

General-purpose MCU (16bit)

16bit ML62Q1000 series

Normal type ML62Q1300 Group 16bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	Low Speed	High Speed			
New ML62Q1323	1.6 to 5.5	Flash	16K	2K	2K	-	-	12	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
New ML62Q1324			24K										
New ML62Q1325			32K										
New ML62Q1333	1.6 to 5.5	Flash	16K	2K	2K	-	-	16	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
New ML62Q1334			24K										
New ML62Q1335			32K										
ML62Q1345	1.6 to 5.5	Flash	32K	2K	4K	-	-	20	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1346			48K										
ML62Q1347			64K										
ML62Q1365	1.6 to 5.5	Flash	32K	2K	4K	-	-	28	32.768kHz (Internal RC oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1366			48K										
ML62Q1367			64K										

Normal type ML62Q1500 Group 16bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	
						Input	Output	Input/Output	Low Speed	High Speed				
ML62Q1530	1.6 to 5.5	Flash	32K	4K	8K	2	-	42	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
ML62Q1531			48K											
ML62Q1532			64K											
ML62Q1533			96K											
ML62Q1534			128K											
ML62Q1540	1.6 to 5.5	Flash	32K	4K	8K	2	-	46	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
ML62Q1541			48K											
ML62Q1542			64K											
ML62Q1543			96K											
ML62Q1544			128K											
ML62Q1550	1.6 to 5.5	Flash	32K	4K	8K	2	-	58	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
ML62Q1551			48K											
ML62Q1552			64K											
ML62Q1553			96K	16K	2	-	-	-	-	-	-	-	-	-
ML62Q1554			128K											
ML62Q1555			160K											
ML62Q1556			192K											
ML62Q1557	256K													
ML62Q1563	1.6 to 5.5	Flash	96K	4K	16K	2	-	72	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	5.5/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
ML62Q1564			128K											
ML62Q1565			160K											
ML62Q1566			192K											
ML62Q1567			256K											
ML62Q1573	1.6 to 5.5	Flash	96K	4K	16K	2	-	92	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	5.5/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
ML62Q1574			128K											
ML62Q1575			160K											
ML62Q1576			192K											
ML62Q1577			256K											
New ML62Q1543C	1.6 to 5.5	Flash	96K	4K	8K	2	-	46	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
New ML62Q1544C			128K											
New ML62Q1553C	1.6 to 5.5	Flash	96K	4K	8K	2	-	58	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
New ML62Q1554C			128K											
New ML62Q1563C	1.6 to 5.5	Flash	96K	4K	8K	2	-	74	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105	
New ML62Q1564C			128K											

*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.

(LAPIS Technology products)

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
						PC	SSIO	UART									
	4 (8bitx8)	4 (TMR, PWM, IGBT, Capture)	1	10bitx6 (SA type)	-	Master Slavex1 Masterx1	UART Full Duplex/ SSIOx2	VLSx1	-	8	Comparatorx1, DMA, Multiplier/Divider	-	P-SSOP16-0225-0.65	-	✓	✓	
P-WQFN16-0404-0.50													-	✓	✓		
P-SSOP16-0225-0.65													-	✓	✓		
	4 (8bitx8)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	-	Master Slavex1 Masterx1	UART Full Duplex/ SSIOx2	VLSx1	-	8	Comparatorx1, DMA, Multiplier/Divider	-	P-TSSOP20-0225-0.65	-	✓	✓	
P-TSSOP20-0225-0.65													-	✓	✓		
P-TSSOP20-0225-0.65													-	✓	✓		
	6 (8bitx12)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	8bitx1	Master Slavex1 Masterx1	UART Full Duplex/ SSIOx2	VLSx1	-	8	Comparatorx1, DMA, Multiplier/Divider	-	P-WQFN24-0404-0.50	-	✓	✓	
P-WQFN24-0404-0.50													-	✓	✓		
P-WQFN24-0404-0.50													-	✓	✓		
	6 (8bitx12)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	8bitx1	Master Slavex1 Masterx1	UART Full Duplex/ SSIOx2	VLSx1	-	8	Comparatorx1, DMA, Multiplier/Divider	-	P-TQFP32-0707-0.80	-	✓	✓	
P-WQFN32-0505-0.50													-	✓	✓		
P-TQFP32-0707-0.80													-	✓	✓		
	6 (8bitx12)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	8bitx1	Master Slavex1 Masterx1	UART Full Duplex/ SSIOx2	VLSx1	-	8	Comparatorx1, DMA, Multiplier/Divider	-	P-TQFP32-0707-0.80	-	✓	✓	
P-WQFN32-0505-0.50													-	✓	✓		
P-TQFP32-0707-0.80													-	✓	✓		

