

## Speech Synthesis LSI with Automotive grade (LAPIS Semiconductor products)

I <sup>2</sup> C Interface/Clock Synchronous Serial Interface 4ch Simultaneous Playback Speaker Amplifier Installed Support for 105°C															
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	Halogen <sup>*3</sup> Free Support	Automotive <sup>*4</sup> Grade	Industrial Grade
<b>New</b> 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	4096	98sec <sup>*1</sup>	I <sup>2</sup> C/ Clock synchronization Serial	1.0/ AB-class	4	Flash MCU <sup>*5</sup> rewrite Failure detection	P-TQFP48-0707-0.50	✓	YES	✓
<b>New</b> ML22Q533					Flash 4M		201sec <sup>*1</sup>						✓	YES	✓
<b>New</b> ML22Q535					Flash 16M		14min <sup>*1</sup>						✓	YES	✓
<b>New</b> ML22530					External maximum 128M		109min <sup>*3</sup>						✓	YES	✓
Clock Synchronous Serial Interface 4ch Simultaneous Playback Speaker Amplifier Installed Support for 105°C															
ML22572	2.7 to 5.5	4.096	External	-40 to +105	Mask 2M	1024	98sec <sup>*1</sup>	Clock synchronization Serial	1.0/ AB-class	4	Fail safe	P-SSOP30-56-0.65	✓	YES	✓
ML22573					Mask 4M		201sec <sup>*1</sup>						✓	YES	✓
ML22Q573					Flash 4M								✓	YES	✓
ML22Q553					Flash 4M								Speaker terminal short circuit detection function	✓	YES
4ch Simultaneous Playback Built-in Mask ROM+Serial External Memory Speaker Amplifier Installed Support for 105°C															
ML22594	4.5 to 5.5	4.096	External	-40 to +105	Mask 6M <sup>*4</sup> External maximum 128M	1024 <sup>*5</sup> (Built-in 512/ External 512)	Built-in 303sec <sup>*2</sup> External 109min <sup>*3</sup>	Clock synchronization Serial	1.0/ AB-class	4	Speaker terminal short circuit detection function	P-SSOP30-56-0.65	✓	YES	✓
Clock Synchronous Serial Interface Speaker Amplifier Installed															
ML22321	2.3 to 5.5	4.096	External	-40 to +85	Mask 920K	62	43sec <sup>*1</sup>	Clock synchronization Serial	1.0/ AB-class	1	Disconnection detection/ Temperature protection circuit/ Analog volume control	P-SSOP30-56-0.65	✓	YES	✓
ML22Q321					Flash 920K							P-SSOP30-56-0.65	✓	YES	✓
Clock Synchronous Serial Interface D-class Speaker Amplifier Installed															
ML22Q374	2.0 to 5.5	4.096	Built-in	-40 to +85	Flash 692K	30	27sec <sup>*2</sup>	Clock synchronization Serial	1.0/ D-class	1	Disconnection/Short circuit detection Built-in oscillator	P-SSOP16-0225-0.65 P-TSSOP20-0225-0.65	— ✓	YES	✓
I <sup>2</sup> C Interface D-class Speaker Amplifier Installed															
ML22Q394	2.0 to 5.5	4.096	Built-in	-40 to +85	Flash 692K	30	27sec <sup>*2</sup>	I <sup>2</sup> C	1.0/ D-class	1	Disconnection/Short circuit detection Built-in oscillator	P-SSOP16-0225-0.65 P-TSSOP20-0225-0.65	— ✓	YES	✓

<sup>\*1</sup> Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM. <sup>\*2</sup> Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.

<sup>\*3</sup> A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

<sup>\*4</sup> Please inquire to the sales for AEC-Q100.

<sup>\*5</sup> While using it clock synchronization serial

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

Clock Synchronous Serial Interface 4ch Simultaneous Playback Speaker Amplifier Installed														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum <sup>*1</sup> Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Halogen <sup>*3</sup> Free Support	Automotive Grade
<b>New</b> ML22Q623	2.7 to 3.6 or 3.3 to 5.5	4.096 4.000	Built-in External	-40 to +70	Flash 4M	4096	201sec <sup>*6</sup>	Clock synchronous serial	1.0/ AB-class, D-class	4	Flash MCU rewrite	P-TQFP32-0707-0.80 P-WQFN32-0505-0.50	✓	—
<b>New</b> ML22Q624					Flash 8M		405sec <sup>*6</sup>						✓	—
<b>New</b> ML22Q625					Flash 16M		14min <sup>*6</sup>						✓	—
<b>New</b> ML22Q626					Flash 32M		27min <sup>*6</sup>						✓	—
I <sup>2</sup> C Interface 4ch Simultaneous Playback Speaker Amplifier Installed														
<b>New</b> ML22Q663	2.7 to 3.6 or 3.3 to 5.5	4.096 4.000	Built-in External	-40 to +70	Flash 4M	4096	201sec <sup>*6</sup>	I <sup>2</sup> C	1.0/ AB-class, D-class	4	—	P-TQFP32-0707-0.80 P-WQFN32-0505-0.50	✓	—
<b>New</b> ML22Q664					Flash 8M		405sec <sup>*6</sup>						✓	—
<b>New</b> ML22Q665					Flash 16M		14min <sup>*6</sup>						✓	—
<b>New</b> ML22Q666					Flash 32M		27min <sup>*6</sup>						✓	—
Clock Synchronous Serial Interface 2ch Simultaneous Playback Speaker Amplifier Installed														
ML22823	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 4M	1024 <sup>*2</sup>	258sec	Clock synchronous serial	0.7/ AB-class	2	—	P-SSOP30-56-0.65	✓	—
ML22824					P2ROM™ 8M		520sec						✓	—
ML22825					P2ROM™ 16M		17min						✓	—
Clock Synchronous Serial Interface Speech-speed and Pitch Conversion Function Installed Speaker Amplifier Installed														
ML22723	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 4M	1024 <sup>*2</sup>	258sec	Clock synchronous serial	0.7/ AB-class	1	Speech-speed and pitch conversion	P-SSOP30-56-0.65	✓	—
ML22724					P2ROM™ 8M		520sec						✓	—
ML22725					P2ROM™ 16M		17min						✓	—
I <sup>2</sup> C Interface 2ch Simultaneous Playback Speaker Amplifier Installed														
ML22863	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 4M	1024 <sup>*2</sup>	258sec	I <sup>2</sup> C	0.7/ AB-class	2	—	P-SSOP30-56-0.65	✓	—
ML22864					P2ROM™ 8M		520sec						✓	—
ML22865					P2ROM™ 16M		17min						✓	—
I <sup>2</sup> C Interface Speech-speed and Pitch Conversion Function Installed Speaker Amplifier Installed														
ML22763	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 4M	1024 <sup>*2</sup>	258sec	I <sup>2</sup> C	0.7/ AB-class	1	Speech-speed and pitch conversion	P-SSOP30-56-0.65	✓	—
ML22764					P2ROM™ 8M		520sec						✓	—
ML22765					P2ROM™ 16M		17min						✓	—

