns * I, A, V, B	512Mb 100 ns/15 ns * I, A, V, B, N
						256Mb 90 ns/25 ns * I	256Mb 90 ns/15 ns * I, A, V, B	
64–128Mb				128Mb 60 ns/20 ns * I, A		128Mb 90 ns/25 ns * I	128Mb 90 ns/15 ns * I, A, V, B	
			64Mb 55 ns/-- * I, A	64Mb 55 ns/20 ns * I, A	64Mb 90 ns/25 ns * I, A		64Mb 70 ns/15 ns * I, A, B	
≤32Mb			32Mb 60 ns/-- * I, A	32Mb 55 ns/20 ns * I, A	32Mb 90 ns/25 ns * I, A			
	16Mb 70 ns/-- * I, A	16Mb 55 ns/-- * I, A, N, M						
	8Mb 70 ns/-- * I, A	8Mb 55 ns/-- * I, A, N, M						

¹ Supports simultaneous read/write operation
² Supports Page Mode
³ S70 series (stacked die)

* I = Industrial: -40°C to +85°C
 A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C
 V = Industrial-plus: -40°C to +105°C
 B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C
 N = Extended: -40°C to +125°C
 M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

Status Availability EOL (Last-Time-Ship)

Concept
 Development
 Sampling
 Production

Sampling QYY
 Production QYY
QYY



Burst NOR Flash Memory Roadmap

Product Family	Density	(Prod) [EOL]	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S29WS-P 90-nm MB 1.8 V	512Mb 256Mb 128Mb		[Production]																			
S29NS-P 90-nm MB 1.8 V	512Mb		[Production]																			
S29VS-R 65-nm MB 1.8 V	256Mb 128Mb 64Mb		[Production]																			
S29XS-R 65-nm MB 1.8 V	256Mb 128Mb 64Mb		[Production]																			
S29CD-J 110-nm MB 2.5 V	32Mb 16Mb		[Production]																			
S29CL-J 110-nm MB 3.0 V	32Mb 16Mb		[Production]																			

Products supported by
Longevity Program unless noted



Burst NOR Flash Memory Portfolio

	S29CL-J ¹ 110-nm FG, 3.0 V	S29CD-J ¹ 110-nm FG, 2.5 V	S29XS-R ² 65-nm MB, 1.8 V	S29VS-R ³ 65-nm MB, 1.8 V	S29NS-P ² 90-nm MB, 1.8 V	S29WS-P ¹ 90-nm MB, 1.8 V
≥256Mb	Density Initial Access/SDR Clock * Temp Range	All parts supported by Longevity Program unless noted			512Mb 80 ns/83 MHz * W	512Mb 80 ns/104 MHz * W
			256Mb 80 ns/108 MHz * W, I	256Mb 80 ns/108 MHz * W, I	256Mb 80 ns/104 MHz * W	
64–128Mb			128Mb 80 ns/108 MHz * W, I	128Mb 80 ns/108 MHz * W, I		128Mb 80 ns/104 MHz * W
			64Mb 80 ns/108 MHz * W, I	64Mb 80 ns/108 MHz * W, I		
≤32Mb	32Mb 54 ns/75 MHz * I, A, N, M, H, T	32Mb 54 ns/75 MHz * I, A, N, M, H, T				
	16Mb 54 ns/66 MHz * I, A, N, M, H, T	16Mb 54 ns/66 MHz * I, A, N, M, H, T				

