Ideal for Major Industrial Network Protocols Including EtherCAT®
RX72M MCU GROUP

This 32-bit microcomputer is ideal for real-time applications such as industrial robots, AC servo drivers, PLCs, and remote I/O. Major protocols including EtherCAT are supported by this product, and equipment control and networking function is realized on a single chip. In addition, featured 240MHz RXv3 core, industry’s largest class on-chip memory, and 182 GPIOs contribute to smaller enclosure and shortened development time by eliminating sub MCUs and external memory.

Features
- 240MHz RXv3 core, Double-precision FPU, Register bank save function for faster interrupt response
- 4MB flash memory (120MHz read access, Dual bank function), 1MB SRAM
- 182 general-purpose input/output (GPIO) ports
- 2ch EtherCAT/Ethernet, SD host I/F, USB 2.0 full speed, 3ch CAN, QSPI
- Arithmetic unit for trigonometric functions accelerating vector controls for motors
- TFT LCD controller supporting WVGA, 2D drawing engine, Serial sound I/F, CMOS camera I/F
- Encryption engine (AES, TDES, RSA, ECC, SHA, TRNG), Key management, Flash memory protection function

Benefits
- Reduce development time with sample programs covering major industrial networks
- Industry’s fastest class on-chip flash memory contributes to higher real-time performance
- Industry’s largest class on-chip memory and high pin-count package for smaller enclosures
- Realize equipment control and networking function on a single chip
- Dedicated hardware accelerator reduces CPU load for motor control
- HMI functions improve exterior design and operability
- Security functions protecting data communications and programs

Applications
- AC servo driver
- General-purpose inverter
- PLC (Programmable Logic Controller)
- Industrial robot
- Motion controller
- Remote I/O
- Industrial gateway

CPU
- 240MHz RXv3
- Double-precision FPU
- Register Bank Save Function

Memory
- 4MB Code Flash Memory
- 32KB Data Flash Memory
- 1MB SRAM

Package
- 100, 144, 176-pin LFQFP
- 176, 224-pin LFBGA

Networking & Advanced Connectivity
- 2ch EtherCAT Slave/Ethernet
- SD Host I/F
- USB 2.0 Full Speed
- 3ch CAN
- QSPI

Motor Control
- Arithmetic Unit for Trigonometric Functions
- PWM Timers
- 2-phase Encoder Pulse Inputs
- Δ-Σ Modulator I/F
- 12-bit A/D Converters

HMI
- TFT LCD Controller
- 2D Drawing Engine
- Serial Sound I/F
- CMOS Camera I/F

Security
- Encryption Engine (AES, TDES, RSA, ECC, SHA, TRNG)
- Key Management
- Flash Memory Protection
Industrial Network Solution

- EtherCAT slave controller and large on-chip memory contribute to smaller system
- Sample programs covering major industrial network protocols are available. In addition, development time can be significantly reduced by working with partners

Smaller System Size

Hardware configuration with an existing general-purpose MCU → Hardware configuration with RX72M

Reduce development time to implement industrial network protocols

Affordable Evaluation Board for Industrial Networks: "TS-RX72M-COM" by TESSERA TECHNOLOGY INC.

Features

- Conformance tests of EtherCAT, EtherNet/IP, and PROFNET RT have passed
- LEDs for conformance tests
- 2-port RJ45 connectors
- CAN transceiver, RS-485 transceiver
- Through holes for testing fieldbus communication
- UART through holes for connecting PCs

Evaluation Board

Ordering References

<table>
<thead>
<tr>
<th>Flash Memory: 4MB, SRAM: 1MB</th>
<th>Flash Memory: 2MB, SRAM: 1MB</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Trusted Secure IP</td>
<td>Without Trusted Secure IP</td>
</tr>
<tr>
<td>RSF572MNHDFP</td>
<td>RSF572MNHDFP</td>
</tr>
<tr>
<td>RSF572MNHDBF</td>
<td>RSF572MNHDBF</td>
</tr>
<tr>
<td>RSF572MNHDFC</td>
<td>RSF572MNHDFC</td>
</tr>
<tr>
<td>RSF572MNHDBG</td>
<td>RSF572MNHDBG</td>
</tr>
<tr>
<td>RSF572MNHDFB</td>
<td>RSF572MNHDFB</td>
</tr>
<tr>
<td>RSF572MNHDBD</td>
<td>RSF572MNHDBD</td>
</tr>
<tr>
<td>RSF572MDHDFP</td>
<td>RSF572MDHDFP</td>
</tr>
<tr>
<td>RSF572MDHDFB</td>
<td>RSF572MDHDFB</td>
</tr>
<tr>
<td>RSF572MDHDFC</td>
<td>RSF572MDHDFC</td>
</tr>
<tr>
<td>RSF572MDHDBG</td>
<td>RSF572MDHDBG</td>
</tr>
<tr>
<td>RSF572MDHDBF</td>
<td>RSF572MDHDBF</td>
</tr>
<tr>
<td>RSF572MDHDBD</td>
<td>RSF572MDHDBD</td>
</tr>
</tbody>
</table>

Pin Counts

- With Trusted Secure IP: 100, 144, 176, 176, 224
- Without Trusted Secure IP: 100, 144, 176, 176, 224

Package

- LFQFP: 14mm x 14mm, 20mm x 20mm, 24mm x 24mm, 13mm x 13mm, 13mm x 13mm
- LFQFP: 14mm x 14mm, 20mm x 20mm, 24mm x 24mm, 13mm x 13mm, 13mm x 13mm
- LFQFP: 0.5mm
- LFQFP: 0.5mm
- LFQFP: 0.8mm
- LFQFP: 0.8mm
- LFQFP: 0.8mm
- LFQFP: 0.8mm
- LFQFP: 0.8mm

Operating Temperature

- Ta = -40°C to 85°C
- Ta = -40°C to 85°C

* For 105°C product, please change the third last alphabet from D to G.