<sup>\*1</sup> Maximum playback time when the sampling frequency is 4kHz in ADPCM2. <sup>\*2</sup> 1024 phrases (1 bank)×4 banks. <sup>\*3</sup> 256 phrases (1 bank)×2 banks. <sup>\*4</sup> 256 phrases (1 bank)×4 banks.  
<sup>\*6</sup> A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

## Speech Synthesis LSI with Short-time playback (LAPIS Semiconductor products)

Clock Synchronous Serial Interface 4ch Simultaneous Playback Speaker Amplifier Installed (Industrial Grade)															
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	Halogen <sup>3)</sup> Free Support	Automotive <sup>4)</sup> Grade	Industrial Grade
ML22562	2.7 to 5.5	4.096	External	-40 to +85	Mask 2M	1024	98sec <sup>*1</sup>	Clock synchronization Serial	1.0/ AB-class	4	Fail safe	P-SSOP30-56-0.65	✓	-	✓
ML22563					Mask 4M		201sec <sup>*1</sup>					P-SSOP30-56-0.65	✓	-	✓
ML22Q563					Flash 4M							P-SSOP30-56-0.65	✓	-	✓
Clock Synchronous Serial Interface Speaker Amplifier Installed (Automotive Grade)															
ML22321	2.3 to 5.5	4.096	External	-40 to +85	Mask 920K	62	43sec <sup>*1</sup>	Clock synchronization Serial	1.0/ AB-class	1	Disconnection detection/ Temperature protection circuit/ Analog volume control	P-SSOP30-56-0.65	✓	YES	✓
ML22Q321					Flash 920K								P-SSOP30-56-0.65	✓	YES
Clock Synchronous Serial Interface D-class Speaker Amplifier Installed (Automotive Grade)															
ML22Q374	2.0 to 5.5	4.096	Built-in	-40 to +85	Flash 692K	30	27sec <sup>*2</sup>	Clock synchronization Serial	1.0/ D-class	1	Disconnection/Short circuit detection Built-in oscillator	P-SSOP16-0225-0.65	-	YES	✓
												P-TSSOP20-0225-0.65	✓		
I <sup>2</sup> C Interface D-class Speaker Amplifier Installed (Automotive Grade)															
ML22Q394	2.0 to 5.5	4.096	Built-in	-40 to +85	Flash 692K	30	27sec <sup>*2</sup>	I <sup>2</sup> C	1.0/ D-class	1	Disconnection/Short circuit detection Built-in oscillator	P-SSOP16-0225-0.65	-	YES	✓
												P-TSSOP20-0225-0.65	✓		

\*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 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

\*4 Please inquire to the sales for AEC-Q100.

# Speech Synthesis LSI with External Memory (LAPIS Semiconductor products)

4ch Simultaneous Playback Serial External Memory Speaker Amplifier Installed															
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	Halogen <sup>*6</sup> Free Support	Automotive <sup>*7</sup> Grade	Industrial Grade
<b>New</b> ML22620	2.7 to 3.6 or 3.3 to 5.5	4.096 4.000	Built-in External	-40 to +70	External maximum 128M	4096	109min <sup>*3</sup>	Clock synchronization Serial	1.0/ D-class	4	Flash MCU rewrite	P-TQFP32-0707-0.80 P-WQFN32-0505-0.50	✓	-	-
<b>New</b> ML22660								I <sup>2</sup> C			-		✓	-	-
4ch Simultaneous Playback Serial External Memory															
ML22460	2.7 to 5.5	4.096 4.000	External	-40 to +85	External maximum 128M	1024	139min <sup>*1</sup>	I <sup>2</sup> C	0.7/ AB-class	4	-	P-SSOP30-56-0.65	✓	-	-
ML22420								Clock synchronization Serial					✓	-	-

<sup>\*1</sup> Maximum playback time when the sampling frequency is 4kHz in ADPCM2. <sup>\*2</sup> Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.  
<sup>\*3</sup> With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.  
<sup>\*4</sup> Mask's built-in ROM is 6Mbit and an external memory module (Max 128Mbit) can be connected.  
<sup>\*5</sup> Total of mask's internal 512 phrases and external memory's 512 phrases.  
<sup>\*6</sup> A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.  
<sup>\*7</sup> Please inquire to the sales for AEC-Q100.