¹ ADP (Address Data Parallel) Burst

² AADM (Address high, Address low, Data Multiplex) Burst

³ ADM (Address Data Multiplex) Burst

* W = Wireless: -25°C to +85°C

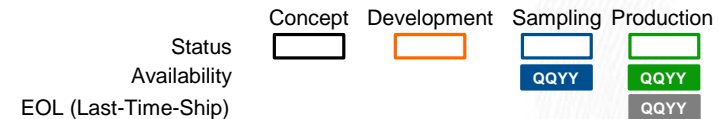
I = Industrial: -40°C to +85°C

A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C

N = Extended: -40°C to +125°C

M = Automotive, AEC-Q100 Grade 1: -40°C to +125°C

T = Automotive, AEC-Q100 Grade 0: -40°C to +150°C



KGD NOR Flash Memory Portfolio¹

	HyperFlash 3.0 V	HyperFlash 1.8 V	Quad SPI 3.0 V	Quad SPI 1.8 V	Parallel 3.0 V
	Density Initial Access/DDR Clock * Temperature Range All parts supported by Longevity Program unless noted		Density SDR Clock/DDR Clock * Temperature Range		Density Initial/Page Access * Temperature Range
≥256Mb	KL-S 512Mb 96 ns/100 MHz * I, V, N KL-S 256Mb 96 ns/100 MHz * I, V, N	KS-S 512Mb 96 ns/166 MHz * I, V, N KS-S 256Mb 96 n /166 MHz * I, V, N	FL-S 512Mb 133 MHz/80 MHz * I, V FL-L 256Mb 133 MHz/66 MHz * I, V, N	FS-S 256Mb 133 MHz/80 MHz * I, V	GL-S 1Gb 100 ns/15 ns * I, V GL-S 512Mb 100 ns/15 ns * I, V GL-S 256Mb 90 ns/15 ns * I, V
64–128Mb	KL-S 128Mb 96 ns/100 MHz * I, V, N	KS-S 128Mb Q417 96 ns/66 MHz * I, V, N	FL-L 128Mb 133 MHz/66 MHz * I, V, N FL-L 64Mb 108 MHz/54 MHz * I, V, N	FS-S 128Mb 133 MHz/80 MHz * I, V FS-S 64Mb 133 MHz/80 MHz * I, V, N	GL-S 128Mb 90 ns / 15 ns * I, V
<64Mb					AL-J 16Mb 55 ns/-- * I, V, N AL-J 8Mb 55 ns/-- * I, V, N

¹ Contact Sales for KGD datasheets

* I = Industrial: -40°C to +85°C
 V = Industrial-plus: -40°C to +105°C
 N = Extended: -40°C to +125°C

Status Availability EOL (Last-Time-Ship)

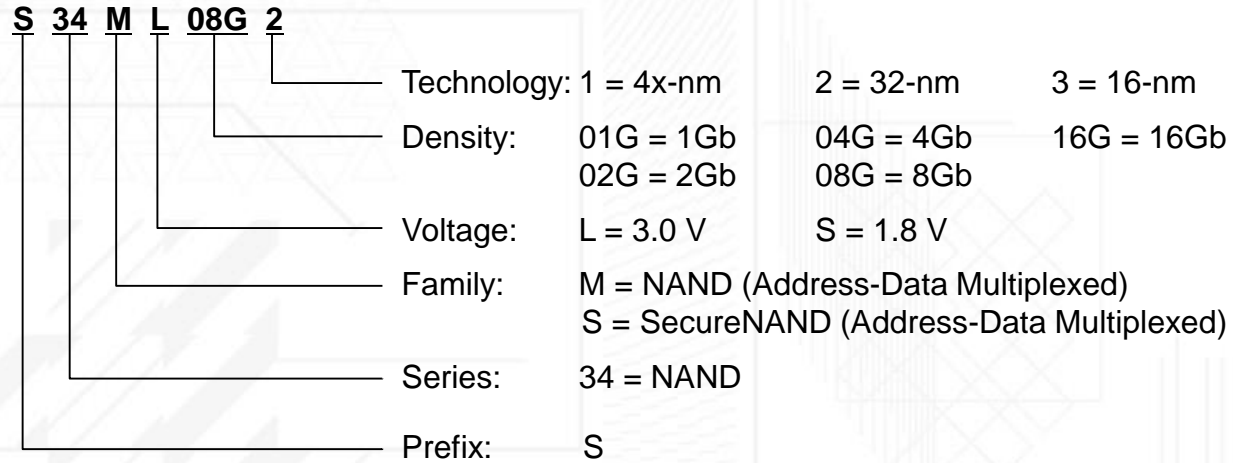
Concept
 Development
 Sampling QQYY
 Production QQYY
QQYY



