

# **MN102L5208AL**

|                                           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                       |
|-------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Type</b>                               |            | <b>MN102L5208AL (under development)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |
| <b>ROM (x8-bit / x16-bit)</b>             |            | Maximum 16M in total (Special Register 1K included)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |
| <b>RAM (x8-bit / x16-bit)</b>             |            | External ROM, RAM 2K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       |
| <b>Minimum Instruction Execution Time</b> |            | <b>100ns (at 4.5 to 5.5V, 20MHz)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       |
| <b>Interrupts</b>                         |            | <ul style="list-style-type: none"> <li>• RESET</li> <li>• Watchdog</li> <li>• Timer Counter 0 to 5</li> <li>• Fixed-length Serial ch 0 Transmission</li> <li>• Fixed-length Serial ch 0 Reception</li> <li>• External 0 to 3</li> <li>• Serial ch0 Transmission</li> <li>• Serial ch0 Reception</li> <li>• NMI Pin</li> <li>• A/D Conversion finish</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |
| <b>Timer Counter</b>                      |            | <p><b>Timer Counter 0 : 8-bit x 1</b> (Timer Output, Event Count)</p> <p>Clock Source . . . 1/1, 1/128 of System Clock, External Clock</p> <p>Interrupt Source . . . Underflow of Timer Counter 0</p> <p><b>Timer Counter 1 : 8-bit x 1</b> (Timer Output, Event Count, A/D Conversion Start up)</p> <p>Clock Source . . . System Clock, External Clock, Timer Counter 0 Output</p> <p>Interrupt Source . . . Underflow of Timer Counter 1</p> <p><b>Timer Counter 2 to 3 : 8-bit x 1</b> (Timer Output, Event Count, UART Baud Rate Generator)</p> <p>Clock Source . . . System Clock, External Clock, Timer Counter 0 Output, Timer Counter 1, 2 Output</p> <p>Interrupt Source . . . Underflow of Timer Counter 2, 3</p> <p><b>Timer Counter 4, 5 : 8-bit x 1</b> (Timer Output, Event Count)</p> <p>Clock Source . . . External Clock, Timer Counter 0 Output, Timer Counter 3, 4 Output</p> <p>Interrupt Source . . . Underflow of Timer Counter 4, 5</p> <p><span>Connectable</span> . . . Timer Counter 0 to 5</p> |                                                                       |
| <b>Serial Interface</b>                   |            | <p><b>Serial 0 : 7, 8-bit x 1</b> (Common use with UART, Transfer direction of MSB/LSB selectable)</p> <p>Clock Source . . . 1/16 of Timer Counter 2, 1/16 of Timer Counter 3, External Clock, 1/2 of Timer Counter 2</p> <p>I<sup>2</sup>C Mode (Master Transmission/Reception is Possible in The Single Master System )</p> <p><b>Fixed-length serial 0 : 8-bit x 1</b></p> <p>Clock Source . . . External Clock</p> <p>Sending Direction . . . LSB</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                       |
| <b>I/O Pins</b>                           | <b>I/O</b> | <b>41</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | • Common use 16 (by 8-bit), 12 (by 6-bit), 4 (by 4-bit), 9 (by 3-bit) |
| <b>A/D Inputs</b>                         |            | 8-bit x 4ch (with S/H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                       |

|                            |                             |
|----------------------------|-----------------------------|
| Notes                      | Burst ROM interface support |
| Package                    | LQFP080-P-1414A             |
| Electrical Characteristics |                             |

A/D Characteristics (at VDD=5V)

| Parameter                     | Symbol | Condition      | Limit |     |     | Unit |
|-------------------------------|--------|----------------|-------|-----|-----|------|
|                               |        |                | min   | typ | max |      |
| A/D Conversion Relative Error |        | VDD=5V, VSS=0V |       |     | ±3  | LSB  |
| A/D Conversion Time           |        |                | 4     | 8   |     | μs   |
| Analog Input Voltage          | VIA    |                | VSS   |     | VDD | V    |

(Ta= 25°C, VDD=5.0V, VSS=0V)

Support Tool

|                     |                                                 |
|---------------------|-------------------------------------------------|
| In-Circuit Emulator |                                                 |
| Pin Assignment      | PX-ICE102L00 + PX-PRB102L52 (under development) |

