



ICs

Microcontroller

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Microcontroller

High Functionality, High Performance & Low Power Tough MCU(High Noise Immunity)

16bit ML621000 series

Standard Type 1200 Group 16bit Low Power Tough MCU(Industrial Grade)

Part No.	Operating Conditions						ROM/RAM				Functions/Features		
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port		
		Low Speed	High Speed								Input	Output	Input/Output
New ML62Q1223A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	16K	2K	2K	—	—	12
New ML62Q1224A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	24K	2K	2K	—	—	12
New ML62Q1225A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	2K	—	—	12
New ML62Q1233A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	16K	2K	2K	—	—	16
New ML62Q1234A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	24K	2K	2K	—	—	16
New ML62Q1235A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	2K	—	—	16
New ML62Q1245A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	20
New ML62Q1246A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	20
New ML62Q1247A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	20
New ML62Q1265A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	28
New ML62Q1266A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	28
New ML62Q1267A	1.6 to 5.5	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	2.8µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	28

Standard Type 1400 Group 16bit Low Power Tough MCU(Industrial Grade)

New ML62Q1430	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	42
New ML62Q1431	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	42
New ML62Q1432	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	42
New ML62Q1440	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	46
New ML62Q1441	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	46
New ML62Q1442	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	46
New ML62Q1450	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	58
New ML62Q1451	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	58
New ML62Q1452	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	58

Standard Type 1500 Group 16bit Low Power Tough MCU(Industrial Grade)

☆ ML62Q1533	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	42
☆ ML62Q1534	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	42
☆ ML62Q1543	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	42
☆ ML62Q1544	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	46
☆ ML62Q1553	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	46
☆ ML62Q1554	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	46
☆ ML62Q1555	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	58
☆ ML62Q1556	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	58
☆ ML62Q1557	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	58
☆ ML62Q1563	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	16K	—	—	72
☆ ML62Q1564	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	16K	—	—	72
☆ ML62Q1565	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	72
☆ ML62Q1566	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	72
☆ ML62Q1567	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	72
☆ ML62Q1573	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	16K	—	—	92
☆ ML62Q1574	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	16K	—	—	92
☆ ML62Q1575	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	92
☆ ML62Q1576	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	92
☆ ML62Q1577	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	92

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.

Built-in LCD Driver Segments type 1600 Group 16bit Low Power Tough MCU(Industrial Grade)

Part No.	Operating Conditions						ROM/RAM				Functions/Features		
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port		
		Low Speed	High Speed								Input	Output	Input/Output
New ML62Q1600	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	37
New ML62Q1601	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	37
New ML62Q1602	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	37
New ML62Q1610	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	41
New ML62Q1611	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	41
New ML62Q1612	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	41
New ML62Q1620	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	32K	2K	4K	—	—	53
New ML62Q1621	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	48K	2K	4K	—	—	53
New ML62Q1622	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	3.4µA (Internal RC oscillation)	-40 to +105	Flash	64K	2K	4K	—	—	53

Built-in LCD Driver Segments type 1700 Group 16bit Low Power Tough MCU(Industrial Grade)

☆ ML62Q1703	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	37
☆ ML62Q1704	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	37
☆ ML62Q1713	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	41
☆ ML62Q1714	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	41
☆ ML62Q1723	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	8K	—	—	53
☆ ML62Q1724	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	8K	—	—	53
☆ ML62Q1725	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	53
☆ ML62Q1726	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	53
☆ ML62Q1727	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	53
☆ ML62Q1733	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	16K	—	—	67
☆ ML62Q1734	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	16K	—	—	67
☆ ML62Q1735	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	67
☆ ML62Q1736	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	67
☆ ML62Q1737	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	67
☆ ML62Q1743	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	96K	4K	16K	—	—	87
☆ ML62Q1744	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	128K	4K	16K	—	—	87
☆ ML62Q1745	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	160K	4K	16K	—	—	87
☆ ML62Q1746	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	192K	4K	16K	—	—	87
☆ ML62Q1747	1.6 to 5.5	32.768kHz (Internal RC oscillation/Crystal oscillation)	24MHz (PLL oscillation)	41ns/ 30.5µs	(TBD) (Internal RC oscillation)	-40 to +105	Flash	256K	4K	16K	—	—	87

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Low Power Tough MCU(High Noise Immunity)

8bit ML6101xx

Standard type 8bit Low Power Tough MCU(Industrial Grade)

