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World Class Quality



## Product Selector Guide | May 2023

### Memory Solutions

DRAM • FLASH • SRAM • MCP

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## RLDRAM® 2 Memory

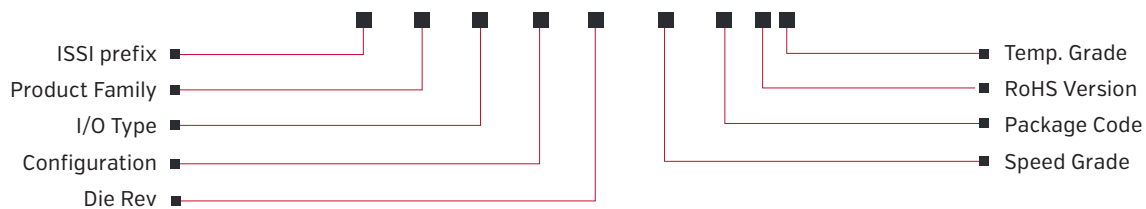
Den	Org	Interface	Part Number	Data Rates [Mbps]	tRC[ns]	Pkg[Pins]	Status	Comment
288M	32Mx9	Common I/O	IS49NLC93200A	1066, 800	15, 20	BGA(144)	Prod	
	16Mx18	Common I/O	IS49NLC18160A	1066, 800	15, 20	BGA(144)	Prod	
	8Mx36	Common I/O	IS49NLC36800A	1066, 800	15, 20	BGA(144)	Prod	
	32Mx9	Separate I/O	IS49NLS93200A	1066, 800	15, 20	BGA(144)	Prod	
	16Mx18	Separate I/O	IS49NLS18160A	1066, 800	15, 20	BGA(144)	Prod	
576M	64Mx9	Common I/O	IS49NLC96400A	1066, 800	15, 20	BGA(144)	Prod	
	32Mx18	Common I/O	IS49NLC18320A	1066, 800	15, 20	BGA(144)	Prod	
	16Mx36	Common I/O	IS49NLC36160A	1066, 800	15, 20	BGA(144)	Prod	
	64Mx9	Separate I/O	IS49NLS96400A	1066, 800	15, 20	BGA(144)	Prod	
	32Mx18	Separate I/O	IS49NLS18320A	1066, 800	15, 20	BGA(144)	Prod	

## RLDRAM® 3 Memory

Den	Org	Interface	Part Number	Speed [Mbps]	tRC[ns]	Pkg[Pins]	Status	Comment
576M	32Mx18	Common I/O	IS49RL18320A	1866, 2133, 2400	6.67, 7.5, 8	BGA(168)	Prod	
	16Mx36	Common I/O	IS49RL36160A	1866, 2133, 2400	6.67, 7.5, 8	BGA(168)	Prod	
1.15G	64Mx18	Common I/O	IS49RL18640	1866, 2133, 2400	6.67, 7.5, 8	BGA(168)	Prod	
	32Mx36	Common I/O	IS49RL36320	1866, 2133, 2400	6.67, 7.5, 8	BGA(168)	Prod	
2.30G	64Mx36	Common I/O	IS49RL36640	1600, 1866	8, 10	BGA(168)	S=NOW	Single Rank

## RLDRAM®2, RLDRAM®3 Part Decoder

IS 49NL C 36800 x - 25E WB L I



### Product Family:

49NL = RLDRAM®2  
49RL = RLDRAM®3

### I/O Type:

C = Common I/O  
S = Separate I/O  
Blank = RLDRAM®3

### Configuration

**288Mb**  
93200 = 32M x 9  
18160 = 16M x 18  
36800 = 8M x 36

**576Mb**  
96400 = 64M x 9  
18320 = 32M x 18  
36160 = 16M x 36

### 1Gb

18640 = 64M x 18  
36320 = 32M x 36

### 2Gb

18128 = 128M x 18  
36640 = 64M x 36

### Speed Grade:

18 - tCK = 1.875ns; tRC = 15ns  
25E - tCK = 2.5ns; tRC = 15ns  
25 - tCK = 2.5ns; tRC = 20ns  
33 - tCK = 3.3ns; tRC = 20ns  
5 - tCK = 5ns; tRC = 20ns  
093E - tCK = 0.93ns; tRC = 8ns  
093 - tCK = 0.93ns; tRC = 10ns  
107E - tCK = 1.07ns; tRC = 8ns  
107 - tCK = 1.07ns; tRC = 10ns  
125F - tCK = 1.25ns; tRC = 8ns  
125E - tCK = 1.25ns; tRC = 10ns  
125 - tCK = 1.25ns; tRC = 12ns

### Package Code:

B = 168-ball FBGA [RLDRAM®3]  
WB = 144-ball WBGA [RLDRAM2]

### RoHS Version:

L = Lead-free [RoHS compliant]

### Temperature Range:

Blank = Commercial [0C to 70°C]  
I = Industrial [-40C to 85°C]

Notes : 1. RLDRAM® is a registered trademark of Micron, Technology Inc. 2. S= Sample, Prod=Production

# DRAM

## 1.2V DDR4 SDRAM

Den	Org	Type	Part Number	Vcc	Refresh	Speed(MT/s)	Pkg(Pins)	Status	Comment
4G	512Mx8	DDR4	IS43/IS46QR85120B	1.2V	8K	2666, 2400	BGA[78]	Prod	
	256Mx16	DDR4	IS43/IS46QR16256B	1.2V	8K	2666, 2400	BGA[96]	Prod	
8G	1Gx8	DDR4	IS43/IS46QR81024A	1.2V	8K	2666, 2400	BGA[78]	Prod	
	512Mx16	DDR4	IS43/IS46QR16512A	1.2V	8K	2666, 2400	BGA[96]	Prod	
16G	2Gx8	DDR4	IS43/IS46QR8K02S2A	1.2V	8K	2400	BGA[78]	Prod	Dual Rank

## 1.5V DDR3 SDRAM (IS43) & Automotive (IS46)

Den	Org	Type	Part Number	Vcc	Refresh	Speed(MT/s)	Pkg(Pins)	Status	Comment
1G	128Mx8	DDR3	IS43/IS46TR81280C	1.5V	8K	1866, 1600	BGA[78]	Prod	
	64Mx16	DDR3	IS43/IS46TR16640C	1.5V	8K	1866, 1600	BGA[96]	Prod	
	64Mx16	DDR3	IS43/IS46TR16640ED	1.5V	8K	1600, 1333	BGA[96]	Prod	ECC
2G	256Mx8	DDR3	IS43/IS46TR82560C	1.5V	8K	1600, 1333	BGA[78]	Prod	
	256Mx8	DDR3	IS43/IS46TR82560D	1.5V	8K	1866, 1600	BGA[78]	Prod	
	128Mx16	DDR3	IS43/IS46TR16128C	1.5V	8K	1866, 1600, 1333	BGA[96]	Prod	
	128Mx16	DDR3	IS43/IS46TR16128D	1.5V	8K	2133, 1866, 1600	BGA[96]	Prod	
4G	512Mx8	DDR3	IS43/IS46TR85120B	1.5V	8K	1866, 1600	BGA[78]	Prod	
	512Mx8	DDR3	IS43/IS46TR85120EC	1.5V	8K	1866, 1600	BGA[78]	Prod	ECC
	256Mx16	DDR3	IS43/IS46TR16256B	1.5V	8K	2133, 1866, 1600	BGA[96]	Prod	
	256Mx16	DDR3	IS43/IS46TR16256EC	1.5V	8K	1866, 1600	BGA[96]	Prod	ECC
8G	1Gx8	DDR3	IS43/IS46TR81024B	1.5V	8K	1866, 1600	BGA[78]	Prod	
	512Mx16	DDR3	IS43/IS46TR16512B	1.5V	8K	1866, 1600	BGA[96]	Prod	Single Rank
16G	1Gx16	DDR3	IS43/IS46TR16K01S2A	1.5V	8K	1600	BGA[96]	Prod	Dual Rank

## 1.35V DDR3L SDRAM (IS43) & Automotive (IS46)

Den	Org	Type	Part Number	Vcc	Refresh	Speed(MT/s)	Pkg(Pins)	Status	Comment
1G	128Mx8	DDR3L	IS43/IS46TR81280CL	1.35V or 1.5V	8K	1866, 1600	BGA[78]	Prod	
	64Mx16	DDR3L	IS43/IS46TR16640CL	1.35V or 1.5V	8K	1866, 1600	BGA[96]	Prod	
2G	256Mx8	DDR3L	IS43/IS46TR82560CL	1.35V or 1.5V	8K	1600, 1333	BGA[78]	Prod	
	256Mx8	DDR3L	IS43/IS46TR82560DL	1.35V or 1.5V	8K	1866, 1600	BGA[78]	Prod	
	128Mx16	DDR3L	IS43/IS46TR16128CL	1.35V or 1.5V	8K	1600, 1333	BGA[96]	Prod	
	128Mx16	DDR3L	IS43/IS46TR16128DL	1.35V or 1.5V	8K	2133, 1866, 1600	BGA[96]	Prod	
4G	512Mx8	DDR3L	IS43/IS46TR85120ECL	1.35V or 1.5V	8K	1866, 1600	BGA[78]	Prod	ECC
	512Mx8	DDR3L	IS43/IS46TR85120BL	1.35V or 1.5V	8K	1866, 1600	BGA[78]	Prod	
	256Mx16	DDR3L	IS43/IS46TR16256BL	1.35V or 1.5V	8K	2133, 1866, 1600	BGA[96]	Prod	
	256Mx16	DDR3L	IS43/IS46TR16256ECL	1.35V or 1.5V	8K	1866, 1600	BGA[96]	Prod	ECC
8G	1Gx8	DDR3L	IS43/IS46TR81024BL	1.35V or 1.5V	8K	1866, 1600	BGA[78]	Prod	
	512Mx16	DDR3L	IS43/IS46TR16512BL	1.35V or 1.5V	8K	1866, 1600	BGA[96]	Prod	Single Rank
	512Mx16	DDR3L	IS43/IS46TR16512S2DL	1.35V or 1.5V	8K	1866, 1600	BGA[96]	Prod	Dual Rank
16G	1Gx16	DDR3L	IS43/IS46TR16K01S2AL	1.35V or 1.5V	8K	1600	BGA[96]	Prod	Dual Rank

Notes : 1. S= Sample 2. Prod=Production 3. NR= Not recommended for new design 4. ECC=Error Correcting Code 5. Commercial and Industrial temperature grade begin with IS43; Automotive grade begin with IS46. 6. Each speed option supports slower speed settings as noted in datasheet.



## 1.8V DDR2 SDRAM (IS43) & Automotive (IS46)

Den	Org	Type	Part Number	Vcc	Refresh	Speed[MT/s]	Pkg[Pins]	Status	Comment
256M	16Mx16	DDR2	IS43/IS46DR16160B	1.8V	8K	800, 667, 533	BGA[84]	Prod	
	8Mx32	DDR2	IS43/IS46DR32801B	1.8V	8K	667, 533	BGA[126]	Prod	
512M	64Mx8	DDR2	IS43/IS46DR86400D	1.8V	8K	800, 667	BGA[60]	Prod	
	64Mx8	DDR2	IS43/IS46DR86400E	1.8V	8K	800, 667	BGA[60]	Prod	
	32Mx16	DDR2	IS43/IS46DR16320D	1.8V	8K	800, 667	BGA[84]	Prod	
	32Mx16	DDR2	IS43/IS46DR16320E	1.8V	8K	800, 667	BGA[84]	Prod	
	16Mx32	DDR2	IS43/IS46DR32160C	1.8V	8K	667, 533	BGA[126]	Prod	
1G	128Mx8	DDR2	IS43/IS46DR81280C	1.8V	8K	800, 667	BGA[60]	Prod	
	128Mx8	DDR2	IS43/IS46DR81280D	1.8V	8K	800, 667	BGA[60]	S=NOW	
	64Mx16	DDR2	IS43/IS46DR16640C	1.8V	8K	800, 667	BGA[84]	Prod	
	64Mx16	DDR2	IS43/IS46DR16640D	1.8V	8K	800, 667	BGA[84]	S=NOW	
2G	256Mx8	DDR2	IS43/IS46DR82560C	1.8V	8K	800, 667	BGA[60]	Prod	
	128Mx16	DDR2	IS43/IS46DR16128C	1.8V	8K	800, 667	BGA[84]	Prod	

## 2.5V DDR SDRAM (IS43) & Automotive (IS46)

Den	Org	Type	Part Number	Vcc	Refresh	Speed[MHz]	Pkg[Pins]	Status	Comment
128M	8Mx16	DDR	IS43R16800E	2.5V	4K	200, 166	TSOP2[66], BGA[60]	Prod	
	4Mx32	DDR	IS43R32400E	2.5V	4K	250, 200	BGA[144]	Prod	
256M	32Mx8	DDR	IS43/IS46R83200F	2.5V	8K	200, 166	TSOP2[66]	Prod	
	16Mx16	DDR	IS43/IS46R16160F	2.5V	8K	200, 166	TSOP2[66],BGA[60]	Prod	
512M	64Mx8	DDR	IS43/IS46R86400E	2.5V	8K	200, 166	TSOP2[66], BGA[60]	Contact	
	64Mx8	DDR	IS43R86400F	2.5V	8K	200, 166	TSOP2[66], BGA[60]	Prod	
	32Mx16	DDR	IS43/IS46R16320E	2.5V	8K	200, 166	TSOP2[66], BGA[60]	Contact	
	32Mx16	DDR	IS43R16320F	2.5V	8K	200, 166	TSOP2[66], BGA[60]	Prod	

