Memory

ICs

Memory

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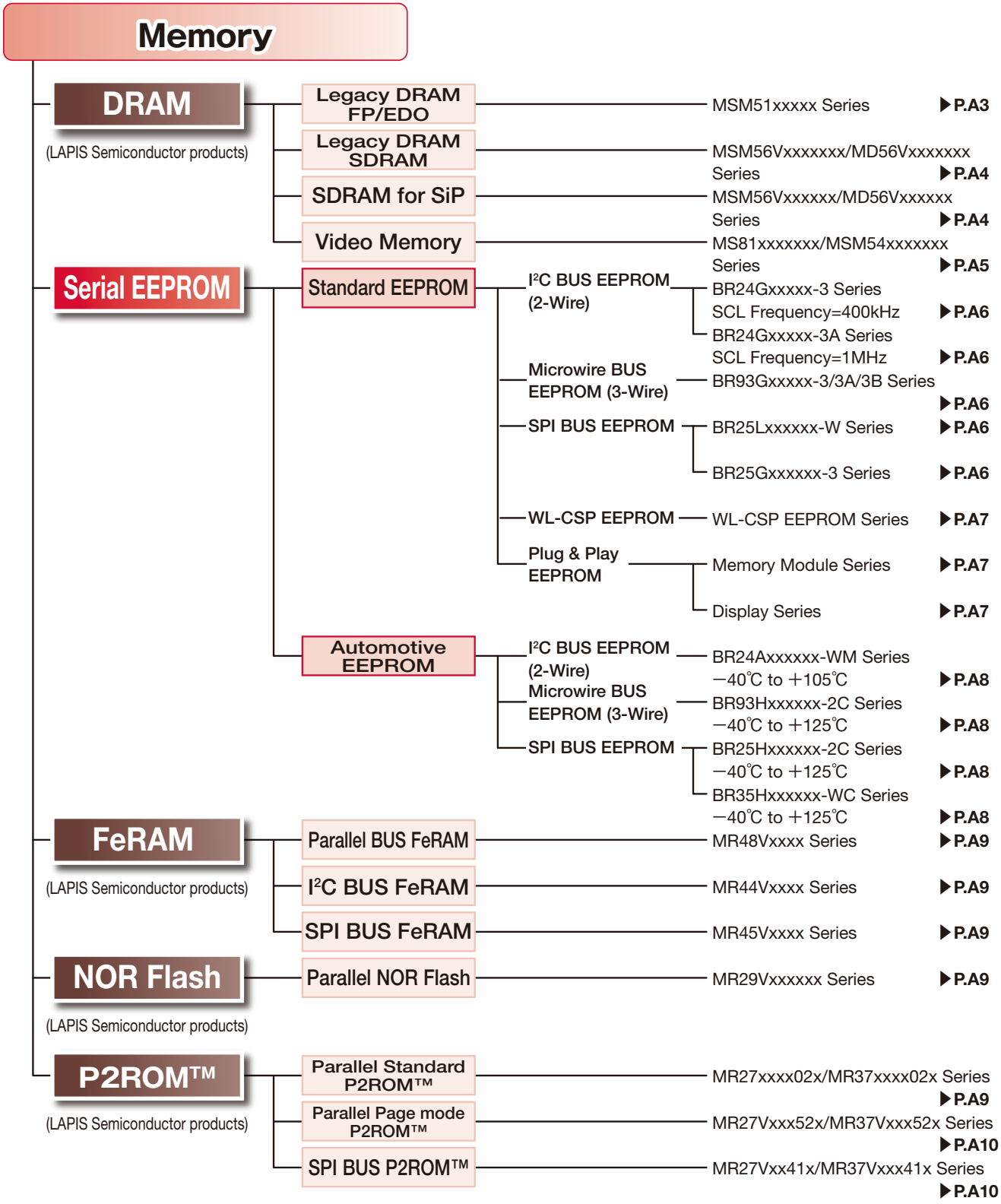
General-purpose ICs

Memory



DRAM

Legacy DRAM FP/EDO

(LAPIS Semiconductor products)