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
						PC	SSIO	UART									
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP48-0707-0.50	-	✓	✓	
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP52-1010-0.65	-	✓	✓	
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP64-1414-0.80	-	✓	✓	
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP80-1414-0.65	-	✓	✓	
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP100-1420-0.65	-	✓	✓	
P-TQFP100-1414-0.50													-	✓	✓		
P-QFP100-1420-0.65													-	✓	✓		
P-TQFP100-1414-0.50													-	✓	✓		
P-QFP100-1420-0.65													-	✓	✓		
P-TQFP100-1414-0.50													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx3	VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP52-1010-0.65	-	✓	✓	
P-TQFP52-1010-0.65													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx4	VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP64-1414-0.80	-	✓	✓	
P-TQFP64-1010-0.50													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx4	VLSx1	-	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP80-1414-0.65	-	✓	✓	
P-QFP80-1414-0.65													-	✓	✓		

Microcontroller

16bit ML62Q1000 series

Built-in LCD Driver Segments type ML62Q1700 Group 16bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	Low Speed	High Speed			
ML62Q1700	1.6 to 5.5	Flash	32K	4K	8K	2	-	37	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1701			48K										
ML62Q1702			64K										
ML62Q1703			96K										
ML62Q1704			128K										
ML62Q1710	1.6 to 5.5	Flash	32K	4K	8K	2	-	41	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1711			48K										
ML62Q1712			64K										
ML62Q1713			96K										
ML62Q1714			128K										
ML62Q1720	1.6 to 5.5	Flash	32K	4K	8K	2	-	53	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1721			48K										
ML62Q1722			64K										
ML62Q1723			96K										
ML62Q1724			128K										
ML62Q1725			160K	16K									
ML62Q1726			192K										
ML62Q1727			256K	8K	32K								
ML62Q1728			384K										
ML62Q1729			512K										
ML62Q1733	1.6 to 5.5	Flash	96K	4K	16K	2	-	67	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	5.7/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1734			128K										
ML62Q1735			160K										
ML62Q1736			192K	8K	32K								
ML62Q1737			256K										
ML62Q1738			384K										
ML62Q1739			512K										
ML62Q1743	1.6 to 5.5	Flash	96K	4K	16K	2	-	87	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	5.7/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1744			128K										
ML62Q1745			160K										
ML62Q1746			192K	8K	32K								
ML62Q1747			256K										
ML62Q1748			384K										
ML62Q1749			512K										
New ML62Q1713C	1.6 to 5.5	Flash	96K	4K	8K	2	-	41	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1714C			128K										
New ML62Q1723C	1.6 to 5.5	Flash	96K	4K	8K	2	-	53	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1724C			128K										
New ML62Q1733C	1.6 to 5.5	Flash	96K	4K	8K	2	-	69	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1734C			128K										

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	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
						PC	SSIO	UART									
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	Max 192dot 24segx 8com	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP48-0707-0.50	-	✓	✓	
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
P-TQFP48-0707-0.50													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	Max 216dot 27segx 8com	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP52-1010-0.65	-	✓	✓	
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
P-TQFP52-1010-0.65													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx2	VLSx1	Max 280dot 35segx 8com	10	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP64-1414-0.80	-	✓	✓	
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
P-TQFP64-1010-0.50	-	✓	✓														
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx6	VLSx1	Max 360dot 45segx 8com	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP80-1414-0.65	-	✓	✓	
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
P-QFP80-1414-0.65													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx6	VLSx1	Max 480dot 60segx 8com	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP100-1420-0.65	-	✓	✓	
P-TQFP100-1414-0.50													-	✓	✓		
P-QFP100-1420-0.65													-	✓	✓		
P-TQFP100-1414-0.50													-	✓	✓		
P-QFP100-1420-0.65													-	✓	✓		
P-TQFP100-1414-0.50													-	✓	✓		
P-QFP100-1420-0.65													-	✓	✓		
P-TQFP100-1414-0.50													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx3	VLSx1	Max 216dot 27segx 8com	10	Comparatorx2, DMA, Multiplier/Divider	-	P-TQFP52-1010-0.65	-	✓	✓	
P-TQFP52-1010-0.65													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx4	VLSx1	Max 280dot 35segx 8com	10	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP64-1414-0.80	-	✓	✓	
P-TQFP64-1010-0.50													-	✓	✓		
P-QFP64-1414-0.80													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/ SSIOx4	VLSx1	Max 360dot 45segx 8com	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP80-1414-0.65	-	✓	✓	
P-QFP80-1414-0.65													-	✓	✓		

