



H8 Value Series Microcontrollers

**EASY TO BUY,
EASY TO USE AND
EASY TO DEVELOP
FOR COST-SENSITIVE
APPLICATIONS**

Overview

Renesas' 16-bit, high-performance H8 Value Series microcontrollers (MCUs) are low-cost embedded system solutions with up to 128KB of ROM. These devices, operating at 3V or 5V, are easy to buy, easy to use and easy to develop for a wide range of cost-sensitive embedded system applications, such as residential security systems, USB dongles, barcode scanners, and more.

Versatile Set of Features

- High-performance
16-bit CPU: 25MHz
- Minimum instruction execution time: 40ns
- Operating voltage range:
3.0 to 3.6V, or 4.5V to 5.5V
- Available in flash, mask ROM and ROMless versions
- 2 or 3 channels of serial communication interface
- Up to 6-channel 16-bit timer pulse unit (TPU)
- Up to 12 channels of 10-bit A/D converter
- Available in 100-, 128- and 144-pin QFP packages

Versatile Features

- + Competitive Pricing
 - + Full-Featured Tools
-
- = **Easy Decision**

Easy to Buy

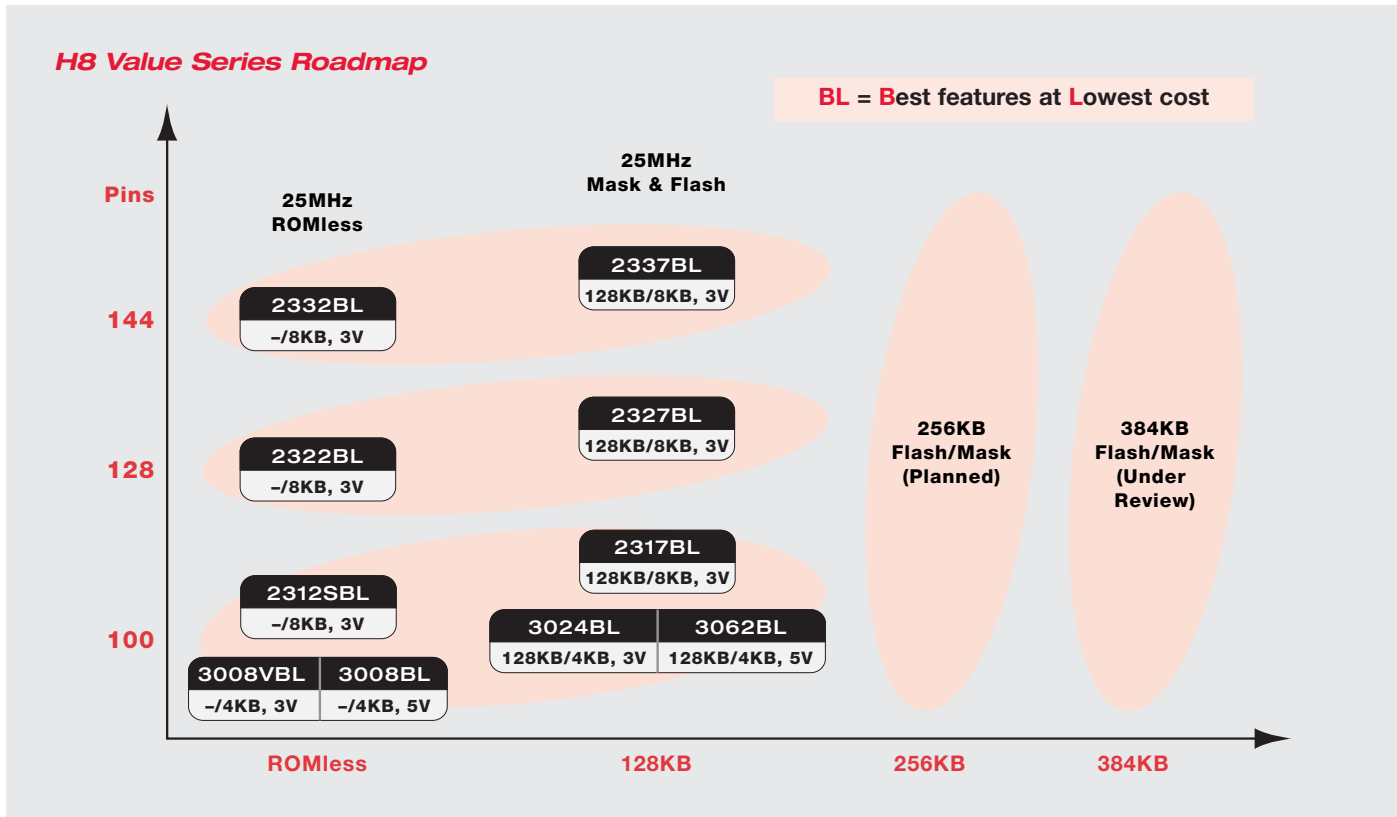
- Fixed low-cost, single-volume price published online
- Automatic annual price adjustment
- In stock, quick availability
- Detailed online information for fast decisions