Part No.	Operating Conditions					ROM/RAM				Functions/Features			
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port		
		Low Speed	High Speed								Input	Output	Input/Output
ML610Q101	2.7 to 5.5	32.768kHz (Internal RC oscillation)	8.192MHz	0.122µs/30.5µs	—	-40 to +85	Flash	4K	—	256	—	—	11
ML610Q102	2.7 to 5.5	32.768kHz (Internal RC oscillation)	8.192MHz	0.122µs/30.5µs	—	-40 to +85	Flash	6K	—	256	—	—	11
ML610Q111	2.7 to 5.5	32.768kHz (Internal RC oscillation)	8.192MHz	0.122µs/30.5µs	—	-40 to +105	Flash	24K	4K	2K	—	—	15
ML610Q112	2.7 to 5.5	32.768kHz (Internal RC oscillation)	8.192MHz	0.122µs/30.5µs	—	-40 to +105	Flash	32K	4K	4K	—	—	25

Built-in LCD Driver Segments type 8bit Low Power Tough MCU

ML610Q172	2.2 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.0µA	-40 to +85	Flash	128K	2K	4K	6	2	37
ML610Q173	2.2 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.0µA	-40 to +85	Flash	128K	2K	4K	6	2	37
ML610Q174	2.2 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.0µA	-40 to +85	Flash	128K	2K	4K	6	6	49
ML610Q178	2.2 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.0µA	-40 to +85	Flash	128K	—	4K	7	8	59

16bit ML6201xx

Standard type 16bit Low Power Tough MCU(Industrial Grade)

Part No.	Operating Conditions					ROM/RAM				Functions/Features			
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port		
		Low Speed	High Speed								Input	Output	Input/Output
ML620Q131/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	8K	2K	2K	1	—	10
ML620Q132/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	16K	2K	2K	1	—	10
ML620Q133/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	24K	2K	2K	1	—	10
ML620Q134/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	8K	2K	2K	1	—	14
ML620Q135/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	16K	2K	2K	1	—	14
ML620Q136/B*	1.6 to 5.5	32.768kHz (Internal RC oscillation)	16MHz	62.5 ns/30.5µs	3.5µA (Internal RC oscillation)	-40 to +105	Flash	24K	2K	2K	1	—	14
ML620Q151A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	32K	2K	2K	5 (Use crystal oscillation) 6 (Not use crystal oscillation)	4	30 (Use crystal oscillation) 31 (Not use crystal oscillation)
ML620Q152A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	48K	2K	2K	5 (Use crystal oscillation) 6 (Not use crystal oscillation)	4	30 (Use crystal oscillation) 31 (Not use crystal oscillation)
ML620Q153A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	64K	2K	2K	5 (Use crystal oscillation) 6 (Not use crystal oscillation)	4	30 (Use crystal oscillation) 31 (Not use crystal oscillation)
ML620Q154A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	32K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	33 (Use crystal oscillation) 34 (Not use crystal oscillation)
ML620Q155A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	48K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	33 (Use crystal oscillation) 34 (Not use crystal oscillation)
ML620Q156A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	64K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	33 (Use crystal oscillation) 34 (Not use crystal oscillation)
ML620Q157A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	32K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	45 (Use crystal oscillation) 46 (Not use crystal oscillation)
ML620Q158A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	48K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	45 (Use crystal oscillation) 46 (Not use crystal oscillation)
ML620Q159A/B*	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation)	8.192MHz	0.122µs/30.5µs	2.5 (Crystal oscillation) 3.5 (Internal RC oscillation)	-40 to +105	Flash	64K	2K	2K	6 (Use crystal oscillation) 7 (Not use crystal oscillation)	4	45 (Use crystal oscillation) 46 (Not use crystal oscillation)

* : Recommended "B" version for New Design.

