

PRODUCT LINEUP

■ Symmetrical Block SmartVoltage Flash Memories

Supply voltage	Smart voltage	Supply voltage can be selected automatically from following combinations; $V_{CC} = 3.3\text{ V}, V_{PP} = 3.3\text{ V}/V_{CC} = 3.3\text{ V}, V_{PP} = 5\text{ V}/V_{CC} = 3.3\text{ V}, V_{PP} = 12\text{ V}/V_{CC} = 5\text{ V}, V_{PP} = 5\text{ V}/V_{CC} = 5\text{ V}, V_{PP} = 12\text{ V}$
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Capacity	Bit Configuration	Erasable block size (bytes/words)	Operating temp. (°C)	Model No.	V _{CC}	V _{PP}	Access time (ns)	Remarks
2 M	x 8	64 kB	0 to 70	LH28F002SC-L	5 V	3.3 V	70 85 95 100 120 150 170	• Readable at 2.7 V
			-40 to 85	LH28F002SCH-L	5 V	3.3 V	70 85 95 100 120 150 170	
4 M	x 8	64 kB	0 to 70	LH28F004SC-L	5 V	3.3 V	70 85 95 100 120 150 170	• Readable at 2.7 V • Full compatible with Intel's flash memories except CSP.*
			-40 to 85	LH28F004SCH-L	5 V	3.3 V	70 85 95 100 120 150 170	
8 M	x 8	64 kB	0 to 70	LH28F008SC	5 V	3.3 V	70 85 95 100 120 150 170	• Full compatible with Intel's flash memories except CSP.*
			-25 to 85	LH28F008SCH	5 V	3.3 V	70 85 95 100 120 150 170	
			0 to 70	LH28F008SC-L	5 V	3.3 V	70 85 95 100 120 150 170	
	x 16	32 kW	-25 to 85	LH28F008SCH-L	5 V	3.3 V	70 85 95 100 120 150 170	• Readable at 2.7 V • Full compatible with Intel's flash memories except CSP.*
			0 to 70	LH28F800SG-L (FOR TSOP, CSP)	5 V	3.3 V	70 85 95 100 120 150 170	
			-40 to 85	LH28F800SGH-L (FOR TSOP, CSP)	5 V	3.3 V	70 85 95 100 120 150 170	
16 M	x 8	64 kB	0 to 70	LH28F016SC-L	5 V	3.3 V	70 85 95 100 120 150 170	• Readable at 2.7 V • Full compatible with Intel's flash memories except CSP.*
			-40 to 85	LH28F016SCH-L	5 V	3.3 V	70 85 95 100 120 150 170	

* Make sure of the actual pin spec. etc. in the latest specifications.

■ Symmetrical Block SmartVoltage Flash Memories (contd.)

Supply voltage	Smart 3	Supply voltage can be selected automatically from following combinations; $V_{CC} = 3.3\text{ V}$, $V_{PP} = 3.3\text{ V}$ / $V_{CC} = 3.3\text{ V}$, $V_{PP} = 12\text{ V}$
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks
8 M	x 8	64 kB	0 to 70	LH28F008SC-T	$V_{CC} = 3.3\text{ V}$	<ul style="list-style-type: none"> Full compatible with Intel's flash memories except CSP.*
			-25 to 85	LH28F008SCH-T	$V_{CC} = 3.3\text{ V}$	
			0 to 70	LH28F008SC-TL	$V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> Readable at 2.7 V Full compatible with Intel's flash memories except CSP.*
			-25 to 85	LH28F008SCH-TL	$V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	

Supply voltage	Smart 5	Supply voltage can be selected automatically from following combinations; $V_{CC} = 5\text{ V}$, $V_{PP} = 5\text{ V}$ / $V_{CC} = 5\text{ V}$, $V_{PP} = 12\text{ V}$
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks
8 M	x 8	64 kB	0 to 70	LH28F008SC-V	$V_{CC} = 5\text{ V}$	<ul style="list-style-type: none"> Full compatible with Intel's flash memories except CSP.*
			-25 to 85	LH28F008SCH-V	$V_{CC} = 5\text{ V}$	

※ Make sure of the actual pin spec. etc. in the latest specifications.

