

COMPANY	PRODUCT	DESCRIPTION	TEMPLATES	CONSTRAINT TYPE	PLACER TYPE	ROUTER TYPE	LINKS TO FLOORPLANNER	DESIGN CHECKING	LINKS TO ANALYSIS TOOLS	OPERATING SYSTEMS	PRICE
<b>ACCEL Technologies, Inc.</b> <i>a subsidiary of Protel Ltd.</i> San Diego, CA (800) 588-0680 sales.na@pcad.com www.pcad.com	P-CAD 2000 Design Suite	Design entry through manufacturing; includes schematic-to-PCB linking, comprehensive manual and interactive placement & routing tools, integrated component library management, documentation and design annotation support	Schematic title sheets, PCB title blocks, schematic symbol and PCB footprint libraries, symbol & pattern (BGA, Quad, Dip) wizards, padstacks & textstyles; custom design & layout technology templates for layer stacks, design rules, padstyles, and via styles	Electrical, physical, manufacturing, routing, & testing	Constraint-driven interactive component placement & organization with visual placement area displays	Shape-based, rules-driven automatic, interactive, and manual routing; interactive push-and-shove, obstacle avoidance, minimum length, maximum hugging routing; interactive bus, multi-wire, and fan-out routing; curve & 45 degree interactive mitering	Interactive, integrated floorplanning	Electrical and design rule checking with user-defined severity setting custom online and batch DRC with advanced error management	Interfaces to signal integrity, simulation, & other analysis tools	Windows 95, 98, 2000, NT	\$9,995
<b>Advanced Microcomputer Systems, Inc</b> Popmano Beach, FL (954) 784-0900 info@advancedmsinc.com www.advancedmsinc.com	Circuit Creator Pro	Schematic design and capture, PCB automatic routing, PCB design & layout, Gerber file import, export and viewing; up to 32"x32" size PCB; 255 s layers with 8 mask each; 25,000 parts library; 3,000 footprint	25,000 schematic symbols, footprint, blank boards and connectors	Electrical, mechanical	Interactive	Interactive & automatic, rip-up & retry	Integrated	On-line DRC, batch DRC for schematic capture as well as PCB Layout	Outputs 15 different file formats	Windows 95, 98, 2000, NT	\$695
	Logic Creator Pro	Schematic capture software	25,000 schematic symbols, with user-expandable library	N/A	Interactive	N/A	Integrated	On-line DRC, batch DRC for schematic capture	Outputs 15 different file formats	Windows 95, 98, 2000, NT	\$149
	Board Creator Pro	PCB automatic routing, PCB design & layout, Gerber file import, export and viewing; up to 32" x 32" size PCB; 255 layers with 8 masks each; 3,000 footprint	3,000 footprint, blank board, industry standard connector	Electrical, mechanical	Interactive	Interactive & automatic, rip-up & retry	Integrated	On-line DRC, batch DRC for schematic capture as well as PCB Layout	Outputs 15 different file formats	Windows 95, 98, 2000, NT	\$295
<b>Bartels System GmbH</b> Erding, Germany 49-8122-9729-0 info@bartels.de www.bartels.de	PCB Design System	Schematic through PCB layout; includes high frequency RF support, automatic place & route	Schematic symbols, symbol logic definitions components, pad/padstacks, rule definition sets	Electrical, EMC, manufacturability, RF, testability	Automatic placer, interactive placement including block-oriented selection (floorplanning support)	Automatic shape-based rip-up/retry/backtracking router; fully gridless or fast gridbased mode, several constraints	Floorplanning support within placer	On-line DRC including complex geometries, electrical and RF-rules, testability and 3D height	Any Interface through User Language Compiler, EDIF, IPC356, DXF, 3D electromag. field simulation	Windows, Linux, HP-UX	\$2.5K to \$15K
<b>Cadence Design Systems, Inc.</b> San Jose, CA (408) 943-1234 www.cadence.com	Orcad Layout	Rules-based interface to Orcad's design entry tool; automatic DFM; CAM station support for high-speed design through net-width and spacing by layer rules	50 component libraries, templates for boards, default rule sets and strategies	Electrical, mechanical	Automatic, interactive	Gridless and grid-based automatic & interactive	N/A	Online & batch DRC	Specctra Quest SI Expert	Windows 9x, 2000, NT	Starts at \$3,495
