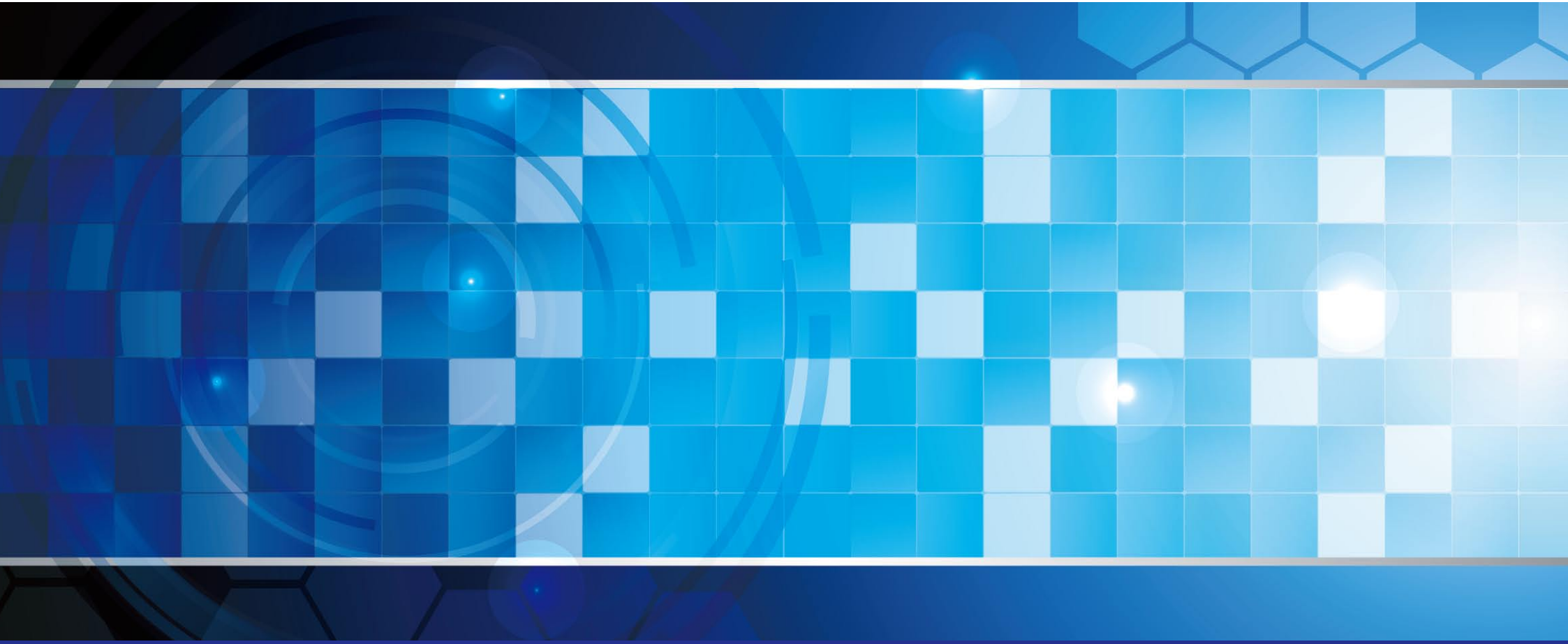
Renesas Microcomputer

SuperH RISC engine Family Selection Guide



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SH7780 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels				Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7780	SH7786	R8A77860HBG**	–	(8K + 16K) x 2	L	–	(32K (instruction) + 32K(data)) x 2 + 256K (L2Cache)	SH-4A core	103	0.94 (@533MHz)	Yes	Yes	24(max)	–	SRAM/MPX/ Burst ROM/ Byte control SRAM/ PCMCIA	Local bus DDR3 PCI-Express	–	–	–	–	–	12(TMU)	–	–	1	6(max)	–	2(max)	–	–	1(max)	2(max)	1(max)	Display Unit	–	60 (max)	9(NMI + 15(15 level) or 8)(max)	Yes	①	533MHz/ 1.25V(internal), 3.3V(I/O etc.), 1.5V(DDR3 etc.)	-40 to 85	BGA593
			R8A77860NBG**																																					-20 to 85	
		SH7785	R8A77850BANBG	–	8K (high speed) + 16K (high-speed) + 128K (medium-speed)			32K (instruction), 32K (data), 4-wayset-associative			0.85 (@600MHz)			12(4 of them are available externally)		SRAM/ MPX/ BurstROM/ Byte control SRAM/ PCMCIA	Local bus (8/16/32/64-bit*1)/ DDR2(32-bit)/ PCI(32-bit) *1:when not using PCI/DU										6(Max.)		–	–		–	–	–		108 (Max.)	9(NMI + 15(15 level) or 8)		②	600MHz/ 1.1V(internal), 3.3V(I/O), 1.8V(DDR2)	-40 to 85	PRBG0436GA-A
			R8A77850BADBG																																						
		SH7780	R8A77800BDBG	–	16K (high-speed) + 32K (medium-speed)						1.25 (@400MHz)					Local bus (8/16/32-bit)/ DDR(32-bit)/ PCI(32-bit)		Yes				4(CMT)					2(Max.)								–	75 (Max.)				400MHz/ 1.25V(internal), 3.3V(I/O), 2.5V(DDR)	-20 to 75	BP-449
			R8A77800BNBG																																						
		SH7764	R5S77640N300BG	–	16K						1.5 (@324MHz)			6(2 of them are available externally)		SRAM/ SDRAM	Separate bus (8/16/32-bit) Can be connected with SDRAM (64bit bus)	–	–	–	–	–	6(TMU)	–	1	3		–	1	6 (SSIx 6)	–	1 (selectable Host/ Function)	1 (selectable Host/ Function)			77	3		–	324MHz/ 1.2V(Internal), 3.3V(I/O)	-20 to 85	PRBG0404GA-A
			R5S77640N300BG																																					-40 to 85	
			R5S77641P300BG																																					-20 to 85	
			R5S77641D300BG																																						
			R5S77641N300BG																																						
			R5S77640P300BG																																						
		SH7763	R5S77630AY266BGV	–	16K						1.9 (@266MHz)			6(4 of them are available externally)		SRAM/ MPX/ Burst ROM/ Byte control SRAM/ PCMCIA	Local bus (8/16/32-bit)/ DDR(32-bit)/ PCI(32-bit)/ Multiplexed bus (32-bit)		10-bit x 4	8-bit x 2		4(CMT)						2	3(serial IOx 3)		2(G-bit)	Yes (selectable USB Function)	Yes (selectable USB HOST)	Yes	4 (Max.)	107 (Max.)	9(NMI + 15(15 level) or 8)		③ ④ ⑤	266MHz/ 1.25V(internal), 3.3V(I/O), 2.5V(DDR)	-20 to 75	BP-449
			R5S77631AY266BGV																																						
			R5S77632AY266BGV																																						
		SH7734	R8A77343D533BG**	–	ILRAM 16KB OLRAM 16KB						0.94 (@533MHz)		–	34		Yes	Separate bus (8/16-bit) DDR (16-bit)	Yes	10-bit x 8	–	–	5(MTU2)	9	(MTU2)	(MTU2)		6(max)	–	2(max)	RSPIx 1(max), HSPIx 1(max), QSPIx 1(max), SSIx 4(max)	2(max)	Gethernet x 1 (max)	2(max) (High-Speed)	1(max) (High-Speed)		12 (max)	160 (max)	17(NMI, IRQx 8, PINTx 8)		⑥	533MHz/ 1.25V (internal), 3.0 to 3.6V (peripharl), 1.8/1.5V (DDR)	-40 to +85	BGA440

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

①HAC, SSI, NAND flash interface, SDIF, HSPI (Some pins for each moduleare multiplexed)
②HAC, SSI, MultiMedia card interface, NAND flash interface (Some pins for each moduleare multiplexed)
③sec.acceralater, HAC, SSI, MultiMedia card interface, Stream interface (Some pins for each moduleare multiplexed)
④HAC, SSI, MultiMedia card interface, Stream interface (Some pins for each moduleare multiplexed)
⑤sec.acceralater, SD Host interface, HAC, SSI, MultiMedia card interface, Stream interface (Some pins for each moduleare multiplexed)
⑥Video in, Display cntl., SRC, FLCTL, MMC, VEU option (STIF, RCAN, SDHI, 2D Graphics Accelerator)

SH7780 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels				Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7780	SH7731	R8A77310C333BA	–	148K	L	–	32K(instruction), 32K(data), 4-wayset-associative	SH4AL-DSP core	170	1.5(@333MHz)	–	Yes	6(1of them is available externally)	–	SRAM/ Burst ROM/ Byte control SRAM/ PCMCIA	Local bus (16/32-bit) SDRAM (16/32/64-bit)	Yes	–	–	–	4(TPU)	4(TMUx 3, CMTx 1)			1	3(SCIF x 3)		1	2(SIOF x 2)	–		1(High-Speed)	High-Speed	–	23	100	9(NMI 1 + IRQ 8)	Yes	①	333MHz/ 1.3V(internal), 3.3V(I/O) 266MHz/ 1.2V(internal), 3.3V(I/O)	-40 to 85	PLBG0417KB-A
			R8A77310D333BG																																							PRBG0449GA-A
		SH7730	R8A77300C200FP	–	16K(high-speed)				SH-4A core	103	2.5(@200MHz)	Yes		6(2 of them are available externally)		SRAM/ SDRAM/ Burst ROM/ Byte control SRAM/ PCMCIA	Separate bus (8/16/32-bit)		10-bit x 4	10-bit x 2	–	6(TPU)	8(TMUx 3, CMTx 5)	–	–		6	–	2	–	–	–	–	–	28	78	21(NMI + 20(15 level))	Yes	–	200MHz/ 1.2V(internal), 3.3V(I/O)	-20 to 75	PLQP0208KB-A
			R8A77301C200FP								1.88(@266MHz)																													266MHz/ 1.2V(internal), 3.3V(I/O)		
			R8A77301C266FP								2.5(@200MHz)																													200MHz/ 1.2V(internal), 3.3V(I/O)	-40 to 85	
			R8A77301D200FP								1.88(@266MHz)																													266MHz/ 1.2V(internal), 3.3V(I/O)		
			R8A77301D266FP																																							
		SH7724	R8A77240B500BB	–	16K			L1C: 32K(instruction), 32K(data) 4-wayset-associative L2C: 256K (Mixed instruction and operand type)			1.00(@500MHz)			12(2 of them are available externally)		SRAM/ Burst ROM/ NOR-Flash/ PCMCIA	Local bus (16/32-bit) DDR1-SDRAM (32-bit)			10-bit x 2		6(TMU), 1(CMT)				3(SCIF x 3) 3(SCIFA x 3)		1	2(MSIOF x 2)		1	Yes	Yes	Yes	6	162	9(NMI 1 + IRQ 8)		②	500MHz/ 1.2V(internal), 3.3V(I/O), 1.8V(DDR2)	-20 to 70 -40 to 85	PVBG0441KB-A
		SH7723	R8A77230C400BG	–	16K						1.25(@400MHz)																													③	400MHz/ 1.2V(internal), 3.3V(I/O), 2.5V(DDR)	-20 to 70 -40 to 85	PRBG0449GA-A
			R8A77230D400BG																																							
		SH7722	R8A77220AC266BA	–	148K			32K(instruction), 32K(data), 4-wayset-associative	SH4AL-DSP core	170	1.5(@333.4MHz)			6(1of them is available externally)			Local bus (16/32-bit) SDRAM (16/32/64-bit)		–				4(TMUx 3, CMTx 1)				3(SCIF x 3)			2(SIOFx 2) 2(SIUx 2)		–	–			23	100			④	266MHz/ 1.2V(internal), 3.3V(I/O) 333MHz/ 1.3V(internal), 3.3V(I/O)	-20 to 70 -40 to 85	PLBG0417KB-A
			R8A77220AC266BG																																							PRBG0449GA-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Oz : OzROM version