NAND Flash Memory Family



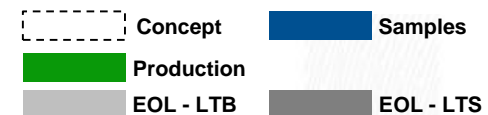
NAND Flash Memory Family Decoder



NAND Flash Memory Roadmap

Product Family	Density	(Prod) [EOL]	2017				2018				2019				2020				2021				
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
S34MS-3 16-nm SLC, ONFI 1.0 1.8 V	16Gb 8Gb 4Gb 2Gb 1Gb	(TBD) (TBD) (Q4'18) (TBD) (TBD)																					
S34MS-2 32-nm SLC, ONFI 1.0 1.8 V	16Gb 8Gb 4Gb 2Gb 1Gb																						
S34MS-1 4x-nm SLC, ONFI 1.0 1.8 V	4Gb 2Gb 1Gb	[Q2'19] [Q2'19] [Q2'19]																					
S34SL-2 32-nm SLC, ONFI 1.0 3.0 V	4Gb 2Gb 1Gb																						
S34ML-3 16-nm SLC, ONFI 1.0 3.0 V	16Gb 8Gb 4Gb 2Gb 1Gb	(TBD) (TBD) (Q2'18) (TBD) (TBD)																					
S34ML-2 32-nm SLC, ONFI 1.0 13.0 V	16Gb 8Gb 4Gb 2Gb 1Gb																						
S34ML-1 4x-nm SLC, ONFI 1.0 3.0 V	8Gb 4Gb 2Gb 1Gb	[Q2'19] [Q2'19] [Q2'19] [Q2'19]																					

Products supported by
Longevity Program unless noted



SLC NAND Flash Memory Portfolio

	S34ML-1 ¹ 4x-nm, 3.0 V SLC, ONFI 1.0 ²	S34ML-2 ³ 32-nm, 3.0 V SLC, ONFI 1.0	S34ML-3 ¹ 16-nm, 3.0 V SLC, ONFI 1.0	S34SL-2 ^{3, 4} 32-nm, 3.0 V SLC, ONFI 1.0	S34MS-1 ¹ 4x-nm, 1.8 V SLC, ONFI 1.0	S34MS-2 ³ 32-nm, 1.8 V SLC, ONFI 1.0	S34MS-3 ¹ 16-nm, 1.8 V SLC, ONFI 1.0
8-16Gb	Density; Bus Width Interface Bandwidth * Temperature Range						
	All parts supported by Longevity Program unless noted						
		16Gb; x8 40 MBps * I, A ⁵ , V ⁵ , B ⁵	16Gb; x8 40 MBps * I, A, V, B			16Gb; x8 40 MBps * I, A ⁵ , V ⁵ , B ⁵	16Gb; x8 40 MBps * I, A, V, B
	8Gb; x8 Q219 40 MBps * I, A, V ⁵ , B	8Gb; x8 40 MBps * I, A, V, B	8Gb; x8 40 MBps * I, A, V, B		8Gb; x8 40 MBps * I, A, V, B	8Gb; x8 40 MBps * I, A, V, B	
1-4Gb	4Gb; x8/16 Q219 40 MBps * I, A, V, B	4Gb; x8/16 40 MBps * I, A, V, B	4Gb; x8 Q118 40 MBps * I, A, V, B	4Gb; x8 40 MBps * I, V	4Gb; x8 Q219 40 MBps * I, A ⁵ , V, B	4Gb; x8/16 40 MBps * I, A, V, B	4Gb; x8 Q318 40 MBps * I, A, V, B
	2Gb; x8/16 Q219 40 MBps * I, A, V, B	2Gb; x8/16 40 MBps * I, A ⁵ , V ⁵ , B ⁵	2Gb; x8 40 MBps * I, A, V, B	2Gb; x8 40 MBps * I, V ⁵	2Gb; x8/16 Q219 40 MBps * I, A ⁵ , V, B	2Gb; x8/16 40 MBps * I, A ⁵ , V ⁵ , B ⁵	2Gb; x8 40 MBps * I, A, V, B
	1Gb; x8 Q219 40 MBps * I, A, V, B	1Gb; x8/16 40 MBps * I, A, V, B	1Gb; x8 40 MBps * I, A, V, B	1Gb; x8 40 MBps * I, V	1Gb; x8/16 Q219 40 MBps * I, A ⁵ , V, B	1Gb; x8/16 40 MBps * I, A, V, B	1Gb; x8 40 MBps * I, A, V, B

