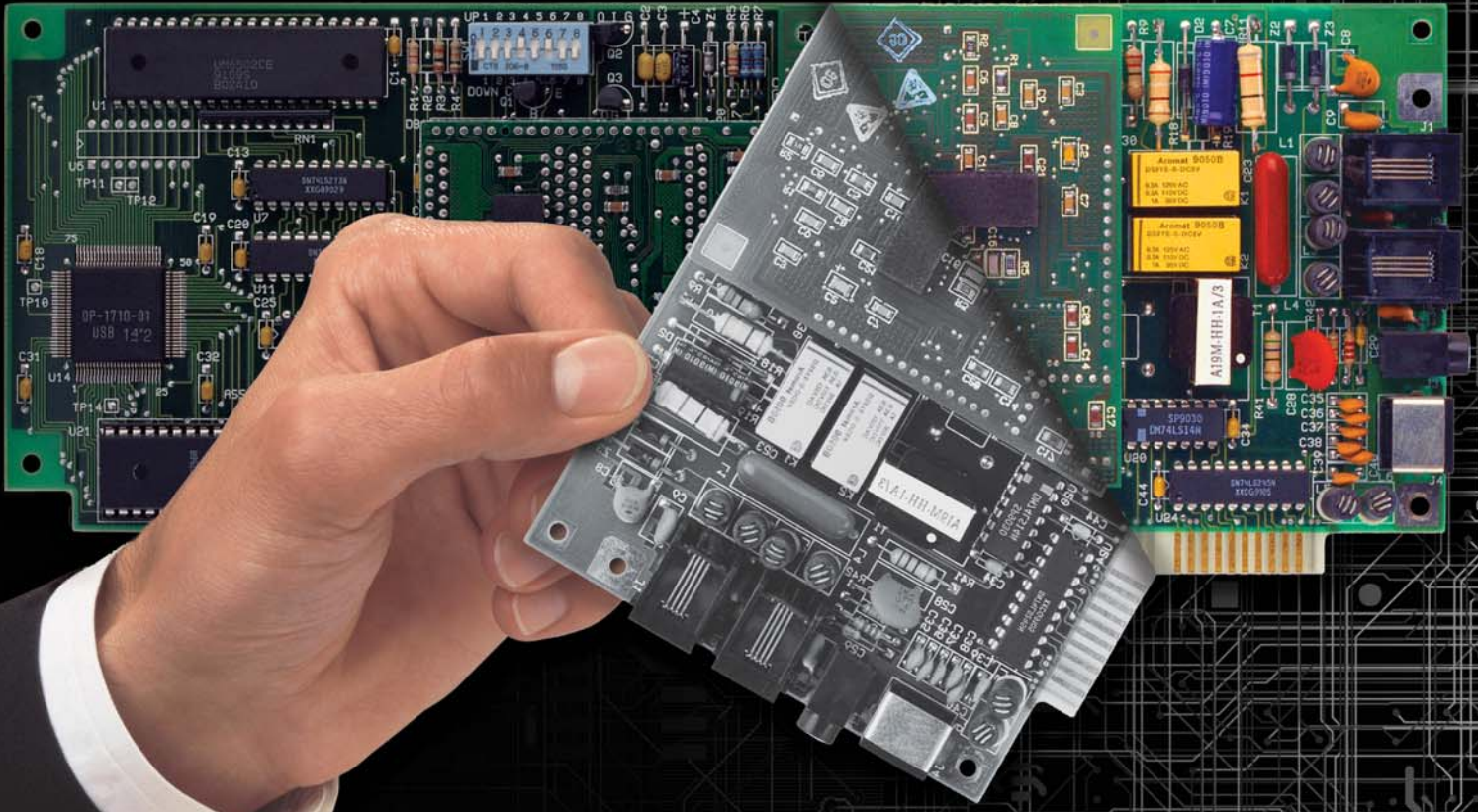
