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MESC TECHNICAL NEWS

No. M16C-54-0004

Difference between M16C/62 and M16C/62A (include low voltage version)

1. Affected devices

- M16C/62 group
{M16C/62, M16C/62L (low voltage version), M16C/62A, M16C/62M (low voltage version)}

Table 1 shows the product list of M16C/62 and M16C/62A.

Table 2 shows the product list of M16C/62L (low voltage version) and M16C/62M (low voltage version).

Table 1. Product list of M16C/62 and M16C/62A

Memory type	M16C/62 group		Package	ROM/RAM size
	M16C/62	M16C/62A		
Mask ROM version	M30622M4-XXXFP/GP	M30622M4A-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	32K byte / 3K byte
	M30623M4-XXXGP	M30623M4A-XXXGP	80P6S-A	
	M30622M8-XXXFP/GP	M30622M8A-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	64K byte /4K byte
	M30623M8-XXXGP	M30623M8A-XXXGP	80P6S-A	
	M30620M8-XXXFP/GP	M30620M8A-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	64K byte /10K byte
	M30621M8-XXXGP	M30621M8A-XXXGP	80P6S-A	
	M30622MA-XXXFP/GP	M30622MAA-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	96K byte /5K byte
	M30623MA-XXXGP	M30623MAA-XXXGP	80P6S-A	
	M30620MA-XXXFP/GP	M30620MAA-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	96K byte /10K byte
	M30621MA-XXXGP	M30621MAA-XXXGP	80P6S-A	
	M30622MC-XXXFP/GP	M30622MCA-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	128K byte /5K byte
	M30623MC-XXXGP	M30623MCA-XXXGP	80P6S-A	
	M30620MC-XXXFP/GP	M30620MCA-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	128K byte /10K byte
	M30621MC-XXXGP	M30621MCA-XXXGP	80P6S-A	
	M30624MG-XXXFP/GP	M30624MGA-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	256K byte /20K byte
	M30625MG-XXXGP	M30625MGA-XXXGP	80P6S-A	
External ROM version	M30620SFP/GP	M30620SAFP/GP	FP:100P6S-A GP:100P6Q-A	- /10K byte
	M30622SFP/GP	M30622SAFP/GP	FP:100P6S-A GP:100P6Q-A	- /3K byte
Flash memory version	M30624FGFP/GP	M30624FGAFP/GP	FP:100P6S-A GP:100P6Q-A	256K byte /20K byte
	M30625FGGP	M30625FGAGP	80P6S-A	
	None	M30620FGAFP/GP	FP:100P6S-A GP:100P6Q-A	128K byte /10K byte
	M30621FGAGP	80P6S-A		

Table 2. Product list of M16C/62L (low voltage version) and M16C/62M (low voltage version)

Memory type	M16C/62 group		Package	ROM/RAM size
	M16C/62L	M16C/62M		
Mask ROM version	None	M30620MCM-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	128K byte /10K byte
		M30621MCM-XXXGP	80P6S-A	
		M30624MGM-XXXFP/GP	FP:100P6S-A GP:100P6Q-A	256K byte /20K byte
		M30625MGM-XXXGP	80P6S-A	
Flash memory version	M30624FGLFP/GP	M30624FGMFP/GP	FP:100P6S-A GP:100P6Q-A	256K byte /20K byte
	M30625FGLGP	M30625FGMGP	80P6S-A	
	None	M30620FGMFP/GP	FP:100P6S-A GP:100P6Q-A	128K byte /10K byte
		M30621FGMGP	80P6S-A	

2. Contents

Table 3 shows the differences between M16C/62 and M16C/62A.

Table 4 shows the differences between M16C/62L (low voltage version) and M16C/62M (low voltage version).

Note: In M16C/62A and M16C/62M (low voltage version), built in non-volatile memory is of type Flash only. One-time PROM and EPROM versions are not available.

Table 3. Differences between M16C/62 and M16C/62A

Item	M16C/62 group		Remarks	
	M16C/62	M16C/62A		
Mask ROM, Flash memory versions common	SDA output delay function in I ² C mode (UART2)	Analog delay	Can be selected analog delay or digital delay	For details, refer to M16C/62A data sheet.
	Memory space	1M byte Expansion mode 1(1.2Mbyte) Expansion mode 2(4Mbyte)	1M byte	Single-chip mode is supported in 80-pin version. Memory expansion and microprocessor modes are not supported in 80-pin version.
	Separate CTS/RTS pins function of serial I/O	Can be selected	None	
Flash memory version	Standard serial I/O mode of flash memory version (flash memory rewrite)	Synchronous mode	Synchronous mode UART mode	
	Restrictions improvement (flash memory version)	Precautions for external bus timing (technical news NO. M16C-24-9905) Precautions for boot mode (technical news NO. M16C-27-9906, M16C-29-9906) Precautions for hysteresis (technical news NO. M16C-33-9908)	Being done to improve the left description	
	Reduction of power supply electric current (flash memory version)	Standard value at f(XIN)=16MHz; 35mA Standard value at f(XCIN)=32kHz; 8mA	Standard value at f(XIN)=16MHz; 32.5mA Standard value at f(XCIN)=32kHz; 2.2mA	
	Flash memory program time (256K byte)	Standard value; Approximately 8 second	Standard value; Approximately 6 second	

Table 4. Differences between M16C/62L (low voltage version) and M16C/62M (low voltage version)

Item		M16C/62 group		Remarks
		M16C/62L	M16C/62M	
Mask ROM, Flash memory versions common	Operation voltage/frequency characteristics	V _{CC} =2.7V to 3.6V (f(X _{IN})=10MHz, No wait) V _{CC} =2.4V to 3.6V (f(X _{IN})=7MHz, No wait)	V _{CC} =2.7V to 3.6V (f(X _{IN})=10MHz, No wait) V _{CC} =2.4V to 3.6V (f(X _{IN})=7MHz, No wait) V _{CC} =2.2V to 3.6V (f(X _{IN})=7MHz, 1 wait)	
	SDA output delay function in I ² C mode (UART2)	Analog delay	Can be selected analog delay or digital delay	For details refer to M16C/62A data sheet.
	Memory space	1M byte Expansion mode 1(1.2Mbyte) Expansion mode 2(4Mbyte)	1M byte	Single-chip mode is supported in 80-pin version. Memory expansion and microprocessor modes are not supported in 80-pin version.
	Separate CTS/RTS pins function of serial I/O	Can be selected	None	
Flash memory version	Program/erase voltage (flash memory version)	Operation voltage ; V _{CC} =2.4V to 3.6V Program/erase voltage ; V _{CC} =2.7V to 3.6V	Operation voltage ; V _{CC} =2.4V to 3.6V Program/erase voltage ; V _{CC} =2.7V to 3.6V Operation voltage ; V _{CC} =2.2V to 2.4V Program/erase voltage ; V _{CC} =2.7V to 3.4V	
	Standard serial I/O mode of flash memory version (flash memory rewrite)	Synchronous mode	Synchronous mode UART mode	
	Restrictions improvement (flash memory version)	Precautions for external bus timing (technical news NO. M16C-24-9905) Precautions for boot mode (technical news NO. M16C-27-9906, M16C-29-9906) Precautions for hysteresis (technical news NO. M16C-33-9908)	Being done to improve the left description	
	Reduction of power supply electric current (flash memory version)	Standard value at f(X _{CIN})=32kHz; 700μA	Standard value at f(X _{CIN})=32kHz; 45μA	
	Flash memory program time (256K byte)	Standard value; Approximately 8 second	Standard value; Approximately 6 second	