①LCD controller (LCDC), Key scan interface (KEYSC), SD card host interface (SDHI)
②Video processing unit (VPU5F), Video I/O (VIO5), Video output unit (VOU), TS I/F (TSIF), Key scan interface (KEYSC), 2D graphic acceralator (2DG), SD card hostI/F (SDHI), NAND flash memory control (FLCTL), ATAPI I/F(ATAPI)
③Video processing unit (VPU5F), Video I/O (VIO5), Video output unit (VOU), TS interface (TSIF), Key scan interface (KEYSC), 2D graphic acceralator (2DG), SD card host interface (SDHI), NAND flash memory control (FLCTL), ATAPI interface (ATAPI)
④Video processing unit (VPU), Video I/O (VIO), JPEG processing unit (JPU), Video output unit (VOU), TS interface (TSIF), Key scan interface (KEYSC), 2D graphic acceralator (2DG), SD card host interface (SDHI), NAND flash memory control (FLCTL)

SH7750 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels		USB HOST		LCD	Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7750	SH7760	HD6417760BL200AD	–	–	L	–	16K (instruction), 32K(data), 2-wayset-associative	SH-4 core	94	2.5(@200MHz)	Yes	Yes	8(4 of them are available externally)	–	SRAM/ SDRAM/ MPX/ Burst ROM/ Byte control SRAM/ PCMCIA	Separate bus(8/16/32-bit)/ Multiplexed bus(32-bit)	–	10-bitx 4	–	–	4(CMT)	3(TMU)	–	–	1	3	–	2	–	2	–	1(Full speed)	–	Yes	–	69 (Max.)	5(NMI + 15(15 level) or 4)	Yes	HAC x 2, SSI x 2, MultiMedia card interface (*Some pins for each moduleare multiplexed)	200MHz/1.5V, 3.3V(I/O)	-40 to 85 / -20 to 75	BP–256B
			HD6417760BL200A																																						
		SH7751R	HD6417751RBG240	–	–						2.1(@240MHz)			8(2 of them are available externally) + 4(PCI only)		SRAM/ DRAM/ SDRAM/ MPX/ Burst ROM/ Byte controlSRAM/ PCMCIA		Yes	–	–	–	5(TMU)	–	–	1	1	1	–	–	–	–	–	–	–	–	39 (Max.)			*(Some pins for each moduleare multiplexed)	240MHz/1.5V, 3.3V(I/O)	-40 to 85	PRBG0292GA–A
			HD6417751RBG200D								2.5(@200MHz)																													200MHz/1.5V, 3.3V(I/O)	-40 to 85 / -20 to 75	
			HD6417751RBG200								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-40 to 85	
			HD6417751RBG240D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-20 to 75	PRBG0256DE–B
			HD6417751RBP200								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-40 to 85 / -20 to 75	
			HD6417751RBP200D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85	PRQP0256LA–B
			HD6417751RBP240D								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-20 to 75 / -40 to 85	
			HD6417751RBP240								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85	
			HD6417751RF240								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-20 to 75	PRBG0292GA–A
			HD6417751RF200								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85 / -20 to 75	
			HD6417751RF200D								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-40 to 85	
			HD6417751RF240D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-20 to 75	PRBG0256DE–B
		SH7750R	HD6417750RBG240	–	–						2.1(@240MHz)			8(2 of them are available externally)			Separate bus(8/16/32/64-bit)/ Multiplexed bus(32/64-bit)																									240MHz/1.5V, 3.3V(I/O)	-40 to 85	
			HD6417750RBG200D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-20 to 75	PRQP0208KE–B
			HD6417750RBG200								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-40 to 85 / -20 to 75	
			HD6417750RBG240D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85	PRBG0292GA–A
			HD6417750RBP200								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-20 to 75	
			HD6417750RBP200D								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85	PRBG0256DE–B
			HD6417750RBP240D								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-20 to 75 / -40 to 85	
			HD6417750RBP240								2.5(@200MHz)																															200MHz/1.5V, 3.3V(I/O)	-40 to 85	PRQP0208KE–B
			HD6417750RF240								2.1(@240MHz)																															240MHz/1.5V, 3.3V(I/O)	-40 to 85	
			HD6417750RF200								2.5(@200MHz)																															200MHz/1.95V, 3.3V(I/O)	–	PRBG0256DE–A
			HD6417750RF200D								2.1(@240MHz)																															167MHz/1.8V, 3.3V(I/O)		
			HD6417750RF240D								2.5(@200MHz)																															200MHz/1.95V, 3.3V(I/O)		PRQP0208KE–B
		SH7750S	HD6417750SBP200W	–	–			8K (instruction), 16K(data), Direct map			3(@167MHz)			4(2 of them are available externally)								3(TMU)																			167MHz/1.8V, 3.3V(I/O)		
			HD6417750SBP200								2.5(@200MHz)																															200MHz/1.95V, 3.3V(I/O)		
			HD6417750SF167I								3(@167MHz)																															167MHz/1.8V, 3.3V(I/O)		
			HD6417750SF200W								2.5(@200MHz)																															200MHz/1.95V, 3.3V(I/O)		
			HD6417750SF167D								3(@167MHz)																															167MHz/1.8V, 3.3V(I/O)		
			HD6417750SF167								2.5(@200MHz)																															200MHz/1.95V, 3.3V(I/O)		
			HD6417750SF200								3.8(@133MHz)																															133MHz/1.5V, 3.3V(I/O)		PLBG0264GA–A
			HD6417750SVBT133																																								PRQP0208KE–B
			HD6417750SVF133																																								

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7700 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN		Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels	Ethernet			LCD	Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7700	SH7721	R8A77210C133BA	–	16K	L	–	32K, 4-wayset-associative	SH3-DSP core	160	7.5(@133MHz)	–	Yes	6(2 of them are available externally)	–	SRAM/ SDRAM/ Burst ROM/ Byte control SRAM/ PCMCIA	Separate bus (8/16/32-bit)	Yes	10-bit x 4	8-bit x 2	–	9(TPU x 4, CMT x 5)	3(TMU)	–	–	1	2	–	1	–	–	–	2 (selectable USB Function)	1 (selectable USB HOST)	Yes	7	110	23(NMI +22(15 level))	Yes	①	133MHz/ 1.5V, 3.3V	-20 to 75	PLBG0256KA-A
			R8A77210C133BG																																							PLBG0256GA-A
			R8A77211C133BA																																					②			PLBG0256KA-A
			R8A77211C133BG																																								PLBG0256GA-A
		SH7720	HD6417320BP133C	–	16K																																			③			
			HD6417720BL133C																																					④			PLBG0256KA-A
			HD6417720BP133C																																								PLBG0256GA-A
		SH7705	HD6417705BP100B	–	–				SH-3 core	68	10(@100MHz)			4(2 of them are available externally)		SRAM/ SDRAM/ Burst ROM/ Byte control SRAM		Yes(not separated power supply)		–	–	5(TPU x 4, CMT)						–		–	–	–	–	1	–	105			–		100MHz/1.5V, 3.3V	-20 to 75	TTBG0208JA-A
			HD6417705BP133B								7.5(@133MHz)																															133MHz/1.5V, 3.3V		
			HD6417705F100B								10(@100MHz)																															100MHz/1.5V, 3.3V		PLQP0208KA-A
			HD6417705F133B								7.5(@133MHz)																															133MHz/1.5V, 3.3V		
		SH7727	HD6417727BP100C	–	16K			16K, 4-wayset-associative	SH3-DSP core	160	10(@100MHz)					SRAM/ SDRAM/ Burst ROM/ PCMCIA			10-bit x 6	8-bit x 2		1(CMT)					1	1							2 (selectable USB Function)	1 (selectable USB HOST)	Yes		104	7(NMI + 6(15 level))		DSP function	100MHz/1.8V, 3.3V		PLBG0240JA-A
			HD6417727BP160C								6.3(@160MHz)																															160MHz/1.9V, 3.3V		
			HD6417727F100C								10(@100MHz)																															100MHz/1.8V, 3.3V		PRQP0240KC-B
			HD6417727F160C								6.3(@160MHz)																															160MHz/1.9V, 3.3V		

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①DSP function, MultiMedia card interface, Compare match timer
②DSP function, MultiMedia card interface, Compare match timer, SD Host interface
③DSP function, MultiMedia card interface, Compare match timer, SD Host interface, SSL acceralater
④DSP function, MultiMedia card interface, Compare match timer, SSL acceralater

