

8-bit MCU with on-chip LCD drive control circuit, A-D converter, serial I/O, etc.

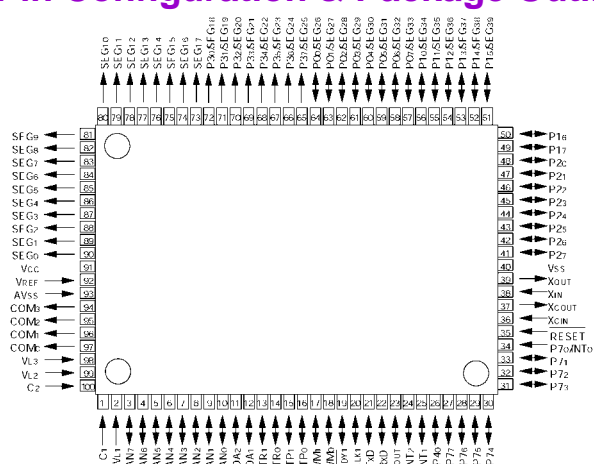
## Applications

Camera, audio equipment, home appliances, consumer electronics, etc.

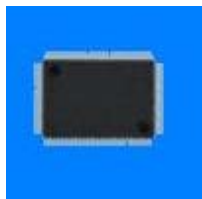
## Features

Minimum Instruction Execution Time	0.4 microseconds (A Version at 10MHz oscillation frequency) 0.5 microseconds (at 8MHz oscillation frequency)
Programmable I/O Ports	I/Os : 55 , Outputs : 8 , Input : 1
Programmable Pull-up Resistors	Ports P0 to P2, P41 to P47, P5, and P6
External Interrupts	7 sources
Timers	8-bit X 3, 16-bit X 2
Serial I/Os	UART or Clock-synchronized : 8-bit X 1 Clock-synchronized : 8-bit X 1
PWM Output	8-bit X 1 channel
A-D Converter	10-bit X 8 channels
D-A Converter	8-bit X 2 channels
LCD Drive Control Circuit	Bias : 1/2, 1/3 Duty : 1/2, 1/3, 1/4 Common Outputs : 4 Segment Outputs : 40 Built-in Charge Pump
Watchdog Timer	14-bit X 1
Main Clock Generating Circuit	Built-in feedback resistor Connect to external ceramic resonator or quartz-crystal oscillator.
Sub-clock Generating Circuit	Connect to external quartz-crystal oscillator.
Power Source Voltage	Mask ROM Version: 1.8V to 5.5V (A Version), 2.2V to 5.5V Extended Operating Temperature Version: 2.2V to 5.5V at -20 to +85 degrees C 3.0V to 5.5V at -40 to -20 degrees C One-time PROM Version: 2.5V to 5.5V Extended Operating Temperature Version: 2.5V to 5.5V at -20 to +85 degrees C 3.0V to 5.5V at -40 to -20 degrees C (depends on oscillation frequency and operating mode)
Current Consumption	4mA (A Version), 6.4mA (at 8MHz oscillation frequency and 5V power source voltage) 9micro-A (A Version), 15micro-A (at 32kHz oscillation frequency and 3V power source voltage)
Operating Temperature Range	-20 to +85 degrees C (Extended Operating Temperature Version: -40 to +85 degrees C)
Packages	100-pin QFP (100P6S-A), 100-pin LQFP (100P6Q-A)