Easy to Use

- Code compatible with other H8 series MCUs
- Low-cost Evaluation Design Kit
- Low-cost on-chip debugger with JTAG interface
- Powerful real-time, zero-wait-state in-circuit emulator
- Highly-optimized compiler, assembler, linker and debugger
- User-friendly tools for in-application flash reprogramming
- Online technical documentation: H/W manual, app notes, etc.
- Supported by third-party tools, including RTOS, compiler, firmware
- User-friendly online training and local FAE support

H8S CPU Core 25MHz (40ns)	Flash/Mask: 0 or 128KB
External Bus Interface	RAM: 4KB or 8KB
Interrupt Controller	16-bit TPU
A/D (8 ch x 10-bit)	8-bit Timer (2 ch)
D/A (2 ch x 8-bit)	Watchdog Timer (1 ch)
DTC (85 ch)	Serial Interface (2 ch)
DMAC (4 ch) (2322BL, 2327BL only)	3rd ch (2322, 2327 only)
	16-bit PPG (2322BL, 2327BL only)

H8 Value Series: Roadmap • Applications • Selector



Applications

Computing: PC peripherals, barcode scanners, label printers, touch-screen controllers, USB dongles

Consumer: White goods, security systems, ID readers, cell phones, Smart Card readers

Industrial: HVAC systems, utility meters, gas pumps, water distribution controllers, GPS systems, emission test equipment

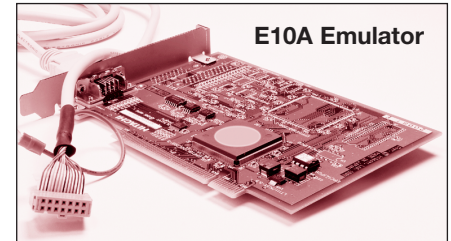
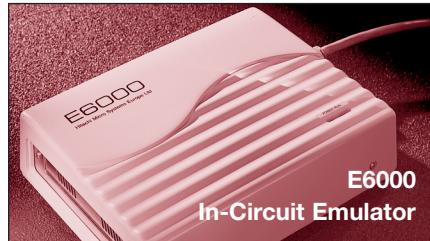
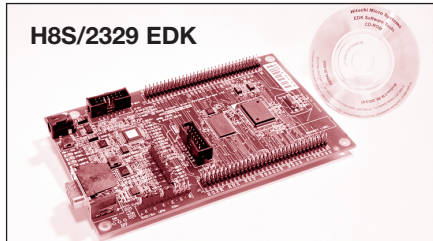
H8 Value Series Selector Guide

