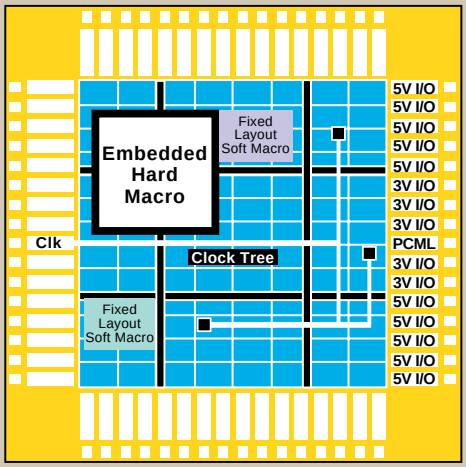
CE66 Series Embedded Array

0.35µm CMOS Technology

Features

- 0.28µm L_{eff} (0.34µm drawn)
- Propagation delay of 98 ps
- Mixed-signal macros: A/D and D/A converters
- High-density diffused RAMs and ROMs
- Separate core and I/O supply voltages
- I/Os: 5V, 3.3V, 5V tolerant
- Core power supply voltage: 3.3V, 2.5V~2.0V
- Junction temperature: -40ºC~125ºC
- Special I/Os: PCI, I^2C, USB
- Analog and digital PLLs
- Packaging options: QFP, HQFP, LQFP, TQFP, PBGA, FBGA
- Support for major third party EDA tools



Description

Fujitsu's CE66 is a series of high-performance, CMOS embedded arrays featuring mixed-signal macros, diffused high-speed RAMs, ROMs, and a variety of other embedded functions. The CE66 series combines the density and performance of standard cells with the time-to-market advantage of gate arrays. In addition, the I/Os, operating at 5V, 3.3V, and 5V tolerant conditions, are designed to provide cost-effective solutions for both core-limited and pad-limited designs. The CE66 series features a very low power consumption of 0.29µW/gate/MHz at 3.3V. Potential applications for the CE66 series include the consumer market, communications, and networking designs.

P-Series with 100µm Inline Pad Pitch

Frame	Total Gates	Total Pads	Signals
CE66P1	188K	144	126
CE66P2	233K	160	138
CE66P3	283K	176	132
CE66P4	337K	192	152
CE66P5	396K	208	178
CE66P6	427K	216	178
CE66P7	460K	224	178
CE66P8	528K	240	206
CE66P9	602K	256	228
CE66PA	680K	272	228
CE66PB	761K	288	228
CE66PC	847K	304	264
CE66PD	940K	320	264
CE66PE	1037K	336	264
CE66PF	1138K	352	312

S-Series with 70µm Inline Pad Pitch

Frame	Total Gates	Total Pads	Signals
CE66S1	91K	144	126
CE66S2	113K	160	138
CE66S3	137K	176	152
CE66S4	164K	192	160
CE66S5	207K	216	178
CE66S6	256K	240	193
CE66S7	311K	264	228
CE66S8	391K	296	248
CE66S9	481K	328	248
CE66SA	580K	360	312

CE66 Series Embedded Array

Mixed-Signal Macros

D/A Converters
- 8-bit: 220 MHz (video)
- 8-bit: 50 MHz (video)
- 8-bit: 1.5 MHz (general purpose)
- 10-bit: 30 MHz (general purpose)
- 10-bit: 1.5 MHz (general purpose)

A/D Converters
- 6-bit: 300 MHz (disk)
- 8-bit: 50 MHz (video)
- 10-bit: 20 MHz (general purpose)
- 10-bit: 1 MHz (general purpose)

Multiplier Compiler
- Multiplicand (m): $4 < m < 32$
- Multiplier (n): $4 < n < 32$ (even numbers only)

Memory Macros
- SRAM Compiler: single and dual port (1 R/W, 1R), up to 72K bits per block, partial write option
- ROM Compiler: up to 512K bits per block
- Delay line: up to 32K bits

Phase-Locked Loops
- Analog: 50-200 MHz
- Digital: 180-360 MHz (Preliminary)

I/Os
- 3.3V, 5V, and 5V tolerant
- Slew-rate controlled
- CMOS, TTL, LVTTL, T-LVTTL, SDRAM I/F, PCI, I^2C, USB

SOC IP Cores

ARC 32-bit RISC
832/833/835 SPARClite Hard Macros
Oak DSP Hard Macro
10/100 MAC
64/256 QAM
MPEG2 Decoder/Demultiplexer
8VSB TV Demodulator
AC-3 Dolby Voice Decoder
JPEG Encoder and Decoder
PCI–33/66 MHz, 32/64-bit cores
USB Host Controller/Device
I^2C
IDE (ATA3) Host Controller
Smart Card I/F
IRDA I/R Interface
More IPs are being added

ASIC Design Kit and EDA Support	
Verilog Logic Simulators from Cadence, Synopsys, and Mentor	Verilog-XL, NC-Verilog, VCS, Model-sim (Verilog)
VHDL/VITAL Logic Simulators from Synopsys, Cadence, and Mentor	VSS, Model-sim (VHDL), V-System, Leapfrog
Synthesis, DFT, and STA tools from Synopsys	Design Compiler, Test Compiler, PrimeTime, MOTIVE, and Sunrise TestGen
Other EDA tools	Chrysalis Design Verifyer

PACKAGE AVAILABILITY

No. of Pins	Frame Size
TQFP	
100	P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S1, S2
LQFP	
100	P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S1, S2
144	P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S1, S2
176	P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF
208	P6, P7, P8, P9, PA, PB, PC, PD, S5, S6, S7
QFP	
120	P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S1, S2
144	P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S1, S2
160	P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S2, S3, S4
176	P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S3, S4
208	P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S5, S6
240	P8, P9, PA, PB, PC, PD, PE, PF, S7, S8
256	P9, PA, PB, PC, PD, PE, PF
HQFP	
208	P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S5, S6
240	P8, P9, PA, PB, PC, PD, PE, PF, S7, S8
256	P9, PA, PB, PC, PD, PE, PF, S8
304	PC, PD, PE, PF, S9, SA
PBGA	
256	P9, PA, PB, PC, PD, PE, PF, S7, S8
352	PF, SA
FBGA	
112	P2, P3, P4, P5, P6, P7, S1, S2, S3
144	P3, P4, P5, P6, P7, S1, S2, S3, S4
168	P6, P7, P8, P9, S3, S4, S5, S6, S7
176	P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, S3, S4
192	P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF, S4, S5
224	P7, P8, P9, PA, PB, PC, PD, PE, PF, S6, S7
288	PC, PD, PE, PF, S8, S9, SA

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