SH7700 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7700	SH7729R	HD6417729RBP133B	–	16K	L	–	16K, 4-wayset-associative	SH3-DSP core	160	7.5(@133MHz)	–	Yes	4(2 of them are available externally)	–	SRAM/ SDRAM/ Burst ROM/ PCMCIA	Separate bus (8/16/32-bit)	Yes	10-bit x 8	8-bit x 2	–	1(CMT)	3(TMU)	–	–	1	1	2	–	–	–	–	–	–	–	–	–	96	23(NMI + 22(15 level))	Yes	DSP function	133MHz/ 1.8V, 3.3V	-20 to 75	PLBG0240JA-A
			HD6417729RF133B								6(@167MHz)																														167MHz/1.9V, 3.3V		PLQP0208KA-A
			HD6417729RF167B								5(@200MHz)																															200MHz/2.0V, 3.3V		PRQP0208KE-B
			HD6417729RHF200B																																								
		SH7709S	HD6417709SBP167B	–	–				SH-3 core	68	6(@167MHz)																															–	167MHz/1.9V, 3.3V		PLBG0240JA-A
			HD6417709SBP100B								10(@100MHz)																															100MHz/1.7V, 3.3V		
			HD6417709SBP133B								7.5(@133MHz)																															133MHz/1.8V, 3.3V		
			HD6417709SF100B								10(@100MHz)																															100MHz/1.7V, 3.3V		PLQP0208KA-A
			HD6417709SF133B								7.5(@133MHz)																															133MHz/1.8V, 3.3V		
			HD6417709SF167B								6(@167MHz)																															167MHz/1.9V, 3.3V		
			HD6417709SHF200B								5(@200MHz)																															200MHz/2.0V, 3.3V		PRQP0208KE-B
		SH7706	HD6417706BP133	–	–						7.5(@133MHz)								10-bit x 4								1											72	7(NMI + 6(15 level))			133MHz/ 1.9V, 3.3V		TTBG0208JA-A
			HD6417706F133																																								PLQP0176KD-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7200 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Industrial field	SH7200	SH7203	R5S72030W200FP	–	64K (high–speed) +16K (retention)	L	–	16K	SH2A-FPU core	112	5(@200MHz)	Yes	–	8(4 of them are available externally)	–	Yes	–	Yes	10-bit x 8	8-bit x 2	–	5(MTU), 2(CMT)	–	–	–	1	4	–	4	6(SSUx 2, SSIx 4)	2	–	1(High-Speed)	High-Speed	Yes	16	82	17(NMI, IROx 8, PINTx 8)	Yes	FLCTL, TFT-support LCDC	200MHz/ 1.1 to 1.3V, 3.0 to 3.6V	-20 to 85	PRQP0240KC-A
		SH7206	R5S72060W200FPV	–	128K			16K, 4-wayset-associative	SH-2A core	91		–				SRAM/ Bytes control SRAM/ Burst ROM/ MPX-IO/ SDRAM/ PCMCIA	Separate bus (8/16/32-bit)	–			–	11(MTU2 x 6, MTU2S x 3, CMT x 2)	–	2(shared with MTU2)	2(shared with MTU2, MTU2S)	1	4		1	–	–		–	–		8	71	9		–	200MHz/ 1.15 to 1.35V, 3.0 to 3.6V (bus)		PLQP0176KD-A
		SH7205	R5S72050W200BG	–	96K (high–speed) +16K (retention)			16K	SH2A-FPU core	112				14		Yes	–				–	9(MTU x 5, CMT x 4)	1(MTU2)	2(shared with MTU2)	1(shared with MTU2)	2	6		4	8(SSUx 2, SSIx 6)	2		2(High-Speed)	High-Speed	–	11	96	17(NMI, IROx 8, PINTx 8)		FLCTL, ATAPI, 2DG	200MHz/ 1.1 to 1.3V, 3.0 to 3.6V		PRBG0272GA-A
		SH7201	R5S72011RB120FP	–	32K			16K, 4-wayset-associative	SH-2A core		8.33(@120MHz)			8(4 of them are available externally)		SRAM/ SDRAM	Separate bus (8/16/32-bit)	Yes			2(TMR)	6(MTU2)	–			1	8		3	2(SSIx 2)			–	–		14	104	17		–	120MHz/ 3.0 to 3.6V	-20 to 70	PLQP0176KB-A
			R5S72011RW100FP								10(@100MHz)																													100MHz/ 3.0 to 3.6V	-20 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7260 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Automotive, Industrial field	SH7260	SH7269	R5S72690W266FP**	–	2500K (SRAM) + 64K (high-speed)	L	–	8K (instruction), 8K(data), 4-way set-associative	SH2A-FPU core	112	3.76 (@266MHz)	Yes	–	16	–	Yes	Separate bus (8/16/32-bit)	Yes	10-bit x 8	–	–	7(MTU2 x 5, CMTx 2)	–	2(shared with MTU2)	1(shared with MTU2)	1	8	–	4	12(RSPI x 2, RQSPI x 2, SSIx 6, SPDIF x 1, SIOFx 1)	3	–	1(High-Speed)	High-Speed	–	8	133	17(NMI, IRQ x 8, PINT x 8)	Yes	2D Graphics Accelerator, Video Decoder, Video in, Display cntl., JPEG Decoder, CDROM Decoder, SRC, FLCTL, SD, MMC	266MHz/ 1.15 to 1.35V (internal), 3.0 to 3.6V (peripheral)	-20 to 85	PLQP0256LB-A
			R5S72691W266FP**																																							-40 to 85	
			R5S72690P266FP**																																								
			R5S72691P266FP**																																								
			R5S72690W266BG**																																								
			R5S72690P266BG**																																								
			R5S72691P266BG**																																								
			R5S72691W266BG**																																								
		SH7268	R5S72681P266FP**	–	2500K (SRAM) + 64K (high-speed)																								2	9(RSPI x 2, RQSP x 2, SSIx 4, SPDIFx 1)								6	101					-40 to 85	PLQP0208KB-A
			R5S72680W266FP**																																							-20 to 85	
			R5S72681W266FP**																																								
			R5S72680P266FP**																																							-40 to 85	
		SH7267	R5S72670P144FP	–	1500K (SRAM) +64K (high-speed)			16K			6.94 (@144MHz)						Separate bus (8/16-bit)		10-bit x 6										3	6(RSPI x 2, SSIx 4)	–								92			Video in, Display cntl., CDROM Decoder, SRC, FLCTL	144MHz/ 1.15 to 1.35V (internal), 3.0 to 3.6V (peripheral)	-40 to 85	PLQP0176KB-A
			R5S72670W144FP																												2												-20 to 85	
			R5S72671P144FP																												–												-40 to 85	
			R5S72671W144FP																																								-20 to 85	
		SH7266	R5S72660P144FP	–	1500K (SRAM) +64K (high-speed)																						5			4(RSPI x 1, SSIx 3)								68	9(NMI, IRQ x 8)			-40 to 85	PLQP0144KA-A
			R5S72660W144FP																												2												-20 to 85	
			R5S72661P144FP																												–												-40 to 85	
			R5S72661W144FP																																								-20 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7260 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Automotive, Industrial field	SH7260	SH7264	R5S72644P144FPU	–	640K (SRAM) + 64K (high-speed)	L	–	16K	SH2A-FPU core	112	6.94 (@144MHz)	Yes	–	16	–	Yes	Separate bus (8/16-bit)	Yes	10-bit x 8	–	–	7(MTU2 x 5, CMTx 2)	–	2(shared with MTU2)	1(shared with MTU2)	1	8	–	3	6(RSPIx 2, SSIx 4)	–	–	1(High-Speed)	High-Speed	–	8	115	17(NMI, IRQ x 8, PINT x 8)	Yes	Video in, Display cntl., CDROM Decoder, SRC, FLCTL	144MHz/ 1.1 to 1.3V (internal), 3.0 to 3.6V (peripheral)	-40 to 85	PLQP0208KB-A
			R5S72644W144FPU																											2											-20 to 85	
			R5S72645P144FPU																											–											-40 to 85	
			R5S72645W144FPU																											2											-20 to 85	
			R5S72646P144FPU																											–											-40 to 85	
			R5S72646W144FPU																											2											-20 to 85	
			R5S72647P144FPU																											–											-40 to 85	
			R5S72647W144FPU																											2											-20 to 85	
			R5S72640P144FPU		1000K (SRAM) + 64K (high-speed)																									–											-40 to 85	
			R5S72640W144FPU																											2											-20 to 85	
			R5S72641P144FPU																											–											-40 to 85	
			R5S72641W144FPU																											2											-20 to 85	
			R5S72642P144FPU																											–											-40 to 85	
			R5S72642W144FPU																											2											-20 to 85	
			R5S72643P144FPU																											–											-40 to 85	
			R5S72643W144FPU																											2											-20 to 85	
		SH7262	R5S72624P144FPU	–	640K (SRAM) + 64K (high-speed)														10-bit x 4											–							4	89					-40 to 85	PLQP0176KB-A
			R5S72624W144FPU																											2											-20 to 85	
			R5S72625P144FPU																											–											-40 to 85	
			R5S72625W144FPU																											2											-20 to 85	
			R5S72626P144FPU																											–											-40 to 85	
			R5S72626W144FPU																											2											-20 to 85	
			R5S72627P144FPU																											–											-40 to 85	
			R5S72627W144FPU																											2											-20 to 85	
			R5S72620P144FPU		1000K (SRAM) + 64K (high-speed)																									–											-40 to 85	
			R5S72620W144FPU																											2											-20 to 85	
			R5S72621P144FPU																											–											-40 to 85	
			R5S72621W144FPU																											2											-20 to 85	
			R5S72622P144FPU																											–											-40 to 85	
			R5S72622W144FPU																											2											-20 to 85	
			R5S72623P144FPU																											–											-40 to 85	
			R5S72623W144FPU																											2											-20 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7260 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Automotive, Industrial fields	SH7260	SH7263	R5S72630P200FP	–	64K (high–speed) +16K (retention)	L	–	16K	SH2A-FPU core	112	5(@200MHz)	Yes	–	8(4 of them are available externally)	–	Yes	–	Yes	10-bit x 8	8-bitx 2	–	5(MTU), 2(CMT)	–	–	–	1	4	–	4	6(SSU x 2, SSI x 4)	2	–	1(High-Speed)	High-Speed	–	16	82	17(NMI, IRQx 8, PINTx 8)	Yes	CDROM, SRC, FLCTL, TFT-support LCDC	200MHz/ 1.1 to 1.3V, 3.0 to 3.6V	-40 to 85	PRQP0240KC-A
			R5S72631P200FP																																				CDROM, SRC, FLCTL, SDHI, TFT-support LCDC			
			R5S72632P200FP																																				CDROM, SRC, FLCTL, TFT-support LCDC			
			R5S72633P200FP																																				CDROM, SRC, FLCTL, SDHI, TFT-support LCDC			
		SH7265	R5S72650P200BG	–	96K (high–speed) +16K (retention)									14							9(MTU x 5, CMT x 4)	1(MTU2)	2(shared with MTU2)	1(shared with MTU2)		2	6		8(SSU x 2, SSI x 6)			2(High-Speed)			11	96			FLCTL, ATAPI, 2DG, AAC encoder			PRBG0272GA-A
			R5S72651P200BG																																				FLCTL, ATAPI, 2DG, AAC encoder, SHDI			
			R5S72652P200BG																																				FLCTL, ATAPI, 2DG, AAC encoder			
			R5S72653P200BG																																				FLCTL, ATAPI, 2DG, AAC encoder, SDHI			
		SH7261	R5S72611RB120FP	–	32K			16K, 4-wayset-associative	SH-2A core		8.33(@120MHz)			8(4 of them are available externally)		SRAM/ SDRAM	Separate bus (8/16/32-bit)				2(TMR)	6(MTU2)	–			1	8		3	2(SSI x 2)	–	–	–	–	14	104	17		–	120MHz/ 3.0 to 3.6V	-20 to 70	PLQP0176KB-A
			R5S72611RP100FP								10(@100MHz)																		3(SSI x 2, IEBus)											100MHz/ 3.0 to 3.6V	-40 to 85	
			R5S72612RB120FP								8.33(@120MHz)																													120MHz/ 3.0 to 3.6V	-20 to 70	
			R5S72612RP100FP								10(@100MHz)																													100MHz/ 3.0 to 3.6V	-40 to 85	
			R5S72613RB120FP								8.33(@120MHz)																													120MHz/ 3.0 to 3.6V	-20 to 70	
			R5S72613RP100FP								10(@100MHz)																													100MHz/ 3.0 to 3.6V	-40 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7260 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Automotive, Industrial fields	SH7260	SH726A	R5S726A0D216FP**	–	1250K(SRAM) + 64K(high-speed)	L	–	8K(instruction), 8K(data), 4-way set-associative	SH2A-FPU core	112	4.6 (@216MHz)	Yes	–	16	–	Yes	Separate bus (8/16-bit)	Yes	10-bit x 6	–	–	7(MTU2 x 5, CMTx 2)	–	2(shared with MTU2)	1(shared with MTU2)	1	5	–	4	8(RSPI x 2, SPIMulti x 1, SSI x 4, SPDIF x 1)	–	–	1(Full-Speed)	Full-Speed	–	8	57	17(NMI, IRQx 8, PINT x 8)	Yes	SPIBSC, CDROM Decoder, SRC, SD	216MHz/ 1.15 to 1.35V (internal), 3.0 to 3.6V (peripheral)	-40 to +85	PLQP0120KA-A
			R5S726A0P216FP**																											2												
			R5S726A1D216FP**																											–												
			R5S726A2D216FP**																											2												
			R5S726A2P216FP**																																								
			R5S726A3D216FP**																																								
			R5S726A3P216FP**																																								
		SH726B	R5S726B0D216FP**	–	1250K(SRAM) + 64K(high-speed)														10-bit x 8											9(RSPI x 3, SPIMulti x 1, SSI x 4, SPDIF x 1)	–		2(Full-Speed)			12	74							
			R5S726B0P216FP**																											2												
			R5S726B1D216FP**																																								
			R5S726B1P216FP**																																								