Part No.	ROM Type*	ROM (KB)	RAM (KB)	Vcc Min	Vcc Max	Max Freq (MHz)	Power Down Modes	16-bit Timer (ch)	8-bit Timer (ch)	Watchdog Timer	PPG (bits)	10-bit ADC (ch)	8-bit DAC (ch)	DTC (ch)	DMAC (ch)	Serial Async/Sync (ch)	Smart Card I/F	Interrupts	External Bus I/F	General Purpose I/O	Package	Mass Production
HD6413008FBL25	L	0	4	4.5	5.5	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	47	FP-100B	Now
HD6433062BFBL	M	128	4	4.5	5.5	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	79	FP-100B	Now
HD64F3062BFBL25L	F	128	4	4.5	5.5	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	79	FP-100B	Now
HD6413008VFBL25	L	0	4	3	3.6	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	47	FP-100B	Now
HD6433024FBL	M	128	4	3	3.6	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	79	FP-100B	Now
HD64F3024FBL25	F	128	4	3	3.6	25	5	3	4	1	-	8	2	-	-	2	Y	7	Y	79	FP-100B	Now
HD6412312SVTEBL25	L	0	8	3	3.6	25	5	6	2	1	-	8	2	85	-	2	Y	9	Y	47	TFP-100B	Now
HD6432317STEBL	M	128	8	3	3.6	25	5	6	2	1	-	8	2	85	-	2	Y	9	Y	79	TFP-100B	Now
HD64F2317VTEBL25	F	128	8	3	3.6	25	5	6	2	1	-	8	2	85	-	2	Y	9	Y	79	TFP-100B	Now
HD6412322RVFBL25	L	0	8	3	3.6	25	5	6	2	1	16	8	2	85	4	3	Y	9	Y	63	FP-128B	Now
HD6432327FBL	M	128	8	3	3.6	25	5	6	2	1	16	8	2	85	4	3	Y	9	Y	95	FP-128B	Now
HD64F2327BFVBL25	F	128	8	3	3.6	25	5	6	2	1	16	8	2	85	4	3	Y	9	Y	95	FP-128B	Now
HD6412332VFCBL25	L	0	8	3	3.6	25	5	6	2	1	16	12	4	85	4	3	Y	9	Y	86	FP-144G	Now
HD6432337FCBL	M	128	8	3	3.6	25	5	6	2	1	16	12	4	85	4	3	Y	9	Y	118	FP-144G	Now
HD64F2337FCBL25	F	128	8	3	3.6	25	5	6	2	1	16	12	4	85	4	3	Y	9	Y	118	FP-144G	Now

* F = Flash; L = ROMless; M = Mask

Minimum order quantity is 10,000pcs for mask ROM version; NRE price of \$6500 is required for mask ROM versions

H8 Value Series: Development Tools



Development Device Selector

Corresponding H8S "E" series devices for using on-chip Debug Emulator (E10)

Part No.	ROM/RAM (KB)	Supported Devices	
HD64F2319EVTE25	512/8	H8S/2317F,17,12S	
HD64F2329EVF25	384/32	H8S/2327BF,27,22R	
HD64F2339EVF25	384/32	H8S/2337F,37,32	
The H8/300H series do not have a corresponding device with on-chip debug; to debug with these, you must use the full In-Circuit Emulator (E6000)			

Development Tool Selector

H8S/2317F,17,12S, H8S/2327F,27,22R, H8S/2337F,37,32 devices			
H8S/2300 Value Series Development Kit: US2329-KIT1 comprising: USS008PXIW2SR On-chip Debug Emulator**: Also available separately E10A PCMCIA Card: HS2339KCM01H E6000 In-Circuit Emulator: E62339 (inc. PCI Interface card) E6000 Optional Emulator-to-PC Interface: PCI Interface Card HS6000EIC02HE PCMCIA Interface Card HS6000EIP01H LAN Interface Box HS6000ELN01H USB Interface Box HS6000EIU01H		Evaluation Design Kit: EDK2329 + USBAG-PSU1* E10A PCI Card: HS2339KCI01H E6000 Emulator Target Adapter EHB2318Q100B (TFP/FP-100B) EHB2328Q128 (TFP-128) JHB2338Q144G (FP-144)	
		Series	
		H8S/2317F	
		H8S/2317	
		H8S/2312S	
		H8S/2327BF	
		H8S/2327	
		H8S/2322R	
		H8S/2337F	
		H8S/2337	
		H8S/2332	

H8/3024F,24,08V, H8/3062F,62,08 devices			
H8/300H Value Series Development Kit: E63064B-KIT1 comprising: C/C++ Compiler, Asm, Linker: USS008PXIW2SR E6000 In-Circuit Emulator: E63064B Evaluation Design Kit: US3068EDK1 E6000 Optional Emulator-to-PC Interface: PCI Interface Card HS6000EIC02HE PCMCIA Interface Card HS6000EIP01H LAN Interface Box HS6000ELN01H USB Interface Box HS6000EIU01H		E6000 Emulator-to-PC Interface: PCI Interface Card HS6000EIC02HE E6000 Emulator Target Adapter: EHB3064BQ100B (FP-100B)	

NOTES:

All prices are Manufacturers Suggested Resale Price

* Power supply and serial cable for the evaluation board.