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Functions/Features																
8bit Timer	16bit Timer	PWM	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
					FC	SSIO	UART									
6 (16bit×3)	—	16bit×1 (with dead time)	1	10bit×6 (SA type)	—	—	1	VLS×2	—	5	Analog comparator×2	—	P-SSOP16-0225-0.65 P-WQFN16-0404-0.50	—	✓	✓
6 (16bit×3)	—	16bit×1 (with dead time)	1	10bit×6 (SA type)	—	—	1	VLS×2	—	5	Analog comparator×2	—	P-SSOP16-0225-0.65 P-WQFN16-0404-0.50	—	✓	✓
6 (16bit×3)	—	16bit×4 (Complementary type)	1	10bit×6 (SA type)	1	1	2	VLS×2	—	7	Analog comparator×2	—	P-TSSOP20-0225-0.65	—	✓	✓
6 (16bit×3)	—	16bit×4 (Complementary type)	1	10bit×8 (SA type)	1	1	2	VLS×2	—	7	Analog comparator×2	—	P-LQFP32-0707-0.80	—	✓	✓
6 (16bit×3)	—	16bit×3 (Supports IGBT control)	1	10bit×12 (SA type)	1	2	2 (Half Duplex×2)	BLD×1	Max. 96dot 24seg.×4com.	4	Low speed frequency correction	—	QFP64-P-1414-0.80	—	✓	—
6 (16bit×3)	—	16bit×3 (Supports IGBT control)	1	10bit×8 (SA type)	1	2	2 (Half Duplex×2)	BLD×1	Max. 96dot 24seg.×4com.	4	Low speed frequency correction/ Analog comparator	—	QFP64-P-1414-0.80	—	✓	—
6 (16bit×3)	—	16bit×3 (Supports IGBT control)	1	10bit×12 (SA type)	1	2	2 (Half Duplex×2)	BLD×1	Max. 128dot 32seg.×4com.	4	Low speed frequency correction/ Analog comparator	—	QFP80-P-1420-0.80	—	✓	—
6 (16bit×3)	—	16bit×2 (Supports IGBT control)	1	10bit×16 (SA type)	1	2	2 (Half Duplex×2)	BLD×1	Max. 160dot 40seg.×4com.	5	Low speed frequency correction	—	P-QFP100-1420-0.65	—	✓	—

(LAPIS Semiconductor products)

Functions/Features																
8bit Timer	16bit Timer	PWM	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
					FC	SSIO	UART									
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×6 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-SSOP16-0225-0.65 P-WQFN16-0404-0.50	—	✓	✓
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×6 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-SSOP16-0225-0.65 P-WQFN16-0404-0.50	—	✓	✓
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×6 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-SSOP16-0225-0.65 P-WQFN16-0404-0.50	—	✓	✓
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×8 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-TSSOP20-0225-0.65	—	✓	✓
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×8 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-TSSOP20-0225-0.65	—	✓	✓
10 (16bit×5)	—	16bit×1 (with dead time)	1	10bit×8 (SA type)	Master×1 Slave×1	1	1	VLS×1	—	5	Analog comparator×2	—	P-TSSOP20-0225-0.65	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	7	Analog comparator	—	P-TQFP48-0707-0.50	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	7	Analog comparator	—	P-TQFP48-0707-0.50	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	7	Analog comparator	—	P-TQFP48-0707-0.50	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-TQFP52-1010-0.65	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-TQFP52-1010-0.65	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-TQFP52-1010-0.65	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-QFP64-1414-0.80 P-TQFP64-1010-0.50	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-QFP64-1414-0.80 P-TQFP64-1010-0.50	—	✓	✓
2 (16bit×1)	4	16bit×4 (Complementary type)	1	10bit×12 (SA type)	1	1	2 (Half Duplex×2, Full Duplex×1)	LLD×1	—	8	Analog comparator	—	P-QFP64-1414-0.80 P-TQFP64-1010-0.50	—	✓	✓

A
Microcontroller



High Performance & Ultra Low Power MCU

16bit ML6205xx/ML6204xx

Standard type 16bit Low Power MCU(Industrial Grade)																	
Part No.	Operating Conditions						ROM/RAM				Functions/Features						
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Co-processor for Multiplication and Division	Port			8bit Timer	16bit Timer	
		Low Speed	High Speed									Input	Output	Input/Output			
ML620Q503H	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation/ External input)		16MHz (Internal RC oscillation/ Crystal oscillation/ External input)	62.5 ns / 30.5µs	0.45µA	-40 to +85	Flash	32K	2K	2K	✓	2	—	36	8 (16bit×4)	4
ML620Q504H	1.8 to 5.5	32.768kHz (Internal RC oscillation/ Crystal oscillation/ External input)		16MHz (Internal RC oscillation/ Crystal oscillation/ External input)	62.5 ns / 30.5µs	0.45µA	-40 to +85	Flash	64K	2K	6K	✓	2	—	36	8 (16bit×4)	4

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32bit ML6304xx(Cortex-M)

Built-in LCD Driver Dot Matrix type 32bit Low Power MCU(Industrial Grade)																	
Part No.	Operating Conditions						ROM/RAM				Functions/Features						
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Co-processor for Multiplication and Division	Port			8bit Timer	16bit Timer	
		Low Speed	High Speed									Input	Output	Input/Output			
New ML630Q464	1.8 to 3.6	32.768kHz (Internal RC oscillation/ Crystal oscillation)		16MHz(Internal RC oscillation) 24MHz(PLL)	41.7ns / 30.5µs	0.8µA	-40 to +85	Flash	64K	2K	8K	✓	—	—	38	8 (16bit×4)	4
New ML630Q466	1.8 to 3.6	32.768kHz (Internal RC oscillation/ Crystal oscillation)		16MHz(Internal RC oscillation) 24MHz(PLL)	41.7ns / 30.5µs	0.8µA	-40 to +85	Flash	128K	2K	16K	✓	—	—	38	8 (16bit×4)	4