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH-Ether Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Communications	SH-Ether	SH7615	HD6417615ARBP	–	8K	L	–	4K	SH2-DSP core	65	16 (@62.5MHz)	–	–	2	–	SRAM/ SDRAM/ DRAM/ Burst ROM	Separate bus (8/16/32-bit)	–	–	–	–	4(FRT, TPU x 3)	–	–	–	1	2	–	–	2(serial IO x 2)	–	1	–	–	–	–	29	5(NMI + 4(15 level))	Yes	DSP function, E-DMAC x 2	62.5MHz/ 3.3V	-20 to 75	PLBG0240JA-A
			HD6417615ARF																																						PLQP0208KA-A
		SH7616	HD6417616SF	–	8K																		TPU																		
		SH7618	HD6417618ABG100V	–	4K			16K	SH-2 core	62	10 (@100MHz)	–	–	–	–	SRAM/ SDRAM/ Byte control SRAM/ PCMCIA	Separate bus (8/16-bit)	–	–	–	–	2(CMT)	–	–	–		3	–	–	–	–							71	9(NMI + 8)		E-DMAC x 2	100MHz/ 1.4 to 1.6V, 3.0 to 3.6V (bus)	-40 to 85	PLBG0176GA-A
			HD6417618ABGN100V																																						
			HD6417618ABGW100V																																							
		SH7619	R4S76191B125BGV	–	16K						8 (@125MHz)			4(2 of them are available externally)			Separate bus (8/16/32-bit)														1(SIOF x 1)						78				125MHz/ 1.71 to 1.89V, 3.0 to 3.6V (bus)	-20 to 70	
			R4S76191D125BGV																																						-40 to 85	
			R4S76191N125BGV																																						-20 to 85	
			R4S76191W125BGV																																							
		SH7710	HD6417710BP	–	16K	L	–	32K, 4-wayset-associative	SH3-DSP core	160	5 (@200MHz)	–	Yes	6(2 of them are available externally)	–	SRAM/ SDRAM/ Burst ROM/ Byte control SRAM/ PCMCIA	Separate bus (8/16/32-bit)	Yes(not separated power supply)	–	–	–	–	3(TMU)	–	–	1	2	–	–	2(serial IO x 2)	–	2(with Bridge)	–	–	–	–	24	7(NMI + 4(15 level) or 6)	yes	DSP function, IP sec. acceralater, E-DMAC x 4	200MHz/ 1.5V(core), 3.3V(I/O)	-20 to 75	PLBG0256GA-A
			HD6417710F																																						PRQP0256LA-B
			HD6417712BP																																					DSP function, E-DMAC x 4		PLBG0256GA-A
			HD6417712F																																							PRQP0256LA-B
			HD6417713BP																														1							DSP function, E-DMAC x 2		PLBG0256GA-A
			HD6417713F																																							PRQP0256LA-B
		SH7670	R5S76700B200BG	–	32K	L	–	D cache 8KB, I cache 8KB	SH2A-FPU core	112	5(@200MHz)	yes	–	8(2 of them are available externally)	–	SRAM/ SDRAM/ Byte control SRAM/ PCMCIA	Separate bus (8/16/32-bit)	–	–	–	–	2(CMT)	–	–	1	1	3	–	1	2(SSI x 2)	–	1	1(selectable USB Function)	1(selectable USB Host)	–	8	86	9(NMI + 8)	Yes	–	–	-20 to 70	PRBG0256GA-A
			R5S76700D133BG								7.5(@133MHz)																													-40 to 85	
			R5S76710B200BG								5(@200MHz)																												SDHI		-20 to 70	
			R5S76710D133BG								7.5(@133MHz)																														-40 to 85	
			R5S76720B200BG								5(@200MHz)																												Encryption function		-20 to 70	
			R5S76720D133BG								7.5(@133MHz)																														-40 to 85	
			R5S76730B200BG								5(@200MHz)																												SDHI, Encryption function		-20 to 70	
			R5S76730D133BG								7.5(@133MHz)																														-40 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7216 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels				Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7216	SH7216	R5F72145ADBG	512K	64K	F	32K(Data flash:FLD)	–	SH-2A core	91	5 (@200MHz)	–	–	8(4 of them are available externally)	DTC	Direct connection to ROM, SRAM, SDRAM, MPX-I/O, and the others is supported	Separate bus (8/16/32-bit)	–	12-bit x 8	–	–	11(MTU2 x 6, MTU2S x 3, CMT x 2)	–	2(shared with MTU2)	2(shared with MTU2, MTU2S)	1	5(SCI x 4, SCIF x 1)	–	1	1(RSPI)	1ch	1ch	–	1ch	–	10	100	9(NMI + IRQ x 8)	Yes (user's degug interface/ advanced user's debugger)	–	200MHz/ 3.0 to 3.6V	-40 to 85	PLBG0176GA-A
			R5F72145ADFA																											1ch											PLQP0176LA-B
			R5F72145ADFP																											–											PLQP0176KB-A
			R5F72145BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72145BDFA								10 (@100MHz)																			–											PLQP0176LA-B
			R5F72145BDFP																																						PLQP0176KB-A
			R5F72145GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72145GDFA																																						PLQP0176LA-B
			R5F72145GDFP																											–											PLQP0176KB-A
			R5F72145HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72145HDFA																																						PLQP0176LA-B
			R5F72145HDFP																											–											PLQP0176KB-A
			R5F72146ADBG	768K	96K						5 (@200MHz)																			1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72146ADFA																																						PLQP0176LA-B
			R5F72146ADFP																											–											PLQP0176KB-A
			R5F72146BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72146BDFA								10 (@100MHz)																														PLQP0176LA-B
			R5F72146BDFP																											–											PLQP0176KB-A
			R5F72146GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72146GDFA																																						PLQP0176LA-B
			R5F72146GDFP																											–											PLQP0176KB-A
			R5F72146HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72146HDFA																																						PLQP0176LA-B
			R5F72146HDFP																											–											PLQP0176KB-A
			R5F72147ADBG	1M	128K						5 (@200MHz)																			1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72147ADFA																																						PLQP0176LA-B
			R5F72147ADFP																											–											PLQP0176KB-A
			R5F72147BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72147BDFA								10 (@100MHz)																														PLQP0176LA-B
			R5F72147BDFP																											–											PLQP0176KB-A
			R5F72147GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72147GDFA																																						PLQP0176LA-B
			R5F72147GDFP																											–											PLQP0176KB-A
			R5F72147HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72147HDFA																																						PLQP0176LA-B
			R5F72147HDFP																											–											PLQP0176KB-A
			R5F72165ADBG	512K	64K				SH2A-FPU core	112	5 (@200MHz)	Yes																			1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72165ADFA																																						PLQP0176LA-B
			R5F72165ADFP																											–											PLQP0176KB-A
			R5F72165BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72165BDFA								10 (@100MHz)																														PLQP0176LA-B
			R5F72165BDFP																											–											PLQP0176KB-A
			R5F72165GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72165GDFA																																						PLQP0176LA-B
			R5F72165GDFP																											–											PLQP0176KB-A
			R5F72165HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72165HDFA																																						PLQP0176LA-B
			R5F72165HDFP																											–											PLQP0176KB-A
			R5F72166ADBG	768K	96K						5 (@200MHz)																			1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72166ADFA																																						PLQP0176LA-B
			R5F72166ADFP																											–											PLQP0176KB-A
			R5F72166BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72166BDFA								10 (@100MHz)																														PLQP0176LA-B
			R5F72166BDFP																											–											PLQP0176KB-A
			R5F72166GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72166GDFA																																						PLQP0176LA-B
			R5F72166GDFP																											–											PLQP0176KB-A
			R5F72166HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72166HDFA																																						PLQP0176LA-B
			R5F72166HDFP																											–											PLQP0176KB-A
			R5F72167ADBG	1M	128K						5 (@200MHz)																			1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72167ADFA																																						PLQP0176LA-B
			R5F72167ADFP																											–											PLQP0176KB-A
			R5F72167BDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72167BDFA								10 (@100MHz)																														PLQP0176LA-B
			R5F72167BDFP																											–											PLQP0176KB-A
			R5F72167GDBG																											1ch										200MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72167GDFA																																						PLQP0176LA-B
			R5F72167GDFP																											–											PLQP0176KB-A
			R5F72167HDBG																											1ch										100MHz/ 3.0 to 3.6V	PLBG0176GA-A
			R5F72167HDFA																																						PLQP0176LA-B
			R5F72167HDFP																											–											PLQP0176KB-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7239, 7231, 7280 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7239*	SH7239	R5F72394ADFP	256K	32K	F	32K (Data flash:FLD)	–	SH2A-FPU core	112	6.25(@160MHz)	Yes	–	8 (4 of them are available externally)	DTC	SRAM/ MPX-I/O	Separate bus (8/16-bit)/ Multiplexed bus (8/16-bit)	–	12-bit x 16	–	–	11 (MTU2 x 6, MTU2S x 3, CMT x 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	4 (SCIx3, SCIFx1)	–	–	1 (RSPI)	1ch	–	–	–	–	16	69	8 (NMI + IRQ x 7)	Yes(User debug interface/ Advanced user's debuggers)	–	160MHz/ 3.0 to 3.6V	-40 to 85	PLQP0120KA-A
			R5F72394BDFP								10(@100MHz)					–	–																									
			R5F72395BDFP	512K	64K						6.25(@160MHz)					SRAM/ MPX-I/O	Separate bus (8/16-bit)/ Multiplexed bus (8/16-bit)																										100MHz/ 4.5V to 5.5V		
			R5F72395ADFP																																						160MHz/ 3.0 to 3.6V		
		SH7237	R5F72374ADFP	256K	32K				SH-2A core	91	10(@100MHz)	–				SRAM/ MPX-I/O	Separate bus (8/16-bit)/ Multiplexed bus (8/16-bit)																										160MHz/ 3.0V to 3.6V		
			R5F72374BDFP													–	–																								100MHz/ 4.5V to 5.5V		
			R5F72375BDFP	512K	64K						6.25(@160MHz)																																
			R5F72375ADFP													SRAM/ MPX-I/O	Separate bus (8/16-bit)/ Multiplexed bus (8/16-bit)																										160MHz/ 3.0V to 3.6V		
	SH7231	SH7231	R5F72314LNBG**	768K	32KB+12KB	F	32K (Data flash:FLD)	–	SH2A-FPU core	112	10(@100MHz)	Yes	–	4 (2 of them are available externally)	DTC	Direct connection to ROM/ SRAM/ SDRAM/ MPX-I/ O/the otehrs is supported	Separate bus (8/16/32-bit)/ Multiplexed bus (8/16-bit)	–	10-bit x 16	–	2 (TIM32C x 2)	12 (MTU2 x 6, MTU2S x 3, CMT x 2, TIM32C x 1)	1 (CMT2)	4 (shared with MTU2, TIM32C)	2 (shared with MTU2, MTU2S)	1	8 (SCIx4, SCIFx4)	–	1ch	1 (RSPI)	1ch	–	–	–	–	22	162	25 (NMI + IRQ x 24)	Yes(User debug interface/ Advanced user's debuggers)	KEYC	100MHz/ 3.0 to 3.6(core, I/O), 1.65 to 1.95 or 3.0 to 3.6(I/O)	-20 to 85	PLBG0256KA-B
			R5F72314LDBA**																																					-40 to 85		
			R5F72314LNBA**																																								
			R5F72315ANBA**	1M																																					-20 to 85		
			R5F72315ADBA**																																						-40 to 85		
			R5F72315LNBA**																																						-20 to 85		
			R5F72315LDBA**																																						-40 to 85		
			R5F72315ANBG**																																						-20 to 85		
			R5F72315LNBG**																																									
	SH7280	SH7286	R5F72865D100FA	512K	24K	F	–	–	SH-2A core	91	10(@100MHz)	–	–	8 (4 of them are available externally)	DTC	Direct connection to ROM/ SRAM/ SDRAM/ MPX-I/ O/the otehrs is supported	Separate bus (8/16/32-bit)/ Multiplexed bus (8/16/32-bit)	–	12-bit x 12	8-bitx 2	–	11 (MTU2 x 6, MTU2S x 3, CMT x 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	5(SCI x 4, SCIF x 1)	–	1	1	1ch	–	–	1ch	–	14	99	9 (NMI + IRQ x 8)	Yes(User debug interface/ Advanced user's debuggers)	–	100MHz/ 3.0 to 5.5V	-40 to 85	PLQP0176LB-A
			R5F72865D100FP																																								PLQP0176KB-A
			R5F72865N100FA																																					-20 to 85		PLQP0176LB-A
			R5F72865N100FP																																								PLQP0176KB-A
			R5F72866D100FA	768K	32K																																				-40 to 85		PLQP0176LB-A
			R5F72866D100FP																																								PLQP0176KB-A
			R5F72866N100FA																																					-20 to 85		PLQP0176LB-A
			R5F72866N100FP																																								PLQP0176KB-A
			R5F72867D100FA	1M																																				-40 to 85		PLQP0176LB-A
			R5F72867D100FP																																								PLQP0176KB-A
			R5F72867N100FA																																					-20 to 85		PLQP0176LB-A
			R5F72867N100FP																																								PLQP0176KB-A
		SH7285	R5F72855D100FP	512K	24K									8 (2 of them are available externally)			Separate bus (8/16-bit)/ Multiplexed bus (8/16-bit)		12-bit x 8	–											–					10	89				-40 to 85	PLQP0144KA-A
			R5F72855N100FP																																						-20 to 85		
			R5F72856D100FP	768K	32K																																				-40 to 85		
			R5F72856N100FP																																						-20 to 85		