Standard

Part No.	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (word×bit)	Circuit function	Access Time (ns)	Refresh cycle (cycles/ms)	Operating Temperature Ta (℃)	Package
MSM514400E	5.0±0.5	4M	×4	1M×4	Fast Page Mode	60/70	1024/16	0 to +70	TSOP(II)26/20Cu
MSM514800E			×8	512K×8		60/70	1024/16		TSOP(II)28
MSM514800ESL							1024/128		
MSM514260E			×16	256K×16		60/70	512/8		TSOP(II)44/40
MSM514265E					EDO				
MSM5416258B					High Speed EDO	28/30/35			
MSM5116400F		16M	×4	4M×4	Fast Page Mode	60	4096/64		TSOP(II)26/24Cu
MSM5117400F						50/60	2048/32		
MSM5117405F					EDO				
MSM5117800F			×8	2M×8	Fast Page Mode	60			TSOP(II)28
MSM5117805F					EDO				
MSM5116160F			×16	1 M×16	Fast Page Mode	60	4096/64		TSOP(II)50/44
MSM5118160F						50/60	1024/16		
MSM5118165F					EDO				
MSM51V4400E	3.3±0.3	4M	×4	1 M×4	Fast Page Mode	70/100	1024/16		TSOP(II)26/20Cu
MSM51V4800E			×8	512K×8		70			TSOP(II)28
MSM54V16258B			×16	256K×16	EDO	40/45/50	512/64		TSOP(II)44/40
MD54V16258BSL									
MSM51V4265E						60/70	512/8		
MSM51V16400F		16M	×4	4M×4	Fast Page Mode	60	4096/64		TSOP(II)26/24Cu
MSM51V16405F					EDO	50/60			
MSM51V17400F					Fast Page Mode	50/60	2048/32		
MSM51V17405F					EDO	50/60			
MSM51V17800F			×8	2M×8	Fast Page Mode	60			TSOP(II)28
MSM51V17805F					EDO				
MSM51V16160F			×16	1M×16	Fast Page Mode	50/60	4096/64		TSOP(II)50/44
MSM51V16165F					EDO	60			
MSM51V18160F					Fast Page Mode	50/60	1024/16		
MSM51V18165F					EDO				
MD51V65165E		64M		4M×16		50/60	4096/54		TSOP(II)50

Automotive

Part No.	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (word×bit)	Circuit function	Access Time (ns)	Refresh cycle (cycles/ms)	Operating Temperature Ta (℃)	Package
MSM514400DP	5.0±0.5	4M	×4	1M×4	Fast Page Mode	60/70	1024/16	−40 to +85	TSOP(II)26/24Cu
MSM514400EP									
MSM514260EP			×16	256K×16		60/70	512/8		TSOP(II)44/40
MSM5118160FP		16M		1M×16		60	1024/16		TSOP(II)50/44
MSM5118165FP					EDO				
MSM51V4400EP	3.3±0.3	4M	×4	1M×4	Fast Page Mode	70/100	1024/16		TSOP(II)26/24Cu
MSM54V16258BP			×16	256K×16	EDO	40/45/50	512/64		TSOP(II)44/40
MSM51V4265EP						60/70	512/8		
MSM51V17400FP		16M	×4	4M×4	Fast Page Mode	60	2048/32		TSOP(II)26/24Cu
MSM51V18165FP			×16	1M×16	EDO	60	1024/16		

Legacy DRAM SDRAM

(LAPIS Semiconductor products)

Standard

Part No.	Data Rate Type	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Features	Operating Temperature Ta (°C)	Package
MSM56V16800F	SDR	3.3±03	16M	×8	2×1M×8	125	4096/64	8/10	–	0 to +70	TSOP(II)44
MSM56V16160F				×16	2×512K×16	125		8/10			TSOP(II)50
MSM56V16160K						143		7/7.5/8/10	Drivability control		TSOP(II)50Cu
☆MSM56V16161N						166		6/7/7.5/8/10			
New MSM56V16161K						143		7/7.5/8/10			
MD56V62160E			64M		4×1M×16	100		10	–		TSOP(II)54
MD56V62160M						143		7/7.5/10	Drivability control		TSOP(II)54Cu
New MD56V62161M						143		7/7.5/10			
New MD56V72160C			128M		4×2M×16	166		6/7/7.5/10			
New MD56V72161C						166		6/7/7.5/10			
New MD56V82160A			256M		4×4M×16	166	8192/64	6/7/7.5/10			
☆MD58W82160A	DDR	2.5±0.2				200		5	–		TSOP(II)66Cu

Industrial

Part No.	Data Rate Type	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Features	Operating Temperature Ta (°C)	Package
New MSM56V16161KP	SDR	3.3±0.3	16M	×16	2×512K×16	143	4096/64	7/7.5/8/10	Drivability control	−40 to +85	TSOP(II)50Cu
☆MSM56V16161NP						166		6/7/7.5/8/10			
New MD56V62161M-xxTAP			64M		4×1M×16	143		7/7.5/10			TSOP(II)54Cu
☆MD56V72161C-xxTAP			128M		4×2M×16	166		6/7/7.5/10			
New MD56V82160A-xxTAP			256M		4×4M×16	166	8192/64	6/7/7.5/10			