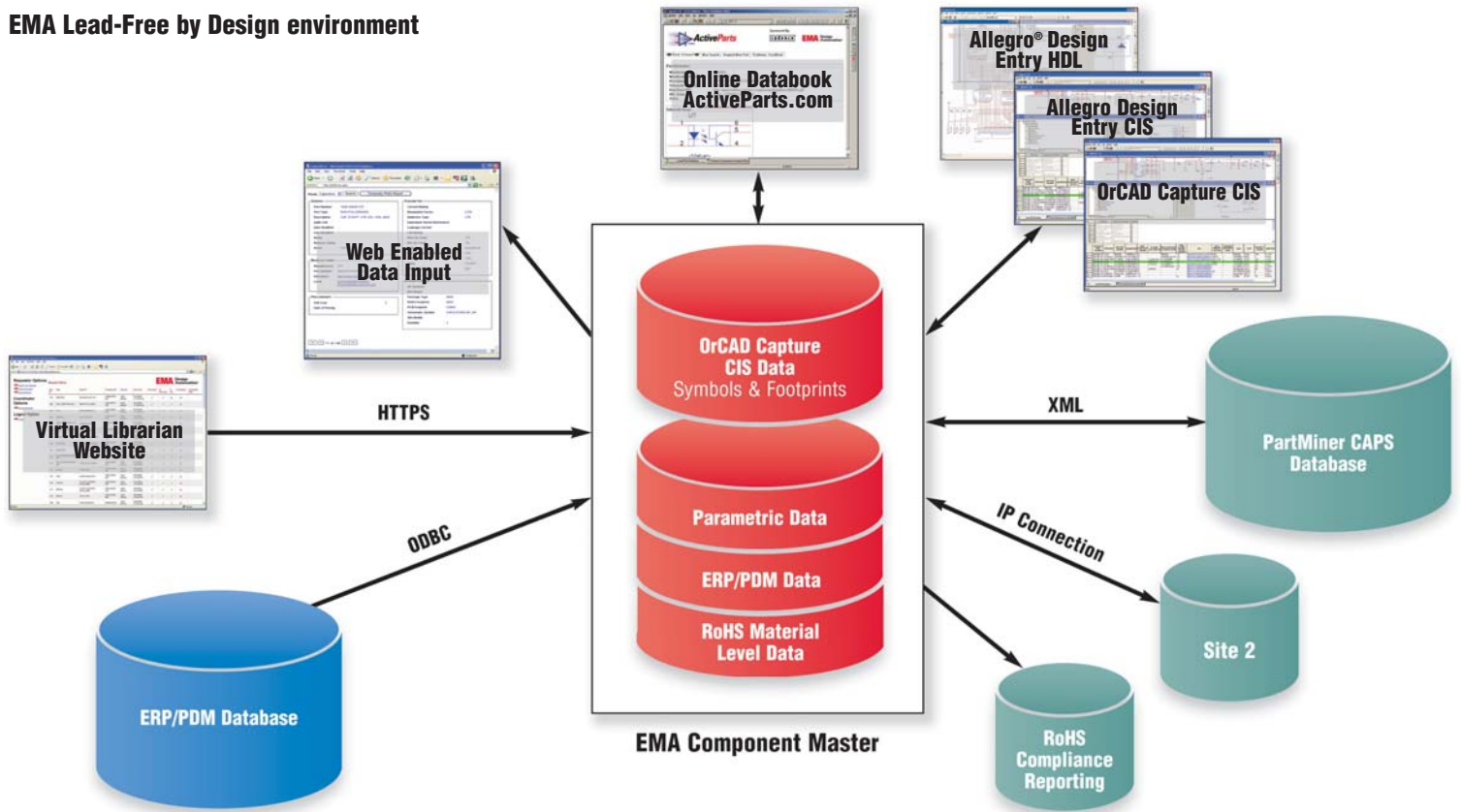