16bit ML62Q1000 series

Normal type ML62Q1800 Group 16bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	Low Speed	High Speed			
New ML62Q1858	1.6 to 5.5	Flash	384K	8K	32K	2	-	58	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1859			512K										
New ML62Q1868	1.6 to 5.5	Flash	384K	8K	32K	2	-	72	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1869			512K										
New ML62Q1878	1.6 to 5.5	Flash	384K	8K	32K	2	-	92	32.768kHz (Internal RC oscillation/ Crystal oscillation)	24MHz (PLL oscillation)	41ns 30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
New ML62Q1879			512K										

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Low Power MCU (16bit)

16bit ML620Q500

Normal type 16bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	Co-processor for Multiplication and Division	8bit Timer	16bit Multi Functions Timer
						Input	Output	Input/Output	Low Speed	High Speed						
ML620Q503H	1.8 to 5.5	Flash	32K	2K	2K	2	-	36	32.768kHz (Internal RC oscillation/ Crystal oscillation/ External input)	16MHz (Internal RC oscillation/ Crystal oscillation/ External input)	62.5ns 30.5µs	0.45µA (Crystal oscillation)	-40 to +85	✓	8 (16bitx4)	4
ML620Q504H			64K													

*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.

USB Interface & Security function MCU (32bit)

32bit ML630Q400 (Cortex-MO+)

Built-in LCD Driver Dot Matrix type 32bit MCU (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	Co-processor for Multiplication and Division	8bit Timer	16bit Multi Functions Timer
						Input	Output	Input/Output	Low Speed	High Speed						
ML630Q464	1.8 to 3.6	Flash	64K	2K	8K	-	-	38	32.768kHz (Internal RC oscillation/ Crystal oscillation)	16MHz (Internal RC oscillation) 24MHz (PLL)	41.7ns 30.5µs	0.8µA (Crystal oscillation)	-40 to +85	32bit multiplier	8 (16bitx4)	4
ML630Q466			128K		16K											

*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.

(LAPIS Technology products)

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
						IC	SSIO	UART									
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master Slavex1 Masterx2	UART Full Duplex/SSIOx2		VLSx1	-	10	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP64-1414-0.80	-	✓	✓
P-TQFP64-1010-0.50														-	✓	✓	
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/SSIOx6		VLSx1	-	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP80-1414-0.65	-	✓	✓
P-QFP80-1414-0.65														-	✓	✓	
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master Slavex1 Masterx2	UART Full Duplex/SSIOx6		VLSx1	-	12	Comparatorx2, DMA, Multiplier/Divider	-	P-QFP100-1420-0.65	-	✓	✓
P-TQFP100-1414-0.50														-	✓	✓	

(LAPIS Technology products)

	PWM	Capture	WDT	ADC (method)	Serial Port				Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade	
					IC	SSIO (SPI)	UART	USB										
	16bitx4 (use 16bit Timer)	16bitx4 (use 16bit Timer)	1	24bitx2 (RC type) 12bitx12 (SA type)	Master x2	2	Full Duplex x2		-	VLSx1 LLDx1	-	8	Low speed frequency correction/ Analog comparatorx2/ Melody: Buzzer	-	P-TQFP48-0707-0.50	✓	✓	✓
P-TQFP48-0707-0.50															✓	✓	✓	

(LAPIS Technology products)