Automotive

Part No.	Data Rate Type	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Features	Operating Temperature Ta (°C)	Package
MSM56V16160FP	SDR	3.3±03	16M	×16	2×512K×16	100	4096/64	10	–	−40 to +85	TSOP(II)50
MSM56V16160KP						125		8/10	Drivability control		TSOP(II)50Cu
☆MSM56V16161NP						166		6/7/7.5/8/10			
MD56V62160E-xxTAP			64M		4×1M×16	100		10	–		TSOP(II)54
MD56V62160M-xxTAP						143		7/7.5/10	Drivability control		TSOP(II)54Cu
New MD56V72160C-xxTAP			128M		4×2M×16	166		6/7/7.5/10			
New MD56V82160A-xxTAP			256M		4×4M×16	166	8192/64	6/7/7.5/10			

DDR : Double Data Rate Synchronous DRAM, SDR : Single Data Rate Synchronous DRAM

☆ : Under Development

SDRAM for SiP

(LAPIS Semiconductor products)

Standard

Part No.	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Operating Temperature Tj (°C)	Features
MSM56V16160K	3.3±03	16M	×16	2×512K×16	143	4096/32	7/7.5/8/10	−40 to +125	KGD
☆MSM56V16160N					166		6/7/7.5/8/10		KGD
MD56V62160M		64M		4×1M×16	143		7/7.5/8/10		KGD
New MD56V72160C		128M		4×2M×16	166		6/7/7.5/10		KGD

Automotive

Part No.	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Operating Temperature Tj (°C)	Features
MSM56V16160K	3.3±03	16M	×16	2×512K×16	143	4096/32	7/7.5/8/10	−40 to +125	KGD
☆MSM56V16160N					166		6/7/7.5/8/10		KGD
MD56V62160M		64M		4×1M×16	143		7/7.5/8/10		KGD
New MD56V72160C		128M		4×2M×16	166		6/7/7.5/10		KGD

☆ : Under Development

Video Memory

(LAPIS Semiconductor products)

Standard

Part No.	Supply Voltage (V)	Density (bit)	Configuration (word×bit)×port	Number of Data bits	Max.Operating Frequency (MHz)	Access Time (ns)	Cycle Time (ns)	Power Consumption (mW)		Operating Temperature Ta (°C)	Package	Notes
								Operating	Standby			
MSM5412222B	5.0±0.5	3M	262,214×12	×12	40	23/25	25/30	330	27.5	0 to +70	TSOP(II)44	Asynchronous serial read/write,Write mask function, Output data control, Cascade
MS8104160A		4M	(262,214×8)×2	×16	50	18/23	20/25	935	27.5		QFP100	Asynchronous serial read/write, Write mask function, Output data control, Cascade, Two−port, 2 common WCLK ports
MSM54V12222B	3.3±0.3	3M	262,214×12	×12	50	18/23	20/25	216	10.8		TSOP(II)44	Asynchronous serial read/write, Write mask function, Output data control, Cascade
MS81V03120					100	7.5/8	10/12	360	14.4		TSOP(II)70	Asynchronous serial read/write, Write mask function, Output data control, Cascade
MS81V04160A		4M	(262,214×8)×2	×16	50	18/23	20/25	288	10.8		QFP100	Asynchronous serial read/write, Write mask function, Output data control, Cascade, Two−port, 2 common WCLK ports
MS81V04166A												Asynchronous serial read/write, Write mask function, Output data control, Cascade, Two−port, 2 independent WCLK ports.
MS81V05200		5M	583,680×10	×10	77	8	13	780	21.6		TSOP(II)70	Asynchronous serial read/write, Write mask function, Output data control, Cascade
MS81V06160		6M	401,408×16	×16	83	9/12	12/15	756/612	21.6			Asynchronous serial read/write, Write mask function, Output data control, Cascade
MS81V10160		10M	664,320×16		83	9/12	12/15	756/612	21.6			Asynchronous serial read/write, Write mask function, Output data control, Cascade
MS81V26000		26M	1,114,112×24	×24	100	8/9	10/12	648/576	18		QFP100	Asynchronous serial read/write, Write mask function, Output data control, Cascade, The top address can be specified

Automotive

Part No.	Supply Voltage (V)	Density (bit)	Configuration (word×bit)×port	Number of Data bits	Max.Operating Frequency (MHz)	Access Time (ns)	Cycle Time (ns)	Power Consumption (mW)		Operating Temperature Ta (°C)	Package	Notes
								Operating	Standby			
MS81V04160AP	3.3±0.3	4M	(262,214×8)×2	×16	50	18/23	20/25	288	10.8	−40 to +85	QFP100	Asynchronous serial read/write, Write mask function, Output data control, Cascade, Two−port, 2 common WCLK ports.
MS81V26000-25TPZP3		26M	1,114,112×24	×24	40	12	25	576	18		TQFP100Cu	Asynchronous serial read/write, Write mask function, Output data control, Cascade, The top address can be specified