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7243, 7210, 7080 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7243	SH7243	R5F72433D100FP	128K	8K	F	–	–	SH-2A core	91	10 (@100MHz)	–	–	8 (2 of them are available externally)	DTC	Direct connection to ROM/SRAM/ SDRAM/ MPX-I/O is supported	Separate bus (8/16-bit)/ Multiplex bus (8/16-bit)	–	12-bit x 8	–	–	11 (MTU2 x 6, MTU2S x 3, CMTx 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	3 (SCI x 2, SCIF x 1)	–	–	–	–	–	–	–	–	8	63	9 (NMI + IRQ x 8)	Yes(User Debug Interface)/ Advanced user's debuggers)	–	100MHz/ 3.0 to 5.5V	-40 to 85	PLQP0100KB-A
			R5F72433N100FP																																						-20 to 85	
			R5F72434D100FP	256K	12K																																				-40 to 85	
			R5F72434N100FP																																						-20 to 85	
	SH7210	SH7211	R5F72114D160FPV	384K	24K	F	–	–	SH-2A core	91	6.25 (@160MHz)	–	–	8 (4 of them are available externally)	–	Direct connection to ROM/SRAM/ SDRAM/ MPX-I/O is supported	Separate bus (8/16-bit)/ Multiplex bus (8/16-bit)	–	12-bit x 8	8-bit x 2	–	11 (MTU2 x 6, MTU2S x 3, CMTx 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	4 (SCIF)	–	1	–	–	–	–	–	–	2	73	9 (NMI + IRQ x 8)	Yes(User Debug Interface)/ Advanced user's debuggers)	–	160MHz/ 1.4 to 1.6V, 3.0 to 3.6V(I/O)	-40 to 85	PLQP0144KA-A
			R5F72115D160FPV	512K	32K																																					
	SH7080	SH7086	R5F70865AD80FPV	512K	32K	F	–	–	SH-2 core	62	12.5 (@80MHz)	–	–	4(externally available)	DTC	Direct connection to ROM/ SRAM/ SDRAM/ MPX-I/O is supported	Separate bus (8/16/32-bit)/ Multiplex bus (8/16/32-bit)	–	10-bitx 16	–	–	11 (MTU2 x 6, MTU2S x 3, CMTx 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	4 (SCI x 3, SCIF x 1)	–	Yes	1 (SSU)	–	–	–	–	–	16	118	9 (NMI + IRQ x 8)	Yes(User Debug Interface)	–	80MHz/ 4.0 to 5.5V or 3.0 to 3.6V	-20 to 85	PLQP0176KB-A
			R5F70865AN80FPV																																							
		SH7085	R5S70850AD80FPV	–	16K	L											Separate bus (8/16/32-bit)/ Multiplex bus (8/16/32-bit)		10-bit x 8																		8	100		–			-40 to 85	PLQP0144KA-A
			R5S70850AN80FPV																																						-20 to 85	
			R5F70854AD80FPV	256K		F																																		-40 to 85	
			R5F70854AN80FPV																																					Yes(User Debug Interface)		-20 to 85	
			R5M70854ADXXXFPV			M																																	–		-40 to 85	
			R5M70854ANXXXFPV																																							-20 to 85	
			R5F70855AD80FPV	512K	32K	F																																			-40 to 85	
			R5F70855AN80FPV																																						-20 to 85	
		SH7084	R5S70840AD80FPV	–	16K	L																																			-40 to 85	PLQP0112JA-A
			R5S70840AN80FPV																																						-20 to 85	
			R5F70844AD80FPV	256K		F																																			-40 to 85	
			R5F70844AN80FPV																																					Yes(User Debug Interface)		-20 to 85	
			R5M70844ADXXXFPV			M																																	–		-40 to 85	
			R5M70844ANXXXFPV																																							-20 to 85	
			R5F70845AD80FPV	512K	32K	F																																			-40 to 85	
			R5F70845AN80FPV																																						-20 to 85	
		SH7083	R5S70830AD80BGV	–	16K	L											Separate bus (8/16-bit)/ Multiplex bus (8/16-bit)																										-40 to 85	PLBG0112GA-A
			R5S70830AD80FTV																																							PTQP0100KA-A
			R5S70830AN80BGV																																						-20 to 85	PLBG0112GA-A
			R5S70830AN80FTV																																							PTQP0100KA-A
			R5F70834AD80BGV	256K		F																																			-40 to 85	PLBG0112GA-A
			R5F70834AD80FTV																																					Yes(User Debug Interface)			PTQP0100KA-A
			R5F70834AN80BGV																																						-20 to 85	PLBG0112GA-A
			R5F70834AN80FTV																																							PTQP0100KA-A
			R5M70834ADXXXBGV			M																																		–		-40 to 85	PLBG0112GA-A
			R5M70834ADXXXFTV																																								PTQP0100KA-A
			R5M70834ANXXXBGV																																							-20 to 85	PLBG0112GA-A
			R5M70834ANXXXFTV																																								PTQP0100KA-A
			R5F70835AD80BGV	512K	32K	F																																			-40 to 85	PLBG0112GA-A
			R5F70835AD80FTV																																					Yes(User Debug Interface)			PTQP0100KA-A
			R5F70835AN80BGV																																						-20 to 85	PLBG0112GA-A
			R5F70835AN80FTV																																								PTQP0100KA-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7137, 7146 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7137	SH7137	R5F71374AD80FPV R5F71374AN80FPV	256K	16K	F	–	–	SH-2 core	62	12.5 (@80MHz)	–	–	–	DTC	ROM/ SRAM	Separate bus (8-bit)	–	12-bit x 16	–	–	–	11 (MTU2 x 6, MTU2S x 3, CMT x 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	3(SCI)	–	1	1	1	–	–	–	–	16	57	5 (NMI + IRQ x 4)	Yes (User debug interface)	–	80MHz/ 3.0 to 3.6V or 4.0 to 5.5V	-40 to 85	PLQP0100KB-A
		SH7136	R5F71364AD80FPV R5F71364AN80FPV	256K	16K											–	–		12-bit x 12																	12	44					-20 to 85	PLQP0080JA-A
		SH7132	R5F71323AD80FPV R5F71324AD80FPV	128K 256K	8K 16K											ROM/ SRAM	Separate bus (8-bit)		12-bit x 16																	16	57					-40 to 85	PLQP0100KB-A
		SH7131	R5F71313AD80FPV R5F71314AD80FPV	128K 256K	8K 16K											–	–		12-bit x 12																	12	44					-20 to 85	PLQP0080JA-A
	SH7146	SH7149	R5F71494AD80FPV R5F71494AN80FPV R5M71494BDXXXFPV R5M71494BNXXXFPV	256K	8K	F M	–	–	SH-2 core	62	12.5 (@80MHz)	–	–	–	DTC –	Direct connection to ROM, SRAM is supported	Separate bus (8/16-bit)	–	10-bit x 12	–	–	–	11 (MTU2 x 6, MTU2S x 3, CMT x 2)	–	2 (shared with MTU2)	2 (shared with MTU2, MTU2S)	1	3(SCI)	–	–	–	–	–	–	–	–	12	63	5 (NMI, IRQ x 4)	Yes (User debug interface) –	–	80MHz/ 4.0 to 5.5V	-40 to 85 -20 to 85 -40 to 85 -20 to 85	PLQP0100KB-A
		SH7146	R5F71464AD80FPV R5F71464AN80FPV R5M71464BDXXXFPV R5M71464BNXXXFPV	256K	8K	F M									DTC –	–	–																				45		Yes (User debug interface) –			-40 to 85 -20 to 85 -40 to 85 -20 to 85	PLQP0080JA-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH/Tiny Series (SH7125)