	PWM	Capture	WDT	ADC (method)	Serial Port				Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade	
					IC	SSIO (SPI)	UART	USB										
	16bitx4 (use 16bit Timer)	16bitx4 (use 16bit Timer)	1	24bitx2 (RC type) 12bitx12 (SA type)	Master/ Slave x2	2	Full Duplex x2		1	VLSx1 LLDx1	Max 400dot 50segx 8com	8	AES/Random generator/DMA/ RTC/Analog comparatorx2/ 1kHz Timer	-	P-TQFP100-1414-0.50	-	✓	✓
P-TQFP100-1414-0.50															-	✓	✓	

Low Voltage Operation MCU (8bit)

8bit ML610400/ML610Q400

Normal type 8bit MCU																		
Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	8bit Timer	1kHz Timer	PWM	Capture	WDT
						Input	Output	Input/Output	Low Speed	High Speed								
ML610482	1.1 to 3.6	Mask	64K	-	4K	6	4	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	-	16bit×1	-	1
ML610Q482		Flash																
Normal type 8bit MCU (Industrial Grade)																		
ML610482P	1.1 to 3.6	Mask	64K	-	4K	6	4	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-40 to +85	4 (16bit×2)	-	16bit×1	-	1
ML610Q482P		Flash																
Built-in LCD Driver Dot Matrix type 8bit MCU																		
ML610Q421	1.1 to 3.6	Flash	32K	-	2K	6	3	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	1	16bit×1	2	1
ML610Q422								14										
ML610Q426	1.1 to 3.6	Flash	40K	-	2K	5	-	7	32.768kHz (Crystal oscillation)	1MHz	1µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	1	16bit×1	-	1
ML610Q426C								13										
ML610Q428	1.1 to 3.6	Flash	48K	-	4K	6	3	14	32.768kHz (Crystal oscillation)	4.096MHz 2MHz	0.244µs/ 0.5µs/ 30.5µs	0.5µA	-20 to +70	2 (16bit×1)	1	16bit×3	-	1
ML610Q429								20										
ML610Q431	1.1 to 3.6	Flash	64K	-	3K	6	3	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	1	16bit×1	2	1
ML610Q431A								14										
ML610Q432																		
ML610Q432A																		
ML610Q435	1.1 to 3.6	Flash	96K	-	3K	6	3	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	1	16bit×1	2	1
ML610Q435A								14										
ML610Q436																		
ML610Q436A																		
ML610Q438	1.1 to 3.6	Flash	128K	-	7K	10	3	20	32.768kHz (Crystal oscillation)	4.096MHz 2MHz	0.244µs/ 0.5µs/ 30.5µs	0.5µA	-20 to +70	4 (16bit×2)	1	16bit×3	2	1
ML610Q439																		
Built-in LCD Driver Dot Matrix type 8bit MCU (Industrial Grade)																		
ML610Q421P	1.1 to 3.6	Flash	32K	-	2K	6	3	22	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/ 2µs/ 30.5µs	0.5µA	-40 to +85	4 (16bit×2)	1	16bit×1	2	1
ML610Q422P								14										
ML610Q439P			20		4.096MHz 2MHz	0.244µs/ 0.5µs/ 30.5µs	16bit×3											

*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.

(LAPIS Technology products)

