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Understanding Embedded - Microprocessors

Embedded microprocessors are specialized computing chips designed to perform specific tasks within an embedded system. Unlike general-purpose microprocessors found in personal computers, embedded microprocessors are tailored for dedicated functions within larger systems, offering optimized performance, efficiency, and reliability. These microprocessors are integral to the operation of countless electronic devices, providing the computational power necessary for controlling processes, handling data, and managing communications.

Applications of Embedded - Microprocessors

Embedded microprocessors are utilized across a broad spectrum of applications, making them indispensable in

Details

Product Status	Active
Core Processor	ARM® Cortex®-A9
Number of Cores/Bus Width	1 Core, 32-Bit
Speed	400MHz
Co-Processors/DSP	Multimedia; NEON™ MPE
RAM Controllers	SDRAM, SRAM
Graphics Acceleration	Yes
Display & Interface Controllers	VDC
Ethernet	10/100Mbps
SATA	-
USB	USB 2.0 (2)
Voltage - I/O	1.2V, 3.3V
Operating Temperature	-40°C ~ 85°C (TA)
Security Features	-
Package / Case	176-LFBGA
Supplier Device Package	176-LFBGA (8x8)
Purchase URL	https://www.e-xfl.com/product-detail/renesas-electronics-america/r7s721034vcbg-ac0

RENESAS

R7S721034VCBG

Product Info

Product Spec

Basic Information   Memory   CPU (Bit, Clock, DMA, External Bus etc)   Timers   Analog
Interfaces   Display Functions   Operating Conditions   Remarks   Package

Basic Information	
Product Status	Under Development
Family	RZ
Series	RZ/A
Group	RZ/A1LC

Memory	
Program memory	0 KB ROMless
RAM	2048 KB
Cache Memory Remark	Primary cache:64KB(instruction32KB/data32KB), TLB128 Secondary cache:128KB(CorelinkTMLevel2 Cache Controller L2C-310)

CPU (Bit, Clock, DMA, External Bus etc)	
CPU	Cortex-A9 (32-bit)
Max. Frequency	400 MHz
Sub-Clock (32.768 kHz)	YES
PLL	YES
Real-Time Clock (RTC)	YES
Power-On Reset	YES
Memory Management Unit	YES
Floating Point Unit	YES
DMA Remarks	DMAC x 16 ch
External Address/Data Bus	YES
External Interrupt Pins	109
I/O Ports	100

Timers	
16-bit Timers	5 ch

32-bit Timers	2 ch
Watchdog Timers	1 ch

Analog

A/D Converters	12-bit x 8 ch

Interfaces

CAN	2 ch
Ethernet	YES
USB Ports	2
USB Host	YES
USB Peripheral	YES
USB High-Speed Support	YES
USB Remarks	Low-speed Support (Host only)
CSIs	12 ch
SPIs	3 ch
UARTs	5 ch
I2Cs	4 ch
LIN	1 ch
IEBus	1 ch
Serial Interface Remarks	SCIF (CSI:5ch/UART:5ch), SCI(CSI:2ch), RSPI (SPI:2ch), SPI multi (SPI:1ch), SSI (CSI:4ch), SPDIF (CSI:1ch)

Display Functions

Operating Voltage	3 to 3.6 V
Power Supply	VCC = 1.10 to 1.26 V, PVCC = 3.0 to 3.6 V, PLLVCC = LVDSPLLVCC = 1.10 to 1.26 V, AVCC = 3.0 to 3.6 V, USBAVCC = USBUVCC = USBDVCC = 1.10 to 1.26 V, USBAPVCC = 3.0 to 3.6 V, VDAVCC = LVDSAPVCC = 3.0 to 3.6 V, USBDPVCC = 3.0 to 3.6 V, VSS = AVSS = 0 V
Operating Temperature	–40 to 85 ℃ (Ambient Temperature)

Operating Conditions

High-resolution display controller	VDC5: XGA (1024 x 768)

Remarks

Remarks	Automotive, General Purpose, LCD Control, Connectivity

Package

Pins	176
Terminal pitch (mm)	0.5 mm
Package Type	LFBGA
Dimensions (mm)	8x8 mm^2

Drawing Link	📄 plbg0176ka_a
Mount pad	📄 fig0013e
Mounting height (mm)[MAX]	1.4 mm
Mass (g) [TYP,]	0.14 g
Renesas code	PLBG0176KA-A
JEITA code	P-LFBGA176-8x8-0.50
Terminal material - Base	Sn-Ag-Cu
Terminal material - Surface	-