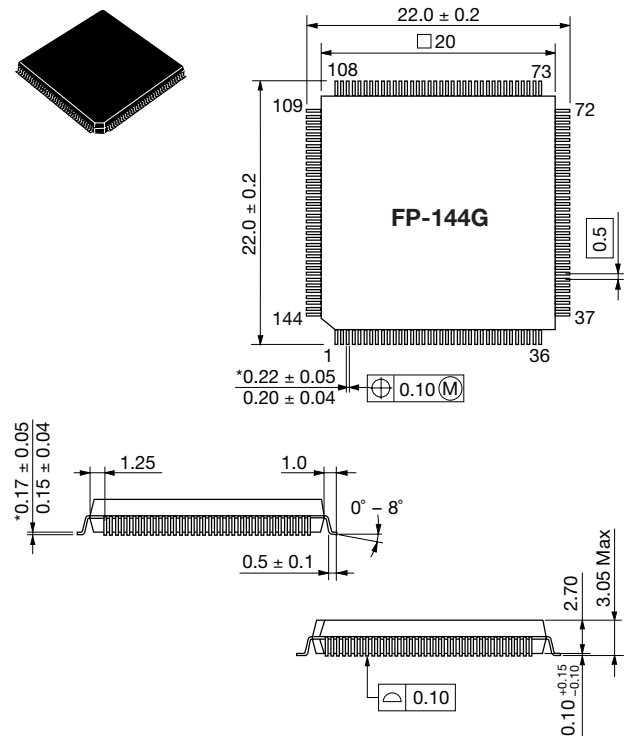
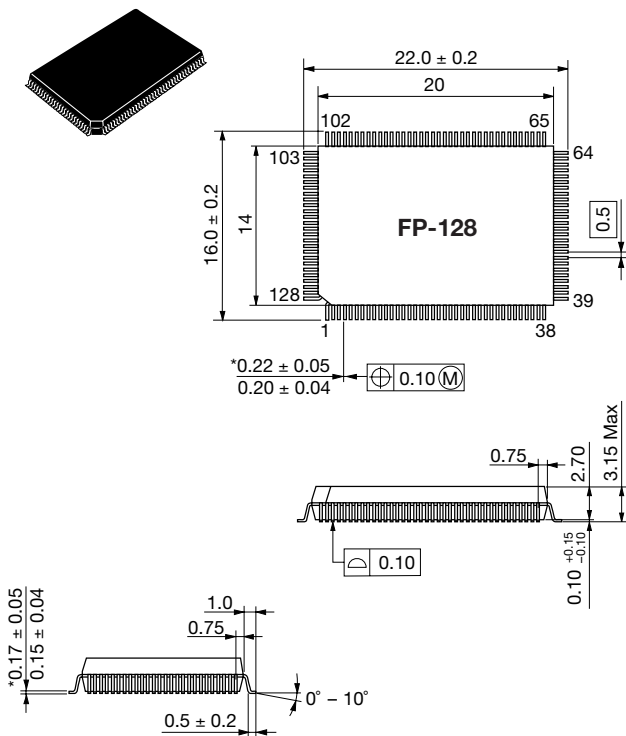
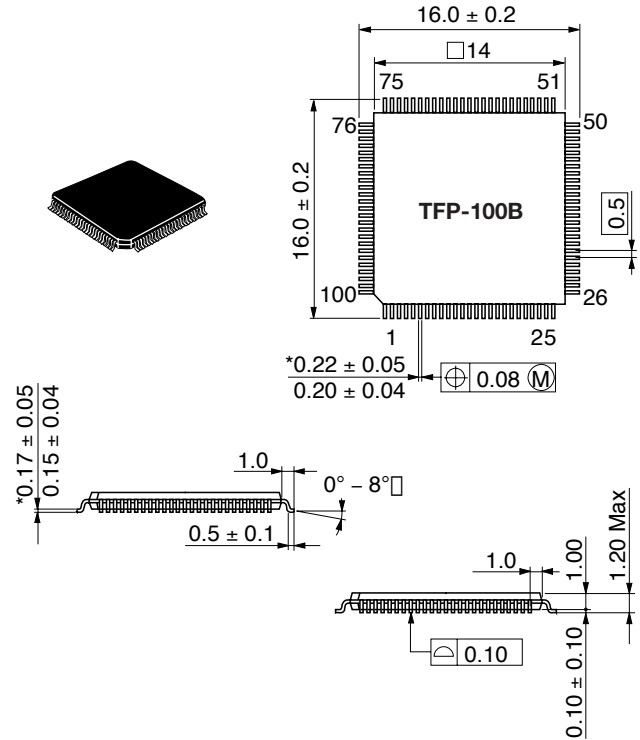
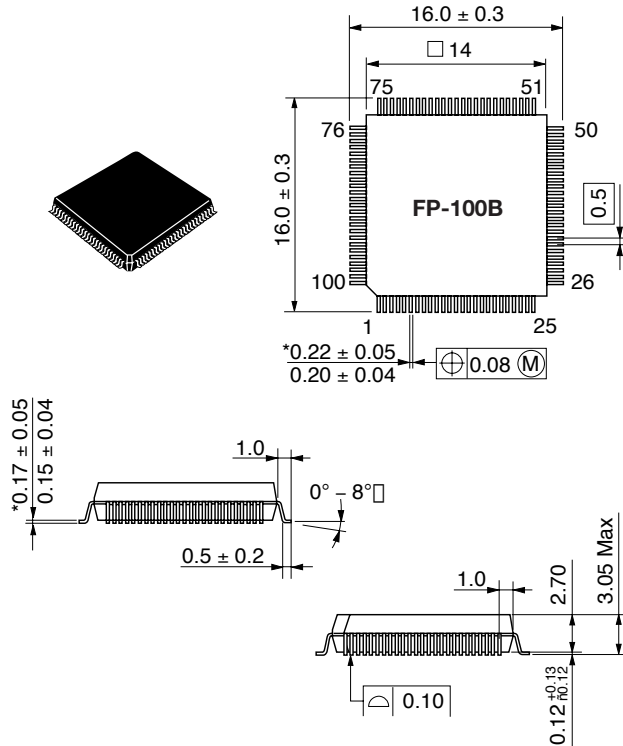
** For on-chip debug development you must use the corresponding "E" version development devices:
 Part # HD64F2319EVTE25, HD64F2329EVF25, HD64F2339EVF25