## 3.3V SDR SDRAM (IS42) & Automotive (IS45)

Den	Org	Type	Part Number	Vcc	Refresh	Speed	Pkg[Pins]	Status	Comment
16M	1Mx16	SDR	IS42/IS45S16100H	3.3V	2K	200, 166, 143	TSOP2[50], BGA[60]	Prod	
64M	4Mx16	SDR	IS42/IS45S16400J	3.3V	4K	200, 166, 143	TSOP2[54], BGA[54], BGA[60]	Prod	
	4Mx16	SDR	IS42/IS45S16400N	3.3V	4K	200, 166, 143	TSOP2[54], BGA[54]	S=NOW	
	2Mx32	SDR	IS42/IS45S32200L	3.3V	4K	200, 166, 143	TSOP2[86], BGA[90]	Prod	
	2Mx32	SDR	IS42/IS45S32200N	3.3V	4K	200, 166, 143	TSOP2[86], BGA[90]	S=NOW	
128M	16Mx8	SDR	IS42/IS45S81600F	3.3V	4K	200, 166, 143	TSOP2[54]	Prod	
	16Mx8	SDR	IS42/IS45S81600J	3.3V	4K	200, 166, 143	TSOP2[54]	S=NOW	
	8Mx16	SDR	IS42/IS45S16800F	3.3V	4K	200, 166, 143	TSOP2[54], BGA[54]	Prod	
	8Mx16	SDR	IS42/IS45S16800J	3.3V	4K	200, 166, 143	TSOP2[54], BGA[54]	S=NOW	
	4Mx32	SDR	IS42/IS45S32400F	3.3V	4K	200, 166, 143	TSOP2[86], BGA[90]	Prod	
	4Mx32	SDR	IS42/IS45S32400J	3.3V	4K	200, 166, 143	TSOP2[86], BGA[90]	S=NOW	
256M	16Mx16	SDR	IS42/IS45S16160J	3.3V	8K	166, 143, 133	TSOP2[54], BGA[54]	Prod	
	8Mx32	SDR	IS42/IS45S32800J	3.3V	4K	166, 143, 133	TSOP2[86], BGA[90]	Prod	
	32Mx8	SDR	IS42/IS45S83200J	3.3V	8K	166, 143, 133	TSOP2[54], BGA[54]	Prod	
512M	64Mx8	SDR	IS42S86400F	3.3V	8K	166, 143, 133	TSOP2[54]	Prod	
	32Mx16	SDR	IS42/IS45S16320F	3.3V	8K	166, 143, 133	TSOP2[54], BGA[54]	Prod	
	16Mx32	SDR	IS42/IS45S32160F	3.3V	8K	166, 143, 133	TSOP2[86], BGA[90]	Prod	

## 3.3V EDO & Fast Page Mode DRAM

Den	Org	Type	Part Number	Vcc	Refresh	Speed[ns]	Pkg[Pins]	Status	Comment
16M	1Mx16	EDO	IS41LV16100D	3.3V	1K	50	TSOP2[44/50]	Prod	
	1Mx16	FP	IS41LV16105D	3.3V	1K	50	TSOP2[44/50]	Prod	

# Mobile DRAM

## LPDDR4 SDRAM (IS43) & Automotive (IS46)

Den.	Type	Part No.	Org.	VDDQ/VDD2/VDD1	Speed(MT/s)	Pkg.	Status
2G	LPDDR4	IS43/IS46LQ16128A	Single channel [1 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ32640A	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
4G	LPDDR4	IS43/IS46LQ16256A	Single channel [1 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ16256B	Single channel [1 x16]	1.1V/1.1V/1.8V	3733, 3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ32128A	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
8G	LPDDR4	IS43/IS46LQ16512A	Single channel [1 x16]	1.1V/1.1V/1.8V	3733, 3200	BGA[200]	S=NOW
	LPDDR4	IS43/IS46LQ32256A	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ32256B	Two channel [2 x16]	1.1V/1.1V/1.8V	3733, 3200	BGA[200]	Prod

## LPDDR4X SDRAM (IS43) & Automotive (IS46)

Den.	Type	Part No.	Org.	VDDQ/VDD2/VDD1	Speed(MT/s)	Pkg.	Status
2G	LPDDR4X	IS43/IS46LQ16128AL	Single channel [1 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ32640AL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
4G	LPDDR4X	IS43/IS46LQ16256AL	Single channel [1 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ16256BL	Single channel [1 x16]	0.6V/1.1V/1.8V	3733, 3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ32128AL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
8G	LPDDR4X	IS43/IS46LQ16512AL	Single channel [1 x16]	0.6V/1.1V/1.8V	3733, 3200	BGA[200]	S=NOW
	LPDDR4X	IS43/IS46LQ32256AL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ32256BL	Two channel [2 x16]	0.6V/1.1V/1.8V	3733, 3200	BGA[200]	Prod

## LPDDR4 SDRAM with ECC (IS43) & Automotive (IS46)

Den.	Type	Part No.	Org.	VDDQ/VDD2/VDD1	Speed(MT/s)	Pkg.	Status
2G	LPDDR4	IS43/IS46LQ16128EA	Single channel [1 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ32640EA	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
4G	LPDDR4	IS43/IS46LQ16256EA	Single channel [1 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4	IS43/IS46LQ32128EA	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod
8G	LPDDR4	IS43/IS46LQ32256EA	Two channel [2 x16]	1.1V/1.1V/1.8V	3200	BGA[200]	Prod

## LPDDR4X SDRAM with ECC (IS43) & Automotive (IS46)

Den.	Type	Part No.	Org.	VDDQ/VDD2/VDD1	Speed(MT/s)	Pkg.	Status
2G	LPDDR4X	IS43/IS46LQ16128EAL	Single channel [1 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ32640EAL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
4G	LPDDR4X	IS43/IS46LQ16256EAL	Single channel [1 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
	LPDDR4X	IS43/IS46LQ32128EAL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod
8G	LPDDR4X	IS43/IS46LQ32256EAL	Two channel [2 x16]	0.6V/1.1V/1.8V	3200	BGA[200]	Prod

## PowerSaver™ LPDDR2 SDRAM (IS43) & Automotive (IS46)

Den	Org	Type	Part Number	VDDQ/VDD2/VDD1	Refresh	Speed(MHz)	Pkg(Pins)	Status
256M	16Mx16	LPDDR2	IS43/IS46LD16160B	1.2V/1.2V/1.8V	4K	533, 400	BGA[134], PoP[168]	Prod
	8Mx32	LPDDR2	IS43/IS46LD32800B	1.2V/1.2V/1.8V	4K	533, 400	BGA[134], PoP[168]	Prod
512M	32Mx16	LPDDR2	IS43/IS46LD16320A	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod
	16Mx32	LPDDR2	IS43/IS46LD32160A	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod

Notes : 1. S = Samples 2. Prod = Production 3. NR = Not recommended for new design 4. Available in automotive temperature grade of -40°C to +105°C  
5. Some TSOP2[54] are available in copper leadframe 6. Contact=Contact ISSI for availability.

## PowerSaver™ LPDDR2 SDRAM (IS43) & Automotive (IS46) (Contd)

Den	Org	Type	Part Number	VDDQ/VDD2/VDD1	Refresh	Speed[MHz]	Pkg[Pins]	Status
1G	64Mx16	LPDDR2	IS43/IS46LD16640C	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod
	64Mx16	LPDDR2	IS43/IS46LD16640D	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod
	32Mx32	LPDDR2	IS43/IS46LD32320C	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod
	32Mx32	LPDDR2	IS43/IS46LD32320D	1.2V/1.2V/1.8V	4K	533, 400	BGA[134]	Prod
	2G	128Mx16	LPDDR2	IS43/IS46LD16128C	1.2V/1.2V/1.8V	8K	533, 400	BGA[134]
	64Mx32	LPDDR2	IS43/IS46LD32640C	1.2V/1.2V/1.8V	8K	533, 400	BGA[134]	Prod
	4G	256Mx16	LPDDR2	IS43/46LD16256C	1.2V/1.2V/1.8V	8K	533, 400	BGA[134]
	128Mx32	LPDDR2	IS43/IS46LD32128B	1.2V/1.2V/1.8V	8K	533, 400	BGA[134],PoP[168]	Prod
		128Mx32	LPDDR2	IS43/IS46LD32128C	1.2V/1.2V/1.8V	8K	533, 400	BGA[134],PoP[168]

## PowerSaver™ Mobile DDR SDRAM (IS43) & Automotive (IS46)

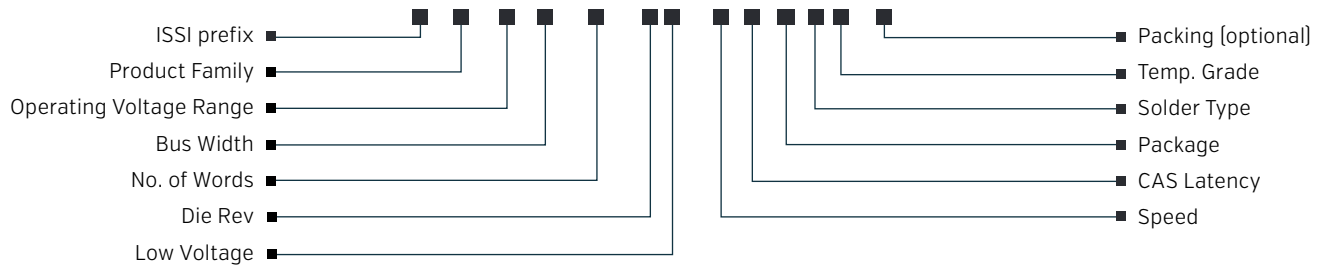
Den	Org	Type	Part Number	VDD	Refresh	Speed[MHz]	Pkg[Pins]	Status
32M	2Mx16	MDDR	IS43/IS46LR16200D	1.8V	4K	200, 166	BGA[60]	Prod
	1Mx32	MDDR	IS43/IS46LR32100D	1.8V	4K	200, 166	BGA[90]	Prod
64M	4Mx16	MDDR	IS43/IS46LR16400C	1.8V	4K	200, 166	BGA[60]	Prod
	2Mx32	MDDR	IS43/IS46LR32200C	1.8V	4K	200, 166	BGA[90]	Prod
128M	8Mx16	MDDR	IS43/IS46LR16800G	1.8V	4K	200, 166	BGA[60]	Prod
	4Mx32	MDDR	IS43/IS46LR32400G	1.8V	4K	200, 166	BGA[90]	Prod
256M	16Mx16	MDDR	IS43/IS46LR16160H	1.8V	8K	200, 166	BGA[60]	Prod
	8Mx32	MDDR	IS43/IS46LR32800H	1.8V	4K	200, 166	BGA[90]	Prod
512M	32Mx16	MDDR	IS43/IS46LR16320C	1.8V	8K	200, 166	BGA[60]	Prod
	16Mx32	MDDR	IS43/IS46LR32160C	1.8V	8K	200, 166	BGA[90]	Prod
1G	64Mx16	MDDR	IS43/IS46LR16640A	1.8V	8K	200, 166	BGA[60]	NR
	64Mx16	MDDR	IS43/IS46LR16640C	1.8V	8K	200, 166	BGA[60]	Prod
	32Mx32	MDDR	IS43/IS46LR32320B	1.8V	8K	200, 166	BGA[90]	NR
	32Mx32	MDDR	IS43/IS46LR32320C	1.8V	8K	200, 166	BGA[90]	Prod
2G	128Mx16	MDDR	IS43/IS46LR16128B	1.8V	8K	200, 166	BGA[60]	Prod
	64Mx32	MDDR	IS43/IS46LR32640A	1.8V	8K	200, 166	BGA[90]	NR
	64Mx32	MDDR	IS43/IS46LR32640B	1.8V	8K	200, 166	BGA[90]	Prod

## PowerSaver™ Mobile SDR SDRAM (IS42) & Automotive (IS45)

Den	Org	Type	Part Number	VDD (option)	Refresh	Speed[MHz]	Pkg[Pins]	Status
32M	2Mx16	MSDR	IS42/IS45VM/RM/SM16200D	1.8V/2.5V/3.3V	4K	166, 133	BGA[54]	Prod
	1Mx32	MSDR	IS42/IS45VM/RM/SM32100D	1.8V/2.5V/3.3V	4K	166, 133	BGA[90]	Prod
64M	4Mx16	MSDR	IS42/IS45VM/RM/SM16400M	1.8V/2.5V/3.3V	4K	166, 133	BGA[54]	Prod
	2Mx32	MSDR	IS42/IS45VM/RM/SM32200M	1.8V/2.5V/3.3V	4K	166, 133	BGA[90]	Prod
128M	8Mx16	MSDR	IS42/IS45VM/RM/SM16800H	1.8V/2.5V/3.3V	4K	166, 133	BGA[54]	Prod
	4Mx32	MSDR	IS42/IS45VM/RM/SM32400H	1.8V/2.5V/3.3V	4K	166, 133	BGA[90]	Prod
256M	16Mx16	MSDR	IS42/IS45VM/RM/SM16160K	1.8V/2.5V/3.3V	8K	166, 133	BGA[54]	Prod
	8Mx32	MSDR	IS42/IS45VM/RM/SM32800K	1.8V/2.5V/3.3V	4K	166, 133	BGA[90]	Prod
512M	32Mx16	MSDR	IS42/IS45VM/RM/SM16320E	1.8V/2.5V/3.3V	8K	166, 133	BGA[54]	Prod
	16Mx32	MSDR	IS42/IS45VM/RM/SM32160E	1.8V/2.5V/3.3V	8K	166, 133	BGA[90]	Prod

# DRAM Part Decoder

IS 43 TR 8 1280 C L - 107M B L I - TR



## SDRAM Product Family

- 41 = Asynchronous
- 42 = SDR Commercial/  
Industrial grade
- 43 = (LP)DDR/DDR2/DDR3/DDR4  
Commercial/Industrial grade
- 45 = SDR Automotive grade
- 46 = (LP)DDR/DDR2/DDR3/DDR4  
Automotive grade