EMA Lead-Free by Design

Making RoHS compliance an inherent part of the design process.



EMA Lead-Free by Design environment



A complete front-to-back content-based solution

The EMA Lead-Free by Design methodology incorporates and supports the various steps required to effectively meet today's compliance requirements in a cost-effective and efficient manner. It leverages the data structures already in place for EDA while decreasing the need for multiple design iterations and rework based on BOM changes due to non-compliant or unavailable components. The methodology is ideal for multi-site development as it uses a common database and user interface. Cost avoidance initiatives, preferred vendors, and company specific requirements can all be incorporated into the process to reduce expenses and increase overall margins.

Integrating RoHS Parameters into the OrCAD Capture CIS System

Confusing specifications and no single source of information remains one of the biggest challenges to executing RoHS compliance. The diversion of valuable engineering and corporate resources to deal with this situation is affecting each organization's productivity and new product development initiatives.

While there is an ongoing effort to validate legacy product designs for RoHS compliance, care should be taken to avoid using non-compliant parts in current and future designs. A BOM cleansing exercise during final stages of the design cycle might call for costly design rework. Integrating RoHS compliance information into the OrCAD® Capture® CIS system can decrease these problems to a manageable level.

EMA Lead-Free by Design methodology

1. Tailor Library Specification
2. Define RoHS Compliance Strategy
3. Design and Implement Database Schema
4. Build/Convert Symbols and Footprints
5. Configure Web-Based Forms for Enterprise-Wide Access to Database
6. Link ERP/PDM Data to Database
7. Customize Virtual Librarian Website for Ongoing Library Support

Item Number	Quantity	Value	Part Ref	COMPANY PART NUMBER	MFR PART NUMBER	DESCRIPTION	RoHS COMPLIANT (YES/NO)	RoHS COMPLIANT ALTERNATE PART	PART NUMBER CHANGE (YES/NO)	TOTAL PRODUCT MASS (G)	MOISTURE SENSITIVITY LEVEL	HUMIDITY CLASS	URL	
1	1	270PF	C1	LEC-EE-10	NMC1206	CAP CER	No	NMC1206NP	Yes	0.017	1		http://	
3	13	220NH	L1	LEC-EE-10	COILCRAFT	0805CS-22	IND. CHIP	2	No	0805CS-221	Yes	0.01	2	http://
4	14	15UH	L2	LEC-EE-10	API DELEVA	8532-15L	IND. PWR.	1	No	8532R-15L	Yes	2.5		http://
5	15	250805600	L3	LEC-EE-12	FAIR-RITE	250805600	FERRITE	4	Yes		No		http://	
6	16	17UH	L4	LEC-EE-13	TDK SEMIC	MLF2012A	IND. CHIP	4	Yes		No		http://	
7	17	MTB75N04	Q1	LEC-EE-11	ON SEMICO	MTB75N04	XSTR. MOS	5	No	MTB75N05H	Yes	1.42	3	http://
8	18	1105	R1	LEC-EE-11	INTERNATIO	WCR-WCR	RES. CHIP	No	WCR-WCR2	Yes			http://	
9	19	1820K	R2	LEC-EE-11	VENKEL	CR0603-16	RES. CHIP	No	CR0603-16W	Yes	0.00214	1	http://	
10	20	10	R3	LEC-EE-11	VENKEL	CR0402-16	RES. CHIP	No	CR0402-16W	Yes	0.000624	1	http://	
11	21	151	R4	LEC-EE-13	ROHM	MCR50Z	RES. CHIP	4	Yes		No		http://	
12	22	1105	R5	LEC-EE-11	INTERNATIO	WCR-WCR	RES. CHIP	No	WCR-WCR2	Yes			http://	
13	23	MAX4006	U1	LEC-EE-10	MAXIM	MAX4006	IC. BUF. 95	1	No	MAX4006CS	Yes	0.078	1	http://
14	24	24LC64-I/S	U2	LEC-EE-11	MICROCHIP	24LC64-I/S	IC. EEPROM	1	Yes				http://	
15	25	MAX4460E	U3	LEC-EE-11	MAXIM	MAX4460E	IC. OP. AMP	1	No	MAX4460EU	Yes	0.0185	1	http://
16	26	LT1128CS	U4	LEC-EE-10	LINEAR TEC	LT1128CS	IC. OP. AMP	1	Yes	LT1128CS8P	Yes	0.07+-10%	1	http://
17	27	SG-636P	U5	LEC-EE-11	EPSON	SG-636P	OSC. 16MHZ	1	No	SG-636PCF	Yes		http://	

OrCAD Capture CIS Bill of Materials for parts used in the design with RoHS information can be exported to Microsoft Excel.

Use RoHS compliant parts while capturing your schematic

By adding RoHS compliance parameters into the CIS database, an OrCAD Capture CIS user can see firsthand this information while entering the schematic. Using this method, an engineer can guarantee that parts used in the design are compliant. There is no requirement for BOM manipulation or cleansing later in the manufacturing stages of the project. The goal is to provide the design engineer with the right information, at the right time. With OrCAD Capture CIS, RoHS parameters are immediately visible to the design engineer.