A Memory

Serial EEPROM

Standard EEPROM

I²C BUS EEPROM (2-Wire) BR24Gxxxxx-3 series (SCL Frequency = 400kHz)

Part No.	Package and suffix								Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	SCL Frequency (Hz)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	DIP-T8	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating(mA)	Standby(μA)					
BR24G01	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	1K	128×8	1.6 to 5.5	2	2	5	400K	−40 to +85	10^6	40
BR24G02	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	2K	256×8	1.6 to 5.5	2	2	5	400K			
BR24G04	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	4K	512×8	1.6 to 5.5	2	2	5	400K			
BR24G08	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	8K	1K×8	1.6 to 5.5	2	2	5	400K			
BR24G16	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	16K	2K×8	1.6 to 5.5	2	2	5	400K			
BR24G32	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	32K	4K×8	1.6 to 5.5	2	2	5	400K			
BR24G64	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	64K	8K×8	1.6 to 5.5	2	2	5	400K			
BR24G128	-3	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	128K	16K×8	1.6 to 5.5	2.5	2	5	400K			
BR24G256	-3	F-3	FJ-3	FV-3	FVT-3	–	–	–	256K	32K×8	1.6 to 5.5	2.5	2	5	400K			

I²C BUS EEPROM (2-Wire) BR24Gxxxxx-3A series (SCL Frequency = 1MHz)

Part No.	Package and suffix								Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	SCL Frequency (Hz)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	DIP-T8	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating(mA)	Standby(μA)					
BR24G01	-3A	F-3A	FJ-3A	–	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	1K	128×8	1.7 to 5.5	2	2	5	1M	−40 to +85	10^6	40
BR24G02	-3A	F-3A	FJ-3A	–	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	2K	256×8	1.7 to 5.5	2	2	5	1M			
BR24G04	-3A	F-3A	FJ-3A	–	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	4K	512×8	1.7 to 5.5	2	2	5	1M			
BR24G08	-3A	F-3A	FJ-3A	–	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	8K	1K×8	1.7 to 5.5	2	2	5	1M			
BR24G16	-3A	F-3A	FJ-3A	–	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	16K	2K×8	1.7 to 5.5	2	2	5	1M			
BR24G32	-3A	F-3A	FJ-3A	FV-3A	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	32K	4K×8	1.7 to 5.5	2	2	5	1M			
BR24G64	-3A	F-3A	FJ-3A	FV-3A	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	64K	8K×8	1.7 to 5.5	2	2	5	1M			
BR24G128	-3A	F-3A	FJ-3A	FV-3A	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	128K	16K×8	1.7 to 5.5	2.5	2	5	1M			
BR24G256	-3A	F-3A	FJ-3A	FV-3A	FVT-3A	–	–	–	256K	32K×8	1.7 to 5.5	2.5	2	5	1M			
BR24G512	-3A	F-3A	FJ-3A	–	FVT-3A	–	–	–	512K	64K×8	1.7 to 5.5	4.5	3	5	1M			
BR24G1M	-3A	F-3A	FJ-3A	–	–	–	–	–	1M	128K×8	1.7 to 5.5	4.5	3	5	1M			

Microwire BUS EEPROM (3-Wire) BR93Gxxxxx-3/3A/3B series

Part No.	Package and suffix						Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	DIP-T8	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSON008X3020				Operating(mA)	Standby(μA)				
BR93G46	-3*1/ -3A*2/ -3B*3	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	1K	64×16(8)	1.7 to 5.5	2	2	5	−40 to +85	10^6	40
BR93G56	-3*1/ -3A*2/ -3B*3	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	2K	128×16(8)	1.7 to 5.5	2	2	5			
BR93G66	-3*1/ -3A*2/ -3B*3	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	4K	256×16(8)	1.7 to 5.5	2	2	5			
BR93G76	-3*1/ -3A*2/ -3B*3	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	8K	512×16(8)	1.7 to 5.5	2	2	5			
BR93G86	-3*1/ -3A*2/ -3B*3	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	16K	1K×16(8)	1.7 to 5.5	2	2	5			

SPI BUS EEPROM BR25Lxxxxxx-W series

Part No.	Package and suffix							Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating(mA)	Standby(μA)				
BR25L010	F-W	FJ-W	FV-W	FVT-W	FVM-W	FVJ-W	–	1K	128×8	1.8 to 5.5	3	2	5	−40 to +85	10^6	40
BR25L020	F-W	FJ-W	FV-W	FVT-W	FVM-W	FVJ-W	–	2K	256×8	1.8 to 5.5	3	2	5			
BR25L040	F-W	FJ-W	FV-W	FVT-W	FVM-W	FVJ-W	–	4K	512×8	1.8 to 5.5	3	2	5			
BR25L080	F-W	FJ-W	FV-W	FVT-W	–	–	–	8K	1K×8	1.8 to 5.5	3	2	5			
BR25L160	F-W	FJ-W	FV-W	FVT-W	–	–	–	16K	2K×8	1.8 to 5.5	3	2	5			