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Ultra Low Operating Voltage & Ultra Low Power MCU

8bit ML6104xx

Standard type 8bit Low Power MCU																		
Part No.	Operating Conditions						ROM/RAM				Functions/Features							
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			8bit Timer	1kHz Timer	PWM	Capture	WDT
		Low Speed	High Speed								Input	Output	Input/Output					
ML610482	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Mask	64K	—	4K	6	4	22	4 (16bit×2)	—	16bit×1	—	1
ML610Q482	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	64K	—	4K	6	4	22	4 (16bit×2)	—	16bit×1	—	1

Standard type 8bit Low Power MCU(Industrial Grade)

ML610482P	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-40 to +85	Mask	64K	—	4K	6	4	22	4 (16bit×2)	—	16bit×1	—	1
ML610Q482P	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-40 to +85	Flash	64K	—	4K	6	4	22	4 (16bit×2)	—	16bit×1	—	1

Built-in LCD Driver Dot Matrix type 8bit Low Power MCU

ML610421	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Mask	32K	—	2K	6	3	22	4 (16bit×2)	1	16bit×1	2	1	
ML610Q421	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	32K	—	2K	6	3	22	4 (16bit×2)	1	16bit×1	2	1	
ML610Q422	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	32K	—	2K	6	3	14	4 (16bit×2)	1	16bit×1	2	1	
ML610426	1.1 to 3.6	32.768kHz (Crystal oscillation)		1MHz	1µs/ 30.5µs	0.5µA	-20 to +70	Mask	40K	—	2K	5	—	7	4 (16bit×2)	1	16bit×1	—	1
ML610Q426	1.1 to 3.6	32.768kHz (Crystal oscillation)		1MHz	1µs/ 30.5µs	0.5µA	-20 to +70	Flash	40K	—	2K	5	—	7	4 (16bit×2)	1	16bit×1	—	1
ML610Q426C	1.1 to 3.6	32.768kHz (Crystal oscillation)		1MHz	1µs/ 30.5µs	0.5µA	-20 to +70	Flash	40K	—	2K	7	—	13	4 (16bit×2)	1	16bit×1	—	1
ML610Q428	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/0.5µs/ 2MHz	0.5µA	-20 to +70	Flash	48K	—	4K	6	3	14	2 (16bit×1)	1	16bit×3	—	1
ML610429	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/0.5µs/ 2MHz	0.5µA	-20 to +70	Mask	48K	—	4K	10	3	20	2 (16bit×1)	1	16bit×3	—	1
ML610Q429	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/0.5µs/ 2MHz	0.5µA	-20 to +70	Flash	48K	—	4K	10	3	20	2 (16bit×1)	1	16bit×3	—	1
ML610Q431	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	64K	—	3K	6	3	22	4 (16bit×2)	1	16bit×1	2	1
ML610Q431A	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	64K	—	3K	6	3	22	4 (16bit×2)	1	16bit×1	2	1
ML610Q432	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	64K	—	3K	6	3	14	4 (16bit×2)	1	16bit×1	2	1
ML610Q432A	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	64K	—	3K	6	3	14	4 (16bit×2)	1	16bit×1	2	1
ML610Q435	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	96K	—	3K	6	3	22	4 (16bit×2)	1	16bit×1	2	1
ML610Q435A	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	96K	—	3K	6	3	22	4 (16bit×2)	1	16bit×1	2	1
ML610Q436	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	96K	—	3K	6	3	14	4 (16bit×2)	1	16bit×1	2	1
ML610Q436A	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/2µs/ 30.5µs	0.5µA	-20 to +70	Flash	96K	—	3K	6	3	14	4 (16bit×2)	1	16bit×1	2	1
ML610Q438	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/0.5µs/ 2MHz	0.5µA	-20 to +70	Flash	128K	—	7K	10	3	20	4 (16bit×2)	1	16bit×3	2	1
ML610Q439	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.096MHz	0.244µs/0.5µs/ 30.5µs	0.5µA	-20 to +70	Flash	128K	—	7K	10	3	20	4 (16bit×2)	1	16bit×3	2	1

Built-in LCD Driver Dot Matrix type 8bit Low Power MCU(Industrial Grade)