## Operating Voltage Range

**Asynchronous: Fast Page & EDO**  
LV = 3.3V

### Synchronous:

#### High Speed

- S = 3.3V SDR
- VS = 1.8V SDR
- R = 2.5V DDR or 2.5V SDR
- DR = DDR2
- TR = DDR3
- QR = DDR4

## Low Power

- SM/RM/VM = 3.3V/2.5V/1.8V  
mobile SDR
- LR = 1.8V mobile DDR (LPDDR)
- LD = LPDDR2
- LQ = LPDDR4

## Bus Width

- 8 = x8
- 16 = x16
- 32 = x32

## No. of Words

- 100 = 1M
- 200 = 2M
- ...
- 128 = 128M
- 256 = 256M
- 512 = 512M
- K01 or 1024 = 1G

## Monolithic/Stacked, Ranks

- [Blank] = Monolithic,  
Single Rank, unless  
stated otherwise.
- S1 = Stacked, Single Rank
- S2 = Stacked, Dual Rank

## Generation ("Die Rev")

- A-Z [1 character]
- EA-EZ [2 characters]  
ECC Feature

## Low Voltage

- DDR3  
L = Supports 1.35V & 1.5V

### LPDDR4

- L = Supports only 0.6V  
I/O (LPDDR4X)

## Speed

- 7 = up to 143Mhz
- 6 = up to 166Mhz
- 75E = up to 133Mhz @ CL2 [SDR]
- 5 = up to 200Mhz
- 37 = up to 266Mhz
- 3 = up to 333Mhz
- 25 = up to 400Mhz
- 187 or -18 = up to 533Mhz  
[1066 Data Rate]
- 15 = up to 667 Mhz [1333 Data Rate]
- 125 = up to 800Mhz [1600 Data Rate]
- 107 = up to 933Mhz [1866 Data Rate]
- 093 = up to 1066Mhz [2133 Data Rate]
- 083 = up to 1200Mhz [2400 Data Rate]
- 075 = Up to 1333Mhz [2666 Data Rate]
- 068 = Up to 1466Mhz [2933 Data Rate]
- 062 = Up to 1600Mhz [3200 Data Rate]

## CAS Latency

- B = 3, C = 4, D = 5, E = 6,  
F = 7, G = 8, H = 9, J = 10,  
K = 11, L = 12, M = 13, N = 14,  
P = 15, R = 16, T = 17, U = 18  
V = 19, Y = 21, AA = 22
- [Blank for some products, whereas  
only specific speed and CAS Latency  
combinations exist for others.]

## Solder Type

- L = 100% matte Sn for non-BGA  
or SnAgCu for BGA

## Temp. Grade

- Blank = Commercial Grade [0°C to +70°C]
- I = Industrial Grade [-40°C to +85°C]
- A1 = Automotive Grade [-40°C to +85°C]
- A2 = Automotive Grade [-40°C to +105°C]
- A25 = Automotive Grade [-40°C to +115°C]
- A3 = Automotive Grade [-40°C to +125°C]
- [Ambient or case temperature limits shown  
for most products. Refer to specs.]

## Package Type

- B = BGA
- CT = Copper TSOP
- T = TSOP
- BP = PoP BGA



## Serial NOR Flash (QSPI, SPI)

Den	Part Number	Type	Vcc	Freq. [MHz]	Temp. Range	Package Type	Status
1M	IS25LP010E	Multi I/O Quad SPI	2.3-3.6V	50M/104	-40 to 125°C	SOIC,VVSOP,USON	Prod
2M	IS25LP020E	Multi I/O Quad SPI	2.3-3.6V	50M/104	-40 to 125°C	SOIC,VVSOP,USON	Prod
	IS25WP020E	Multi I/O Quad SPI	1.65-1.95V	50M/104	-40 to 125°C	SOIC, USON	Prod
4M	IS25LP040E	Multi I/O Quad SPI	2.3-3.6V	50M/104	-40 to 125°C	SOIC,VVSOP,USON	Prod
	IS25WP040E	Multi I/O Quad SPI	1.65-1.95V	50M/104	-40 to 125°C	SOIC, USON	Prod
8M	IS25LP080D	Multi I/O SPI, QPI, DTR	2.3-3.6V	50M/133	-40 to 125°C	SOIC,VVSOP,WSON,USON	Prod
	IS25WP080D	Multi I/O SPI, QPI, DTR	1.65-1.95V	50M/133	-40 to 125°C	SOIC,VVSOP,WSON,USON	Prod
16M	IS25LP016D	Multi I/O SPI, QPI, DTR	2.3-3.6V	50M/133	-40 to 125°C	SOIC,VVSOP,WSON,USON,TFBGA	Prod
	IS25WP016D	Multi I/O SPI, QPI, DTR	1.65-1.95V	50M/133	-40 to 125°C	SOIC,VVSOP,WSON,USON,TFBGA	Prod
	IS25WJ016F	Multi I/O SPI, QPI, DTR	1.65-2.0V	66M/133	-40 to 105°C	SOIC,USON	Prod
32M	IS25LP032D	Multi I/O SPI, QPI, DTR	2.3-3.6V	50M/133	-40 to 125°C	SOIC,WSON,USON,XSON,TFBGA	Prod
	IS25WP032D	Multi I/O SPI, QPI, DTR	1.65-1.95V	50M/133	-40 to 125°C	SOIC,WSON,USON,XSON,TFBGA	Prod
	IS25WJ032F	Multi I/O SPI, QPI, DTR	1.65-2.0V	66M/133	-40 to 105°C	SOIC,USON,XSON	Prod
64M	IS25LP064D	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166	-40 to 125°C	SOIC,WSON,XSON,TFBGA	Prod
	IS25WP064D	Multi I/O SPI, QPI, DTR	1.65-1.95V	80M/166	-40 to 125°C	SOIC,WSON,XSON,TFBGA	Prod
	IS25WJ064F	Multi I/O SPI, QPI, DTR	1.65-2.0V	66M/133	-40 to 105°C	SOIC,WSON,USON,XSON	Prod
128M	IS25LP128F	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166	-40 to 125°C	SOIC,WSON,TFBGA	Prod
	IS25WP128F	Multi I/O SPI, QPI, DTR	1.65-1.95V	80M/166	-40 to 125°C	SOIC,WSON,TFBGA	Prod
256M	IS25LP256D	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166	-40 to 125°C	SOIC,WSON,TFBGA	Prod
	IS25WP256D	Multi I/O SPI, QPI, DTR	1.7-1.95V	80M/133	-40 to 125°C	SOIC,WSON,TFBGA	Prod
512M	IS25LP512M	Multi I/O SPI, QPI, DTR	2.3-3.6V	50M/133	-40 to 125°C	SOIC,WSON,TFBGA	Prod
	IS25LP512MG	Multi I/O SPI, QPI, DTR	2.3-3.6V	66M/166	-40 to 105°C	SOIC,WSON,TFBGA	Prod
	IS25WP512M	Multi I/O SPI, QPI, DTR	1.7-1.95V	50M/112	-40 to 125°C	SOIC,WSON,TFBGA	Prod
1G	IS25LP01G	Multi I/O SPI, QPI, DTR	2.7-3.6V	50M/133	-40 to 125°C	LFBGA	Prod
	IS25WP01G	Multi I/O SPI, QPI, DTR	1.7-1.95V	50M/104	-40 to 125°C	LFBGA	Prod
2G	IS25LP02GG	Multi I/O SPI, QPI, DTR	2.7-3.6V	50M/133	-40 to 105°C	LFBGA	S=NOW
	IS25WP02GG	Multi I/O SPI, QPI, DTR	1.6-1.95V	50M/133	-40 to 105°C	LFBGA	S=Q3/23

## Serial NOR Flash with ECC

Den	Part Number	Type	Vcc	Frequency	Temp. Range	Package Type	Status
128M	IS25LE128E	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Contact Factory
	IS25WE128E	Multi I/O SPI, QPI, DTR	1.7-1.95V	80M/166Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Contact Factory
256M	IS25LE256E	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Prod
	IS25WE256E	Multi I/O SPI, QPI, DTR	1.7-1.95V	80M/166Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Prod
512M	IS25LE512M	Multi I/O SPI, QPI, DTR	2.3-3.6V	50M/133Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Prod
	IS25WE512M	Multi I/O SPI, QPI, DTR	1.65-1.95V	50M/112Mhz	-40 to 125°C	SOIC, WSON, TFBGA	Prod
1G	IS25LE01G	Multi I/O SPI, QPI, DTR	2.7-3.6V	50M/133Mhz	-40 to 125°C	LFBGA	Prod
	IS25WE01G	Multi I/O SPI, QPI, DTR	1.7-1.95V	50M/104Mhz	-40 to 125°C	LFBGA	Prod
2G	IS25LE02GG	Multi I/O SPI, QPI, DTR	2.7-3.6V	50M/133Mhz	-40 to 105°C	LFBGA	Contact Factory
	IS25WE02GG	Multi I/O SPI, QPI, DTR	1.6-1.95V	50M/133Mhz	-40 to 105°C	LFBGA	Contact Factory

## Security Flash

Den	Part Number	Type	Vcc	Frequency	Temp. Range	Package Type	Status
128M	IS25RLP128F	Multi I/O SPI, QPI, DTR, RPMC	2.3-3.6V	80M/166Mhz	-40 to 85°C	WSON	Contact Factory
256M	IS25RLP256E	Multi I/O SPI, QPI, DTR, RPMC	2.3-3.6V	80M/166Mhz	-40 to 85°C	WSON	Contact Factory

## Octal Flash (xSPI)

Den	Part Number	Type	Vcc	Frequency	Temp. Range	Package Type	Status
64M	IS25LX064	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	S=NOW
	IS25WX064	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	S=NOW
128M	IS25LX128	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	S=NOW
	IS25WX128	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	S=NOW
256M	IS25LX256	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	S=NOW
	IS25WX256	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	S=NOW
512M	IS25LX512M	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	S=NOW
	IS25WX512M	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	S=NOW
1G	IS25LX01G	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	S=2H/23
	IS25WX01G	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	S=2H/23
2G	IS25LX02GA	xSPI	2.7-3.6V	133Mhz	-40 to 125°C	TFBGA	Contact Factory
	IS25WX02GA	xSPI	1.7-2.0V	200Mhz	-40 to 125°C	TFBGA	Contact Factory

## Twin Quad Serial NOR Flash (x8 SPI)

Den	Part Number	Type	Vcc	Freq.[MHz]	Temp. Range	Package Type	Status
256M	IS25DLP256M	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166	-40 to 125°C	SOIC, TFBGA	Contact Factory
	IS25DWP256M	Multi I/O SPI, QPI, DTR	1.65-1.95V	80M/166	-40 to 125°C	SOIC, TFBGA	Contact Factory
512M	IS25DLP512M	Multi I/O SPI, QPI, DTR	2.3-3.6V	80M/166	-40 to 125°C	SOIC, TFBGA	Prod
	IS25DWP512M	Multi I/O SPI, QPI, DTR	1.65-1.95V	80M/166	-40 to 125°C	SOIC, TFBGA	Contact Factory

## HyperFlash™

Den	Part Number	Type	Vcc	Freq.[MHz]	Temp. Range	Package Type	Status
128/256Mb	IS26KS/KL Family	HyperFlash™	-	-	-	-	Contact Factory

## Parallel (ISA) NOR Flash

Den	Part Number	Type	Remark	Vcc	Access Time (ns)	Temp. Range	Package Type	Status
32M	IS29GL032	x8/x16	Top Boot [U] or Bottom Boot [D] High Protection [T] or Low Protection [B]	2.7-3.6V	70	-40 to 125°C	TSOP, BGA	Prod
64M	IS29GL064	x8/x16	Top Boot [U] or Bottom Boot [D] High Protection [T] or Low Protection [B]	2.7-3.6V	70	-40 to 125°C	TSOP, BGA	Prod
128M	IS29GL128	x8/x16	High Protection [T] or Low Protection [B]	2.7-3.6V	70	-40 to 125°C	TSOP, BGA	Prod
256M	IS29GL256	x8/x16	High Protection [T] or Low Protection [B]	2.7-3.6V	70	-40 to 125°C	TSOP, BGA	Prod

Notes : 1. S = Samples 2.Prod = Production

## SPI NAND Flash (IS37) & Automotive (IS38)

Den	Part Number	Type	Vcc	Freq.(MHz)	Temp. Range	Package Type	Status
1G	IS37/IS38SML01G1	x1, x2, x4	3.3V	104	-40 to 105°C	16-SOIC, 8-WSON	Prod
	IS37/IS38SML01G8A	x1, x2, x4	3.3V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
	IS37/IS38SMW01G8A	x1, x2, x4	1.8V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
2G	IS37/IS38SML02G8A	x1, x2, x4	3.3V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
	IS37/IS38SMW02G8A	x1, x2, x4	1.8V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
4G	IS37/IS38SML04G8A	x1, x2, x4	3.3V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
	IS37/IS38SMW04G8A	x1, x2, x4	1.8V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
8G	IS37/IS38SML08G8A	x1, x2, x4	3.3V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23
	IS37/IS38SMW08G8A	x1, x2, x4	1.8V	133	-40 to 105°C	SOIC,WSON,TFBGA,LFBGA	S=2H/23