*** Promotional price for H8 Value Series customers only

Development Tool Features

Evaluation Design Kit		ENTRY LEVEL
• Includes monitor for C source code debug from HEW, using serial interface • 512Kb external SRAM • User LED indicators • Flash boot mode LED indicator • NMI and reset circuitry • 30-day evaluation C/C++ compiler included • EDK2329 has HD64F2329EVF25 "E" version development device and E10A (JTAG) interface for on-chip debug emulator		
HEW (High-performance Embedded Workshop)		VALUE DEVELOPMENT SYSTEM
• Flexible code development and debugging interface • Wizard for easy project setup • Fully-featured integrated editor • Optimized H8 C/C++ compiler toolchain • Graphical selection of toolchain options for project files • Hierarchical support for multiple projects in a workspace • Customizable integrated MAKE facility		
FDT (Flash Development Toolkit)		
• Supports direct connection to customer's own target • Supports BOOT and USER programming modes • Serial communication interface • Advance messaging levels to aid hardware development Free download and upgrade patches to support new devices are available at: www.eu.renesas.com/products/ mpumcu/tool/fdt/support.html		
E10A		FULL ICE
• On-chip debug emulator via JTAG interface • PCI or PCMCIA card form factors • 256 PC breakpoints • Hardware breakpoint on address and data • 4-level branch trace • Single stepping at C and assembly level • Ability to program on-chip Flash		
E6000 In-Circuit Emulator		
• Zero wait state/real-time in-circuit emulator • 256 PC breakpoints • 12 sequenceable complex hardware breakpoint events • 80-bit wide, 32k-cycle trace buffer • Four user logic probes • Multiple target clock selection • HDI debugging software included		
HDI (High-Level Debugging Interface)		
• C/C++ level, assembler or mixed debugging • Graphical control over emulator breakpoint, trace and mapping functions • Step-over, step-into, step-out functions • Register display • C-level watch points • Memory window		

H8 Value Series Package Outlines



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