SPI BUS EEPROM BR25Gxxxxxx-3 series

Part No.	Package and suffix					Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSON008X2030				Operating(mA)	Standby(μA)				
New BR25G320	F-3	FJ-3	FVT-3	FVM-3	NUX-3	32K	4K×8	1.6 to 5.5	1	1	5	−40 to +85	10^6	40
New BR25G640	F-3	FJ-3	FVT-3	FVM-3	NUX-3	64K	8K×8	1.6 to 5.5	1	1	5			
New BR25G128	F-3	FJ-3	FVT-3	–	NUX-3	128K	16K×8	1.6 to 5.5	1	1	5			
New BR25G256	F-3	FJ-3	FVT-3	–	–	256K	32K×8	1.6 to 5.5	1	1	5			

Microwire BUS EEPROM (3-Wire) BR93Gxxxxx-3/3A/3B series : *1 They are dual organization (by 16bit or 18bit) and it is selected the input of ORG PIN. *2 1PIN : CS PIN *3 3PIN : CS PIN

WL-CSP EEPROM

Part No.	Package					Pull-up resister	I/F	Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time(ms)	Operating temperature range(°C)	Data retention (years)
	Package Name	Size(mm)	Thickness (mm)Max.	Ball pitch (mm)	RESIN COATING						Operating (mA)	Standby (μA)			
BU9833GUL-W	VCSP50L1	x : 1.27 y : 1.50	0.55	0.5	✓	–	I²C	2K	256 × 8	1.7 to 5.5	2	2	5	−40 to +85	40
BU9847GUL-W	VCSP50L1	x : 1.95 y : 1.06	0.55	0.5	✓	–	I²C	4K	512 × 8	1.7 to 5.5	2	2	5	−40 to +85	40
BU9889GUL-W	VCSP50L1	x : 1.60 y : 1.00	0.55	0.5	✓	–	I²C	8K	1K × 8	1.7 to 5.5	2	2	5	−40 to +85	40
BRCB008GWZ-3	UCSP30L1	x : 0.94 y : 0.94	0.33	0.4	–	–	I²C	8K	1K × 8	1.7 to 3.6	2	2	5	−40 to +85	40
BRCB016GWL-3	UCSP50L1	x : 1.10 y : 1.15	0.55	0.4	–	–	I²C	16K	2K × 8	1.7 to 3.6	2	2	5	−40 to +85	40
New BRCD016GWZ-3	UCSP35L1	x : 1.30 y : 0.77	0.40	0.4	✓	–	I²C	16K	2K × 8	1.7 to 3.6	2	2	5	−40 to +85	40
BRCA016GWZ-W	UCSP30L1	x : 1.30 y : 0.77	0.35	0.4	–	–	I²C	16K	2K × 8	1.7 to 3.6	2	2	5	−40 to +85	40
BRCC016GWX-3	UCSP16X1	x : 1.30 y : 0.77	0.20	0.4	–	WP	I²C	16K	2K × 8	1.7 to 3.6	2	2	5	−40 to +85	40
New BRCB032GWZ-3	UCSP30L1	x : 1.45 y : 0.77	0.33	0.4	–	–	I²C	32K	4K × 8	1.7 to 5.5	2	2	5	−40 to +85	40
New BRCG064GWZ-3	UCSP35L1	x : 1.50 y : 1.00	0.36	0.4	✓	–	I²C	64K	8K × 8	1.6 to 5.5	2	2	5	−40 to +85	40
BRCB064GWZ-3	UCSP30L1	x : 1.50 y : 1.00	0.35	0.4	–	WP	I²C	64K	8K × 8	1.6 to 5.5	3.9	2	5	−40 to +85	40
New BRCE064GWZ-3	UCSP25L1	x : 1.50 y : 1.00	0.30	0.4	–	–	I²C	64K	8K × 8	1.6 to 5.5	2	2	5	−40 to +85	40
BU9897GUL-W	VCSP50L2	x : 2.44 y : 1.99	0.55	0.5	✓	–	I²C	128K	16K × 8	1.7 to 5.5	2.5	2	5	−40 to +85	40
BU9832GUL-W	VCSP50L2	x : 2.09 y : 1.85	0.55	0.5	✓	–	SPI	8K	1K × 8	1.8 to 5.5	3	2	5	−40 to +85	40
BU9829GUL-W	VCSP50L1	x : 1.74 y : 1.65	0.55	0.5	✓	–	SPI	16K	2K × 8	1.6 to 3.6	2	1	5	−30 to +85	10
BR25S128GUZ-W	VCSP35L2	x : 2.00 y : 2.63	0.40	0.5	✓	–	SPI	128K	16K × 8	1.7 to 5.5	2*	2	5	−40 to +85	40
BU9891GUL-W	VCSP50L1	x : 1.60 y : 1.00	0.55	0.5	✓	–	MW	4K	256 × 16	1.7 to 5.5	3	2	5	−40 to +85	40