¹ 1-bit error-correcting code (ECC)

² Open NAND Flash Interface

³ 4-bit error-correcting code (ECC)

⁴ SecureNAND™: Cypress' SLC NAND Flash Memory with full-capacity volatile and nonvolatile block protection

⁵ Contact Sales

* I = Industrial: -40°C to +85°C

A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C

V = Industrial-plus: -40°C to +105°C

B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C

Flash and RAM Memory MCP



Flash and RAM Memory MCP Decoder

S 71 N S 512 R D

RAM Density:	A = 16Mb	B = 32Mb	C = 64Mb	D = 128Mb	E = 256Mb
Flash Technology:	N = 110-nm MirrorBit (MB)		P = 90-nm MB	R, S = 65-nm MB	
Flash Density:	032 = 32Mb	128 = 128Mb	512 = 512Mb		
	064 = 64Mb	256 = 256Mb	01G = 1Gb		
Voltage:	L = 3.0 V	S = 1.8 V			
Family:	G = Page Mode K = HyperFlash N = Burst Mode Simultaneous Read/Write ADM (Address-Data Multiplexed) V = Burst Mode Simultaneous Read/Write ADM (Address-Data Multiplexed) W = Burst Mode Simultaneous Read/Write ADP (Address-Data Parallel) X = Burst Mode Simultaneous Read/Write AADM (Address-Address-Data Multiplexed)				
Series:	71, 98 = NOR Flash + pSRAM 72 = NOR Flash + DRAM				
Prefix:	S				

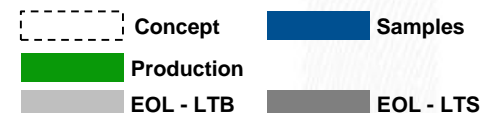
S 76 M S A 9 2

Memory Type:	2 = NAND SLC, x16 NAND, x16 LPDDR1, 200 MHz DDR, 1.8 V				
RAM Density:	9 = 512Mb				
Flash Density:	A = 1Gb				
Voltage:	L = 3.0 V	S = 1.8 V			
Family:	M = NAND				
Series:	76 = NAND Flash + DRAM				
Prefix:	S				

Flash and RAM Memory MCP Roadmap

Product Family Flash / RAM	Flash / RAM Density	(Prod) [EOL]	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S71KS-S HyperFlash/ HyperRAM 1.8 V	512Mb/64Mb 256Mb/64Mb 128Mb/64Mb	(TBD) (TBD)	Concept	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S71KL-S HyperFlash/ HyperRAM 3.0 V	512Mb/64Mb 256Mb/64Mb 128Mb/64Mb	(TBD)	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S76MS NAND/DRAM 1.8 V	1Gb/512Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S98GL-N 110-nm MB/pSRAM 3.0 V	64Mb/32Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S72XS-R 65-nm MB/DRAM 1.8 V	256Mb/256Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S72VS-R 65-nm MB/DRAM 1.8 V	256Mb/256Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S71VS-R 65-nm MB/pSRAM 1.8 V	256Mb/128Mb 256Mb/64Mb 128Mb/64Mb 128Mb/32Mb 64Mb/32Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S71NS-P 90-nm MB/pSRAM 1.8 V	512Mb/128Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production
S71WS-P 90-nm MB/pSRAM 1.8 V	256Mb/64Mb		Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

