

## YOUR BEST IP PARTNER

Founded in 1993, CAST continues to thrive as the longest-running—and most experienced—independent IP supplier. Our years of work to perfect IP reuse, improve IP quality standards, and refine sales and business practices yield a product line and a partner that offer unique benefits for you today and in the future.

### Simple, Flexible, Licensing

We help you get to work quickly, with fine-tuned project options and licensing terms that ensure smooth legal sign-off. Most CAST IP is available royalty-free, and extremely cost-effective.

### Application Area Experts for the Best IP Possible

Our experienced internal engineering team develops cores, subsystems, and reference designs. We also cultivate enduring relationships with technology experts around the world and work with them to give you the very best IP in multiple application areas.

### The Most Experienced IP Sales and Support Team

The sales and support professionals within CAST have helped customers choose and successfully deploy IP for nearly thirty years. We make sure you have an excellent IP experience from your first consideration of what core you need through the successful completion and shipping of your finished product.

### Find Out More

Get in touch to learn more about how the IP cores from CAST have given many other defense and aerospace developers a competitive edge and how we might do the same for you.

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# CAST IP Cores for ASICs & FPGAs

- ▶ RISC-V & other 8-bit to 32-bit embedded processors
- ▶ Automotive, Functional Safety & other interfaces
- ▶ Data, Image & Video Compression
- ▶ Networking & Communications
- ▶ SoC Security & Encryption Primitives
- ▶ Audio, memory, serial & other peripheral device controllers

*All with*

## A Better IP Experience

- ▶ High-quality, low-risk products
- ▶ Flexible licensing, including royalty-free
- ▶ Industry-leading support

# CAST

## A BETTER IP EXPERIENCE

Founded in 1993, CAST focuses entirely on silicon intellectual property. We develop, aggregate, and support digital IP, delivering proven products that save system designers time and money.

### Diverse IP Offerings

Our product line can satisfy many of your IP requirements, ranging from leading-edge new cores to reliable standards-based functions. These are available as synthesizable RTL for ASICs or netlists optimized for all popular FPGAs.

### Easy to Use and Integrate

CAST IP is easy to use and straightforward to integrate and verify.

Deliverables include high-quality code, documentation, and development aids like simulation models, test cases, processor debug interfaces, and IDEs. Reference designs simplify pre-sales evaluation and provide a head start for system development.

### Proven, Low-Risk Products

Our quality standards are high, and all our IP undergoes extreme testing before it gets to you. We conduct rigorous internal testing, participate in industry collaboration plugfests, and partner with popular semiconductor companies to ensure proper functioning and smooth integration.

Our practices have been tested and proven over time, as we have helped thousands of customers ship billions of units in hundreds of application areas.

## RISC-V PROCESSORS

### BA51 32-bit Ultra-Low-Power

- Deeply embedded, 2-stage pipeline

### BA51 32-bit Low-Power, Fast

- Embedded, 5-stage pipeline

### EMSA5-FS 32-bit, Functional Safety

- ASIL D Ready



## BA2X™ PROCESSORS

### Application Processors

- 7/12-Stage Out of Order Completion
- 5-Stage In-Order, Basic

### Embedded Processors

- 5-Stage Cache-Enabled
- Deeply Embedded: 4/5-Stage, 2-Stage Low-Power, 1-Stage PipelineZero™

IDE, Debug Key, Eval Kit, Boards

## 8051 MICROCONTROLLERS

### R8051XC2 Fast & Configurable

### T8051XC3 Ultra-Small

### L8051XC1 Legacy

Debug Key, Eval Kit, Boards



## Outstanding Support

CAST IP comes with some of the best customer support in the industry. Our goal is to help you succeed, not just sell you IP, and we have the experience and resources to make that happen.

## INTERFACES

### Automotive Bus Controllers

- CAN CC/FD/XL/TTCAN & CANsec
- TSN Ethernet: Endpoint, Switch, & Switched Endpoint
- 10BASE-T1S and 100BASE-T1
- SafeSPI M/S/Monitor/Bridge
- SENT Rx & Tx, and LIN M/S



### IP Protocol Stacks

- 1G to 100G UDP/IP and TCP/IP
- eMACs: 1G, Low-Latency, SPE
- MACsec Protocol Engine

### Audio Interfaces

- I2S-TDM Multichannel Transceiver
- Audio Sample Rate Converter
- AC'97 interface Controller

### MIPI Controllers

- I3C Basic Secondary Cont. & Target
- SPMI Controller/Target; I3C Target

### PCI Interfaces

- Target, Master & Host Bridges

## PERIPHERALS

### Serial Communications

- SPI M/S: Single, Dual, Quad & Octal
- HDLC/SDLC: DO-254/DAL-A option
- I2C/SMBUS; UARTs

### Memory Controllers

- xSPI, HyperBus, Xccela, PSRAM
- Cache, SRAM, ECC

### DMA Controllers

- Scatter-Gather, Memory-to-Memory & Memory-to/from-Stream

### AMBA® Fabrics

- AHB & AXI Multi-layer Interconnect and bridges

**Other Peripherals:** Smart Card Reader, DMAs, Timers, Real-Time Clock, GPIO

## LOSSLESS DATA COMPRESSION

**LZ4/Snappy & GZIP/ZLIB/Deflate**  
Compressor & Decompressor

## LOSSLESS IMAGE COMPRESSION

**QOI** Quite Okay Image format  
• Encoder & Decoder

**PNG Encoder & Decoder**

**JPEG-LS Encoder & Decoder**

## JPEG IMAGE COMPRESSION

**JPEG Encoders & Decoders**

- Low-Power, Extended, Ultra-Fast

### Subsystems

- RTP Hardware Stack for JPEG
- Motion JPEG over IP Subsystem

## VIDEO COMPRESSION

**H.264/AVC Encoders**

- Low-Power through High-Performance
- Scalable 1080p & UHD/4K-8K
- Intra-Only options

**H.264/AVC Baseline Decoders**

- Low-Latency & Low-Power

**Platforms & Companion Cores**

## SECURITY

**GEON™ SoC Security**

- GEON-SBoot SoC Secure Boot
- GEON Secure BA2x Processor

**Encryption Primitives**

- Post-Quantum Key Encapsulation
- SNOW-V for 4G/5G/6G networks
- ASCON Lightweight Encryption
- AES: CCM, GCM, XTS, KEX
- Keccak/SHA-3, SHA-256, MD5