**GRADE** **A**

# 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-volitile memory is of type Flash only. One-time PROM and EPROM versions are not availible.

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 $I^2C$ 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($X_{IN}$)=16MHz; 35mA Standard value at f($X_{CIN}$)=32kHz; 8mA | Standard value at f($X_{IN}$)=16MHz; 32.5mA Standard value at f($X_{CIN}$)=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 | Vcc=2.7V to 3.6V ( f(XIN)=10MHz, No wait)<br><br>Vcc=2.4V to 3.6V ( f(XIN)=7MHz, No wait) | Vcc=2.7V to 3.6V ( f(XIN)=10MHz, No wait)<br><br>Vcc=2.4V to 3.6V ( f(XIN)=7MHz, No wait)<br><br>Vcc=2.2V to 3.6V ( f(XIN)=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 ; Vcc=2.4V to 3.6V Program/erase voltage ; Vcc=2.7V to 3.6V | Operation voltage ; Vcc=2.4V to 3.6V Program/erase voltage ; Vcc=2.7V to 3.6V<br><br>Operation voltage ; Vcc=2.2V to 2.4V Program/erase voltage ; Vcc=2.7V to 3.4V | |
| | Standard serial I/O mode of flash memory version (flash memory rewrite) | Synchronous mode | Synchronous mode<br><br>UART mode | |
| | Restrictions improvement (flash memory version) | Precautions for external bus timing (technical news NO. M16C-24-9905)<br><br>Precautions for boot mode (technical news NO. M16C-27-9906, M16C-29-9906)<br><br>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(XCIN)=32kHz; 700µA | Standard value at f(XCIN)=32kHz; 45µA | |
| | Flash memory program time (256K byte) | Standard value; Approximately 8 second | Standard value; Approximately 6 second | |