## Pin Configuration & Package Outlines

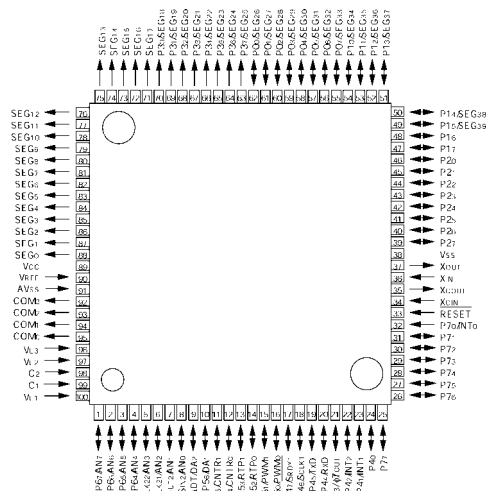


100P6S-A Pin Configuration



100P6S-A Package Outline

Body: 14mm X 20mm  
Pin Pitch: 0.65mm



100P6Q-A Pin Configuration



100P6Q-A Package Outline

Body: 14mm X 14mm  
Pin Pitch: 0.5mm

## Memory Expansion

Part No.	ROM Size (bytes)	RAM Size (bytes)	Package	Remarks
M37560M8A-XXXFP**	32K	1024	100P6S-A	Mask ROM Version (A Version)
M37560M8A-XXXGP**			100P6Q-A	Mask ROM Version (A Version)
M37560MFA-XXXFP**	60K	2560	100P6S-A	Mask ROM Version (A Version)
M37560MFA-XXXGP**			100P6Q-A	Mask ROM Version (A Version)
M37560MFDXXXFP	60K	2560	100P6S-A	Mask ROM Version (Extended Operating Temperature Version)
M37560EFFP			100P6S-A	One-time PROM Version(blank product only)
M37560EFGP			100P6Q-A	One-time PROM Version(blank product only)
M37560EFDFP			100P6S-A	One-time PROM Version(blank product only) (Extended Operating Temperature Version)
M37560M8-XXXFP	32K	1024	100P6S-A	Mask ROM Version
M37560M8-XXXGP			100P6Q-A	Mask ROM Version
M37560MF-XXXFP	60K	2560	100P6S-A	Mask ROM Version
M37560MF-XXXGP			100P6Q-A	Mask ROM Version

\*\* : Under Development

## RENESAS Tools [http://www.renesas.com/eng/products/mpumcu/toolhp/mcu/740\\_e.htm](http://www.renesas.com/eng/products/mpumcu/toolhp/mcu/740_e.htm)

Products		Part No.	Remarks
Relocatable Assembler (incl. integrated development environment)		M3T-SRA74	IBM PC/AT compatibles
Simulator Debugger		M3T-PD38SIM	IBM PC/AT compatibles
Emulator System	Emulator Debugger	M3T-PD38	IBM PC/AT compatibles
	Emulator	PC4701U	License of emulator debugger is bundled.
	Emulation Pod	M38000TL2-FPD	Common in 740 Family. Low voltage operation is supported.
	Emulator MCU	M37560RLFS	-
EPROM Version for development		M37560EFFS	ROM: 60K bytes RAM: 2560 bytes Package: 100-pin QFN (100D0)
Accessories	Package Converters	M3T-100LCC-QSD	Converter for connecting 100P6Q-A system to EPROM Version or Emulator MCU
		M3T-100LCC-DMS	Converter for connecting 100P6Q-A system to EPROM Version or Emulator MCU
		M3T-FLX-100NSD	Converter for connecting 100P6Q-A system to EPROM Version or Emulator MCU
		M3T-100LCC-DMS	Converter for connecting 100P6S-A system to EPROM Version or Emulator MCU
		M3T-FLX-100NRB	Converter for connecting 100P6S-A system to EPROM Version or Emulator MCU
	Temporary Target Board	M38187T-ADF	Temporary Target Board for Emulator MCU
PROM Programming Adapters		PCA4738F-100A	For One-time PROM Version M37560EFFP, and M37560EFDFP
		PCA4738G-100A	For One-time PROM Version M37560EFGP
		PCA4738L-100A	For EPROM Version M37560EFFS

## Partner Tools [http://www.renesas.com/eng/products/mpumcu/toolhp/link/740\\_e.htm](http://www.renesas.com/eng/products/mpumcu/toolhp/link/740_e.htm)

## Documents [http://www.renesas.com/eng/products/mpumcu/specific/lcd\\_mcu/8lctope.htm](http://www.renesas.com/eng/products/mpumcu/specific/lcd_mcu/8lctope.htm)

Document Name		Remarks
Datasheet	7560 Group A Version (PDF) Rev.1.02	Explanation of the MCU functions and features ROM/RAM expansion
	7560 Group (PDF) Rev.2.0	
Software Manual	740 Family(PDF) Rev.1.0	Explanation of assembly instructions for this MCU