■ Boot Block SmartVoltage Flash Memories *1

Supply voltage	Smart Voltage	Supply voltage can be selected automatically from following combinations; $V_{CC} = 3.3\text{ V}$, $V_{PP} = 3.3\text{ V}/V_{CC} = 3.3\text{ V}$, $V_{PP} = 5\text{ V}/V_{CC} = 3.3\text{ V}$, $V_{PP} = 12\text{ V}/V_{CC} = 5\text{ V}$, $V_{PP} = 5\text{ V}/V_{CC} = 5\text{ V}$, $V_{PP} = 12\text{ V}$ (Operable at $V_{CC} = 2.7\text{ V}$, $V_{PP} = 2.7\text{ V}$)
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Capacity	Bit Configuration	Erasable block size (words)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks
4 M	x 16	4 kW, 32 kW	0 to 70	LH28F400BG-TL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Top boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F400BG-TL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
			-40 to 85	LH28F400BGH-TL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F400BGH-TL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
			0 to 70	LH28F400BG-BL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F400BG-BL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
-40 to 85	LH28F400BGH-BL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.* 			
	LH28F400BGH-BL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$				
8 M	x 16	4 kW, 32 kW	0 to 70	LH28F800BG-TL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Top boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F800BG-TL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
			-40 to 85	LH28F800BGH-TL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F800BGH-TL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
			0 to 70	LH28F800BG-BL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
				LH28F800BG-BL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	
-40 to 85	LH28F800BGH-BL (FOR TSOP, CSP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.* 			
	LH28F800BGH-BL (FOR SOP)	$V_{CC} = 5\text{ V}$ $V_{CC} = 3.3\text{ V}$ $V_{CC} = 2.7\text{ V}$				

*1 Boot block architecture : A well-balanced block architecture for storage of system programs. This architecture consists of small-sized blocks (4 k-word) for storage of boot code and parameters, and larger size symmetrical blocks (32 k-word) for storage of main code.

※ Make sure of the actual pin spec. etc. in the latest specifications.

■ Boot Block Flash Memories (contd.) *1

★ Under development

Supply voltage	Smart 3	Supply voltage can be selected automatically from following combinations; V _{CC} = 2.7 to 3.6 V, V _{PP} = 2.7 to 3.6 V/V _{CC} = 2.7 to 3.6 V, V _{PP} = 12 V
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Capacity	Bit Configuration	Erasable block size (bytes/words)	Operating temp. (°C)	Model No.	V _{CC}	Access time (ns)					Remarks
						90	100	120	130	150	
16 M	x 16	4 kW, 32 kW	0 to 70	★LH28F160BG-TTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	<ul style="list-style-type: none"> • Top boot • Pin compatible with Intel's flash memories except CSP.*
			-25 to 85	★LH28F160BGH-TTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	
			0 to 70	★LH28F160BG-BTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
			-25 to 85	★LH28F160BGH-BTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	
	x 8/x 16	8 kB, 64 kB	0 to 70	★LH28F160BV-TTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	<ul style="list-style-type: none"> • Top boot • Pin compatible with Intel's flash memories except CSP.*
			-40 to 85	★LH28F160BVH-TTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	
			0 to 70	★LH28F160BV-BTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	<ul style="list-style-type: none"> • Bottom boot • Pin compatible with Intel's flash memories except CSP.*
			-40 to 85	★LH28F160BVH-BTL	V _{CC} = 2.7 to 3.6 V	90	100	120	130	150	

*1 Boot block architecture : A well-balanced block architecture for storage of system programs. This architecture consists of small-sized blocks (4 k-word) for storage of boot code and parameters, and larger size symmetrical blocks (32 k-word) for storage of main code.

※ Make sure of the actual pin spec. etc. in the latest specifications.

■ Fast Programming Flash Memories *1

★ Under development

Supply voltage	Smart 3	Supply voltage can be selected automatically from following combinations; VCC = 3.3 V, VPP = 3.3 V/VCC = 3.3 V, VPP = 5 V (Operable at VCC = 2.7 V, VPP = 2.7 V)
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	VCC	Access time (ns)	Remarks																		
16 M	x 8/x 16	64 kB	0 to 70	LH28F160S3-L	VCC = 3.3 V	<table border="1"> <tr><td>70</td><td>80</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	70	80	100	120	130	150													<ul style="list-style-type: none"> • Full compatible with Intel's flash memories except CSP.*
			70	80	100		120	130	150																
-40 to 85	LH28F160S3H-L	VCC = 3.3 V	<table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																						
32 M	x 8/x 16	64 kB	0 to 70	★LH28F320S3-L	VCC = 3.3 V	<table border="1"> <tr><td>85</td><td>90</td><td>110</td><td>130</td><td>140</td><td>160</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	110	130	140	160													<ul style="list-style-type: none"> • Full compatible with Intel's flash memories except CSP.*
			85	90	110		130	140	160																
-40 to 85	★LH28F320S3H-L	VCC = 3.3 V	<table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																						