ML610Q421P	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-40 to +85	Flash	32K	—	2K	6	3	22	4 (16bit×2)	1	16bit×1	2	1
ML610Q422P	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/2µs/ 30.5µs	0.5µA	-40 to +85	Flash	32K	—	2K	6	3	14	4 (16bit×2)	1	16bit×1	2	1
ML610Q439P	1.1 to 3.6	32.768kHz (Crystal oscillation)		0.244µs/0.5µs/ 30.5µs	0.5µA	-40 to +85	Flash	128K	—	7K	10	3	20	4 (16bit×2)	1	16bit×3	2	1

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Functions/Features														Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
PWM	Capture	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others								
				I ² C	SSIO (SPI)	UART					USB							
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	2	2	2	—	VLS×1 LLD×1	—	8	Low speed frequency correction/ Analog comparator×2/Melody : Buzzer	—	P-TQFP48-0707-0.50	✓	✓	✓		
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	2	2	2	—	VLS×1 LLD×1	—	8	Low speed frequency correction/ Analog comparator×2/Melody : Buzzer	—	P-TQFP48-0707-0.50	✓	✓	✓		
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	3	2	3	—	VLS×1 LLD×1	Max. 2048dot 64seg.×32com.	8	Low speed frequency correction/ Analog comparator×2/ Melody : Buzzer/1kHz Timer	—	—	✓	✓	—		
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	3	2	3	—	VLS×1 LLD×1	Max. 2048dot 64seg.×32com.	8	Low speed frequency correction/ Analog comparator×2/ Melody : Buzzer/1kHz Timer	—	—	✓	✓	—		

(LAPIS Semiconductor products)

Functions/Features														Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
PWM	Capture	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others								
				I ² C	SSIO (SPI)	UART					USB							
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	2	2	2	1	VLS×1 LLD×1	Max. 400dot 50seg.×8com.	8	AES/Random generator/DMA/RTC/ Analog comparator×2/1kHz timer	—	P-TQFP100-1414-0.50	—	✓	✓		
16bit×4 (use 16bit timer)	16bit×4 (use 16bit timer)	1	24bit×2(RC type) 12bit×12(SA type)	2	2	2	1	VLS×1 LLD×1	Max. 400dot 50seg.×8com.	8	AES/Random generator/DMA/RTC/ Analog comparator×2/1kHz timer	—	P-TQFP100-1414-0.50	—	✓	✓		

(LAPIS Semiconductor products)

Functions/Features										Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others							
	I ² C	SSIO	UART											
24bit×2(RC type)	1	1	1	BLD×1	—	5	Low speed frequency correction /Buzzer	—	—	✓	✓	—		
24bit×2(RC type)	1	1	1	BLD×1	—	5	Low speed frequency correction /Buzzer	—	P-TQFP48-0707-0.50	✓	✓	—		
24bit×2(RC type)	1	1	1	BLD×1	—	5	Low speed frequency correction /Buzzer	—	—	✓	✓	✓		
24bit×2(RC type)	1	1	1	BLD×1	—	5	Low speed frequency correction /Buzzer	—	P-TQFP48-0707-0.50	✓	✓	✓		

24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 400dot 50seg.×8com.	5	Low speed frequency correction/ Melody : Buzzer	—	—	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 400dot 50seg.×8com.	5	Low speed frequency correction/ Melody : Buzzer	—	P-TQFP120-1414-0.40	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 800dot 50seg.×16com.	5	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable	P-TQFP120-1414-0.40	✓	✓	—
16bit×1(RC type)	1	1	1	BLD×1	Max. 800dot 50seg.×16com.	5	Low speed frequency correction/Melody : Buzzer/ EL Driver/External input voltage detection	—	—	✓	✓	—
16bit×1(RC type)	1	1	1	BLD×1	Max. 800dot 50seg.×16com.	5	Low speed frequency correction/Melody : Buzzer/ EL Driver/External input voltage detection	—	—	✓	✓	—
16bit×1(RC type)	1	1	1	BLD×1	Max. 672dot 42seg.×16com.	8	Low speed frequency correction/Melody : Buzzer/ EL Driver/External input voltage detection	—	—	✓	✓	—
24bit×2(RC type)	1	1	1	BLD×1	Max. 1392dot 58seg.×24com.	5	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	TQFP128-P-1414-0.40	✓	✓	—
24bit×2(RC type)	1	1	1	BLD×1	Max. 512dot 64seg.×8com.	9	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	—	✓	✓	—
24bit×2(RC type)	1	1	1	BLD×1	Max. 512dot 64seg.×8com.	9	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	TQFP128-P-1414-0.40	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1024dot 64seg.×16com.	5	RTC/Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable	P-LQFP144-2020-0.50	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1024dot 64seg.×16com.	5	RTC/Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : disenable	—	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1536dot 64seg.×24com.	5	RTC/Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable	P-LQFP144-2020-0.50	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1536dot 64seg.×24com.	5	RTC/Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : disenable	P-LQFP144-2020-0.50	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1344dot 56seg.×24com.	9	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	P-LQFP144-2020-0.50	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1024dot 64seg.×16com.	9	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	—	✓	✓	—
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 400dot 50seg.×8com.	5	Low speed frequency correction/ Melody : Buzzer	—	P-TQFP120-1414-0.40	✓	✓	✓
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 800dot 50seg.×16com.	5	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable	P-TQFP120-1414-0.40	✓	✓	✓
24bit×2(RC type) 12bit×2(SA type)	1	1	1	BLD×1	Max. 1024dot 64seg.×16com.	9	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable/disable according to software	P-LQFP144-2020-0.50	—	✓	✓