## NAND Flash (IS34) & Automotive (IS35)

Den	Part Number	Vcc	Ecc Req.	Bus Width	Sequential Read Speed [ns]	Temp.Range	Package Type	Status
1G	IS34/IS35ML01G081	3.3V	1-bit	X8	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35ML01G084	3.3V	4-bit	X8	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35MW01G084	1.8V	4-bit	X8	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35MW01G164	1.8V	4-bit	X16	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
2G	IS34/IS35ML02G081	3.3V	1-bit	X8	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35ML02G084	3.3V	4-bit	X8	25	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35MW02G084	1.8V	4-bit	X8	45	-40°C to 105°C	48-TSOP, 63-BGA	Prod
	IS34/IS35MW02G164	1.8V	4-bit	X16	45	-40°C to 105°C	48-TSOP, 63-BGA	Prod
4G	IS34/IS35ML04G081	3.3V	1-bit	X8	25	-40°C to 105°C	48-TSOP	Prod
	IS34/IS35ML04G084	3.3V	4-bit	X8	25	-40°C to 105°C	48-TSOP	Prod
	IS34/IS35MW04G084	1.8V	4-bit	X8	45	-40°C to 105°C	48-TSOP	Prod
	IS34/IS35MW04G164	1.8V	4-bit	X16	45	-40°C to 105°C	48-TSOP	Call Factory
	IS34ML04G088/168	3.3V	8-bit	X8 or X16	25	-40°C to 85°C	48-TSOP, 63-BGA	Call Factory
	IS34MW04G088/168	1.8V	8-bit	X8 or X16	25	-40°C to 85°C	48-TSOP, 63-BGA	Call Factory
8G	IS34ML08G088/168	3.3V	8-bit	X8 or X16	25	-40°C to 85°C	48-TSOP, 63-BGA	Call Factory
	IS34MW08G088/168	1.8V	8-bit	X8 or X16	25	-40°C to 85°C	48-TSOP, 63-BGA	Call Factory

## eMMC (IS21) & Automotive (IS22)

Den	Part Number	Bus Width	Temperature	Package Type	eMMC Interface	Status
8GB	IS21ES08GA	x8	-40°C to 85°C	100-FBGA, 153-FBGA	5.0	Prod
16GB	IS21/22TF16G	x8	-40°C to 85°C, -40°C to 105°C	100-FBGA, 153-FBGA	5.1	Prod*
32GB	IS21/22TF32G	x8	-40°C to 85°C, -40°C to 105°C	100-FBGA, 153-FBGA	5.1	Prod*
64GB	IS21/22TF64G	x8	-40°C to 85°C, -40°C to 105°C	100-FBGA, 153-FBGA	5.1	Prod*
128GB	IS21/22TF128G	x8	-40°C to 85°C, -40°C to 105°C	100-FBGA, 153-FBGA	5.1	Prod*

Notes :

\* 153-FBGA in Prod, 100-FBGA Sampling now

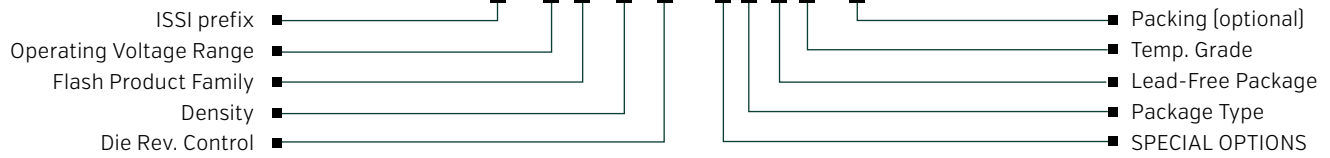
1. S = Samples 2. Prod = Production

## UFS 2.1/2.2

Den	Part Number	Vcc/Vccq	Temperature	Package Type	UFS Interface	Status
64GB	IS27TH064G21/22	3.3V/1.8V	-40°C to 105°C	153-FBGA	UFS 2.1/2.2	Sampling
128GB	IS27TH128G21/22	3.3V/1.8V	-40°C to 105°C	153-FBGA	UFS 2.1/2.2	Sampling
256GB	IS27TH256G21/22	3.3V/1.8V	-40°C to 105°C	153-FBGA	UFS 2.1/2.2	Sampling

# Serial NOR Flash (SPI) Part Decoder

IS 25 L P 128 F - J B L E - TR



### Operating Voltage Range

L = 2.3-3.6V  
W = 1.65-1.95V

### Flash Product Family

P = Single/Dual/Quad/QPI SPI  
DTR Options Available  
X = xSPI (Octal)

### Die Rev. Control

Blank = First Rev.

### Density

025 = 256Kb  
512 = 512Kb  
010 = 1Mb  
020 = 2Mb  
040 = 4Mb  
080 = 8Mb  
016 = 16Mb  
032 = 32Mb  
064 = 64Mb  
128 = 128Mb  
256 = 256Mb  
512M = 512Mb  
01G = 1Gb

### SPECIAL OPTIONS

J = Standard  
Q = QE bit set to 1  
R = Dedicated RESET#  
in 16-pin SOIC  
or 24-ball BGA

### Package Type

N = 8 pin SOIC 150mil  
B = 8 pin SOIC 208mil  
M = 16 pin SOIC 300mil  
U = 8 pin USON [2x3mm]  
T = 8 pin USON [4x3mm]  
K = 8 pin WSON [6x5 mm]  
L = 8 pin WSON [8x6 mm]  
H = 24 ball [BGA 6x8 mm]  
I = 24 ball [LFBGA 6x8mm]

### Lead-free Package

L = Lead-Free (Pb Free) and Halogen Free

### Temperature Grade

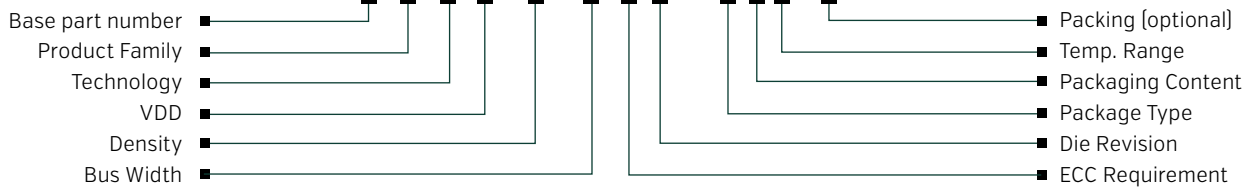
E = Extended grade [-40°C to +105°C]  
A3 = Automotive grade [-40°C to +125°C]

### Packing

TR = Tape and Reel  
TY = Tray  
Blank = Bulk

# SLC NAND Flash Part Decoder

IS 34 M W 02G 08 4 \_ - T L I - TR



### Base part number

IS = Integrated Silicon  
Solution Inc.

### Product Family

34 = NAND  
35 = Automotive NAND

### Technology

M = Standard NAND [SLC]

### VDD

W = 1.8V  
L = 3.3V

### Density

01G = 1 Gigabit  
02G = 2 Gigabit  
04G = 4 Gigabit

### Bus Width

08 = x8 NAND  
16 = x16 NAND

### ECC Requirement

1 = 1-bit ECC  
4 = 4-bit ECC

### Die Revision

Blank = First Gen.

### Package Type

T = 48-pin TSOP [Type I]<sup>(1)</sup>  
B = 63-ball VFBGA

### Packaging Content

L = RoHS compliant

### Temperature Range

I = Industrial [-40°C to +85°C]  
E = Industrial [-40°C to +105°C]  
A1 = Automotive Grade [-40°C to +85°C]  
A2 = Automotive Grade [-40°C to +105°C]

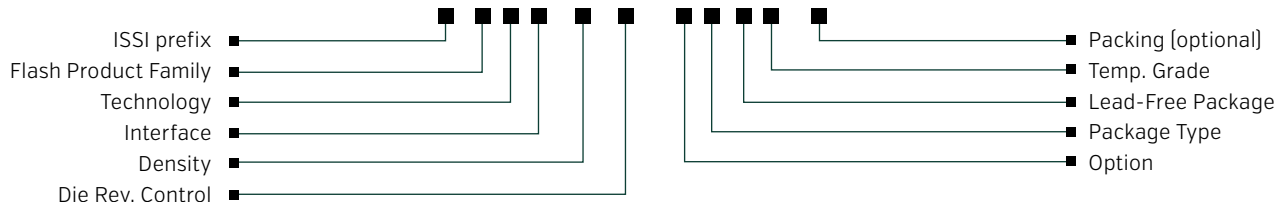
### Packing (optional)

TR = Tape and reel  
TY = Tray  
Blank = Bulk

Note:  
1. Call Factory for TSOP1 x16

# eMMC Part Decoder

IS 21 E S 16G \_ - J Q L I - TR



## Interface

S = eMMC 5.0  
F = eMMC 5.1

## Technology

E = ISSI eMMC with MLC NAND  
M = ISSI eMMC with pMLC NAND

## Flash Product Family

21 = Managed NAND  
22 = Automotive Managed NAND

## Die Rev. Control

Blank = First Rev.

## Density

4G = 4 GB  
8G = 8 GB  
16G = 16 GB  
32G = 32 GB  
64G = 64 GB

## OPTIONS

J = Standard (Boot  
Partition Size: 4MB)  
B = Boot Partition Size:  
16MB

## Package Type

C = 153-ball FBGA  
Q = 100-ball FBGA

## Lead-free Package

L = Lead-Free (Pb Free) and Halogen Free

## Temperature Grade

I = Industrial [-40°C to +85°C]  
A1 = Automotive Grade [-40°C to +85°C]  
A2 = Automotive Grade [-40°C to +105°C]

## Packing

TR = Tape and Reel  
Blank = Bulk



# MCP (Multi-Chip Package)

## Octal MCP

Part Number	Description	Freq.	Temp. Range	Package	Status
IS72WV016M8AWO256-200HLA2	1.8V 128Mb OctalRAM + 1.8V 256Mb xSPI Flash	200Mhz	-40 to 105°C	24-TFBGA	S=NOW
IS72WV016M8AWO256-166HLA3	1.8V 128Mb OctalRAM + 1.8V 256Mb xSPI Flash	166Mhz	-40 to 125°C	24-TFBGA	S=NOW
IS72WV016M8AWO512-166HLA3	1.8V 128Mb OctalRAM + 1.8V 512Mb xSPI Flash	166Mhz	-40 to 125°C	24-TFBGA	S=NOW
IS72WV032M8AWO256-200HLA2	1.8V 256Mb OctalRAM + 1.8V 256Mb xSPI Flash	200Mhz	-40 to 105°C	24-TFBGA	S=NOW
IS72WV032M8AWO512-200HLA2	1.8V 256Mb OctalRAM + 1.8V 512Mb xSPI Flash	200Mhz	-40 to 105°C	24-TFBGA	S=NOW
IS72WV016M8BLO256-133HLA2	3.0V 128Mb OctalRAM + 3.0V 256Mb xSPI Flash	133Mhz	-40 to 105°C	24-TFBGA	S=NOW
IS72WV016M8BLO256-133HLA3	3.0V 128Mb OctalRAM + 3.0V 256Mb xSPI Flash	133Mhz	-40 to 125°C	24-TFBGA	S=NOW
IS72WV016M8BLO512-133HLA3	3.0V 128Mb OctalRAM + 3.0V 512Mb xSPI Flash	133Mhz	-40 to 125°C	24-TFBGA	S=NOW
IS72WV032M8BLO256-133HLA2	3.0V 256Mb OctalRAM + 3.0V 256Mb xSPI Flash	133Mhz	-40 to 105°C	24-TFBGA	S=NOW
IS72WV016M8BLO512-133HLA2	3.0V 256Mb OctalRAM + 3.0V 512Mb xSPI Flash	133Mhz	-40 to 105°C	24-TFBGA	S=NOW

# SRAM

## 5V High-Speed Asynchronous SRAM (IS61) & Automotive (IS64)

Den	Org	Part Number	Vcc	Speed[ns]	Pkg[Pins]	Status	Comment
64K	8Kx8	IS61C64AL	5V	10	SOJ[28], TSOP1[28]	Prod	
256K	32Kx8	IS61C256AL	5V	10,12	SOJ[28], TSOP1[28]	Prod	
512K	32Kx16	IS61C3216AL	5V	12	SOJ[44], TSOP2[44]	Prod	
1M	64Kx16	IS61/IS64C6416AL	5V	12	SOJ[44], TSOP2[44]	Prod	
	128Kx8	IS61/IS64C1024AL	5V	12	SOJ[32.3], TSOP1[32], sTSOP[32]	Prod	
4M	512Kx8	IS61C5128AL	5V	10,12	SOJ[36], TSOP2[44]	Prod	
	512Kx8	IS61C5128AS	5V	25	SOP[36], sTSOP1[32], TSOP2[32]	Prod	
	256Kx16	IS61C25616AL	5V	10	SOJ[44], TSOP2[44]	Prod	
	256Kx16	IS61C25616AS	5V	25	SOJ[44], TSOP2[44]	Prod	

## 5V Low Power Asynchronous SRAM (IS62) & Automotive (IS65)

Den	Org	Part Number	Vcc	Speed[ns]	Pkg[Pins]	Status	Comment
256K	32Kx8	IS62/IS65C256AL	5V	25, 45	SOP[28], TSOP1[28]	Prod	
1M	128Kx8	IS62/IS65C1024AL	5V	35, 45	SOP[32], TSOP1[32]	Prod	
4M	512Kx8	IS62C5128EL	5V	45	SOP[32], TSOP1[32], sTSOP1[32]	Prod	
	256Kx16	IS62C25616EL	5V	45	TSOP2[44]	Prod	
8M	1Mx8	IS62C10248AL	5V	45, 55	TSOP2[44], BGA[48]	Prod	
	512Kx16	IS62C51216AL	5V	45, 55	TSOP2[44], BGA[48]	Prod	