	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
		I ² C	SSIO	UART									
	24bit×2 (RC type)	Master x1	1	Half Duplex x1	BLD×1	-	5	Low speed frequency correction/ Buzzer	-	-	✓	✓	-
										P-TQFP48-0707-0.50	✓	✓	-
	24bit×2 (RC type)	Master x1	1	Half Duplex x1	BLD×1	-	5	Low speed frequency correction/ Buzzer	-	-	✓	✓	✓
										P-TQFP48-0707-0.50	✓	✓	✓
	24bit×2 (RC type) 12bit×2 (SA type)	Master x1	1	Half Duplex x1	BLD×1	Max 400dot 50seg×8com	5	Low speed frequency correction/ Melody: Buzzer	-	P-TQFP120-1414-0.40	✓	✓	-
						Max 800dot 50seg×16com			Low-speed scillation stop detect reset: enable	P-TQFP120-1414-0.40	✓	✓	-
	16bit×1 (RC type)	Master x1	1	Half Duplex x1	BLD×1	Max 800dot 50seg×16com	5	Low speed frequency correction/ Melody: Buzzer/ EL Driver/ External input voltage detection	-	-	✓	✓	-
						Max 672dot 42seg×16com	8			-	✓	✓	-
	24bit×2 (RC type)	Master x1	1	Half Duplex x1	BLD×1	Max 1392dot 58seg×24com	5	Low speed frequency correction/ Melody: Buzzer	Selectable oscillation stop detection reset: function enable/ disable according to mask option	TQFP128-P-1414-0.40	✓	✓	-
						Max 512dot 64seg×8com	9			TQFP128-P-1414-0.40	✓	✓	-
	24bit×2 (RC type) 12bit×2 (SA type)	Master x1	1	Half Duplex x1	BLD×1	Max 1024dot 64seg×16com	5	RTC/ Low speed frequency correction/ Melody: Buzzer	Low-speed oscillation stop detect reset: enable	P-LQFP144-2020-0.50	✓	✓	-
									Low-speed oscillation stop detect reset: disable	-	✓	✓	-
									Low-speed oscillation stop detect reset: enable	P-LQFP144-2020-0.50	✓	✓	-
									Low-speed oscillation stop detect reset: disable	P-LQFP144-2020-0.50	✓	✓	-
	24bit×2 (RC type) 12bit×2 (SA type)	Master x1	1	Half Duplex x1	BLD×1	Max 1024dot 64seg×16com	5	RTC/ Low speed frequency correction/ Melody: Buzzer	Low-speed oscillation stop detect reset: enable	-	✓	✓	-
									Low-speed oscillation stop detect reset: disable	P-LQFP144-2020-0.50	✓	✓	-
									Low-speed oscillation stop detect reset: enable	-	✓	✓	-
									Low-speed oscillation stop detect reset: disable	P-LQFP144-2020-0.50	✓	✓	-
	24bit×2 (RC type) 12bit×2 (SA type)	Master x1	1	Half Duplex x1	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	✓	✓	-
						Max 1024dot 64seg×16com				-	✓	✓	-
	24bit×2 (RC type) 12bit×2 (SA type)	Master x1	1	Half Duplex x1	BLD×1	Max 400dot 50seg×8com	5	Low speed frequency correction/ Melody: Buzzer	-	P-TQFP120-1414-0.40	✓	✓	✓
						Max 800dot 50seg×16com			Low-speed scillation stop detect reset: enable	P-TQFP120-1414-0.40	✓	✓	✓
						Max 1024dot 64seg×16com			Selectable oscillation stop detection reset: function enable/ disable according to software	P-LQFP144-2020-0.50	-	✓	✓

Microcontroller

8bit ML610400/ML610Q400

Built-in LCD Driver Segments type 8bit MCU																			
Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	8bit Timer	1kHz Timer	PWM	Capture	WDT	
						Input	Output	Input/Output	Low Speed	High Speed									
ML610Q407	1.25 to 3.6	Flash	16K	—	1K	5	12	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	4 (16bitx2)	—	16bitx1	2	1	
ML610Q407A																			
ML610Q407D																			
ML610Q408	1.25 to 3.6	Flash	16K	—	1K	5	8	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	4 (16bitx2)	—	16bitx1	2	1	
ML610Q409	1.25 to 3.6	Flash	16K	—	1K	5	4	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-20 to +70	4 (16bitx2)	—	16bitx1	2	1	
ML610Q409A																			
ML610Q411	1.1 to 3.6	Flash	16K	—	1K	6	3	22	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-20 to +70	4 (16bitx2)	1	16bitx1	2	1	
ML610Q412																			14
ML610Q418	1.1 to 3.6	Flash	128K	4K	4K	6	3	18	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	1.1µA	-20 to +70	4 (16bitx2)	—	16bitx1	2	1	
ML610Q418C																			26
ML610Q419	1.1 to 3.6	Flash	64K	4K	2K	6	3	18	32.768kHz (Crystal oscillation)	4.096MHz 500kHz	0.244µs/2µs/30.5µs	0.9µA	-20 to +70	4 (16bitx2)	—	16bitx1	2	1	
ML610Q419C																			26
Built-in LCD Driver Segments type 8bit MCU (Industrial Grade)																			
ML610Q407P	1.25 to 3.6	Flash	16K	—	1K	5	12	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	4 (16bitx2)	—	16bitx1	2	1	
ML610Q407PA																			
ML610Q408P	1.25 to 3.6	Flash	16K	—	1K	5	8	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	4 (16bitx2)	—	16bitx1	2	1	
ML610Q409P	1.25 to 3.6	Flash	16K	—	1K	5	4	22	32.768kHz (Crystal oscillation)	2MHz	0.5µs/30.5µs	0.9µA	-40 to +85	4 (16bitx2)	—	16bitx1	2	1	
ML610Q411P	1.1 to 3.6	Flash	16K	—	1K	6	3	22	32.768kHz (Crystal oscillation)	500kHz	2µs/30.5µs	0.5µA	-40 to +85	4 (16bitx2)	1	16bitx1	2	1	
ML610Q411PA																			
ML610Q412P																			14