At any stage of the schematic creation process a user can generate a report to verify that all parts used are RoHS compliant. The figure above is a report directly from OrCAD Capture CIS exported to Microsoft Excel. It illustrates the combined information from the schematic, like reference designators, with RoHS information from the

database to create a complete parts listing. Also, the bill of materials generated from OrCAD Capture CIS lists all parts in the design, including RoHS information, and can easily be exported to Microsoft Excel.

EMA Lead-Free by Design brings together the best tools and the most comprehensive RoHS hazardous material content, so your engineering team can make RoHS an inherent part of the design process with no additional cost or overhead.

Make RoHS compliance a natural part of design process

By implementing EMA's Lead-Free by Design methodology, you eliminate the need for adding long-term head count to handle a short-term problem. EMA's Lead-Free by Design solution is a cost-effective methodology that frees your engineers from the mundane tasks of insuring compliance and allows them to focus on the work at hand.

Who will RoHS affect?

RoHS will have a direct and significant impact on the entire world-wide electronics industry.

Europe

The RoHS Directive, EU Directive 2002/95/EG, which will go into affect on July 1, 2006 in Europe, mandates that electrical and electronic products put in the market within the European Union (EU) shall contain restrictive levels of the following substances:

1. Lead (Pb)
2. Cadmium (Cd)
3. Mercury (Hg)
4. Hexavalent Chromium (Cr6+)
5. Polybrominated Biphenyls (PBB)
6. Polybrominated Diphenyl Ethers (PBDE)

United States

The state of California is initiating their own version of the EU's RoHS Directive, The Electronic Waste Recycling Act of 2003, or SB20 for short, scheduled to take effect January 2007. Twenty other states have bills pending for RoHS-like regulations.

China

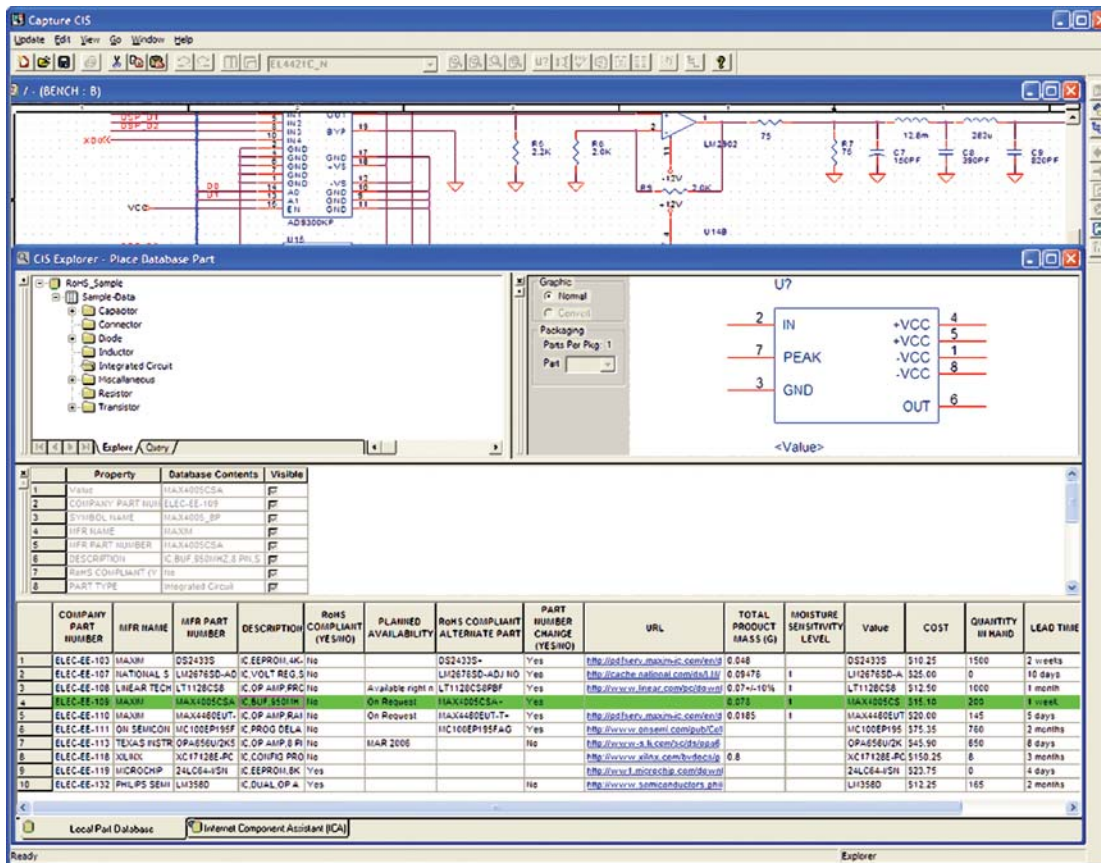
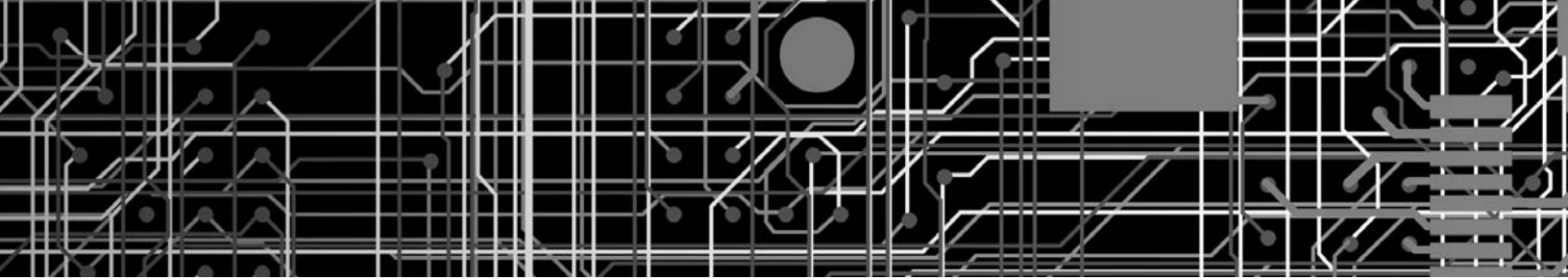
China's Regulation for Pollution Control of Electronic Products (RPCEP), which is modeled after RoHS and WEEE, has more restrictions than RoHS and is scheduled to go into affect around July 2006.