## High Speed Low Power Asynchronous SRAM (IS61) & Automotive (IS64)

Den	Org	Part Number	Vcc	Speed[ns]	Pkg[Pins]	Status	Comment/ Previous rev.
256K	32Kx8	IS61LV256AL	3.3V	10	SOJ[28], TSOP1[28]	Prod	
512K	32Kx16	IS61WV3216DBLL	2.4-3.6V	8, 10, 12	TSOP2[44], BGA[48]	Prod	
1M	64Kx16	IS61/IS64WV6416EEBLL	2.4-3.6V	8, 10	TSOP2[44], SOJ[44], BGA[48]	Prod	ECC Based SRAM
	128Kx8	IS61/IS64WV1288EEBLL	2.4-3.6V	8, 10	TSOP2[32], BGA[48], sTSOP1[32], SOJ[32.3]	Prod	ECC Based SRAM
2M	128Kx16	IS61/IS64WV12816EDBLL	2.4-3.6V	8, 10	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	128Kx16	IS61/IS64WV12816EFALL/BLL	1.65-3.6V	8, 10, 12	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	128Kx16	IS61/IS64WV12816FALL/BLL	1.65-3.6V	8, 10, 12	TSOP2[44], BGA[48]	Prod	
	256Kx8	IS61/IS64WV2568EDBLL	2.4-3.6V	8, 10	SOJ[36], TSOP2[44], BGA[36]	Prod	ECC Based SRAM
	256Kx8	IS61/IS64WV2568EFALL/BLL	1.65-3.6V	8, 10, 12	SOJ[36], TSOP2[44], BGA[36]	Prod	ECC Based SRAM
	256Kx8	IS61/IS64WV2568FALL/BLL	1.65-3.6V	8, 10, 12	SOJ[36], TSOP2[44], BGA[36]	Prod	
3M	128Kx24	IS61WV12824	1.65-2.2V	8, 10	PBGA[119]	Prod	
4M	256Kx16	IS61WV25616EDALL	1.65-2.2V	20	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	256Kx16	IS61/IS64WV25616EDBLL	2.4-3.6V	8, 10	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	256Kx16	IS61/IS64WV25616EFALL/BLL	1.65-3.6V	8, 10, 12	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	256Kx16	IS61/IS64WV25616FALL/BLL	1.65-3.6V	8, 10, 12	TSOP2[44], BGA[48]	Prod	
	512Kx8	IS61/IS64WV5128EDBLL	2.4-3.6V	8, 10	TSOP2[44], BGA[36]	Prod	ECC Based SRAM
	512Kx8	IS61/IS64WV5128EFALL/BLL	1.65-3.6V	8, 10, 12	SOJ[36], TSOP2[44], BGA[36]	Prod	ECC Based SRAM
	512Kx8	IS61/IS64WV5128FALL/BLL	1.65-3.6V	8, 10, 12	SOJ[36], TSOP2[44], BGA[36]	Prod	
8M	512Kx16	IS61WV51216EDALL	1.65-2.2V	20	TSOP2[44], BGA[48]	Prod	ECC Based SRAM

## High Speed Low Power Asynchronous SRAM (IS61) & Automotive (IS64) (Contd)

Den	Org	Part Number	Vcc	Speed(ns)	Pkg(Pins)	Status	Comment/ Previous rev.
8M	512Kx16	IS61/IS64WV51216EDBLL	2.4-3.6V	8, 10	TSOP2[44], BGA[48]	Prod	ECC Based SRAM
	512Kx16	IS61/IS64WV51216EEALL/BLL	1.65-3.6V	8,10,20	TSOP1[48], TSOP2[44], TSOP2[54], BGA[48]	Prod	ECC Based SRAM
	1Mx8	IS61/IS64WV10248EDBLL	2.4-3.6V	8, 10	TSOP2[44],BGA[48]	Prod	ECC Based SRAM
	1Mx8	IS61/IS64WV10248EEALL/BLL	1.65-3.6V	8,10,20	TSOP2[44], TSOP2[54], BGA[48]	Prod	ECC Based SRAM
	256Kx32	IS61WV25632ALL/BLL	1.65-3.6V	8, 10, 20	BGA[90]	Prod	
16M	1Mx16	IS61/64WV102416FALL/BLL	1.65-3.6V	8, 10, 20	TSOP1[48], TSOP2[54], BGA[48]	Prod	
	1Mx16	IS61/64WV102416EDALL/BLL	1.65-3.6V	10, 12	TSOP1[48], BGA[48]	Prod	ECC based SRAM
	2Mx8	IS61/64WV20488FALL/BLL	1.65-3.6V	8, 10, 20	TSOP2[44],TSOP2[54], BGA[48]	Prod	
	2Mx8	IS62WV20488ALL/BLL	1.65-3.6V	25, 35	TSOP2[44], BGA[48]	Prod	Low Power
	512Kx32	IS61WV51232ALL/BLL	1.65-3.6V	8, 10, 20	BGA[90]	Prod	
32M	2Mx16	IS61WV204816ALL	1.65-2.2V	10, 12	TSOP1[48], BGA[48]	Prod	
	2Mx16	IS61/IS64WV204816BLL	2.4-3.6V	10, 12	TSOP1[48],BGA[48]	Prod	

## PowerSaver™ Lower Power Asynchronous SRAM (IS62) & Automotive (IS65)

Den	Org	Part Number	Vcc	Speed(ns)	Pkg(Pins)	Status	Comment/Pre. Rev.
256K	32Kx8	IS62/IS65LV256AL	3.3V	20, 45	SOJ[28], SOP[28], TSOP1[28]	Prod	
1M	64Kx16	IS62WV6416ALL/BLL	1.7-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	64Kx16	IS62WV6416FALL/FBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	128Kx8	IS62WV1288ALL	1.65-2.2V	70	SOP[32], sTSOP1[32], TSOP1[32], BGA[36]	Prod	
	128Kx8	IS62/IS65WV1288BLL	1.65-3.6V	45,55	SOP[32], sTSOP1[32], TSOP1[32], BGA[36]	Prod	
	128Kx8	IS62WV1288FALL	1.65-2.2V	45	SOP[32], sTSOP1[32], TSOP1[32], BGA[36]	Prod	
	128Kx8	IS62/IS65WV1288FBLL	2.2-3.6V	45,55	SOP[32],sTSOP1[32],TSOP1[32],BGA[36]	Prod	
2M	128Kx16	IS62WV12816EALL	1.65-2.2V	55	TSOP2[44], BGA[48]	Prod	
	128Kx16	IS62/IS65WV12816EBLL	2.2-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	128Kx16	IS62WV12816FALL/FBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	256Kx8	IS62WV2568EALL/EBLL	1.65-3.6V	45, 55	sTSOP1[32], TSOP1[32], BGA[36]	Prod	
	256Kx8	IS62WV2568FALL/FBLL	1.65-3.6V	45, 55	sTSOP1[32], TSOP1[32], BGA[36]	Prod	
4M	256Kx16	IS62WV25616EALL	1.65-3.6V	35, 45, 55	TSOP2[44], BGA[48]	Prod	
	256Kx16	IS62/IS65WV25616EBLL/ECLL	1.65-3.6V	35, 45, 55	TSOP2[44], BGA[48]	Prod	
	256Kx16	IS62/IS65WV25616EHALL/BLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	ECC based SRAM
	512Kx8	IS62WV5128EALL	1.65-3.6V	35, 45, 55	sTSOP1[32], TSOP1[32], TSOP2[32], BGA[36], SOP[32]	Prod	
	512Kx8	IS62/IS65WV5128EBLL/ECLL	1.65-3.6V	35, 45, 55	sTSOP1[32], TSOP1[32], TSOP2[32], BGA[36], SOP[32]	Prod	
	512Kx8	IS62/IS65WV5128EHALL/BLL	1.65-3.6V	45, 55	sTSOP1[32], TSOP1/2[32], BGA[36]	Prod	ECC based SRAM
8M	512Kx16	IS62/IS65WV51216EALL/EBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	512Kx16	IS62/IS65WV51216EFALL/EFBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	ECC based SRAM
	512Kx16	IS62/IS65WV51216GALL/GBLL	1.65-3.6V	45, 55	TSOP1[48]	Prod	
	512Kx16	IS62WV51216HALL/BLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
	1Mx8	IS62/IS65WV10248EALL/EBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	

## PowerSaver™ Lower Power Asynchronous SRAM (Contd)

Den	Org	Part Number	Vcc	Speed[ns]	Pkg[Pins]	Status	Comment/ Previous rev.
8M	1Mx8	IS62/IS65WV10248EFALL/ EFBLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	ECC based SRAM
	1Mx8	IS62/IS65WV10248HALL/BLL	1.65-3.6V	45, 55	TSOP2[44], BGA[48]	Prod	
16M	1Mx16	IS62WV102416EALL/BLL	1.65-3.6V	45, 55	BGA[48]	Prod	Icc = 12mA [Max], Isb1 = 30uA [Typ]
	1Mx16	IS62/IS65WV102416FALL/BLL	1.65-3.6V	45, 55	BGA[48]	Prod	Icc = 36mA [Max], Isb1 = 5.8uA [Typ]
	2Mx8	IS62WV20488EALL/BLL	1.65-3.6V	45, 55	BGA[48]	Prod	Icc = 12mA [Max], Isb1 = 30uA [Typ]
	2Mx8	IS62/IS65WV20488FALL/BLL	1.65-3.6V	45, 55	BGA[48]	Prod	Icc = 36mA [Max], Isb1 = 5.8uA [Typ]
	1Mx16/ 2Mx8	IS62WV102416DALL/BLL	1.65-3.6V	45, 55	TSOP1[48]	Prod	Icc = 12mA [Max], Isb1 = 30uA [Typ]. x8/x16 configurable
	1Mx16/ 2Mx8	IS62WV102416GALL/BLL	1.65-3.6V	45, 55	TSOP1[48]	Prod	Icc = 36mA [Max], Isb1 = 5.8uA [Typ]

## CellularRAM/Pseudo SRAM (IS66) & Automotive (IS67)

Den	Org	Part Number	Vcc	Speed[ns]	Pkg[Pins]	Status	Comment/Prev. Rev.
8M	512Kx16	IS66/67WV51216EALL/EBLL	1.7-1.95V/2.5-3.6V	70	TSOP2[44], mBGA[48]	Prod	Standard Asynch
	512Kx16	IS66/67WVE51216EALL/EBLL/ECLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/Page
16M	1Mx16	IS66/67WV1M16EBLL	1.7-1.95V	70	mBGA[48]	Prod	Standard Asynch
	1Mx16	IS66/67WVC1M16EALL	1.7-1.95V	70	VFBGA[54]	Prod	CRAM 1.5
	1Mx16	IS66/67WVE1M16EALL/EBLL/ECLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/Page
32M	2Mx16	IS66/67WVC2M16EALL	1.7-1.95V	70	VFBGA[54]	Prod	CRAM 1.5
	2Mx16	IS66/67WVC2M16ECLL	1.7-1.95V	70	VFBGA[54]	Prod	CRAM 1.5
	2Mx16	IS66/67WVE2M16EALL/EBLL/ECLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/Page
	2Mx16	IS66/67WVE2M16TALL/TBLL/TCLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/ Page
64M	4Mx16	IS66/67WVC4M16EALL	1.7-1.95V	70	VFBGA[54]	Prod	CRAM 1.5
	4Mx16	IS66/67WVC4M16ECLL	1.7-1.95V	70	VFBGA[54]	Prod	CRAM 1.5
	4Mx16	IS66/67WVE4M16EALL/EBLL/ECLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/Page
	4Mx16	IS66/67WVE4M16TALL/TBLL/TCLL	1.7-1.95V/2.7-3.6V	70	TFBGA[48]	Prod	Asynch/ Page