	PCB Design Expert	Design suite for high-speed, high-density PCB designs; includes Capture CIS or ConceptHDL design entry, advanced electrical rule checking spreadsheet-based constraint management, Allegro PCB layout, interfaces for mechanical & PCB CAD input, and Specctra high-speed, rules-driven autorouting	7,000 schematic symbols, PCB footprints & padstacks	Electrical, EMI, manufacturability, physical, testability, assembly	Constraint-driven, shape-based, interactive & automatic placement & floorplanning, place by room	Constraint-driven, shape-based architecture, supports physical and electrical rules, microvia, manufacturing, testability, hybrid rules; push-and-shove, rip-up & retry	Shares core architecture, constraint system, and database with Specctra Quest SI expert	Spreadsheet-based electrical constraints are hierarchically managed and checked online; online DRC also covers physical & EMI rules	Integrated through Specctra Quest SI Expert	HP-UX, IBM-AIX, Solaris, Windows 2000, NT	Starts at \$26K
	Specctraquest SI Expert	Design & analysis environment or high-speed digital systems; provides spreadsheet-based constraint management, component placement & trial routing, comprehensive pre- and post-layout signal integrity analysis, constrains place & route	1,000 signal integrity example models; 9,000 models optionally available; accepts IBIS, Quad, & Spice models optionally available;	Electrical, EMI, manufacturability, physical, testability	Constraint-driven, shape-based, interactive & automatic placement & floorplanning	Constraint-driven, shape-based architecture, supports physical and electrical rules, microvia, manufacturing, testability, & hybrid rules; push-and-shove, rip-up & retry	Integrated	Spreadsheet-based electrical constraints are hierarchically managed and checked online; online DRC also covers physical and EMI rules	Integrated signal integrity, crosstalk, EMI, power delivery, & timing analysis	HP-UX, IBM-AIX, Solaris, Windows 2000, NT	Starts at \$24.2K
<b>DDE USA, Inc.</b> Newport, CA (949) 955-7977 eda@dde-eda.com www.dde-eda.com	Supermax E-CAD	Integrated PCB, MCM, hybrid RF & high-speed design system; constraint-driven placement & gridless routing through to CAM output and documentation	Library of footprints	Electrical, DFM, Placement, High speed, Wire Bonding	Constraint-driven, gridless, automatic placement by room area or wholeboard; interactive placement with online DRC checking overlap room association, component keep in/out areas, high-speed length & delayules; floor-planning, rotation to 1/100 degrees; alternate footprint support, thermal prediction, auto pin & gate sweep	User configurable route editor Gridless; push'n'shove; visual clearance display; single click staggered via; auto neck up/down; ortho or free angle; rounded corners; online DRC for clearance, timing, length, match length; testpoint insertion; cross-over isolation automation for hybrids	Integrated	On-line or batch; DFM (loops, blinds, acutes); placement: component location, overlap of text, pads, copper fills; nets: clearance, shorts, crosstalk, length, delay, width; wire bonding; hybrid: cross-over isolation	Integration to HPADS, EE-sof; Quad tools- XTK, Quiet and Quiet expert analysis tools; SDF output; Specctra Quest; Ansoft	SunOS, Solaris, HP-UX, Windows NT, Linux	Starts at \$25K