*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.

ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
	I ² C	SSIO	UART									
16bit×2 (RC type)	-	2	Half Duplex ×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	✓	✓	-
								Low-speed scillation stop detect reset: disable LCD bias: 1/2, 1/3	-	✓	✓	-
								Low-speed scillation stop detect reset: enable LCD bias: 1/2, 1/3	-	✓	✓	-
16bit×2 (RC type)	-	2	Half Duplex ×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	Half Duplex ×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	✓	✓	-
								Low-speed scillation stop detect reset: disable LCD bias: 1/2, 1/3	-	✓	✓	-
24bit×2 (RC type) 12bit×2 (SA type)	Master ×1	1	Half Duplex ×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	✓	✓	-
					Max 176dot 44seg×4com			-	P-TQFP120-1414-0.40	✓	✓	-
24bit×2 (RC type) 12bit×2 (SA type)	Master ×1	2	Half Duplex ×1	BLD×1	Max 192dot 48seg×4com	5	Low speed frequency correction/ Melody: Buzzer	-	P-TQFP100-1414-0.50	✓	✓	-
					Max 160dot 40seg×4com			-	P-TQFP100-1414-0.50	✓	✓	-
24bit×2 (RC type) 12bit×4 (SA type)	Master ×1	2	Half Duplex ×1	BLD×1	Max 192dot 48seg×4com	5	Low speed frequency correction/ Melody: Buzzer	-	P-TQFP100-1414-0.50	✓	✓	-
					Max 160dot 40seg×4com			-	P-TQFP100-1414-0.50	✓	✓	-
16bit×2 (RC type)	-	2	Half Duplex ×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	✓	✓	✓
					-			Low-speed scillation stop detect reset: disable LCD bias: 1/2, 1/3	-	✓	✓	✓
16bit×2 (RC type)	-	2	Half Duplex ×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	Half Duplex ×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	✓	✓	✓
24bit×2 (RC type) 12bit×4 (SA type)	Master ×1	1	Half Duplex ×1	BLD×1	Max 144dot 36seg×4com	5	Low speed frequency correction/ Buzzer	Low-speed oscillation stop detect reset: enable	P-TQFP120-1414-0.40	✓	✓	✓
					-			Low-speed oscillation stop detect reset: disable	P-TQFP120-1414-0.40	✓	✓	✓
					Max 176dot 44seg×4com			-	P-TQFP120-1414-0.40	✓	✓	✓

Speech Play Back MCU (8bit)

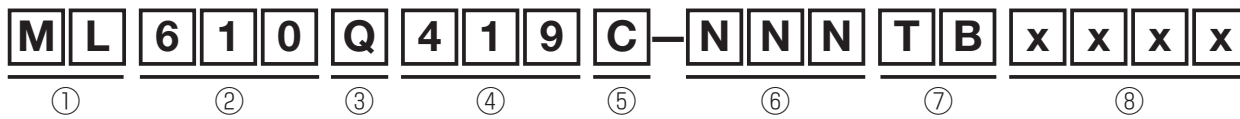
8bit ML610Q300

Normal type 8bit MCU (industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	Memory for Sound	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
							Input	Output	Input/Output	Low Speed	High Speed			
ML610Q304	2.0 to 5.5	Flash	96K	2K	Flash ROM	1K	1	3	11	32.768kHz (Internal RC oscillation)	8.192MHz	0.122µs/ 30.5µs	2.7µA	-40 to +85
☆ML610Q305									12					
☆ML610Q306									15					

*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.