Supply voltage	Smart 5	VCC = 5 V, VPP = 5 V
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	VCC	Access time (ns)	Remarks																		
16 M	x 8/x 16	64 kB	0 to 70	LH28F160S5-L	VCC = 5 V	<table border="1"> <tr><td>70</td><td>80</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	70	80	100	120	130	150													<ul style="list-style-type: none"> • Full compatible with Intel's flash memories except CSP.*
			70	80	100		120	130	150																
-40 to 85	LH28F160S5H-L	VCC = 5 V	<table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																						
32 M	x 8/x 16	64 kB	0 to 70	★LH28F320S5-L	VCC = 5 V	<table border="1"> <tr><td>85</td><td>90</td><td>110</td><td>120</td><td>140</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	110	120	140	150													<ul style="list-style-type: none"> • Full compatible with Intel's flash memories except CSP.*
			85	90	110		120	140	150																
-40 to 85	★LH28F320S5H-L	VCC = 5 V	<table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																						

*1 Fast programming is available with two 32-byte page buffers/bank.

* Make sure of the actual pin spec. etc. in the latest specifications.

■ Dual Work Flash Memories *1

Supply voltage	VCC = 2.9 to 3.3 V, VPP = 2.9 to 3.3 V					
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks												
8 M	x 8	64 kB	-40 to 85	LH28F008SCHSD-ZL	VCC = 2.7 to 3.3 V <table border="1"> <tr><td>85</td><td>90</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	100	120	130	150							• Readable at 2.7 V
85	90	100	120	130	150													

Supply voltage	Smart Voltage	Supply voltage can be selected automatically from following combinations; VCC = 3.3 V, VPP = 3.3 V/VCC = 3.3 V, VPP = 5 V/VCC = 3.3 V, VPP = 12 V/ VCC = 5 V, VPP = 5 V/VCC = 5 V, VPP = 12 V (Operable at VCC = 2.7 V, VPP = 2.7 V)				
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Capacity	Bit Configuration	Erasable block size (words)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks																								
16 M	x 16	32 kW	-10 to 70	LH28F160SGED-L10	VCC = 5 V VCC = 3.3 V VCC = 2.7 V <table border="1"> <tr><td>85</td><td>90</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	100	120	130	150																			—
85	90	100	120	130	150																									

Supply voltage	Smart 3	Supply voltage can be selected automatically from following combinations; VCC = 3.3 V, VPP = 3.3 V/VCC = 3.3 V, VPP = 5 V (Operable at VCC = 2.7 V, VPP = 2.7 V)				
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks																		
32 M	x 8/x 16	64 kB	0 to 70	LH28F320S3TD-L10	VCC = 3.3 V VCC = 2.7 V <table border="1"> <tr><td>85</td><td>90</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	100	120	130	150													—
85	90	100	120	130	150																			

■ Dual 5 V/12 V Power Supply Flash Memories *1

Supply voltage	VCC = 5 V, VPP = 12 V					
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Capacity	Bit Configuration	Erasable block size (bytes)	Operating temp. (°C)	Model No.	Access time (ns)	Remarks												
8 M	x 8	64 kB	0 to 70	LH28F008SA-K	VCC = 5 V <table border="1"> <tr><td>85</td><td>90</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	100	120	130	150							• Full compatible with Intel's flash memories except CSP.*
			85	90	100	120	130	150										
-25 to 85	LH28F008SAH-K	VCC = 5 V <table border="1"> <tr><td>85</td><td>90</td><td>100</td><td>120</td><td>130</td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	85	90	100	120	130	150										
85	90	100	120	130	150													

*1 Capable of performing erase, write and read for each bank independently.
(Impossible to perform read from both banks at a time.)

※ Make sure of the actual pin spec. etc. in the latest specifications.