<b>Electronics Workbench</b> Toronto, Ontario; Canada (408) 977-5550 www.electronics-workbench.com ewb@electronics-workbench.com	Multisim/ Ultiboard/ Ultiroute Suite	Schematic capture, simulation, and programmable logic environment; PCB layout tool; autorouting & autoplacement layout	Schematic capture & simulation with integration to PCB interactive database of 16,000 logically organized parts; sophisticated library search; advanced component editor allows update of parts	Co-simulation of SPICE with VHDL & Verilog; real-time DRC simulation; industry standard Berkeley SPICE; XSPICE; enhancement code modeling; advanced convergence solving	Through Utiroute's autoplacer; pre-place critical components	Grid/gridless autorouting; design analysis; customizable routing options	Integrated	Highly flexible copper & trace placement; DRC	Link to Multisim; AC frequenc sweep, DC operating point, transient, Fourier, noise, user-defined analysis, distortion, temperature sweep, model parameter sweep, nested sweep, AC & DC sensitivity, pole-zero, transfer function, worst case, monte carlo, trace width, batched analysis	Windows 95, 98, 2000, NT	\$500 - \$8K

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<b>Innoveda, Inc.</b> Marlboro, Mass. 800-873-8439 askus@innoveda.com www.innoveda.com	Power PCB	Rules-driven layout for complex and high-speed designs; features OLE automation, DFT analysis and Blaze Router	14,000 part library, wizards	Electrical, manufacturing, mechanical	Automatic, interactive	Interactive (manual & dynamic route editing) & automatic shape-based angle free autorouting	Integrated	Interactive & batch DRC, electrodynamic, DFT audit	ASCII, DFT audit, Direct CAM link, OLE, Hyper suite tools	Windows 98, 2000, NT	\$3K - \$28K
<b>Mentor Graphics, Inc.</b> Wilsonville, OR (800) 547-3000 info@mentorg.com www.mentor.com	Board Station Family	PCB/MCM design environment including design capture, library management, board verification, floorplanning, place & route, and output to manufacturing	User-defined components, vias, and blocks	Electrical, physical, manufacturing, assembly	Netlist-driven interactive & automatic	Autoactive	IS_Floorplanner	LVS, electrical, manufacturing, assembly	ICX, Quicksim Pro, Tau, Accusim, Auto Therm	Solaris, HP-UX, Windows NT	Starts at \$28K
	Expedition Series	PCB design environment including design capture, board verification, floorplanning, place & route, and output to manufacturing	Footprints, boards, routing/display/rule schemes	Electrical, physical, manufacturing, assembly	Autoactive	Autoactive	PCB Planner	Automatic and online; user-defined element DRC, library verification	Signal vision, ICX, Tau, Analog Designer, Beta Soft Board	Windows NT	Starts at \$10K
<b>OHIO Design Automation, Inc.</b> Nashua, NH (603) 598-2525 info@ohio-da.com www.ohio-da.com	Intercomm	Allows access to schematic and PCB design data; browses, cross-probes, queries schematics or PCBs; outputs test point & routing topology data to Excel spreadsheets; communicates redline markups	N/A	N/A	N/A	N/A	N/A	Cross-probing, fault checking, impedance checking	Boundary scan analysis tools	Windows 95, 98, 2000, NT; Solaris	\$5K
<b>Protel Ltd.</b> Sydney, Australia (800) 544-4611 sales.na@protel.com www.protel.com	Protel 99 SE	Includes multi-sheet, hierarchical schematic entry, mixed-mode simulation, PLD design, rules-driven board layout, shape-based autorouting, signal integrity simulation, integrated document management and design team collaboration; CAM technology for design output	Schematic sheets, board blanks, schematic symbol and PCB footprint libraries, board & component wizards	Electrical, physical, manufacturing, testing, signal integrity, & routing	Automatic statistical & cluster placer, interactive rules driven placement	Shape-based, rules-driven automatic & interactive routing; interactive push-and-shove & obstacle avoidance routing	Integrated floorplanning	Online & batch DRC	Integrated mixed-mode circuit simulation & signal integrity analysis	Windows 95, 98, 2000, NT	\$5,995
<b>Vamp Inc.</b> Los Angeles, CA (323) 466-5533 mccad@idt.net www.mccad.com	Mc CAD EDS-1	Integrated design environment for PCBs, MCMs, BGAs; for digital, analog and mixed-signal designs; foot-prints includes schematic capture, place & route, component library management & DFM outputs	User defined and 1,000 footprints	Electrical, physical	Interactive, manual	Automatic, interactive, manual options	Mc CAD Planner	Electrical & mechanical DRC	Mc CAD's 3-Spice	Windows 95, 98, 2000, NT; MAC OS	\$1,495