8bit ML6104xx

Built-in LCD Driver Segments type Low Power 8bit MCU

Part No.	Operating Conditions					ROM/RAM				Functions/Features								
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			8bit Timer	1kHz Timer	PWM	Capture	WDT
		Low Speed	High Speed								Input	Output	Input/Output					
ML610401	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-20 to +70	Mask	6K	—	192	4	12	18	2 (16bit × 1)	—	—	2	1
ML610402	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-20 to +70	Mask	6K	—	192	4	8	18	2 (16bit × 1)	—	—	2	1
ML610403	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-20 to +70	Mask	6K	—	192	4	4	18	2 (16bit × 1)	—	—	2	1
ML610404	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	8K	—	256	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610405	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	8K	—	256	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610406	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	8K	—	256	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610407	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q407	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q407A	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q407D	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610408	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	16K	—	1K	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q408	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610409	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Mask	16K	—	1K	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q409	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q409A	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q411	1.1 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-20 to +70	Flash	16K	—	1K	6	3	22	4 (16bit × 2)	1	16bit × 1	2	1
ML610Q412	1.1 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-20 to +70	Flash	16K	—	1K	6	3	14	4 (16bit × 2)	1	16bit × 1	2	1
ML610Q418	1.1 to 3.6	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	1.1µA	-20 to +70	Flash	128K	4K	4K	6	3	18	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q418C	1.1 to 3.6	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	1.1µA	-20 to +70	Flash	128K	4K	4K	6	3	26	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q419	1.1 to 3.6	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	0.9µA	-20 to +70	Flash	64K	4K	2K	6	3	18	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q419C	1.1 to 3.6	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	0.9µA	-20 to +70	Flash	64K	4K	2K	6	3	26	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q461	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	10	14	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q462	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	6	14	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q463	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.9µA	-20 to +70	Flash	16K	—	1K	5	2	14	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q477	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.8µA	-20 to +70	Flash	24K	—	2K	4	10	15	6 (16bit × 3)	—	—	2	1
ML610Q478	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.8µA	-20 to +70	Flash	24K	—	2K	4	6	15	6 (16bit × 3)	—	—	2	1
ML610Q479	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz 500kHz	0.5µs/2µs/30.5µs	0.8µA	-20 to +70	Flash	24K	—	2K	4	2	15	6 (16bit × 3)	—	—	2	1

Built-in LCD Driver Segments type Low Power 8bit MCU(Industrial Grade)

ML610401P	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-40 to +85	Mask	6K	—	192	4	12	18	2 (16bit × 1)	—	—	2	1
ML610402P	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-40 to +85	Mask	6K	—	192	4	8	18	2 (16bit × 1)	—	—	2	1
ML610403P	1.25 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.9µA	-40 to +85	Mask	6K	—	192	4	4	18	2 (16bit × 1)	—	—	2	1
ML610404P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	8K	—	256	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610405P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	8K	—	256	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610406P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	8K	—	256	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610407P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q407P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Flash	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q407PA	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Flash	16K	—	1K	5	12	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610408P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	16K	—	1K	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q408P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Flash	16K	—	1K	5	8	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610409P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Mask	16K	—	1K	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q409P	1.25 to 3.6	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	Flash	16K	—	1K	5	4	22	4 (16bit × 2)	—	16bit × 1	2	1
ML610Q411P	1.1 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-40 to +85	Flash	16K	—	1K	6	3	22	4 (16bit × 2)	1	16bit × 1	2	1
ML610Q411PA	1.1 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-40 to +85	Flash	16K	—	1K	6	3	22	4 (16bit × 2)	1	16bit × 1	2	1
ML610Q412P	1.1 to 3.6	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-40 to +85	Flash	16K	—	1K	6	3	14	4 (16bit × 2)	1	16bit × 1	2	1

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.