Plug & Play EEPROM For Memory Modules

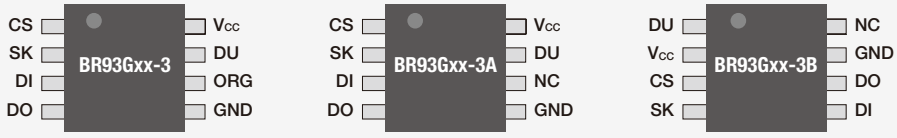
Part No.	Package and suffix		Bit format (word×bit)	Supply voltage (V)	Clock frequency (kHz)	Write cycle time (ms)	Endurance (times)	Data retention (years)	Write Protect
	TSSOP-B8	VSON008X2030							
BR34L02	FVT-W	–	256 × 8	1.7 to 5.5	100*1/400*2	5	1 million	40	Onetime ROM write protect
BR34E02	FVT-3	NUX-3	256 × 8	1.7 to 5.5	400	5	1 million	40	Settable write protect Onetime ROM write protect

Plug & Play EEPROM For Display

Part No.	Package and suffix							Function Descriptions	Bit format (word×bit)	Supply voltage (V)	Clock frequency (MHz)	Write cycle time (ms)
	SOP8	SOP-J8	SSOP-B8	SOP14	SSOP-B14	SSOP-B16	VSON008X2030					
BR24C21	F	FJ	FV	–	–	–	–	Supports DDC1™ / DDC2™ for displays	128 × 8	2.5 to 5.5	100 / 400	10
BU9882	–	–	–	F-W	FV-W	–	–	Dual-port type compatible with DDC2™ for displays	128 × 8 × 2ch	2.5 to 5.5	100 / 400	10
BU9883	–	–	–	–	–	FV-W	–	2kbit × 3ch EEPROM for HDMI ports	256 × 8 × 3ch	3.0 to 5.5	400	5
New BU99022	–	–	–	–	–	–	NUX-3	2Kbit × 2ch type	256 × 8 × 2ch	1.7 to 5.5	400	5

WL-CSP EEPROM : * Vcc=2.5V
Plug & Play EEPROM For Memory Modules : *1 : Vcc=1.7 to 5.5V *2 : Vcc=2.5 to 5.5V

Micro Wire BUS Pin Assignment



Selectable Bit Format (8bit or 16bit)

Interchangeable with the BR93LxxRxx-W Series

Rotated Pins

Automotive EEPROM

105°C Operation I²C BUS EEPROM (2-Wire) BR24Axxxxxx-WM series

Part No.	Package and suffix			Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	MSOP8				Operating(mA)	Standby(μA)				
BR24A01A	F-WM	FJ-WM	–	1K	128×8	2.5 to 5.5	2	2	5	−40 to +105	10^6	40
BR24A02	F-WM	FJ-WM	FVM-WM	2K	256×8	2.5 to 5.5	2	2	5			
BR24A04	F-WM	FJ-WM	–	4K	512×8	2.5 to 5.5	2	2	5			
BR24A08	F-WM	FJ-WM	–	8K	1K×8	2.5 to 5.5	2	2	5			
BR24A16	F-WM	FJ-WM	–	16K	2K×8	2.5 to 5.5	2	2	5			
BR24A32	F-WM	–	–	32K	4K×8	2.5 to 5.5	3	2	5			
BR24A64	F-WM	–	–	64K	8K×8	2.5 to 5.5	3	2	5			

125°C Operation Microwire BUS EEPROM (3-Wire) BR93Hxxxxxx-2C series

Part No.	Package and suffix				Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating(mA)	Standby(μA)				
BR93H46	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	1K	64×16	2.5 to 5.5	3	10	4	−40 to +125	10^6	100
BR93H56	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	2K	128×16	2.5 to 5.5	3	10	4			
BR93H66	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	4K	256×16	2.5 to 5.5	3	10	4			
BR93H76	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	8K	512×16	2.5 to 5.5	3	10	4			
BR93H86	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	16K	1K×16	2.5 to 5.5	3	10	4			