## Serial SRAM and Serial RAM

Den	Org	Part Number	Vcc	Speed [MHz/ns]	Pkg[Pins]	Status	Comment/Prevs. Rev.	
512K	64Kx8	IS62WVS0648FALL	1.65-2.2V	16MHz	SOIC[8]	Prod	Serial SRAM	
	64Kx8	IS62WVS0648FBLL	2.2-3.6V	20MHz	SOIC[8]	Prod	Serial SRAM	
	64Kx8	IS62WVS0648GALL	1.65-2.2V	30MHz	SOIC[8]	Prod	Serial SRAM	
	64Kx8	IS62WVS0648GBLL	2.7-3.6V	45MHz	SOIC[8]	Prod	Serial SRAM	
1M	128Kx8	IS62WVS1288FALL	1.65-2.2V	16MHz	SOIC[8]	Prod	Serial SRAM	
	128Kx8	IS62WVS1288FBLL	2.2-3.6V	20MHz	SOIC[8]	Prod	Serial SRAM	
	128Kx8	IS62WVS1288GALL	1.65-2.2V	30MHz	SOIC[8]	Prod	Serial SRAM	
	128Kx8	IS62WVS1288GBLL	2.7-3.6V	45MHz	SOIC[8]	Prod	Serial SRAM	
2M	256Kx8	IS62WVS2568FALL	1.65-2.2V	16MHz	SOIC[8]	Prod	Serial SRAM	
	256Kx8	IS62WVS2568FBLL	2.2-3.6V	20MHz	SOIC[8]	Prod	Serial SRAM	
	256Kx8	IS62WVS2568GALL	1.65-2.2V	30MHz	SOIC[8]	Prod	Serial SRAM	
	256Kx8	IS62WVS2568GBLL	2.7-3.6V	45MHz	SOIC[8]	Prod	Serial SRAM	
4M	512Kx8	IS62WVS5128FALL	1.65-2.2V	16MHz	SOIC[8]	Prod	Serial SRAM	
	512Kx8	IS62WVS5128FBLL	2.2-3.6V	20MHz	SOIC[8]	Prod	Serial SRAM	
	512Kx8	IS62WVS5128GALL	1.65-2.2V	30MHz	SOIC[8]	Prod	Serial SRAM	
	512Kx8	IS62WVS5128GBLL	2.7-3.6V	45MHz	SOIC[8]	Prod	Serial SRAM	
	256Kx16	IS61WV25616LEBLL	2.4-3.6V	12,15 ns	TSOP2[44],BGA[48]	Prod	Latched SRAM	
	256Kx16	IS61WV25616MEBLL	2.4-3.6V	10, 12 ns	TSOP2[44],BGA[48]	Prod	Muxed SRAM	
8M	1Mx8	IS66/IS67WVS1M8ALL	1.65-1.95V	104MHz	SOIC[8]	Prod	Serial RAM	
	1Mx8	IS66/IS67WVS1M8BLL	2.7-3.6V	104MHz	SOIC[8]	Prod	Serial RAM	
	2Mx4	IS66/67WVQ2M4DALL	1.65-1.95V	200MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM	
	2Mx4	IS66/67WVQ2M4DBLL	2.7-3.6V	133MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM	
	2Mx4	IS66/67WVQ2M4EDALL	1.65-1.95V	200MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM, ECC Based	
	2Mx4	IS66/67WVQ2M4EDBLL	2.7-3.6V	133MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM, ECC Based	
	16M	2Mx8	IS66/IS67WVS2M8ALL	1.65-1.95V	104MHz	SOIC[8]	Prod	Serial RAM
		2Mx8	IS66/IS67WVS2M8BLL	2.7-3.6V	104MHz	SOIC[8]	Prod	Serial RAM
		4Mx4	IS66/67WVQ4M4DALL	1.65-1.95V	200MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM
		4Mx4	IS66/67WVQ4M4DBLL	2.7-3.6V	166MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM
4Mx4		IS66/67WVQ4M4EDALL	1.65-1.95V	200MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM, ECC Based	
	4Mx4	IS66/67WVQ4M4EDBLL	2.7-3.6V	133MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM, ECC Based	
	32M	4Mx8	IS66/IS67WVS4M8ALL	1.65-1.95V	104MHz	SOIC[8]	Prod	Serial RAM
		4Mx8	IS66/IS67WVS4M8BLL	2.7-3.6V	104MHz	SOIC[8]	Prod	Serial RAM
		8Mx4	IS66/IS67WVQ4M4DALL	1.65-1.95V	200MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM
		8Mx4	IS66/IS67WVQ4M4DBLL	2.7-3.6V	166MHz	SOIC[16], BGA[24]	Prod	Serial QUADRAM
64M	8Mx8	IS66/IS67WVS8M8FALL	1.65-1.95V	104MHz	SOIC[8]	S=H2/23	Serial RAM	
	8Mx8	IS66/IS67WVS8M8FBLL	2.7-3.6V	104MHz	SOIC[8]	S=H2/23	Serial RAM	
	16Mx4	IS66/IS67WVQ16M4FALL	1.65-1.95V	200MHz	BGA[24]	S=H2/23	Serial QUADRAM	
	16Mx4	IS66/IS67WVQ16M4FBLL	2.7-3.6V	200MHz	BGA[24]	S=H2/23	Serial QUADRAM	
128M	16Mx8	IS66/IS67WVS16M8FALL	1.65-1.95V	104MHz	SOIC[8]	S=H2/23	Serial QUADRAM	
	16Mx8	IS66/IS67WVS16M8FBLL	2.7-3.6V	104MHz	SOIC[8]	S=H2/23	Serial QUADRAM	



# HyperRAM™

Den	Org	Part Number	Vcc	Speed[MHz]	Pkg[Pins]	Status	Comment
32M	4Mx8	IS66/IS67WVH4M8FALL	1.7-1.95V	200	BGA[24]	S=H2/23	
	4Mx8	IS66/IS67WVH4M8FBLL	2.7-3.6V	200	BGA[24]	S=H2/23	
64M	8Mx8	IS66/IS67WVH8M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	8Mx8	IS66/IS67WVH8M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
	8Mx8	IS66/IS67WVH8M8EDALL	1.7-1.95V	166	BGA[24]	Prod	ECC based
	8Mx8	IS66/IS67WVH8M8EDBLL	2.7-3.6V	133	BGA[24]	Prod	ECC based
128M	16Mx8	IS66/IS67WVH16M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	16Mx8	IS66/IS67WVH16M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
	16Mx8	IS66/IS67WVH16M8EDALL	1.7-1.95V	166	BGA[24]	Prod	ECC based
	16Mx8	IS66/IS67WVH16M8EDBLL	2.7-3.6V	133	BGA[24]	Prod	ECC based
256M	32Mx8	IS66/IS67WVH32M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	32Mx8	IS66/IS67WVH32M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
512M	64Mx8	IS66/IS67WVH64M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	64Mx8	IS66/IS67WVH64M8DBLL	2.7-3.6V	200	BGA[24]	Prod	

# OctalRAM

Den	Org	Part Number	Vcc	Speed[MHz]	Pkg[Pins]	Status	Comment
32M	4Mx8	IS66/IS67WVO4M8FALL	1.7-1.95V	200	BGA[24]	S=H2/23	
	4Mx8	IS66/IS67WVO4M8FBLL	2.7-3.6V	200	BGA[24]	S=H2/23	
64M	8Mx8	IS66/IS67WVO8M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	8Mx8	IS66/IS67WVO8M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
	8Mx8	IS66/IS67WVO8M8EDALL	1.7-1.95V	166	BGA[24]	Prod	ECC based
	8Mx8	IS66/IS67WVO8M8EDBLL	2.7-3.6V	166	BGA[24]	Prod	ECC based
	8Mx8	IS66/IS67WVO8M8FALL	1.7-1.95V	200	BGA[24]	S=H2/23	
	8Mx8	IS66/IS67WVO8M8FBLL	2.7-3.6V	200	BGA[24]	S=H2/23	
128M	16Mx8	IS66/IS67WVO16M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	16Mx8	IS66/IS67WVO16M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
	16Mx8	IS66/IS67WVO16M8EDALL	1.7-1.95V	166	BGA[24]	Prod	ECC based
	16Mx8	IS66/IS67WVO16M8EDBLL	2.7-3.6V	133	BGA[24]	Prod	ECC based
256M	32Mx8	IS66/IS67WVO32M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	32Mx8	IS66/IS67WVO32M8DBLL	2.7-3.6V	166	BGA[24]	Prod	
512M	64Mx8	IS66/IS67WVO64M8DALL	1.7-1.95V	200	BGA[24]	Prod	
	64Mx8	IS66/IS67WVO64M8DBLL	2.7-3.6V	200	BGA[24]	Prod	

# Pipeline Synchronous SRAM (IS61) & Automotive (IS64)

Den	Org	Part Number	Vcc	VccQ	Speed[MHz]	tKQ[ns]	Pkg[Pins]	Status	Comment
2M	64Kx32	IS61LP6432A	3.3V	2.5/3.3V	133	4	QFP[100]	Prod	P
	64Kx36	IS61LP6436A	3.3V	2.5/3.3V	166,133	3.5,4	QFP[100]	Prod	P
4M	128Kx32	IS61/ IS64LPS12832EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature
	128Kx36	IS61/ IS64LPS12836EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature
	256Kx18	IS61/ IS64LPS25618EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature
	128Kx32	IS61/ IS64VPS12832EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature

Notes: 1. S = Sample 2. Prod = Production 3. P = Pipeline 4. F =Flow Through 5. SCD = Single Cycle Deselect 6. DC = Double Cycle Deselect

## Pipeline Synchronous SRAM (IS61) & Automotive (IS64) (Contd)

Den	Org	Part Number	Vcc	VccQ	Speed[MHz]	tKQ[ns]	Pkg[Pins]	Status	Comment
4M	128Kx36	IS61/ IS64VPS12836EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature
	256Kx18	IS61/ IS64VPS25618EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119],QFP[100], BGA[165]	Prod	P/SCD,ECC feature
9M	256Kx32	IS61LPS25632B	3.3V	2.5/3.3V	200,166	3.1,3.8	QFP[100]	Prod	P/SCD
	256Kx36	IS61/64LPS25636B	3.3V	2.5/3.3V	250,200,166	IS61: 2.6,3.1,3.8 IS64: 3.8	BGA[119], QFP[100], BGA[165]	Prod	P/SCD
	512Kx18	IS61LPS51218B	3.3V	2.5/3.3V	250,200,166	2.6,3.1,3.8	BGA[119], QFP[100], BGA[165]	Prod	P/SCD
	256Kx36	IS61VPS25636B	2.5V	2.5V	250,200,166	2.6,3.1,3.8	BGA[119], QFP[100], BGA[165]	Prod	P/SCD
	512Kx18	IS61VPS51218B	2.5V	2.5V	250,200,166	2.6,3.1,3.8	BGA[119], QFP[100], BGA[165]	Prod	P/SCD
	256Kx36	IS61LPD25636A	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P/DCD
	512Kx18	IS61LPD51218A	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P/DCD
	256Kx36	IS61VPD25636A	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P/DCD
	512Kx18	IS61VPD51218A	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P/DCD
18M	256Kx72	IS61LPS25672A	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[209]	Prod	P/SCD, 300MHz available
	512Kx36	IS61/ IS64LPS51236B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100],BGA[119], BGA[165,209]	Prod	P/SCD, IS61LPS51236A 300MHz available
	1Mx18	IS61LPS102418B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100],BGA[119], BGA[165,209]	Prod	P/SCD, IS61LPS102418A 300MHz available
	256Kx72	IS61VPS25672A	2.5V	2.5V	250,200	2.6,3.1	BGA[209]	Prod	P/SCD
	512Kx36	IS61VPS51236B	2.5V	2.5V	250,200	2.6,3.0	QFP[100],BGA[119], BGA[165,209]	Prod	P/SCD, IS61VPS51236A
	1Mx18	IS61VPS102418B	2.5V	2.5V	250,200	2.6,3.0	QFP[100],BGA[119], BGA[165,209]	Prod	P/SCD, IS61VPS102418A
	512Kx36	IS61LPD51236B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100],BGA[165], BGA[119]	Prod	P/DCD
	1Mx18	IS61LPD102418B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100],BGA[165], BGA[119]	Prod	P/DCD
	512Kx36	IS61VPD51236B	2.5V	2.5V	250,200	2.6,3.0	QFP[100],BGA[165], BGA[119]	Prod	P/DCD
	1Mx18	IS61VPD102418B	2.5V	2.5V	250,200	2.6,3.0	QFP[100],BGA[165], BGA[119]	Prod	P/DCD
36M	1Mx36	IS61/ IS64LPS102436B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD, IS61LPS102436A
	2Mx18	IS61/ IS64LPS204818B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD, IS61LPS204818A
	1Mx36	IS61/ IS64VPS102436B	2.5V	2.5V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD, IS61VPS102436A
36M	2Mx18	IS61/ IS64VPS204818B	2.5V	2.5V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD, IS61VPS204818A
	1Mx36	IS61VVPS102436B	1.8V	1.8V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD
	2Mx18	IS61VVPS204818B	1.8V	1.8V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165], BGA[119]	Prod	P/SCD

Notes: 1. S = Sample 2. Prod = Production 3. P = Pipeline 4. F = Flow Through 5. SCD = Single Cycle Deselect 6. DC = Double Cycle Deselect

## Pipeline Synchronous SRAM (IS61) & Automotive (IS64) (Contd)

Den	Org	Part Number	Vcc	VccQ	Speed[MHz]	tKQ[ns]	Pkg[ Pins]	Status	Comment
72M	2Mx32	IS61LPS204832B	3.3V	2.5/3.3V	200	3.1	QFP[100]	Prod	P/SCD
	2Mx36	IS61/ IS64LPS204836B	3.3V	2.5/3.3V	250, 200, 166	2.8, 3.1, 3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD
	4Mx18	IS61/ IS64LPS409618B	3.3V	2.5/3.3V	250, 200, 166	2.8, 3.1, 3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD
	2Mx36	IS61/ IS64VPS204836B	2.5V	2.5V	250, 200, 166	2.8, 3.1, 3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD
	4Mx18	IS61/ IS64VPS409618B	2.5V	2.5V	250, 200, 166	2.8, 3.1, 3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD
	2Mx36	IS61/ IS64VPS204836B	1.8V	1.8V	166	3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD
	4Mx18	IS61/ IS64VPS409618B	1.8V	1.8V	166	3.8	QFP[100], BGA[165], BGA[119]	Prod	P/SCD

## Flow-Through Synchronous SRAM (IS61) & Automotive (IS64)

Den	Org	Part Number	Vcc	VccQ	Speed [MHz]	tKQ[ns]	Pkg[ Pins]	Status	Comment
2M	64Kx32	IS61LF6432A	3.3V	2.5/3.3V	90	8.5	QFP[100]	Prod	F
	64Kx36	IS61LF6436A	3.3V	2.5/3.3V	90	8.5	QFP[100]	Prod	F
4M	128Kx32	IS61/ IS64LF12832EC	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F,ECC feature
	128Kx36	IS61/ IS64LF12836EC	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F,ECC feature
	256Kx18	IS61/ IS64LF25618EC	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F,ECC feature
	128Kx32	IS61/ IS64VF12832EC	2.5V	2.5V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	IS61: P,ECC feature IS64: F,ECC feature
	128Kx36	IS61/ IS64VF12836EC	2.5V	2.5V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F,ECC feature
	256Kx18	IS61/ IS64VF25618EC	2.5V	2.5V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F,ECC feature
9M	256Kx36	IS61/ IS64LF25636B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61/ IS64LF25636A
	512Kx18	IS61/IS64LF51218B	3.3V	2.5/3.3V	133,117	IS61: 6.5, 7.5 IS64: 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61/ IS64LF51218A
	256Kx36	IS61/ IS64VF25636B	2.5V	2.5V	133,117	IS61: 6.5, 7.5 IS64: 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61VF25636A
	512Kx18	IS61/IS64VF51218B	2.5V	2.5V	133,117	IS61: 6.5, 7.5 IS64: 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61VF51218A
18M	256Kx72	IS61LF25672A	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[209]	Prod	F
	512Kx36	IS61/IS64LF51236B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 3.0	BGA[119], QFP[100], BGA[165]	Prod	IS61: F, IS61LF51236A IS64: P
	1Mx18	IS61LF102418B	3.3V	2.5/3.3V	133,117	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61LF102418A
	256Kx72	IS61VF25672A	2.5V	2.5V	133,117	6.5, 7.5	BGA[209]	Prod	F
	512Kx36	IS61VF51236B	2.5V	2.5V	133,117	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61VF51236A
	1Mx18	IS61VF102418B	2.5V	2.5V	133,117	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61VF102418A
36M	1Mx36	IS61/ IS64LF102436B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	IS61: F, IS61LF102436A IS64: F
	2Mx18	IS61/ IS64LF204818B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	IS61: F, IS61LF204818A IS64: F