Products supported by
Longevity Program unless noted



Flash and RAM Memory MCP Portfolio

	S71WS-P ¹ 90-nm MB, 1.8 V	S71NS-P ² 90-nm MB, 1.8 V	S71VS-R ² 65-nm MB, 1.8 V	S72VS-R ³ 65-nm MB, 1.8 V	S72XS-R ³ 65-nm MB, 1.8 V	S98GL-N ⁴ 110-nm MB, 3.0 V	S76MS ⁵ 32-nm MB, 1.8 V	S71KL-S ⁶ 65-nm MB, 3.0 V	S71KS-S ⁶ 65-nm MB, 1.8 V
	Flash Density RAM Density * Temperature Range	All parts supported by Longevity Program unless noted							
≥256Mb		512Mb 128Mb * W			256Mb 256Mb ⁷ * I		1Gb 512Mb * I	512Mb 64Mb ⁹ * I, A, V, B	512Mb 64Mb ⁹ * I, A, V, B
	256Mb 64Mb * W		256Mb 128Mb * W	256Mb 256Mb * W	256Mb 256Mb ⁸ * W, I			256Mb 64Mb ⁹ * I, A, V, B	256Mb 64Mb ⁹ * I, A, V, B
64–128Mb			128Mb 64Mb * W					128Mb 64Mb ⁹ * I, A, V, B	128Mb 64Mb ⁹ * I, A, V, B
			128Mb 32Mb * W						
			64Mb 32Mb * W			64Mb 32Mb * I			

¹ ADP (Address Data Parallel) Burst

² ADM (Address Data Multiplex) Burst

³ AADM (Address High, Address Low, Data Multiplex) Burst

⁴ Parallel, Page Mode

⁵ NAND

⁶ HyperFlash

⁷ DRAM Version 2

⁸ DRAM Version 1

⁹ HyperRAM

* W = Wireless: -25°C to +85°C

I = Industrial: -40°C to +85°C

A = Automotive, AEC-Q100 Grade 3: -40°C to +85°C

V = Industrial-plus: -40°C to +105°C

B = Automotive, AEC-Q100 Grade 2: -40°C to +105°C



HyperRAM™ and HyperFlash™ NOR Flash Memory Packages

Family	Density	Device	BGA24 8 x 8 mm/5 x 5 Ball	BGA24 8 x 6 mm/5 x 5 Ball	KGD
KS-T	512Mb	S26KS512T	CF	CF	CF
	1Gb	S26KS01GT	CF		CF
	2Gb	S70KS02GT	CF		
	4Gb	S70KS04GT	CF		
KS-S	128Mb	S26KS128S		✓	CF
	256Mb	S26KS256S		✓	CF
	512Mb	S26KS512S		✓	CF
	1Gb	S70KS01GS		✓	
KL-T	512Mb	S26KL512T	CF	CF	CF
	1Gb	S26KL01GT	CF		CF
	2Gb	S70KL02GT	CF		
	4Gb	S70KL04GT	CF		
KL-S	128Mb	S26KL128S		✓	CF
	256Mb	S26KL256S		✓	CF
	512Mb	S26KL512S		✓	CF
	1Gb	S70KL01GS		✓	
KS-1	64Mb	S26KS0641		✓	CF
	128Mb	S70KS1281		✓	
	256Mb	S70KS2561		✓	
KL-1	64Mb	S26KL0641		✓	CF
	128Mb	S70KL1281		✓	
	256Mb	S70KL2561		✓	