ML610/ML610Q/ML620Q/ML630Q Part Number Explanation



Part Name

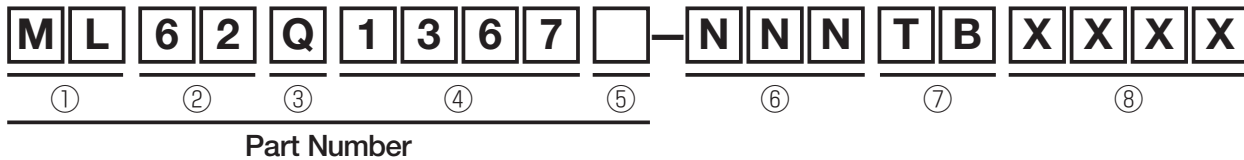
- | | | |
|--|---|---|
| <p>① Device type
ML: Bipolar Logic</p> <p>② CPU Core type
610: 8bit CPU nX-U8/100
620: 16bit CPU nX-U16/100
630: 32bit CPU ARM CortexM0+</p> <p>③ ROM type
None: Mask ROM
Q: Flash ROM</p> | <p>④ Part Code
3xx: Speech Play Back
4xx: Low Power or Low Voltage Operation
5xx: Low Power</p> <p>⑤ Option Code
None to x: Set for product</p> <p>⑥ ROM Code
NNN: Blank
001 to xxx: Custom Code Number</p> | <p>⑦ Package Code
GD: VQFN, WQFN
MB: SSOP
TD: TSSOP
TB: TQFP
GA: QFP
WA: Chip</p> <p>⑧ Company's Code in LAPIS Technology</p> |
|--|---|---|

(LAPIS Technology products)

8bit Timer	PWM	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	SP Amp Output (W)/ Class	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade
				I ² C	SSIO	UART										
4 (16bit×2)	-	1	10bit×3 (SA type)	Master/ Slave x1	2	Half Duplex x1	-	-	9	1.0 (@5V)/ D class	Speech function/ ADPCM2 decoder/ Built-in speaker Amplifier	-	P-VQFN28-0505-0.50 P-SSOP30-56-0.65 P-WQFN32-0505-0.50	-	✓	✓
			LLD×1				Speech function/ ADPCM2 HQ-ADPCM decoder/ Built-in speaker Amplifier				P-WQFN32-0505-0.50 P-TQFP32-0707-0.80		-	✓	✓	
			10bit×4 (SA type)								P-WQFN36-0606-0.50		-	✓	✓	

☆: Under Development

ML62Q1000 series Part Number Explanation



- ① Device type
ML: Bipolar Logic
- ② CPU Core type
62: 16bit CPU nX-U16/100
- ③ ROM type
Q: Flash ROM
- ④ Part Code
13xx: ML62Q1300 Group
2x: 16pin
3x: 20pin
4x: 24pin
6x: 32pin

x3: ROM 16KB
x4: ROM 24KB
x5: ROM 32KB
x6: ROM 48KB
x7: ROM 64KB
- ⑤ Option Code
None to x: Set for product
- ⑥ ROM Code
NNN : Blank
001 to xxx: Custom Code Number
- ⑦ Package Code
GD: WQFN
MB: SSOP
TD: TSSOP
TB: TQFP
GA: QFP
- ⑧ Company's Code in LAPIS Technology

- 15xx: ML62Q1500 Group
3x: 48pin
4x: 52pin
5x: 64pin
6x: 80pin
7x: 100pin

x0: ROM 32KB
x1: ROM 48KB
x2: ROM 64KB
x3: ROM 96KB
x4: ROM 128KB
x5: ROM 160KB
x6: ROM 192KB
x7: ROM 256KB
- 17xx: ML62Q1700 Group
(Built-in LCD Driver)
0x: 48pin
1x: 52pin
2x: 64pin
3x: 80pin
4x: 100pin

x0: ROM 32KB
x1: ROM 48KB
x2: ROM 64KB
x3: ROM 96KB
x4: ROM 128KB
x5: ROM 160KB
x6: ROM 192KB
x7: ROM 256KB
x8: ROM 384KB
x9: ROM 512KB
- 18xx: ML62Q1800 Group
5x: 64pin
6x: 80pin
7x: 100pin

x8: ROM 384KB
x9: ROM 512KB