Notes: 1. S = Sample 2. Prod = Production 3. P = Pipeline 4. F =Flow Through 5. SCD = Single Cycle Deselect 6. DC = Double Cycle Deselect

## Flow-Through Synchronous SRAM (IS61) & Automotive (IS64) (Contd)

Den	Org	Part Number	Vcc	VccQ	Speed [MHz]	tKQ[ns]	Pkg(Pins)	Status	Comment
36M	1Mx36	IS61/ IS64VF102436B	2.5V	2.5V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	IS61: F, IS61VF102436A IS64: F
	2Mx18	IS61/ IS64VF204818B	2.5V	2.5V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	IS61: F, IS61VF204818A IS64: F
	1Mx36	IS61VVF102436B	1.8V	1.8V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
	2Mx18	IS61VVF204818B	1.8V	1.8V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
72M	2Mx36	IS61LF204836B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
	4Mx18	IS61LF409618B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
	2Mx36	IS61VF204836B	2.5V	2.5V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
	4Mx18	IS61VF409618B	2.5V	2.5V	133,117	6.5,7.5	QFP[100], BGA[165], BGA[119]	Prod	F
	2Mx36	IS61/ IS64VVF204836B	1.8V	1.8V	133,117	IS61: 7.5 IS64: 6.5, 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	F
	4Mx18	IS61/ IS64VVF409618B	1.8V	1.8V	133,117	IS61: 7.5 IS64: 6.5, 7.5	IS61: QFP[100], BGA[165], BGA[119] IS64: BGA[119], BGA[165], TQFP[100]	Prod	F

## No-Wait (ZBT) Synchronous SRAM (IS61) & Automotive (IS64)

Den	Org	Part Number	Vcc	VccQ	Speed[MHz]	tKQ[ns]	Pkg(Pins)	Status	Comment
2M	64Kx32	IS61NLP6432A	3.3V	2.5/3.3V	250,200	2.6,3.1	QFP[100]	Prod	P
	64Kx36	IS61NLP6436A	3.3V	2.5/3.3V	250,200	2.6,3.1	QFP[100]	Prod	P
4M	128Kx32	IS61/64NLP12832EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	128Kx36	IS61/64NLP12836EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	256Kx18	IS61/64NLP25618EC	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	128Kx32	IS61/64NVP12832EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	128Kx36	IS61/64NVP12836EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	256Kx18	IS61/64NVP25618EC	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, ECC feature
	128Kx32	IS61/64NLF12832EC	3.3V	2.5/3.3V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
	128Kx36	IS61/64NLF12836EC	3.3V	2.5/3.3V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
	256Kx18	IS61/64NLF25618EC	3.3V	2.5/3.3V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
	128Kx32	IS61/64NVF12832EC	2.5V	2.5V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
	128Kx36	IS61/64NVF12836EC	2.5V	2.5V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
	256Kx18	IS61/64NVF25618EC	2.5V	2.5V	177,133	6.5, 7.5	BGA[119], QFP[100], BGA[165]	Prod	F, ECC feature
9M	256Kx36	IS61NLP25636B	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, IS61NLP25636A
	512Kx18	IS61NLP51218B	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, IS61NLP51218A
	256Kx36	IS61NVP25636B	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, IS61NVP25636A
	512Kx18	IS61NVP51218B	2.5V	2.5V	250,200	2.6,3.1	BGA[119], QFP[100], BGA[165]	Prod	P, IS61NVP51218A
	256Kx36	IS61NLF25636B	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61NLF25636A
	512Kx18	IS61NLF51218B	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[119], QFP[100], BGA[165]	Prod	F, IS61NLF51218A
18M	256Kx72	IS61NLP25672	3.3V	2.5/3.3V	250,200	2.6,3.1	BGA[209]	Prod	P, 300MHz available
	512Kx36	IS61/IS64NLP51236B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100], BGA[119,165]	Prod	IS61: IS61NLP51236 P, 300MHz available IS64: P
	1Mx18	IS61NLP102418B	3.3V	2.5/3.3V	250,200	2.6,3.0	QFP[100], BGA[119,165]	Prod	IS61NLP102418 P, 300MHz available
	256Kx72	IS61NVP25672	2.5V	2.5V	250,200	2.6,3.1	BGA[209]	Prod	P
	512Kx36	IS61NVP51236B	2.5V	2.5V	250,200	2.6,3.0	QFP[100], BGA[119,165]	Prod	P, IS61NVP51236
	1Mx18	IS61NVP102418B	2.5V	2.5V	250,200	2.6,3.0	QFP[100], BGA[119,165]	Prod	P, IS61NVP02418
	256Kx72	IS61NLF25672	3.3V	2.5/3.3V	133,117	6.5,7.5	BGA[209]	Prod	F

## No-Wait (ZBT) Synchronous SRAM (Contd)

Den	Org	Part Number	Vcc	VccQ	Speed[MHz]	tKQ[ns]	Pkg[Pins]	Status	Comment
	512Kx36	IS61/IS64NLF51236B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100], BGA[119,165]	Prod	IS61: F, IS61NLF51236 IS64: F
	1Mx18	IS61NLF102418B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F, IS61NLF102418
18M	256Kx72	IS61NVF25672	2.5V	2.5V	133,117	6.5,7.5	BGA[209]	Prod	F
	512Kx36	IS61NVF51236B	2.5V	2.5V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F, IS61NVF51236
	1Mx18	IS61NVF102418B	2.5V	2.5V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F, IS61NVF102418
36M	1Mx36	IS61/ IS64NLP102436B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100], BGA[119,165]	Prod	IS61: P,IS61NLP102436A IS64: P
	2Mx18	IS61/ IS64NLP204818B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100], BGA[119,165]	Prod	IS61: P,IS61NLP204818A IS64: P
	1Mx36	IS61/ IS64NVP102436B	2.5V	2.5	250,200,166	2.8,3.1,3.8	QFP[100], BGA[119,165]	Prod	IS61: P, IS61NVP102436A IS64: P
	2Mx18	IS61/ IS64NVP204818B	2.5V	2.5	250,200,166	2.8,3.1,3.8	QFP[100], BGA[119,165]	Prod	IS61: P,IS61NVP204818A IS64: P
	1Mx36	IS61NVVP102436B	1.8V	1.8V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
	2Mx18	IS61NVVP204818B	1.8V	1.8V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
36M	1Mx36	IS61/ IS64NLF102436B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 7.5	QFP[100],BGA[165,119]	Prod	IS61: F,IS61NLF102436A IS64: F
	2Mx18	IS61/ IS64NLF204818B	3.3V	2.5/3.3V	133,117	IS61: 6.5,7.5 IS64: 7.5	QFP[100],BGA[165,119]	Prod	IS61: F,IS61NLF204818A IS64: F
	1Mx36	IS61/ IS64NVF102436B	2.5V	2.5V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100],BGA[165,119] IS64: BGA[119],BGA[165],TQFP[100]	Prod	IS61: F,IS61NVF102436A IS64: F
	2Mx18	IS61/ IS64NVF204818B	2.5V	2.5V	133,117	IS61: 6.5,7.5 IS64: 7.5	IS61: QFP[100],BGA[165,119] IS64: BGA[119],BGA[165],TQFP[100]	Prod	IS61: F,IS61NVF204818A IS64: F
	1Mx36	IS61NVVF102436B	1.8V	1.8V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	2Mx18	IS61NVVF204818B	1.8V	1.8V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
72M	2Mx36	IS61NLP204836B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
	4Mx18	IS61NLP409618B	3.3V	2.5/3.3V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
	2Mx36	IS61NVP204836B	2.5V	2.5V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
	4Mx18	IS61NVP409618B	2.5V	2.5V	250,200,166	2.8,3.1,3.8	QFP[100],BGA[165,119]	Prod	P
	2Mx36	IS61NVVP204836B	1.8V	1.8V	250,200,166	2.8,3.1	QFP[100],BGA[165,119]	Prod	P
	4Mx18	IS61NVVP409618B	1.8V	1.8V	250,200,166	2.8,3.1	QFP[100],BGA[165,119]	Prod	P
	2Mx36	IS61NLF204836B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	4Mx18	IS61NLF409618B	3.3V	2.5/3.3V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	2Mx36	IS61NVF204836B	2.5V	2.5V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	4Mx18	IS61NVF409618B	2.5V	2.5V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	2Mx36	IS61NVVF204836B	1.8V	1.8V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F
	4Mx18	IS61NVVF409618B	1.8V	1.8V	133,117	6.5,7.5	QFP[100],BGA[165,119]	Prod	F

Notes: 1. S = Sample 2. Prod = Production 3. P = Pipeline 4. F =Flow Through 5. SCD = Single Cycle Deselect 6. DC = Double Cycle Deselect



## QUAD

Den	Org	Part Number	Burst	Speed[MHz]	Status	Comments/Previous revision
18M	1Mx18	IS61QDB41M18C	4	250, 300, 333, 400	Prod	
	512Kx36	IS61QDB451236C	4	250, 300, 333, 400	Prod	
	1Mx18	IS61QDB21M18C	2	250, 300, 333, 400	Prod	
	512Kx36	IS61QDB251236C	2	250, 300, 333, 400	Prod	
36M	1Mx36	IS61QDB41M36C	4	250, 300, 333, 400	Prod	
	2Mx18	IS61QDB42M18C	4	250, 300, 333, 400	Prod	
	1Mx36	IS61QDB21M36C	2	250, 300, 333, 400	Prod	
	2Mx18	IS61QDB22M18C	2	250, 300, 333, 400	Prod	
72M	2Mx36	IS61QDB42M36C	4	250, 300, 333, 400	Prod	IS61QDB42M36A
	4Mx18	IS61QDB44M18C	4	250, 300, 333, 400	Prod	IS61QDB44M18A
	2Mx36	IS61QDB22M36C	2	250, 300, 333	Prod	IS61QDB22M36A
	4Mx18	IS61QDB24M18C	2	250, 300, 333	Prod	IS61QDB24M18A

## QUADP

Den	Org	Part Number	Burst	Speed[MHz]	Status	Comments/Previous revision
18M	1Mx18	IS61QDPB41M18C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	1Mx18	IS61QDP2B41M18C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	1Mx18	IS61QDPB21M18C/C1/C2	2	333,400,450,500	Prod	2.5 Cycle Read Latency
	1Mx18	IS61QDP2B21M18C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	512Kx36	IS61QDPB451236C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	512Kx36	IS61QDP2B451236C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	512Kx36	IS61QDPB251236C/C1/C2	2	333,400,450,500	Prod	2.5 Cycle Read Latency
	512Kx36	IS61QDP2B251236C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
36M	2Mx18	IS61QDPB42M18C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	2Mx18	IS61QDP2B42M18C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	2Mx18	IS61QDPB22M18C/C1/C2	2	333,400,450,500	Prod	2.5 Cycle Read Latency
	2Mx18	IS61QDP2B22M18C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	1Mx36	IS61QDPB41M36C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	1Mx36	IS61QDP2B41M36C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	1Mx36	IS61QDPB21M36C/C1/C2	2	333,400,450,500	Prod	2.5 Cycle Read Latency
	1Mx36	IS61QDP2B21M36C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
72M	4Mx18	IS61QDPB44M18C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	4Mx18	IS61QDP2B24M18C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	2MX36	IS61QDPB42M36C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	2Mx36	IS61QDP2B22M36C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency

Notes: 1. S = Sample 2. Prod = Production 3. P = Pipeline 4. F =Flow Through 5. SCD = Single Cycle Deselect 6. DC = Double Cycle Deselect

## DDR-II, Common I/O

Den	Org	Part Number	Burst	Speed(MHz)	Status	Comments/Previous rev.
18M	1Mx18	IS61DDB41M18C	4	250,300,333,400	Prod	
	1Mx18	IS61DDB21M18C	2	250,300,333,400	Prod	
	1Mx18	IS61DDSB21M18C	2	250,300,333,400	Prod	Separate I/O
	512Kx36	IS61DDB451236C	4	250,300,333,400	Prod	
	512Kx36	IS61DDB251236C	2	250,300,333,400	Prod	
	512Kx36	IS61DDSB251236C	2	250,300,333,400	Prod	Separate I/O
36M	2Mx18	IS61DDB42M18C	4	250,300,333,400	Prod	
	2Mx18	IS61DDB22M18C	2	250,300,333,400	Prod	
	2Mx18	IS61DDSB22M18C	2	250,300,333,400	Prod	Separate I/O
	1Mx36	IS61DDB41M36C	4	250,300,333,400	Prod	
	1Mx36	IS61DDB21M36C	2	250,300,333,400	Prod	
	1Mx36	IS61DDSB21M36C	2	250,300,333,400	Prod	Separate I/O
72M	2Mx36	IS61DDB22M36C	2	250,300,333,400	Prod	IS61DDB22M36A
	4Mx18	IS61DDB24M18C	2	250,300,333,400	Prod	IS61DDB24M18A