<b>Zuken USA Inc.</b> Westford, MA (978) 692-4900 www.zuken.com	System Designer	Schematic capture for PCB design	Symbols, functions and symbol/component builder; import from FPGA vendor pin report data	Electrical, EMC, manufacturability	Design & reuse, hierarchical	N/A	Design constraints definable	Sheet and DRC checks, Circuit Advisor (enables to perform check and find errors without simulation), property and PCB library check, legibility, ERC, connectivity	Analog Designer (Spice, Saber), HDL Designer (Logic Synthesis Verilog HDL, VHDL), ICX (including Tau), SPECCTRA Quest, Rambus	Windows 95, 98, 2000, NT, Unix	\$3K - \$5K
	Board Designer	Integrated PCB/BGA/MCM design environment; guides user through schematic capture, floorplanning, placement, semi- & autorouting, manufacturability, thermal and signal integrity analysis, fabrication and manufacturing	Parametric pads, pad stacks, parametric footprints, packages, components; design kits from web	Electrical, EMC, fabrication, test & manufacturability	Constraint driven, X and/or Y axis, gridded or gridless, divided/partitioned/parallel design, design reuse, placement area guide, component occupancy ratio, component mounting density, automatic or automatic	Unconnected net indicator, positive/negative layer design, HSL processing, route search function, diamond gage, push-and-shove, copper pour-and-plov, auto-avoid, auto-bundle; ERC functions & screening functions, automatic neck down & pad shaving, route searching for specified pass points, component move & reroute, free angle, gridded & gridless, interactive & auto, fanout, river, auto dog bone, length & cross talk, RAMBUS design support module	Integration with floorplanner; floorplanner component groups, component placement side, and net/component property data can be linked to System Designer	Rules for fab, test & assembly; clearance, unconnect, technology, via (blind, buried, buildup), branch, resist	Interactive thermal analysis tool: quick thermal, transmission line, Rambus, EMC advisor checks that the PCB design respects EMC design rules, with attention to wiring patterns & part placement & links to Hot Stage & EMC Workbench	Windows 2000, NT, Unix	\$38K - \$90K
	Hot Stage	Signal integrity & EMI prototyping tool; combines logical and physical design environments through enhanced visualization parameters on top of PR Editor	Topology, placement & routing, board outlines	Electrical, mechanical, routability, thermal	Automatic and interactive	Automatic & interactive - constraint driven	See PR Editor, topology scratch; pad-based on analysis	Online DRC; batch for electrical & physical rules; statis time analysis	Integrated within tool; links to EMC Workbench	Windows NT, Unix	\$25K - \$70K
	PR Editor	Concurrent place & route tool	N/A	Electrical, EMC, fabrication, test & manufacturability	Constraint driven, X and/or Y axis, gridded or gridless, automatic or interactive	Positive/negative layer design, push-&-shove, copper pour & plov, auto-avoid, auto-bundle, automatic neck down and pad shaving; component move & reroute, free angle, gridded & gridless, interactive & auto, fanout, river, auto dog bone, length & cross talk	Integrated in tool, splash & route	Rules for fab, test & assembly; clearance, unconnect, technology, via (blind, buried, buildup), branch, resist	Back to CAD tool	Windows NT, Unix	\$40K - \$70K
<b>Cadstar</b>	Cadstar	Schematic to PCB solution; place & route in a single environment	Full pad stack solutions, 255 layer capacity, microvia, blind, and buried via support	Electrical, mechanical & user definable	Gridded auto placement, channel replication on step grids (automatic), point and click to drag interface	Standalone route editor and embedded route editor interface	Via CADIF	Design rule spacing & manufacturing checks; electrical rules check by pin type; spacing classes	P-Spice, EMC Design Advisor & PCB Signal Integrity 5.0	Windows 98, 98, SE, 2000, NT	\$2.5K - \$25K