



CoolRunner-II™ A CPLDs.

More Great Features. New Low-Cost Packages.

Today's complex, multi-voltage systems present a variety of design challenges. These applications often require a cost-effective method of connecting multiple serial and parallel devices, with varying core and I/O voltages. CoolRunner-II CPLDs excel in these voltage translation applications and the new CoolRunner-IIA 32- and 64- macrocell CPLDs bring even more potential for cost and space savings.

The new CoolRunner-IIA family features two devices, each with two I/O banks, plus extra logic for interface conversion, state machines, timers/counters and other logic functions that traditionally require extra discrete devices.

Also new to the CoolRunner-IIA devices are QFG (Quad Flat No-lead) packages, which are as small as costly chip-scale BGA (Ball Grid Array) packages, but as inexpensive as TQ (Thin Quad) packages.



Enhanced CPLD Functionality and Value

CoolRunner-IIA 32- and 64-macrocell CPLDs offer:

- **Additional I/O Banks** – Both devices feature two I/O banks, enabling easy communication between two distinct signal level interfaces such as different bus interface I/O voltage levels. This can also include voltage translation of peripheral devices and memory to microcontrollers, or communication between wired interfaces.
- **Wider Package Offering** – With the inclusion of MLF (Micro Lead Frame), also known as QFG packages, CoolRunner-IIA devices combine cost savings with small form factor packages. The 32-macrocell CPLD is available in a 32-pad QFG with 21 user I/Os, while the 64-macrocell device is offered in a 48-pad QFG with 37 user I/Os. This gives you smaller package size and lower costs, without the use of buried solder balls.
- **Ease-of-Use** – CoolRunner-IIA CPLDs are supported by both WebPACK™ and ISE foundation software tools.
- **Leading CPLD Technology** – These new devices feature all the winning features of our popular CoolRunner-II devices — including advanced security, on-the-fly reprogramming, DualEDGE flip flops, input hysteresis, low power, and low cost.

Xilinx QFG Packages –

Better Performance at a Lower Cost

QFG packages offer many advantages over chip-scale BGA options. Since they have pins similar to TQ or VQ pins, it is easier to probe and visually inspect for bridges and solder paste coverage. Plus, chip-scale BGA packages are often expensive due to the multi-layer construction, while QFG packages are built with a lead frame structure—again similar to TQ/VQ packages. This makes them much less expensive and easier to run through reflow equipment. Since they are small, the lead frame structure does not require the large resistance and capacitance often associated with large TQFP (Thin Quad Flat Pack) lead frame packages. Thermal performance is on par with TQ/VQ packages, and they offer better electrical characteristics with fewer ground-bounce problems.

Take the Next Step


The new CoolRunner-IIA CPLD devices offer both the flexibility of voltage translation through I/O banking and the cost savings of QFG packages. If you're looking to save circuit board real estate — without the high cost of chip-scale BGA packages — check out the new feature-enhanced, low-cost CoolRunner-IIA CPLDs for your next design.

www.xilinx.com/cpld/cr2a

Lowest-Cost Small Form Factor Packaging



CoolRunner-IIA Product Table

	Macrocells	F _{Toggle} (MHZ)	F _{System} (MHZ)	Maximum I/O	I/O Banks	LVC MOS, LV TTL (1.5, 1.8, 2.5, 3.3)	HSTL, SSTL	DualEDGE	DataGATE, CoolCLOCK	Standby Power (uW)	Advanced Security	
CoolRunner-IIA												
	XC2C32A	32	500	417	33	2	Yes	No	Yes	No	28.8	Yes
	XC2C64A	64	454	333	64	2	Yes	No	Yes	No	30.6	Yes

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