November 18, 2014

Main Specifications of the RZ/T1 Solutions

Product No.	R7S910015	R7S910016	R7S910017	R7S910018
Package	320-pin FPBGA			
Main CPU (Maximum operating frequency)	ARM® Cortex®-R4F (450 MHz)		ARM Cortex-R4F (600 MHz)	
FPU	Supports addition, subtraction, multiplication, division, multiply-and-accumulate, and square-root operations at single- and double-precision.			
Tightly-coupled memory	ATCM: 512 KB (with ECC); BTCM: 32 KB (with ECC)			
Cache memory	Instruction cache : 8 KB (with ECC); Data cache: 8 KB (with ECC)			
On-chip extended SRAM	1 MB (with ECC)			
Clock	• External clock / oscillator input frequency: 25 MHz • CPU clock frequency: Up to 450/600 MHz • Low-speed on-chip oscillator (LOCO): 240 kHz			
Timers	Up to 33 extended-function timers • 16-bit TPUa (12 channels), MTU3a (9 channels), GPTa (4 channels): Input capture, output compare, PWM waveform output • 16-bit CMT (6 channels), 32-bit CMTW (2 channels)			
Industrial Ethernet communication	• Multiprotocol Ethernet accelerator “R-IN engine” • EtherCAT® slave controller			
Communication interfaces	• EtherMAC: 1 port (without the switching function / 2 ports with switching function) • USB 2.0 High-Speed host / function: 1 channel • CAN (compliant with ISO11898-1 specification): 2 channels (max.) • SCIFA with 16-byte transmission and reception FIFOs: 5 channels			

Product No.	R7S910015	R7S910016	R7S910017	R7S910018
	• I2C bus interface: 2 channels for transfer at up to 400 Kbps • RSPIa: 4 channels • SPIBSC: Provides a single interface for multi-I/O compatible serial flash memory			
Encoder interface	-	Supports EnDat 2.2, BiSS® interface	-	Supports EnDat 2.2、BiSS interface
AD converter	12 bit × 2 units (max.) (8 channels for unit 0, 16 channels for unit 1)			
DMA	16 channels × 2 units			
Others	• Temperature sensor for measuring temperature within the chip • Safety functions (register write protection, input clock oscillation stop detection, CRC, IWDTa, A/D self-diagnostic function of AD converter, error control module, etc.) • Security functions (option): Boot mode with security through encryption, JTAG locking mechanism, etc.			
Power supply voltage	3.3 V (I/O), 1.2 V (core)			
Operating temperature	Tj = −40°C - +125°C			

Product No.	R7S910001	R7S910002	R7S910006	R7S910007	R7S910011	R7S91013
Package	176-pin HLQFP	320-pin FPBGA				
Main CPU (Maximum operating frequency)	ARM Cortex-R4F (450 MHz)			ARM Cortex-R4F (600 MHz)	ARM Cortex-R4F (450 MHz)	ARM Cortex-R4F (600 MHz)
FPU	Supports addition, subtraction, multiplication, division, multiply-and-accumulate, and square-root operations at single- and double-precision.					

Product No.	R7S910001	R7S910002	R7S910006	R7S910007	R7S910011	R7S91013
Tightly coupled memory	ATCM: 512 KB (with ECC); BTCM: 32 KB (with ECC)					
Cache memory	Instruction cache: 8 KB (with ECC); Data cache: 8 KB (with ECC)					
On-chip extended SRAM	-		1 MB (with ECC)		-	1 MB (with ECC)
Clock	• External clock / oscillator input frequency: 25 MHz • CPU clock frequency: Up to 450/600 MHz • Low-speed on-chip oscillator (LOCO): 240 KHz					
Timers	Up to 33 extended-function timers • 16-bit TPUa (12 channels), MTU3a (9 channels), GPTa (4 channels): Input capture, output compare, PWM waveform output • 16-bit CMT (6 channels), 32-bit CMTW (2 channels) *176-pin products differ in the number of channels, etc.					
Industrial Ethernet communication	-					
Communication function	• EtherMAC: 1 port (without the switching function / 2 ports with switching function) • USB 2.0 High-Speed host / function: 1 channel • CAN (compliant with ISO11898-1 specification): 2 channels (max.) • SCIFA with 16-byte transmission and reception FIFOs: 5 channels • I2C bus interface: 2 channels for transfer at up to 400 Kbps • RSPIa: 4 channels • SPIBSC: Provides a single interface for multi-I/O compatible serial flash memory *176-pin products differ in the number of channels or ports, etc.					
Encoder interface	-			Support EnDat 2.2, BiSS interface		
AD converter	12 bit					

Product No.	R7S910001	R7S910002	R7S910006	R7S910007	R7S910011	R7S91013
	2 units (max.) (8 channels for unit 0, 16 channels for unit 1) *176-pin products have unit 0 only.					
DMA	16 channels × 2 units					
Others	• Temperature sensor for measuring temperature within the chip • Safety functions (register write protection, input clock oscillation stop detection, CRC, IWDTa, A/D self-diagnostic function of AD converter, error control module, etc.) • Security functions (option): Boot mode with security through encryption, JTAG locking mechanism, etc.					
Power supply voltage	3.3 V (I/O), 1.2 V (core)					
Operating temperature	Tj = −40°C - +125°C					

(Remarks)