CF = Contact Factory

SPI NOR Flash Memory Packages

Family	Density	Device	SOIC-8 150 mil	SOIC-8 208 mil	SOIC-16 300 mil	WSON 4 x 4 mm	WSON 6 x 5 mm	WSON 8 x 6 mm	BGA24 8 x 8 mm 5 x 5 Ball	BGA24 8 x 6 mm 5 x 5 Ball	BGA24 8 x 6 mm 4 x 6 Ball	KGD
FS-T	512Mb	S25FS512T			CF				CF	CF		CF
	1Gb	S25FS01GT			CF				CF			CF
	2Gb	S70FS02GT							CF			
	4Gb	S70FS04GT							CF			
FS-S	64Mb	S25FS064S		✓			✓			✓		✓
	128Mb	S25FS128S		✓	CF		✓	✓		✓	✓	CF
	256Mb	S25FS256S			✓			✓		✓	✓	✓
	512Mb	S25FS512S			✓			✓		✓	✓	CF
	1Gb	S70FS01GS			✓					✓		
FL-T	512Mb	S25FL512T			CF				CF	CF		CF
	1Gb	S25FL01GT			CF				CF			CF
	2Gb	S70FL02GT							CF			
	4Gb	S70FL04GT							CF			
FL-S Dual Quad	256Mb	S79FL256S			✓							
	512Mb	S79FL512S			✓							
	1Gb	S79FL01GS								✓		
FL-S	128Mb	S25FL127S		✓	✓		✓			✓	✓	
	128Mb	S25FL128S			✓			✓		✓	✓	
	256Mb	S25FL256S			✓			✓		✓	✓	
	512Mb	S25FL512S			✓					✓	✓	✓
	1Gb	S70FL01GS			✓					✓		
FL-P	32Mb	S25FL032P		✓	✓		✓	✓		✓	✓	✓
	64Mb	S25FL064P			✓			✓		✓	✓	✓
	128Mb	S25FL128P			✓			✓				
	128Mb	S25FL129P			✓			✓		✓	✓	
	256Mb	S70FL256P			✓			✓		✓		
FL-L	64Mb	S25FL064L		✓	UD	✓	UD			✓	✓	CF
	128Mb	S25FL128L		✓	UD		✓			✓	✓	CF
	256Mb	S25FL256L			✓			✓		✓	✓	CF
FL1-K	16Mb	S25FL116K	✓	✓			✓			✓	✓	✓
	32Mb	S25FL132K	✓	✓		✓	✓			✓	✓	✓
	64Mb	S25FL164K		✓	✓		✓			✓	✓	✓

CF = Contact Factory UD = Under Development

Parallel NOR Flash Memory Packages

Family	Density	Device	48-Ball FBGA (0.8-mm pitch)	48-Ball FBGA (0.5-mm pitch)	56-Ball BGA (0.8-mm pitch)	64-Ball BGA (0.8-mm pitch)	64-Ball Fortified BGA (1.0-mm pitch)	48-Pin TSOP	56-Pin TSOP	KGD
GL-T	512Mb	S29GL512T			✓		✓		✓	
	1Gb	S29GL01GT			✓		✓		✓	
	2Gb	S70GL02GT					✓			
GL-S	64Mb	S29GL064S	✓				✓	✓	✓	
	128Mb	S29GL128S			✓		✓		✓	✓
	256Mb	S29GL256S			✓		✓		✓	✓
	512Mb	S29GL512S			✓		✓		✓	✓
	1Gb	S29GL01GS					✓		✓	✓
	2Gb	S70GL02GS					✓			
GL-P	128Mb	S29GL128P					✓		✓	✓
	256Mb	S29GL256P					✓		✓	✓
	512Mb	S29GL512P					✓		✓	
	1Gb	S29GL01GP					✓		✓	
	2Gb	S70GL02GP					✓			
GL-N	32Mb	S29GL032N	✓				✓	✓	✓	✓
	64Mb	S29GL064N	✓				✓	✓	✓	✓
PL-J	32Mb	S29PL032J	✓		✓					
	64Mb	S29PL064J	✓		✓					
	128Mb	S29PL127J				✓			✓	✓
JL-J	32Mb	S29JL032J	✓					✓		✓
	64Mb	S29JL064J	✓					✓		✓
AL-J	8Mb	S29AL008J	✓					✓		✓
	16Mb	S29AL016J	✓				✓	✓		✓
AS-J	8Mb	S29AS008J	✓					✓		✓
	16Mb	S29AS016J	✓	✓				✓		✓

