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Category Speech Synthesis LSI

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Speech Synthesis LSI

Includes LAPIS Technology products

**Speech Synthesis LSI with
Automotive grade** ————— **98**

**Speech Synthesis LSI with
Long-time Playback** ————— **99**

**Speech Synthesis LSI with
Short-time playback** ————— **99**

**Speech Synthesis LSI with
External Memory** ————— **99**

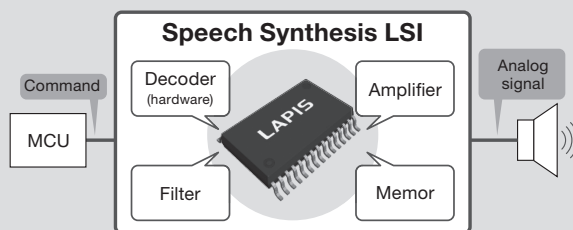
Speech Synthesis LSI

Speech Synthesis LSI with Automotive grade	P.98	Speech Synthesis LSI with Long-time Playback	P.99
Speech Synthesis LSI with Short-time Playback	P.99	Speech Synthesis LSI with External Memory	P.99

For over 40 years, LAPIS Technology has provided Speech Synthesis LSIs that enable immediate high-quality sound playback in everything from home appliances to automotive systems. These sound playback LSIs feature an all-in-one configuration that integrates all necessary functions into a single chip, enabling high-fidelity sound playback by simply connecting a speaker and sending simple commands. Our focus on 'enhanced sound quality' has been well-received by customers for many years. We provide added value by delivering support and solutions keyed to customer demands.

Key Features

- Easy** Playback sounds by directly connecting to a speaker and sending commands from an MCU.
- High fidelity** Established sound technology centered on ADPCM.
- Multifunction** Equipped with a variety of functions including simultaneous sound generation and fault detection.
- Fewer external parts** ... Integrates a speaker amp, memory, oscillator circuit, and other necessary components.
- Sound production support** ... Sound production support - Provides total support from arranging a studio and narrator to analyzing and editing recorded sound sources and creating sound code data.



Speech Synthesis LSI with Automotive grade (LAPIS Technology products)

Internal Flash Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	AEC-Q100 standard
ML22Q532	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +105	Flash 2M	4,096	99sec*1	I ² C/ Clock synchronous serial	1.0/ AB-class	4	Rewrite Flash from MCU*/Serial Audio Interface/ Failure detection	P-TQFP48 -0707-0.50-Z6K6-MC	YES	✓
ML22Q533							202sec*1					P-TQFP48 -0707-0.50-Z6K6-MC		
ML22Q274	2.0 to 5.5	4.096	Built-in	-40 to +105	Flash 692K*5	30	28sec*2	Clock synchronous serial	1.0/ D-class	1	Disconnection and short circuit detection function	P-TSSOP20 -0225-0.65-TK6	YES	✓
ML22Q284								Stand-alone				P-TSSOP20 -0225-0.65-TK6		
ML22Q294								I ² C				P-TSSOP20 -0225-0.65-TK6		
External Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	AEC-Q100 standard
ML22530	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +105	External maximum 128M	4,096	109min*3	I ² C/ Clock synchronous serial	1.0/ AB-class	4	Rewrite Flash from MCU*/Serial Audio Interface/Failure detection	P-TQFP48 -0707-0.50-Z6K6	YES	✓

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*1 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

*2 Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.

*3 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

*4 While using it clock synchronization serial.

*5 When 30 phrases are selected. When 62 phrases are selected, 688 Kbit.

Speech Synthesis LSI with Long-time Playback (LAPIS Technology products)

Internal Flash Memory Type																
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade		
ML22Q623	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +70	Flash 4M	4,096	202sec*3	Clock synchronous serial	1.0/ AB-class, D-class	4	Rewrite Flash from MCU/ Failure detection	P-TQFP32 -0707-0.80-Z6K6-MC	-	✓		
ML22Q624					Flash 8M		406sec*3					P-TQFP32 -0707-0.80-Z6K6-MC				
ML22Q625					Flash 16M		14min*3					P-TQFP32 -0707-0.80-Z6K6-MC				
ML22Q626					Flash 32M		27min*3					P-TQFP32 -0707-0.80-Z6K6-MC				
ML22Q663					Flash 4M		202sec*3					P-WQFN32 -0505-0.50-A63-MC				
ML22Q664					Flash 8M		406sec*3					P-WQFN32 -0505-0.50-A63-MC				
ML22Q665					Flash 16M		14min*3					P-WQFN32 -0505-0.50-A63-MC				
ML22Q666					Flash 32M		27min*3					I ² C			Failure detection	P-TQFP32 -0707-0.80-Z6K6-MC
																P-WQFN32 -0505-0.50-A63-MC

Internal P2ROM™ Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22724	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 8M	4,096*2	325sec*1	Clock synchronous serial	0.7/ AB-class	1	Speech-speed and pitch conversion	P-SSOP30 -56-0.65-ZK6-MC	-	✓
ML22725					P2ROM™ 16M		11min*1					P-SSOP30 -56-0.65-ZK6-MC		
ML22764					P2ROM™ 8M		325sec*1	P-SSOP30 -56-0.65-ZK6-MC						
ML22765					P2ROM™ 16M		11min*1	P-SSOP30 -56-0.65-ZK6-MC						

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*1 Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.

*2 1024 phrases (1 bank)×4 banks.

*3 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

Speech Synthesis LSI with Short-time Playback (LAPIS Technology products)

Internal D-class Speaker Amplifier Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22Q234	2.0 to 5.5	8.192	Built-in	-40 to +85	Flash 676K*2	30/62	34sec*1	Clock synchronous serial	1.0/ D-class	1	Disconnection and short circuit detection function	P-TSSOP20 -0225-0.65-TK6	-	✓
ML22Q244					Flash 692K*3			Stand-alone				P-TSSOP20 -0225-0.65-TK6		
ML22Q254					Flash 676K*2			I ² C				P-TSSOP20 -0225-0.65-TK6		

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*1 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.


*2 When 30 phrases are selected. When 62 phrases are selected, 676 Kbit

*3 When 30 phrases are selected. When 62 phrases are selected, 688 Kbit

Speech Synthesis LSI with External Memory (LAPIS Technology products)

Internal AB-class/D-class Speaker Amplifier Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrase	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22620	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +85	External maximum 128M	4,096	109min*2	Clock synchronous serial	1.0/ AB-class, D-class	4	Rewrite Flash from MCU/ Failure detection	P-TQFP32 -0707-0.80-Z6K6	-	✓
ML22660								I ² C			Failure detection	P-TQFP32 -0707-0.80-Z6K6		

Internal AB-class Speaker Amplifier Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrase	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22420	2.7 to 5.5	4.096	External	-40 to +85	External maximum 128M	1,024	87min*1	Clock synchronous serial	0.7/ AB-class	4	-	P-SSOP30 -56-0.65-ZK6	-	✓
ML22460								I ² C				P-SSOP30 -56-0.65-ZK6		

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*1 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.

*2 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.