Functions/Features										Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others							
	IC	SSIO	UART											
16bit × 2(RC type)	—	—	1	—	Max. 55dot 11seg. × 5com.	8 (include 4bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	—	1	—	Max. 75dot 15seg. × 5com.	8 (include 4bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	—	1	—	Max. 95dot 19seg. × 5com.	8 (include 4bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 105dot 21seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/2, 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 125dot 25seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/2, 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 145dot 29seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 145dot 29seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 145dot 29seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable LCD bias : 1/3			P-TQFP100-1414-0.50	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 145dot 29seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : disenable LCD bias : 1/2, 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 145dot 29seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable LCD bias : 1/2, 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 165dot 33seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 165dot 33seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable LCD bias : 1/3			P-TQFP100-1414-0.50	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 185dot 37seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Selectable oscillation stop detection reset : function enable according to software LCD bias : 1/3			—	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 185dot 37seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : enable LCD bias : 1/3			P-TQFP100-1414-0.50	✓	✓	—
16bit × 2(RC type)	—	2	1	—	Max. 185dot 37seg. × 5com.	13 (include 8bit-OR input)	Low speed frequency correction/ Melody : Buzzer	Low-speed scillation stop detect reset : disenable LCD bias : 1/2, 1/3			—	✓	✓	—
24bit × 2(RC type) 12bit × 2(SA type)	1	1	1	BLD × 1	Max. 144dot 36seg. × 4com.	5	Low speed frequency correction/ Buzzer	Low-speed scillation stop detect reset : enable			P-TQFP120-1414-0.40	✓	✓	—
24bit × 2(RC type) 12bit × 2(SA type)	1	1	1	BLD × 1	Max. 176dot 44seg. × 4com.	5	Low speed frequency correction/ Buzzer	—			P-TQFP120-1414-0.40	✓	✓	—
24bit × 2(RC type) 12bit × 4(SA type)	1	2	1	BLD × 1	Max. 192dot 48seg. × 4com.	5	Low speed frequency correction/ Melody : Buzzer	—			P-TQFP100-1414-0.50	✓	✓	—
24bit × 2(RC type) 12bit × 4(SA type)	1	2	1	BLD × 1	Max. 160dot 40seg. × 4com.	5	Low speed frequency correction/ Melody : Buzzer	—			P-TQFP100-1414-0.50	✓	✓	—
24bit × 2(RC type) 12bit × 4(SA type)	1	2	1	BLD × 1	Max. 192dot 48seg. × 4com.	5	Low speed frequency correction/ Melody : Buzzer	—			P-TQFP100-1414-0.50	✓	✓	—
24bit × 2(RC type) 12bit × 4(SA type)	1	2	1	BLD × 1	Max. 160dot 40seg. × 4com.	5	Low speed frequency correction/ Melody : Buzzer	—			P-TQFP100-1414-0.50	✓	✓	—
16bit × 2(RC type)	—	1	1	—	Max. 64dot 16seg. × 4com.	5	Low speed frequency correction	—			P-TQFP64-1010-0.50	—	✓	—
16bit × 2(RC type)	—	1	1	—	Max. 80dot 20seg. × 4com.	5	Low speed frequency correction	—			P-TQFP64-1010-0.50	—	✓	—
16bit × 2(RC type)	—	1	1	—	Max. 96dot 24seg. × 4com.	5	Low speed frequency correction	—			P-TQFP64-1010-0.50	—	✓	—
16bit × 1(RC type)	—	—	1	—	Max. 135dot 27seg. × 5com.	12 (include 8bit-OR input)	Low speed frequency correction/ Analog comparator	—			—	✓	✓	—
16bit × 1(RC type)	—	—	1	—	Max. 155dot 31seg. × 5com.	12 (include 8bit-OR input)	Low speed frequency correction/ Analog comparator	—			—	✓	✓	—
16bit × 1(RC type)	—	—	1	—	Max. 175dot 35seg. × 5com.	12 (include 8bit-OR input)	Low speed frequency correction/ Analog comparator	—			—	✓	✓	—

A
Microcontroller

Built-in Speech Output Function MCU

8bit ML6103xx

Standard type 8bit Low Power MCU(Industrial Grade)															
Part No.	Operating Conditions						ROM/RAM				Functions/Features				
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	Memory for Sound	RAM Capacity (Byte)	Port			
		Low Speed	High Speed									Input	Output	Input/Output	
ML610Q304	2.0 to 5.5	32.768kHz (Internal RC oscillation)		8.192MHz	0.122µs/30.5µs	2.7µA	-40 to +85	Flash	96K	2K	Flash ROM	1K	1	3	11
ML610Q359	2.2 to 3.6	32.768kHz (Crystal oscillation)		8.192MHz	0.122µs/30.5µs	1.7µA	-40 to +85	Flash	160K	3K	Flash ROM	2K	8	3	29
ML610Q360	2.2 to 3.6	32.768kHz (Crystal oscillation)		8.192MHz	0.122µs/30.5µs	1.7µA	-40 to +85	Flash P2ROM	160K	3K	P2ROM: 16M bit	2K	8	3	29