125°C Operation SPI BUS EEPROM BR25Hxxxxxx-2C series

Part No.	Package and suffix				Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating(mA)	Standby(μA)				
BR25H010	F-2C	FJ-2C	FVT-2C	FVM-2C	1K	128×8	2.5 to 5.5	4	10	4	−40 to +125	10^6	100
BR25H020	F-2C	FJ-2C	FVT-2C	FVM-2C	2K	256×8	2.5 to 5.5	4	10	4			
BR25H040	F-2C	FJ-2C	FVT-2C	FVM-2C	4K	512×8	2.5 to 5.5	4	10	4			
BR25H080	F-2C	FJ-2C	FVT-2C	FVM-2C	8K	1K×8	2.5 to 5.5	4	10	4			
BR25H160	F-2C	FJ-2C	FVT-2C	FVM-2C	16K	2K×8	2.5 to 5.5	4	10	4			
BR25H320	F-2C	FJ-2C	FVT-2C	FVM-2C	32K	4K×8	2.5 to 5.5	4	10	4			
BR25H640	F-2C	FJ-2C	FVT-2C	–	64K	8K×8	2.5 to 5.5	5.5	10	4			
BR25H128	F-2C	FJ-2C	–	–	128K	16K×8	2.5 to 5.5	5.5	10	4			

125° C Operation SPI BUS EEPROM BR35Hxxxxxx-WC series

Part No.	Package and suffix				Density (bit)	Bit format (word×bit)	Supply voltage range(V)	Current consumption(Max.)		Write cycle time (Max.)(ms)	Operating temperature range(°C)	Endurance (times)	Data retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating(mA)	Standby(μA)				
BR35H160	F-WC	FJ-WC	FVT-WC	FVM-WC	16K	2K×8	2.5 to 5.5	3	10	5	−40 to +125	10^6	40
BR35H320	F-WC	FJ-WC	FVT-WC	FVM-WC	32K	4K×8	2.5 to 5.5	3	10	5			
BR35H640	F-WC	FJ-WC	FVT-WC	–	64K	8K×8	2.5 to 5.5	5.5	10	5			
BR35H128	F-WC	FJ-WC	–	–	128K	16K×8	2.5 to 5.5	5.5	10	5			

FeRAM

Ferroelectric Memory

(LAPIS Semiconductor products)

Part No.	Memory Density (bit)	Configuration (word×bit)	Supply Voltage (V)	Operating speed	Read/Write Endurance	Data Retention	Operating Temperature Ta (°C)	Package
Parallel BUS FeRAM MR48Vxxxx Series								
New MR48V256C	256K	32K × 8	2.7 to 3.6	t_{RC} = 150ns	10^{12} Times	10 years	−40 to +85	TSOP(I)28
I²C BUS FeRAM MR44Vxxxx Series								
MR44V064A	64K	8K × 8	2.5 to 3.6	f_{clk} = 3.4MHz	10^{12} Times	10 years	−40 to +85	SOP8
SPI BUS FeRAM MR45Vxxxx Series								
MR45V032A	32K	4K × 8	2.7 to 3.6	f_{clk} = 15MHz	10^{12} Times	10 years	−40 to +85	SOP8
MR45V256A	256K	32K × 8	3.0 to 3.6	f_{clk} = 15MHz				
New MR45V200A	2M	256K × 8	2.7 to 3.6	f_{clk} = 34MHz				DIP8

NOR Flash

(LAPIS Semiconductor products)

Part No.	Supply Voltage (V)	Memory Density (bit)	Configuration (word×bit)	Mode	Page size	Access Time (Address/Page) (ns)	Current Consumption (Max.)		Operating temperature Ta (°C)	Package	Package Frame
							Operating	Standby			
Parallel NOR Flash MR29xxxxxxx Series											
☆MR29V25652B	2.7 to 3.6	256M	16M × 16	NOR	16-word × 16	TBD	TBD	TBD	TBD	TSOP(I)56	–
☆MR29V12852A		128M	8M × 16			70/25	25mA	100uA	−40 to +85		–
☆MR29V12852B						TBD	TBD	TBD	TBD		–
☆MR29V06452B		64M	4M × 16			TBD	TBD	TBD	TBD	TSOP(I)48	–
☆MR29V03252A		32M	2M × 16			80/25	15mA	30uA	−40 to +85		–
☆MR29V03252B						80/25	15mA	30uA	−40 to +85		–

☆ : Under Development

P2ROM™

(LAPIS Semiconductor products)