Burst NOR Flash Memory Packages

Family	Density	Device	44-Ball FBGA (0.5-mm pitch)	64-Ball BGA (0.5-mm pitch)	84-Ball Fortified BGA (0.8-mm pitch)	80-Ball FBGA (1.0-mm pitch)	80-Pin PQFP	KGD
WS-P	128Mb	S29WS128P			✓			
	256Mb	S29WS256P			✓			
	512Mb	S29WS512P			✓			
NS-P	512Mb	S29NS512P		✓				
VS-R	64Mb	S29VS064R	✓					
	128Mb	S29VS128R	✓					
	256Mb	S29VS256R	✓					
XS-R	64Mb	S29XS064R	✓					
	128Mb	S29XS128R	✓					
	256Mb	S29XS256R	✓					
CD-J	16Mb	S29CD016J				✓	✓	✓
	32Mb	S29CD032J				✓	✓	
CL-J	16Mb	S29CL016J				✓	✓	
	32Mb	S29CL032J				✓	✓	

SLC NAND Flash Memory Packages

Family	Density	Device	63-Ball BGA (0.8-mm pitch)	67-Ball BGA (0.8-mm pitch)	48-Pin TSOP
MS-3	1Gb	S34MS01G3	✓		
	2Gb	S34MS02G3	✓		
	4Gb	S34MS04G3	✓		
	8Gb	S34MS08G3	✓		
	16Gb	S34MS16G3	✓		
MS-2	1Gb	S34MS01G2	✓	✓	✓
	2Gb	S34MS02G2	✓	✓	✓
	4Gb	S34MS04G2	✓		✓
	8Gb	S34MS08G2	✓		
	16Gb	S34MS16G2	✓		
MS-1	1Gb	S34MS01G1	✓		
	2Gb	S34MS02G1	✓		✓
	4Gb	S34MS04G1	✓		✓
ML-3	1Gb	S34ML01G3	✓		✓
	2Gb	S34ML02G3	✓		✓
	4Gb	S34ML04G3	✓		✓
	8Gb	S34ML08G3	✓		✓
	16Gb	S34ML16G3	✓		✓
ML-2	1Gb	S34ML01G2	✓	✓	✓
	2Gb	S34ML02G2	✓	✓	✓
	4Gb	S34ML04G2	✓		✓
	8Gb	S34ML08G2	✓		✓
	16Gb	S34ML16G2	✓		✓
ML-1	1Gb	S34ML01G1	✓		✓
	2Gb	S34ML02G1	✓		✓
	4Gb	S34ML04G1	✓		✓
	8Gb	S34ML08G1	✓		✓

SecureNAND Flash Memory Packages

Family	Density	Device	63-Ball BGA (0.8-mm pitch)
SL-2	1Gb	S34SL01G2	✓
	2Gb	S34SL02G2	✓
	4Gb	S34SL04G2	✓

CF = Contact Factory
UD = Under Development

Flash and RAM Memory MCP Packages

Family	Flash Density	RAM Density	BGA24 8 x 6 mm 5 x 5 Ball	56-Ball Very Thin FBGA (0.5-mm pitch)	56-Ball FBGA (0.8-mm pitch)	84-Ball FBGA (0.8-mm pitch)	130-Ball BGA (0.65-mm pitch)	133-Ball FBGA (0.5-mm pitch)
S71KS-S	128Mb	64Mb	✓					
	256Mb	64Mb	✓					
	512Mb	64Mb	✓					
S71KL-S	128Mb	64Mb	✓					
	256Mb	64Mb	✓					
	512Mb	64Mb	✓					
S76MS	1Gb	512Mb				✓		
S98GL-N	64Mb	32Mb			✓			
S72XS-R	256Mb	256Mb						✓
S72VS-R	256Mb	256Mb						✓
S71VS-R	256Mb	128Mb		✓				
	256Mb	64Mb		✓				
	128Mb	64Mb		✓				
	128Mb	32Mb		✓				
	64Mb	32Mb		✓				
S71NS-P	512Mb	128Mb		✓				
S71WS-P	256Mb	64Mb				✓		



CYPRESS[®]
EMBEDDED IN TOMORROW[™]