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Sensor Hub MCU

8bit ML61079x

U8 Core Based Standard type 8bit Low Power MCU														
Part No.	Operating Conditions						ROM/RAM				Functions/Features			
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@HALT)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			
		Low Speed	High Speed								Input	Output	Input/Output	
ML610Q793*	V _{DD} : 1.7 to 1.9 AV _{DD} : 2.5 to 3.6	32.768kHz (External clock)		4.096MHz	0.25µs/30.5µs	0.6µA	-30 to +85	Flash	64K	—	4K	—	—	21
ML610Q794G*	2.5 to 3.6	32.768kHz (Crystal oscillation)		4.096MHz	0.25µs/30.5µs	1.1µA	-30 to +85	Flash	64K	—	4K	—	—	21

* : Not Recommended for New Design

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.

32bit ML63079x

ARM Cortex-M0 Based Standard type 32bit Low Power MCU														
Part No.	Operating Conditions						ROM/RAM				Functions/Features			
	Operating Voltage (V)	Operating Frequency(Max.)		Minimum Instruction Execution Time	Current Consumption (Typ.@SLEEPDEEP)	Operating Temperature (°C)	ROM Type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			
		Low Speed	High Speed								Input	Output	Input/Output	
ML630Q791*	V _{DD} : 1.7 to 1.9	32.768kHz (External clock)		32MHz	—	2.5µA	-40 to +85	Flash	128K	—	16K	—	—	7

* : Not Recommended for New Design

A
Microcontroller

(LAPIS Semiconductor products)

Functions/Features														Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
8bit Timer	PWM	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	SP Amp Output(W)/Class	Others							
				I ² C	SSIO	UART												
4 (16bit×2)	—	1	10bit×3 (SA type)	1	2	1	—	—	8	1.0(@5V) /D class	Speech function/ ADPCM decoder/ Built-in speaker amp.	—	P-VQFN28-0505-0.50	—	✓	✓		
8 (16bit×4)	—	1	12bit×4 (SA type)	—	2	2	VLS×1	—	7	0.5(@3V) /AB class	Speech function/ ADPCM decoder/ Built-in speaker amp.	—	P-TQFP64-1010-0.50	—	✓	✓		
8 (16bit×4)	—	1	12bit×4 (SA type)	—	2	2	VLS×1	—	7	0.5(@3V) /AB class	Speech function/ ADPCM decoder/ Built-in speaker amp.	—	P-TQFP64-1010-0.50	—	—	✓		
6 (16bit×3)	16bit×2	1	10bit×8 (SA type)	1	2	2	BLD×1	Max. 96dot 24seg. ×4com.	5	0.6(@5V) /AB class	Speech function/ ADPCM decoder/ Built-in speaker amp.	—	P-QFP80-1414-0.65	—	—	—		

(LAPIS Semiconductor products)

Functions/Features											Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
8bit Timer	PWM	WDT	ADC (method)	Serial Port				External Interrupt Sources	Others						
				I ² C	SSIO	UART	I ² C/SPI(for Host Communication)								
6 (16bit×3)	—	1	12bit×3 (SA type)	1	1	2	1	16	16bit Square Root, Multiply, Divider, Host I/F(SPI/I ² C/Logging RAM : 8KB)	—	S-UFLGA48-3.06×2.96-0.40 (WCSP48)	—	✓	—	
6 (16bit×3)	—	1	12bit×2 (SA type)	1	1	2	1	16	16bit Square Root, Multiply, Divider, Host I/F(SPI/I ² C/Logging RAM : 8KB)	—	P-TQFP48-0707-0.50	—	✓	—	

(LAPIS Semiconductor products)

Functions/Features											Notes	Package	Chip Support	Halogen Free Support	Industrial Grade
8bit Timer	PWM	WDT	ADC (method)	Serial Port				External Interrupt Sources	Others						
				I ² C	SSIO	UART	I ² C/SPI(for Host Communication)								
8 (16bit×4)	1	1	—	2	—	1	1	7	Square Root, Division operations, Host I/F(Built-in 512 byte communication register)	—	(WCSP)	—	✓	—	

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Microcontroller