## DDR-IIP, Common I/O

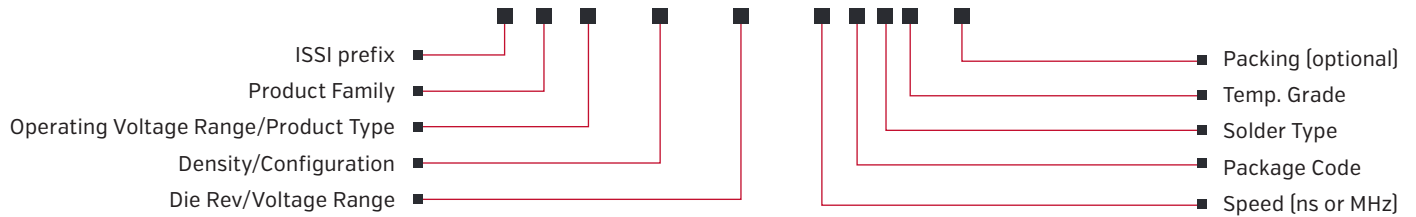
Den	Org	Part Number	Burst	Speed(MHz)	Status	Comments/Previous rev.
18M	1Mx18	IS61DDPB41M18C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	1Mx18	IS61DDP2B41M18C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	1Mx18	IS61DDPB21M18C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
	1Mx18	IS61DDP2B21M18C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency

## DDR-IIP, Common I/O (Contd)

Den	Org	Part Number	Burst	Speed(MHz)	Status	Comments/Previous rev.
18M	512Kx36	IS61DDPB451236C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	512Kx36	IS61DDP2B451236C/C1/C2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	512Kx36	IS61DDPB251236C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
	512Kx36	IS61DDP2B251236C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
36M	2Mx18	IS61DDPB42M18C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	2Mx18	IS61DDPB22M18C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
	2Mx18	IS61DDP2B22M18C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	1Mx36	IS61DDPB41M36C/C1/C2	4	450,500,550,567	Prod	2.5 Cycle Read Latency
	1Mx36	IS61DDPB21M36C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
72M	1Mx36	IS61DDP2B21M36C/C1/C2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	4Mx18	IS61DDPB44M18B/B1/B2	4	400,450,500,550	Prod	2.5 Cycle Read Latency
	4Mx18	IS61DDP2B44M18A/A1/A2	4	300,333,400,450	Prod	2.0 Cycle Read Latency
	4Mx18	IS61DDPB24M18B/B1/B2	2	400,450,500,550	Prod	2.5 Cycle Read Latency
	4Mx18	IS61DDPB24M18C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
	4Mx18	IS61DDP2B24M18A/A1/A2	2	300,333,400,450	Prod	2.0 Cycle Read Latency
	2Mx36	IS61DDPB42M36B/B1/B2	4	400,450,500,550	Prod	2.5 Cycle Read Latency
	2Mx36	IS61DDPB22M36A/A1/A2	2	300,333,400,450	Prod	2.5 Cycle Read Latency
	2Mx36	IS61DDPB22M36B/B1/B2	2	400,450,500,550	Prod	2.5 Cycle Read Latency
	2Mx36	IS61DDPB22M36C/C1/C2	2	450,500,550,567	Prod	2.5 Cycle Read Latency
2Mx36	IS61DDP2B22M36A/A1/A2	2	300,333,400,450	Prod	2.0 Cycle Read Latency	

# SRAM Part Decoder

IS 61 WV 12816 DBLL - 10 T L I - TR



## SRAM Product Family

- 61/63 = High Speed
- 62 = Low Power
- 64 = Automotive High Speed
- 65 = Automotive Low Power
- 66 = Pseudo SRAM/HyperRAM™
- 67 = Automotive PSRAM/HyperRAM™

## Density/Configuration

- Example:*
- 25636 = 256Kx36
  - 51216 = 512Kx16
  - 1M36 = 1Mx36

## Die Rev/Voltage Range

**Die Rev**  
Blank-Z

### Voltage Range (WV)

- ALL = 1.65V to 2.2V
- BLL = 2.2V [2.4V/2.5V] to 3.6V
- CLL = 1.7 to 1.95V

## Operating Voltage Range/ Product Type

### Asynchronous SRAM

- C = 5V
- LV = 3.3V
- WV = Wide Voltage Range
- WVS = Serial SRAM
- WVH = HyperRAM™

### Synchronous SRAM

- P = Pipeline, F = Flowthrough
- NLP/NLF/NVP/NVF = No-Wait Option
- LP/LF: Vcc = 3.3V, VccQ = 3.3V/2.5V
- VP/VF: Vcc = 2.5V, VccQ = 2.5V
- QD = QUAD, Vcc = 1.8V, VccQ = 1.8V/1.5V
- DD = DDR-II, Vcc = 1.8V, VccQ = 1.8V/1.5V

## Packing

- TR = Tape and Reel
- Blank = Bulk

## Temp. Grade

- Blank = Commercial Grade [0C to +70°C]
- I = Industrial Grade [-40C to +85°C]
- A1 = Automotive Grade [-40C to +85°C]
- A2 = Automotive Grade [-40C to +105°C]
- A3 = Automotive Grade [-40C to +125°C]

## Solder Type

- L = Lead-free [RoHS Compliant]

## Speed (ns or MHz)

- Example:*
- 8 = 8ns
  - 200 = 200MHz

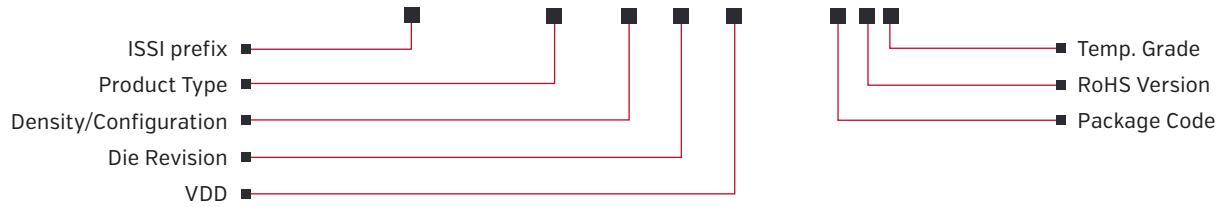
## Package Code

- B, B1, B2, B3 = BGA
- CT = Copper TSOP
- H = sTSOP
- J = 300-mil SOJ
- K = 400-mil SOJ
- LQ = LQFP
- M, M3, = BGA
- N = 8-SOIC
- Q = SOP
- T/T2 = TSOP
- TQ = QFP
- U = SOP

**Note:** Speed, temperature grade, and voltage range values shown are applicable for most products. Please refer to the datasheet for a product's exact specifications.

# PSRAM Part Decoder

IS 66/67 WVE 4M16 x BLL - 70 B L I



## PSRAM Product Type

Blank = Standard Asynch PSRAM  
E = Asynch/Page PSRAM  
C = Cellular RAM 1.5

## Density/Configuration

51216 = 8Mb /512K x16  
1M16 = 16Mb /1M x16  
2M16 = 32Mb /2M x16  
4M16 = 64Mb /4M x16

## Die Rev

Die Rev

## VDD

ALL = 1.8V  
BLL = 3V  
CLL = 1.8V

## Package Code

B = BGA  
T = TSOP

## RoHS Version

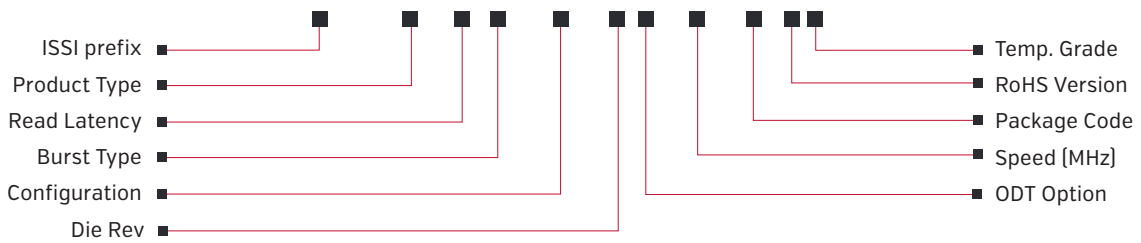
Blank = Leaded  
L = Lead-free

## Temperature Range

I = Industrial [-40°C to 85°C]  
A1 = Automotive [-40°C to 85°C]

# QUAD/P, DDR-II/P Part Decoder

IS 61 QDP 2 B4 4M18 X 1 - 333 M3 L I



## Product Type

QD = QUAD  
QDP = QUADP  
DD = DDR-II, Common I/O  
DDP = DDR-IIP, Common I/O

## Configuration

51236 = 512Kb x 36  
1M18 = 1Mb x 18  
1M36 = 1Mb x 36  
2M18 = 2Mb x 18  
2M36 = 2Mb x 36  
4M18 = 4Mb x 18

## Read Latency (RL):

For QUAD/DDR-II devices:

Blank = 1.5 clock cycles

For QUADP/DDR-IIP devices:

Blank = 2.5 clock cycles

2 = 2.0 clock cycles

## Burst Type:

B2 = Burst 2  
B4 = Burst 4

## ODT Option (if supported):

Blank: No ODT

1: ODT Option 1

If ODT = HIGH or floating, a high range termination resistance is selected.

If ODT = LOW, a low range termination resistance is selected.

2: ODT Option 2

If ODT = HIGH, a high range termination resistance is selected.

If ODT = LOW or floating, ODT is disabled

## Speed

Example

250 = 250MHz

## Package Code

B4 = 165 ball BGA (13 x 15 mm)

M3 = 165-ball BGA (15 x 17 mm)

## RoHS Version

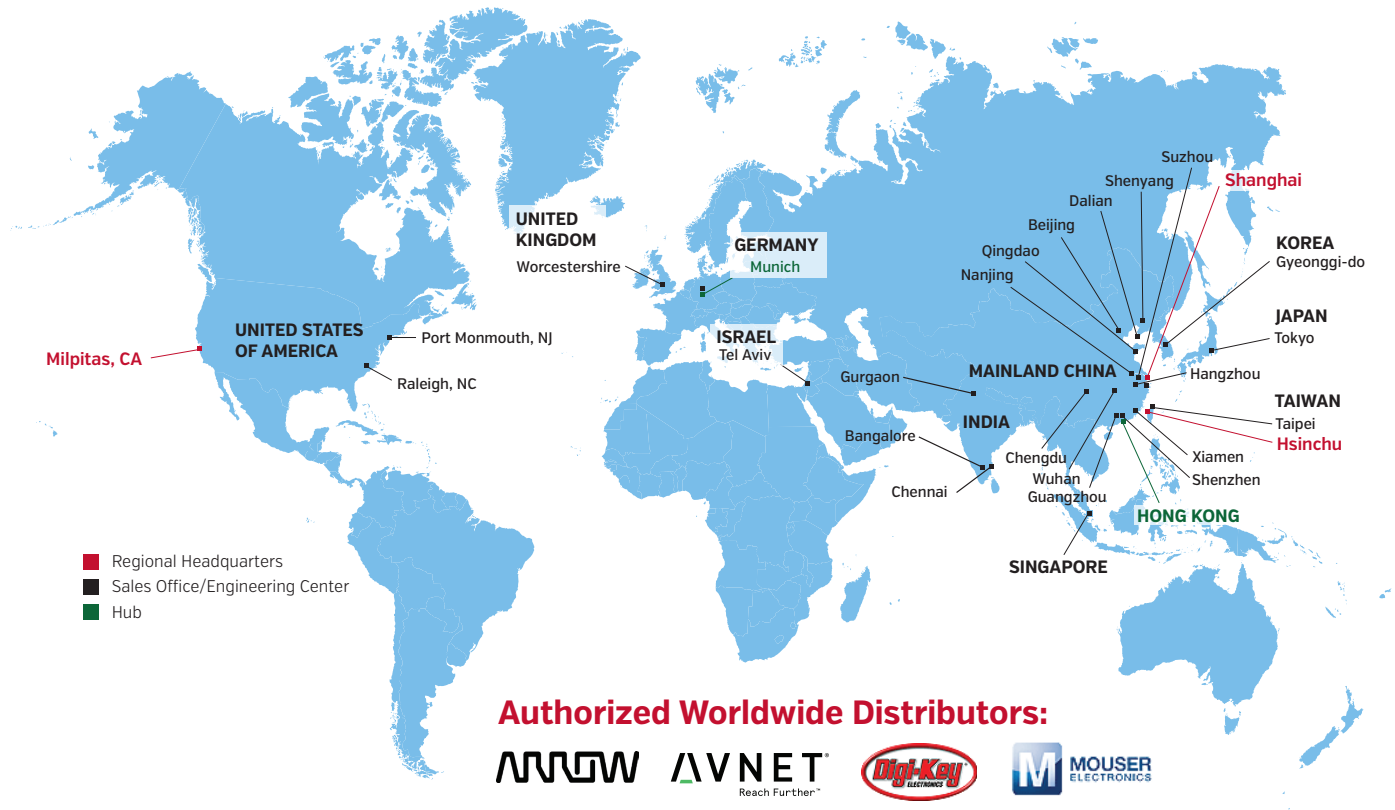
Blank = Leaded  
L = Lead-free

## Temperature Range

Blank = Commercial (0C to 70°C)

I = Industrial [-40C to 85°C]

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