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH/Tiny (SH7125)	SH7125	R5F71250AD50FA	16K	4K	F	–	–	SH-2 core	62	20 (@50MHz)	–	–	–	–	–	–	–	10-bit x 8	–	–	8 (MTU2 x 6, CMTx 2)	–	2 (shared with MTU2)	1 (shared with MTU2)	1	3(SCI)	–	–	–	–	–	–	–	–	8	37	5(NMI, IRQ x 4)	–	–	50MHz/ 4.0 to 5.5V	-40 to 85	PRQP0064GC-A
			R5F71250AD50FP																																							PLQP0064KB-A
			R5F71250AD50NP																																								PVQN0064LB-A
			R5F71250AN50FA																																							-20 to 85	PRQP0064GC-A
			R5F71250AN50FP																																								PLQP0064KB-A
			R5F71250AN50NP																																							PVQN0064LB-A
			R5F71251AD50FA	32K	8K																																					-40 to 85	PRQP0064GC-A
			R5F71251AD50FP																																								PLQP0064KB-A
			R5F71251AD50NP																																									PVQN0064LB-A
			R5F71251AN50FA																																							-20 to 85	PRQP0064GC-A
			R5F71251AN50FP																																								PLQP0064KB-A
			R5F71251AN50NP																																									PVQN0064LB-A
			R5F71252D50FA	64K																																							-40 to 85	PRQP0064GC-A
			R5F71252D50FP																																									PLQP0064KB-A
			R5F71252D50NP																																									PVQN0064LB-A
			R5F71252N50FA																																							-20 to 85	PRQP0064GC-A
			R5F71252N50FP																																									PLQP0064KB-A
			R5F71252N50NP																																									PVQN0064LB-A
			R5F71253D50FA	128K																																							-40 to 85	PRQP0064GC-A
			R5F71253D50FP																																									PLQP0064KB-A
			R5F71253D50NP																																									PVQN0064LB-A
			R5F71253N50FA																																							-20 to 85	PRQP0064GC-A
			R5F71253N50FP																																									PLQP0064KB-A
			R5F71253N50NP																																									PVQN0064LB-A
		SH7124	R5F71240AD50FP	16K	4K	F	–	–	SH-2 core	62	20 (@50MHz)	–	–	–	–	–	–	–	10-bit x 8	–	–	8 (MTU2 x 6, CMTx 2)	–	2 (shared with MTU2)	1 (shared with MTU2)	1	2(SCI)	–	–	–	–	–	–	–	–	8	23	4(NMI, IRQ x 3)	–	–	50MHz/ 4.0 to 5.5V	-40 to 85	PLQP0048JA-A
			R5F71240AD50NP																																								PVQN0052LE-A
			R5F71240AN50FP																																							-20 to 85	PLQP0048JA-A
			R5F71240AN50NP																																								PVQN0052LE-A
			R5F71241AD50FP	32K	8K																																					-40 to 85	PLQP0048JA-A
			R5F71241AD50NP																																								PVQN0052LE-A
			R5F71241AN50FP																																							-20 to 85	PLQP0048JA-A
			R5F71241AN50NP																																								PVQN0052LE-A
			R5F71242D50FP	64K																																							-40 to 85	PLQP0048JA-A
			R5F71242D50NP																																									PVQN0052LE-A
			R5F71242N50FP																																							-20 to 85	PLQP0048JA-A
			R5F71242N50NP																																									PVQN0052LE-A
			R5F71243D50FP	128K																																							-40 to 85	PLQP0048JA-A
			R5F71243D50NP																																									PVQN0052LE-A
			R5F71243N50FP																																							-20 to 85	PLQP0048JA-A
			R5F71243N50NP																																									PVQN0052LE-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7144, 7060, 7047 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug				
General-purpose	SH7144	SH7145	HD6417145F50V	–	8K	L	–	–	SH-2 core	62	20 (@50MHz)	–	–	4(two of them are available externally)	DTC	Direct connection to ROM/ SRAM is supported	Separate bus (8/16/32-bit)	–	10-bit x 8	–	–	7 (MTU x 5, CMT x 2)	–	2 (shared with MTU)	1 (shared with MTU)	1	4(SCI)	–	1	–	1	–	–	–	–	–	8	98	9 (NMI, IRQ x 8)	–	–	50MHz/ 3.0 to 3.6V	-20 to 75	PLQP0144KB-A
			HD6417145FW50V																																						-40 to 85	
			HD64F7145F50V	256K		F																																	Yes(User Debug Interface/ Advanced user's debugger)			-20 to 75	
			HD64F7145FW50V																																							-40 to 85	
			HD6437145XXXF			M																																		–			-20 to 75	
			HD6437145XXXFW																																								-40 to 85	
			HD6437145WXXXF																																								-20 to 75	
			HD6437145WXXXFW																																									-40 to 85	
		SH7144	HD6417144F50V	–	8K	L	–	–									Separate bus (8/16-bit)																											-20 to 75	PRQP0112JB-A
			HD6417144FW50V																																							-40 to 85	
			HD64F7144FW50V	256K		F																																	Yes(User Debug Interface/ Advanced user's debugger)			-20 to 75	
			HD64F7144F50V																																								-40 to 85	
			HD6437144WXXXFW			M																																		–			-20 to 75	
			HD6437144XXXF																																									-40 to 85	
			HD6437144XXXFW																																									-20 to 75	
			HD6437144WXXXF																																									-40 to 85	
	SH7060	SH7065	HD64F7065AF60V	256K	8K	F	–	–	SH2-DSP core	182	16 (@60MHz)	–	–	4(two of them are available externally)	–	Direct connection to ROM/SRAM/ DRAM/EDO DRAM is supported	Separate bus (8/16/32-bit)	–	10-bit x 8	8-bit x 2	–	5 (TPU x 2, CMT x 2, MMT)	–	4 (shared with TPU)	6 (MMT)	1	3	–	–	–	–	–	–	–	–	–	–	8	110	9	–	–	60MHz/3.3V (some of external I/O are available at 5V)	-20 to 75	PLQP0176KC-A
			HD6437065AXXXF			M																																						PLQP0176KD-A
	SH7047	SH7049	HD6437049XXXF	128K	8K		–	–	SH-2 core	62	20 (@50MHz)	–	–	–	DTC	Direct connection to ROM/ SRAM is supported	Separate bus (8-bit)	–	10-bit x16	–	–	8 (MMTx 1, MTUx 5, CMTx 2)	–	2 (shared with MTU)	2 (MTU, MMT)	1	3(SCI)	–	–	–	1	–	–	–	–	–	16	53	5	–	–	50MHz/5.0V	-20 to 75	PRQP0100KB-A
			HD6437049XXXFW																																								40MHz/5.0V	-40 to 85	
		SH7047	HD64F7047F50V	256K	12K	F																																					50MHz/5.0V	-20 to 75	
			HD64F7047FW40V																																								40MHz/5.0V	-40 to 85	
		SH7109	HD6437109XXXF	128K	4K										–											2(SCI)														–			-20 to 75	
			HD6437109XXXFW																																									-40 to 85	
		SH7107	HD6437107XXXF	64K	4K	M																																					-20 to 75	
			HD6437107XXXFW																																									-40 to 85	
		SH7105	HD6437105XXXF	256K	8K																																							-20 to 75	
			HD6437105XXXFW																																									-40 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Oz : OzROM version