Part No.	Density (bit)	Configuration (bank × word × bit)	Supply Voltage (V)	Access Time (ns)	Current Consumption (Max.)		Operating temperature (°C)	Package	Package Frame
					Operating	Standby			
Parallel BUS Standard P2ROM™									
MR26T51203L	512M	32M × 16 / 64M × 8	3.0 to 3.6	100	35mA	10μA	0 to +70	TSOP(II)50	–
			2.7 to 3.6	120					
MR37T25602T	256M	16M × 16 / 32M × 8	3.0 to 3.6	100	35mA	10μA		TSOP(I)56	–
			2.7 to 3.6	150					
MR27T25603L			3.0 to 3.6	100	35mA	10μA		TSOP(II)50	–
			2.7 to 3.6	120					
MR27T12800L	128M	8M × 16 / 16M × 8	2.7 to 3.6	90	25mA	10μA		TSOP(I)48	–
MR27T12802L			3.0 to 3.6	80	25mA	10μA		TSOP(I)56	–
			2.7 to 3.6	90					
MR27V12800L			3.0 to 3.6	85	25mA	10μA		Chip	–
MR27T6402L	64M	4M × 16 / 8M × 8	3.0 to 3.6	70	20mA	10μA		SOP44 / TSOP(I)48 / TFBGA48	Cu / TSOP(I)48
			2.7 to 3.6	90					
			3.0 to 3.6	80	20mA	10μA	−40 to +85	TSOP(I)48	
			2.7 to 3.6	90					
MR27V6402L			3.0 to 3.6	70	20mA	10μA	0 to +70	Chip	–
MR27T3202L	32M	2M × 16 / 4M × 8	3.0 to 3.6	70	20mA	10μA		SOP44 / TSOP(I)48 / TFBGA48	–
			2.7 to 3.6	90					
			3.0 to 3.6	80	20mA	10μA	−40 to +85	TSOP(I)48	
			2.7 to 3.6	90					
MR27V3202L			3.0 to 3.6	80	20mA	10μA	0 to +70	Chip	–
MR27T1602L	16M	1M × 16 / 2M × 8	2.7 to 3.6	70	16mA	10μA		SOP44 / TSOP(I)48 / TFBGA48	Cu / TSOP(I)48
							−40 to +85	TSOP(I)48	
MR27V1602L			3.0 to 3.6	70	16mA	10μA	0 to +70	Chip	–
MR27T802F	8M	512K × 16 / 1M × 8	2.7 to 3.6	80	18mA	5μA		SOP44 / TSOP(I)48	–
MR27V802F			3.0 to 3.6	70	18mA	5μA			–
MR27V802F			3.0 to 3.6	90	18mA	5μA		Chip	–

(LAPIS Semiconductor products)

Parallel BUS Page mode P2ROM™

Part No.	Supply Voltage (V)	Density (bit)	Configuration (word × bit)	Mode	Page Size	Access Time (Address/Page) (ns)	Current Consumption (Max.)		Operating Temperature Ta (°C)	Package	Package Frame
							Operating	Standby			
MR36V01G52B	3.0 to 3.6	1G	64M × 16/128M × 8	NOR	8-word × 16	105/25	100mA	25mA	0 to +70	TSOP(I)56	—
MR26V51252R		512M	32M × 16/64M × 8			105/25	50mA	4mA			—
MR37V25652T		256M	16M × 16/32M × 8			100/25	35mA	20μA			—
MR27V25653L						100/35	60mA	5mA		Chip	—
MR37V12852B		128M	8M × 16/16M × 8			90/30	50mA	10μA		TSOP(I)56	—
MR27V12852L						85/30	50mA	10μA			—
MR27V12850L						85/30	50mA	10μA		TSOP(I)48 / Chip	—
MR37V6452B		64M	4M × 16/8M × 8			90/30	50mA	10μA		TSOP(I)48 / TSOP(I)56	—
MR27V6452L						90/30	50mA	10μA		SOP44 / TSOP(I)48 / TSOP(I)56/Chip	—
MR27V6452R						80/25	40mA	10μA	−40 to +85	TSOP(I)48 / TSOP(I)56	—
MR26V6455J			2M × 32/4M × 16			100/30	100mA	20μA	0 to +70	SSOP70	—
MR27V3252J		32M	2M × 16/4M × 8			70/25	50mA	10μA		SOP44 / TSOP(I)48	—
MR27V1652L		16M	1M × 16/2M × 8			80/25	60mA	10μA		SOP44 / TSOP(I)48/ Chip	—

SPI BUS P2ROM™

Part No.	Supply Voltage (V)	Density (bit)	Configuration (word × bit)	Operating Frequency (MHz)		Current Consumption (Max.)		Operating Temperature Tj (°C)	Package
				FAST-READ	READ	Operating*	Standby		
MR37V12841A	3.0 to 3.6	128M	128M × 1	33	20	30mA/20mA*	50μA	0 to +70	SOP16
MR27V6441L		64M	64M × 1	33	20	30mA/20mA*	50μA		SOP16/Chip
MR27V3241L		32M	32M × 1	33	20	40mA/20mA*	50μA		
MR27V1641L		16M	16M × 1	30	20	25mA/20mA*	50μA		

SPI BUS P2ROM™ : * : FAST READ/READ