Japan

The green procurement practices (JPSSI) in Japan has more stringent mandates than the European RoHS.

Taiwan, Korea, Canada, and Australia

Taiwan, Korea, Canada, and Australia are all initiating versions of the RoHS directive.



RoHS Parameters are integrated into the OrCAD Capture CIS System

Implementing RoHS compliance through a cost-effective solution

EMA has the resources necessary to provide solutions that meet the RoHS directive. We not only have relationships with component information companies, but our staff of component engineers, with expertise in design chain data analysis, along with our design engineers, can implement the necessary changes to PCBs with alternative lead-free parts to comply with RoHS standards.

Add up the benefits!

By incorporating EMA Lead-Free by Design into your design process, you can reduce your design expenses while increasing your bottom line. Just look at the savings:

- Reduction in overall development cycle
- Increased reliability in the delivered product
- Automatic lifecycle reporting

- Automatic obsolescence reporting
- Ability to share projects across sites more effectively
- Reduction in ECOs related to library errors
- Increased control and usage of preferred parts or approved vendor lists
- Faster, more accurate parts list generation
- Increased re-use of library data
- RoHS compliance reporting

Call us today!

We can help you change compliance issues from a time-consuming, complex, and costly problem to a one-time, manageable cost. We've helped many companies with their RoHS compliance challenges, and we can help your company too. Call us at 877.362.3321. Or visit us on the Web at www.leadfreebydesign.com.

PartMiner CAPS electronic component database provides the EMA Lead-Free by Design solution with compliance analysis to meet environmental regulations.

PartMiner® has created a new material content data source that provides both high level compliance indications, and detailed parametric values such as moisture sensitivity ratings and substance weights and locations. It is the most comprehensive database of technical information on over 47 million components from over 1,900 manufacturers.

PartMiner CAPS™ high-level data can include Yes/No parameters for both lead-free and RoHS compliance, and the detailed information includes the various hazardous substance names, symbols, Chemical Abstract Service (CAS) numbers, and the amount and locations of these substances within the component. The compilation of the hazardous material information by PartMiner offers an invaluable resource, which will enable buyers and engineers in the electronic component industry to quickly assess hazardous material information and make informed decisions for compliance to import/export, recycling and disposal regulations.

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Printed in the USA. OTE0605_01