SH7046 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7046	SH7046	HD64F7046F50V HD64F7046FW50V	256K	12K	F	–	–	SH-2 core	62	20 (@50MHz)	–	–	–	DTC	–	–	–	10-bit x 12	–	–	8(MTU x 5, CMTx 2, MMT x 1)	–	2(shared with MTU)	2(MTU, MMT)	1	2(SCI)	–	–	–	–	–	–	–	–	–	12	42	5(NMI, IRQ x 4)	–	–	50MHz/4.0 to 5.5V	-20 to 75	PRQP0080JD-A
		SH7148	HD6437148RXXXF HD6437148RXXXFW	64K	4K	M																																				-40 to 85	
		SH7048	HD6437048XXXF HD6437048XXXFW	128K	4K																																					-20 to 75	
		SH7101	HD6437101XXXF HD6437101XXXFW	32K	2K						25 (@40MHz)								10-bit x 8			7(MTUx 5, CMTx 2)			1(MTU)																	-40 to 85	
		SH7108	HD6437108XXXFW HD6437108XXXF	128K	4K						20 (@50MHz)				–				10-bit x 12			8(MTU x 5, CMTx 2, MMT x 1)			2(MTU, MMT)																	-20 to 75	
		SH7106	HD6437106XXXF HD6437106XXXFW	64K	4K																																					-40 to 85	
		SH7104	HD6437104XXXF HD6437104XXXFW	256K	4K																																					-20 to 75	
																																									-40 to 85	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7040, 7010 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7040	SH7045	HD64F7045F28V	256K	4K(2K)*	F	–	1K	SH-2 core	62	35 (@28.7MHz)	–	–	4(two of them are available externally)	DTC	Direct connection to ROM/ SRAM/ DRAM is supported	Separate bus (8/16/32-bit)	–	10-bit x 8	–	–	7 (MTU x 5, CMT x 2)	–	2 (shared with MTU)	1 (shared with MTU)	1	2	–	–	–	–	–	–	–	8	74	9	–	–	28.7MHz/5.0V	-20 to 75	PRQP0144KB-A
			HD64F7045FI28V																																						-40 to 85	FP-144
			HD6437045XXXFI			M																																				
			HD6437045XXXF																																						-20 to 75	PRQP0144KB-A
		SH7044	HD64F7044FI28V	256K	4K(2K)*	F											Separate bus (8/16-bit)																									-40 to 85	PRQP0112JA-A
			HD64F7044F28V																																						-20 to 75	
			HD6437044XXXFI			M																																			-40 to 85	
			HD6437044XXXF																																						-20 to 75	
		SH7043	HD6437043AXXXF	128K	4K(2K)*						63(@16MHz)						Separate bus (8/16/32-bit)																									PRQP0144KB-A
			HD6437043AXXXFI																																						-40 to 85	FP-144
			HD6477043AVF16V			O																																			28.7MHz/5.0V, 16.7MHz/3.3V	-20 to 75	
			HD6477043AFI28V																																						16.7MHz/3.3V	-40 to 85	
			HD6477043AF28V								35 (@28.7MHz)																														28.7MHz/5.0V	-20 to 75	PRQP0144KB-A
		SH7042	HD6437042AXXXF	128K	4K(2K)*	M	–	1K						4(two of them are available externally)				–	10-bit x 8	–	–	7 (MTU x 5, CMT x 2)	–	2 (shared with MTU)	1 (shared with MTU)	1	2	–	–	–	–	–	–	–	8	74	9	–	–	28.7MHz/5.0V, 16.7MHz/3.3V	-20 to 75	PRQP0112JA-A
			HD6437042AXXXFI																																						-40 to 85	
			HD6437042AXXXXI																																						16.7MHz/3.3V	-20 to 75	PTQP0120LA-A
			HD6437042AXXXX																																								
			HD6477042AVF16V																																								
			HD6477042AF28V			O					63 (@16MHz)						Separate bus (8/16-bit)																									28.7MHz/5.0V	-40 to 85	PRQP0112JA-A
			HD6477042AFI28V								35 (@28.7MHz)																															
			HD6477042AVX16V								63(@16MHz)																														16.7MHz/3.3V	-20 to 75	PTQP0120LA-A
		SH7041	HD6417041AF28V	–	4K(2K)*	L					35 (@28.7MHz)						Separate bus (8/16/32-bit)																									28.7MHz/5.0V		PRQP0144KB-A
			HD6417041AVF16V																																					16.7MHz/3.3V		FP-144
			HD6417041ACFI28V																																					28.7MHz/5.0V	-40 to 85	
			HD6437041AXXXFI	64K		M																																		28.7MHz/5.0V, 16.7MHz/3.3V		
			HD6437041AXXXF																																						-20 to 75	PRQP0144KB-A
		SH7040	HD6417040AF28V	–	4K(2K)*	L					60 (@16.7MHz)						Separate bus (8/16-bit)																									28.7MHz/5.0V	-40 to 85	PRQP0112JA-A
			HD6417040AF28V																																							
			HD6417040AVF16V																																						16.7MHz/3.3V	-20 to 75	
			HD6417040AVFI16V																																							-40 to 85	
			HD6437040AXXXFI	64K		M					35 (@28.7MHz)																														28.7MHz/5.0V, 16.7MHz/3.3V		
			HD6437040AXXXF																																						-20 to 75	
			HD6437040AXXXXI								60 (@16.7MHz)																														16.7MHz/3.3V	-40 to 85	PTQP0120LA-A
			HD6437040AXXXX																																							-20 to 75	
	SH7010	SH7017	HD64F7017FI28V	128K	4K(2K)*	F	–	1K	SH-2 core	62	35 (@28.7MHz)	–	–	2(two of them are available externally)	–	Direct connection to ROM/ SRAM/ DRAM is supported	Separate bus(8/16-bit)	–	10-bit x 8 (Middle speed)	–	–	5(MTU x 3, CMTx 2)	–	2(shared with MTU)	–	1	2	–	–	–	–	–	–	–	8	74	7	–	–	28.7MHz/5.0V	-40 to 85	PRQP0112JB-A
		SH7016	HD6437016XXXF	64K	3K(1K)*	M													10-bit x 8 (High-speed)																				35				-20 to 75	PRQP0112JA-A
		SH7014	HD6417014F28V	–	3K(1K)*	L																																					
			HD6417014RF28V																																								
		SH7011	HD6417011VTE20V	–	4K		–	–			50(@20MHz)			–		Direct connection to ROM/SRAM is supported	Separate bus(16-bit)		10-bit x 7		2(TIM1, TIM2)		–		–	–	–	1								–	11	9			20MHz/3.3V		PTQP0100KA-A

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7030, 7020 Series

Device				Memory					CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I²Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
General-purpose	SH7030	SH7034B	HD6417034BVF20V	–	4K	L	–	–	SH-1 core	56	50 (@20MHz)	–	–	4(two of them are available externally)	–	Direct connection to ROM/ SRAM/ DRAM is supported	Separate bus(8/16-bit)	–	10-bit x 8	–	–	5(ITU)	–	1(shared with ITU)	1(shared with ITU)	1	2	–	–	–	–	–	–	–	–	8	32	9	–	–	20MHz/3.3V	-20 to 75	PRQP0112JA-A
			HD6417034BVFW20V																				ITU	–																-40 to 85	
			HD6417034BVX20V																				1(shared with ITU)	1(shared with ITU)																-20 to 75	PTQP0120LA-A
			HD6437034BXXXF	64K		M					80 (@12.5MHz)																												12.5MHz/3.3V	-40 to 85	PRQP0112JA-A
			HD6437034BXXXE																				ITU	–																-20 to 75	PTQP0120LA-A
			HD6437034BXXXX																																				-40 to 85	PRQP0112JA-A
			HD6437034BXXXW																																				-40 to 85	PTQP0120LA-A
		SH7034	HD6417034FI20V	–	4K	L					50(@20MHz)																												20MHz/5.0V		
			HD6417034VF12								80 (@12.5MHz)																												12.5MHz/3.3V	-20 to 75	
			HD6417034VFI12																																					-40 to 85	
			HD6417034F20V								50(@20MHz)																												20MHz/5.0V	-20 to 75	
			HD6417034VX12								80(@12.5MHz)																												12.5MHz/3.3V		PTQP0120LA-A
			HD6437034AXXXFI																																				20MHz/5.0V, 12.5MHz/3.3V	-40 to 85	PRQP0112JA-A
			HD6437034AXXXF																																					-20 to 75	PTQP0120LA-A
			HD6437034AXXXX																																					-40 to 85	
			HD6437034AXXXXI																																						PRQP0112JA-A
			HD6477034FI20V	64K		M					50 (@20MHz)												1 (shared with ITU)	1 (shared with ITU)																20MHz/5.0V	-20 to 75	
			HD6477034F20V																																				12.5MHz/3.3V		PTQP0120LA-A
			HD6477034VF12			O					80(@12.5MHz)																												20MHz/5.0V		
			HD6477034X20V								50 (@20MHz)																												12.5MHz/3.3V		PRQP0112JA-A
		SH7032	HD6417032F20V	–	4K	L																																20MHz/5.0V		PTQP0120LA-A
			HD6417032VF12V																																				12.5MHz/3.3V		PRQP0112JA-A
			HD6417032FI20V																																				20MHz/5.0V	-40 to 85	
	SH7020	SH7021	HD6437021SXXXX	32K	1K	M	–	–	SH-1 core	56	50 (@20MHz)	–	–	4(two of them are available externally)	–	Direct connection to ROM/ SRAM/ DRAM is supported	Separate bus(8/16-bit)	–	–	–	–	5(ITU)	–	1(shared with ITU)	1(shared with ITU)	1	2	–	–	–	–	–	–	–	–	8	32	9	–	–	20MHz/5.0V, 12.5MHz/3.3V	-20 to 75	PTQP0100KA-A
			HD6437021SXXXXI																																					-40 to 85	
			HD6477021X20IV			O																																	20MHz/5.0V		
			HD6477021VX12V																																				12.5MHz/3.3V	-20 to 75	
			HD6477021X20V																																				20MHz/5.0V		
		SH7020	HD6417020VX12IV	–	1K	L					80(@12.5MHz)																												12.5MHz/3.3V	-40 to 85	
			HD6417020X20IV								50 (@20MHz)																												20MHz/5.0V		
			HD6417020X20V																																					-20 to 75	
			HD6437020SXXXXI	16K		M																																20MHz/5.0V, 12.5MHz/3.3V	-40 to 85	
			HD6437020SXXXX																																					-20 to 75	

★ : New product ★★ : Under development
*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version

SH7050, 7250, 7450 Series

Device				Memory						CPU					DMA		External Bus Interface		Clock	ADC	DAC	Timer					Watchdog timer	Serial Interface		I^2Cbus	SSU/ Special Serial I/O	CAN	Ethernet	USB HOST	USB Function	LCD	I/O Port		External Interrupt Pins	On-Chip Debug Function	Other Functions	Operating Frequency/ Supply Voltage	Operating Ambient Temperature (°C)	Package Code
Application	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	RRPROM (bytes)	ROM Type*	Data flash/ E2Data flash	Cache Memory	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	FPU	MMU	DMAC (channels)	DTC/DMACII	Bus State Controller	Bus structure	Real Time Clock	Resolution x Channels	Resolution x Channels	8-bit	16-bit	32-bit	2-Phase Encoder Input	3-Phase Inverter Control		Clock Sync./ Clock Async.	Clock Sync. Only			Channels					Input Only (Numbers)	CMOS I/O (Numbers)		On-Chip Debug	Others			
Power train	SH7050	SH7055	HD64F7055SBP40K HD64F7055SF40K	512K	32K	–	F	–	–	SH-2E core	79	25(@40MHz)	Yes	–	4	–	ROM/ SRAM	Separate bus (8/16-bit)	–	10-bit x 32	–	–	65 (ATU-II)	–	–	–	1	5	–	–	–	2	–	–	–	–	–	149	9	–	–	40MHz/3.3V (External I/O : 5.0V, Bbus : 3.3V)	-40 to 125	PRBG0272FA-A
		SH7058S	R4F70580SCK80BGV R4F70580SCK80FPV	1M	48K							12.5(@80MHz)																			2										80MHz/3.3V (External I/O : 5.0V, bus : 3.3V)		PRQP0256KB-A PRBG0272FA-A PRQP0256KB-A
		SH7059	R4F70590K80FPV R4F70590K80BGV	1.5M	80K																																					PRBG0272FA-A
	SH7250	SH7253	R5F72533KFPU**	2M	96K	32K	F	–	–	SH2A-FPU core	112	6.25(@160MHz)	Yes	–	66 (8(DMAC) + 58(A-DMAC))	–	–	–	–	12-bit x 32	–	–	28 (Timer E, G, J)	5 (Timer A, H)	–	–	1	3	–	–	2(RSPI)	2	–	–	–	–	23	89	5	Yes	–	160MHz/3.3V (external I/O : 5.0V, bus : 3.3V)	-40 to +125	PLQP0176KB-A
			R5F72531KFPU	1.25M	64K							8.3(@120MHz)																													120MHz/3.3V (external I/O : 5.0V, bus : 3.3V)		
			R5F72531DKFPU									6.25(@160MHz)																													160MHz/3.3V (external I/O : 5.0V, bus : 3.3V)		
		SH7254R	R5F72543RKBGV	2M	128K	128K						5(@200MHz)			74 (8(DMAC) + 66(A-DMAC))		ROM/ SRAM	Separate bus (8/16-bit)		12-bit x 37			32 (Timer E, G, J)	7 (Timer A, H)				5			3(RSPI)	3					–	144	9			200MHz/3.3V (external I/O : 5.0V, bus : 3.3V)		PRBG0272FA-A
			R5F72544RKBGV	2.5M																																						
			R5F72546RKBGV**	3.75M	256K																																							
		SH7256R	R5F72567RKBGV**	4M	256K										86 (8(DMAC) + 78(A-DMAC))								36 (Timer E, G, J)									4											
Active safety	SH7450	SH7450	R5F74504KBG	2M	8K + 16K(High speed) + 512K(Middle speed)	–	F	–	32K(instruction), 32K(data), 4-wayset-associative	SH-4A core	103	4.1(@240MHz)	Yes	Yes	12	Yes	SRAM/ ROM	Separate bus (8/16/32-bit)	–	12-bit x 16, 12-bit x 8	–	–	6 (TimerG)	5 (TimerA x 12, TMUx 3)	4 (shared with TimerF)	5 (shared with TOU)	1	4	–	1	–	5	–	–	–	–	24	142	9	Yes	Direct RAM input interface Direct RAM output interface Parallel DAC control	240MHz/1.5V (internal), 3.3V, 5V, 240MHz/1.5V (internal), 3.3V, 240MHz/1.5V (internal), 5.0V	-40 to 125	PRBG0292GB-A
		SH7451	R5F74513KBG	1.5M	8K + 16K(High speed) + 512K(Middle speed)																																			240MHz/1.5V (internal), 3.3V, 5V, 1.5V (internal), 3.3V, 1.5V (internal), 5.0V		
		SH7455	R5F74552KBG	1M	8K + 16K(High speed) + 256K(Middle speed)							6.25(@160MHz)					–	–		12-bit x 8, 12-bit x 8											4						92	7			160MHz/1.5V (internal), 3.3V, 5V, 1.5V (internal), 3.3V, 1.5V (internal), 5.0V		PRBG0176GA–A
		SH7456	R5F74562KBG**	1M	8K + 16K(High speed) + 256K(Middle speed)																																							

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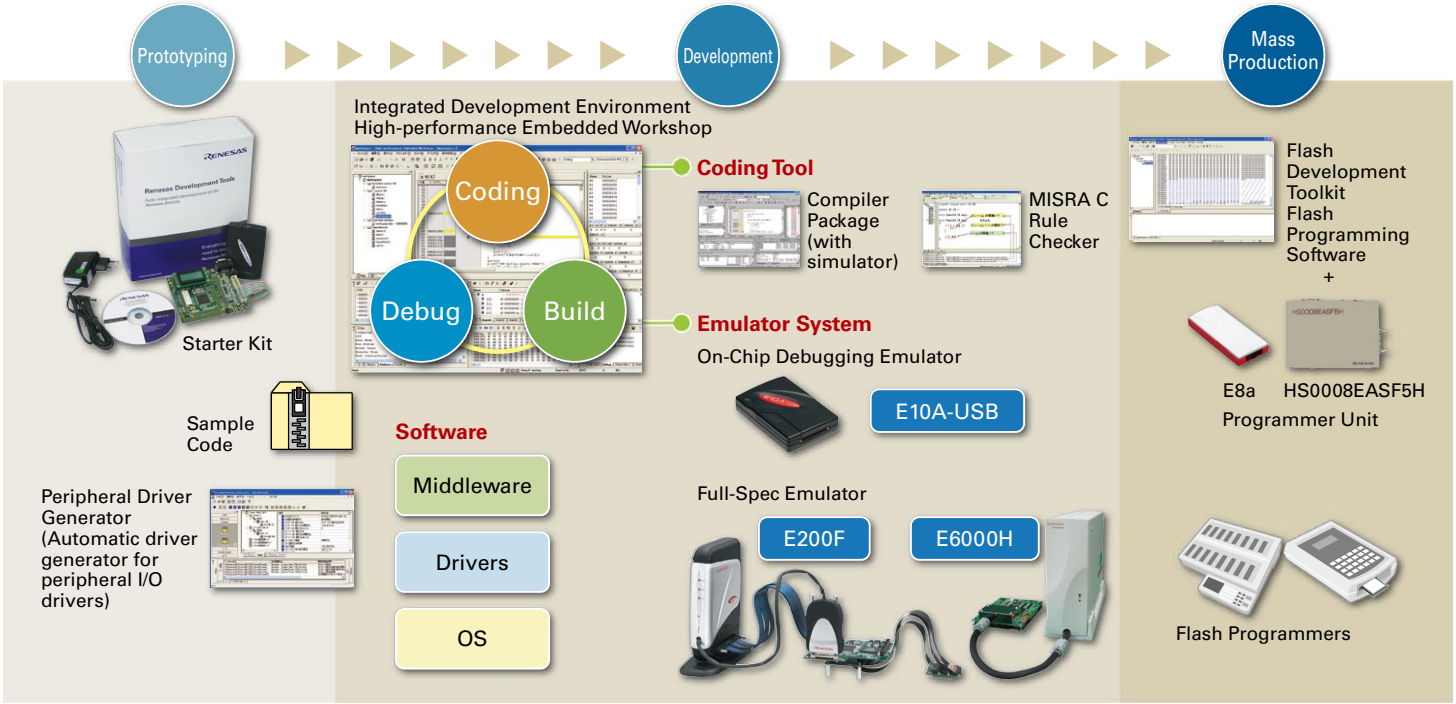
Tool Chain Overview



*A free evaluation version of the coding tool and flash programming software (Flash Development Toolkit) is provided.

SuperH Family Development Tool Lineup

MCU	Real Time OS	Software Tool	Emulator		Programming Tool
			On-Chip Debugging Emulator	Full-Spec Emulator	Programmer*4
SH4A-MULTI	–	C/C++ Compiler Package for SuperH Family (An integrated development environment*3, compiler and simulator are included. The emulator-debugger is bundled with the emulator.)	E10A-USB	–	–
SH-4A Core	HI7750/4, HI7700/4*1, HI7300/PX*2			–	E8a*5, HS0008EASF5H*5 *6
SH-4 Core				–	–
SH-3 Core	HI7700/4*1			–	–
SH2A-DUAL	HI7200/MP			–	–
SH-2A Core	HI7000/4			E200F	E8a*5, HS0008EASF5H*5 *6
SH-2 Core (including SH/Tiny)				E200F, E6000H	E8a*5, HS0008EASF5H*5 *6

*1. Compatible microcontrollers: SH-3, SH3-DSP and SH4AL-DSP
*2. Compatible microcontrollers: SH-4A and SH4AL-DSP
*3. The High-performance Embedded Workshop is provided as an integrated development environment.
*4. This programmer is for Renesas Flash on-board microcontrollers.
*5. The E8a and HS0008EASF5H are usable with the Flash Development Toolkit [R0C00000FDW04R] (Free evaluation version available).
*6. The HS0008EASF5H is used together with the F-ZTAT microcontroller on-board writing program Ver. 5.0 [HS6400FWIW5SR].
*For information about microcontrollers compatible with the emulator or emulator specifications, access the website: http://www.renesas.com/emulation_debugging
Compatible emulators may vary according to the microcontroller part number.

SuperH Tool

Get up and running quickly: Starter kit

Want to start evaluating the SuperH right away? The Renesas Starter Kit is just what you need. It brings together in a single package all the development tools needed for microcontroller evaluation and initial implementation. The control signals from the microcontroller are output to the expansion board interface of the CPU board, allowing connection to the target system under development for easy debugging.

Including:

- SuperH On-board CPU Board
- On-Chip Debugging Emulator E10A-USB for Starter Kit
- Multi region power supply
- Free evaluation version of the C/C++ Compiler Package (with simulator)
- Free evaluation version of the Flash Development Toolkit
- The High-performance Embedded Workshop is provided as an integrated development environment.

■Renesas Starter Kit for SuperH RISC engine Family

Target Device		Product Name	Part Number
Series	Group		
SH/Tiny	SH/7124, SH7125	Renesas Starter Kit for SH7124	R0K571242S001BE
SH7080	SH7083, SH7084, SH7085, SH7086	Renesas Starter Kit for SH7086	R0K570865S001BE
SH7137	SH7131, SH7132, SH7136, SH7137	Renesas Starter Kit for SH7137	R0K571374S000BE
SH7200	SH7201	Renesas Starter Kit for SH7201	R0K572011S001BE
	SH7203	Renesas Starter Kit+ for SH7203	R0K572030S000BE
SH7210	SH7211	Renesas Starter Kit for SH7211	R0K572115S001BE
SH7216	SH7214, SH7216	Renesas Starter Kit+ for SH7216	R0K572167S000BE
SH7243, SH7280	SH7243, SH7285, SH7286	Renesas Starter Kit for SH7286	R0K572867S000BE
SH7260	SH7262, SH7264	Renesas Starter Kit+ for SH7264	R0K572643S000BE (with Linux CD)
			YR0K572643S000BE-L (without Linux CD)
SH7670	SH7670	Renesas Starter Kit+ for SH7670	R0K576700S000BE

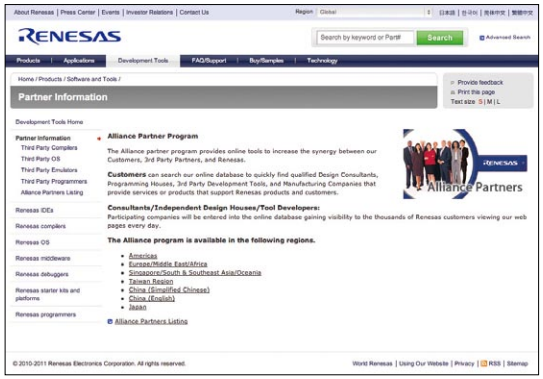
Visit this website for information about development environment products.

SuperH Family Development Environment Site
http://www.renesas.com/sh_tools

Partner Alliances

The Alliance Partner Program is a web system that provides Renesas microcontroller users with the latest information about a wide variety of solutions using partner company products and services in coordination with Renesas products.

Over 700 partner companies worldwide provide development tool products and a variety of services for Renesas microcontrollers needed by Renesas customers for product development. Renesas will continue strengthening and expanding its coordination with partner companies in the future and prepare the optimal solutions for our customers.



Strong alliances with over 700 partner companies worldwide

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http://www.renesas.com/sh_partners

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