

# Electronic Connector Trends



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PERFORMANCE AND FORECAST OF THE WORLD CONNECTOR INDUSTRY



# Global Connector Market Size

		North		Asia			ROW	Total
		America	Europe	Japan	China	Pacific		
1	TE Connectivity	\$2,131	\$2,795	\$547	\$1,660	\$902	\$176	\$8,211
2	Amphenol	\$1,670	\$991	\$107	\$1,616	\$647	\$208	\$5,238
3	Molex Incorporated	\$1,215	\$574	\$429	\$1,279	\$672	\$0	\$4,169
4	Delphi Connection Systems	\$1,235	\$757	\$4	\$522	\$158	\$61	\$2,736
5	Yazaki	\$369	\$295	\$541	\$406	\$627	\$221	\$2,459
6	Foxconn (FIT)	\$164	\$85	\$24	\$1,514	\$509	\$31	\$2,328
7	JAE	\$159	\$69	\$318	\$737	\$124	\$21	\$1,428
8	JST	\$212	\$92	\$460	\$313	\$241	\$3	\$1,321
9	Luxshare	\$0	\$11	\$29	\$1,034	\$50	\$15	\$1,139
10	Hirose	\$62	\$53	\$272	\$330	\$289	\$12	\$1,017
Total Top 10		\$7,216	\$5,721	\$2,731	\$9,411	\$4,218	\$749	\$30,047
All Others		\$4,017	\$4,731	\$2,029	\$5,308	\$4,375	\$1,544	\$22,003
Total World		\$11,233	\$10,453	\$4,760	\$14,719	\$8,593	\$2,292	\$52,050

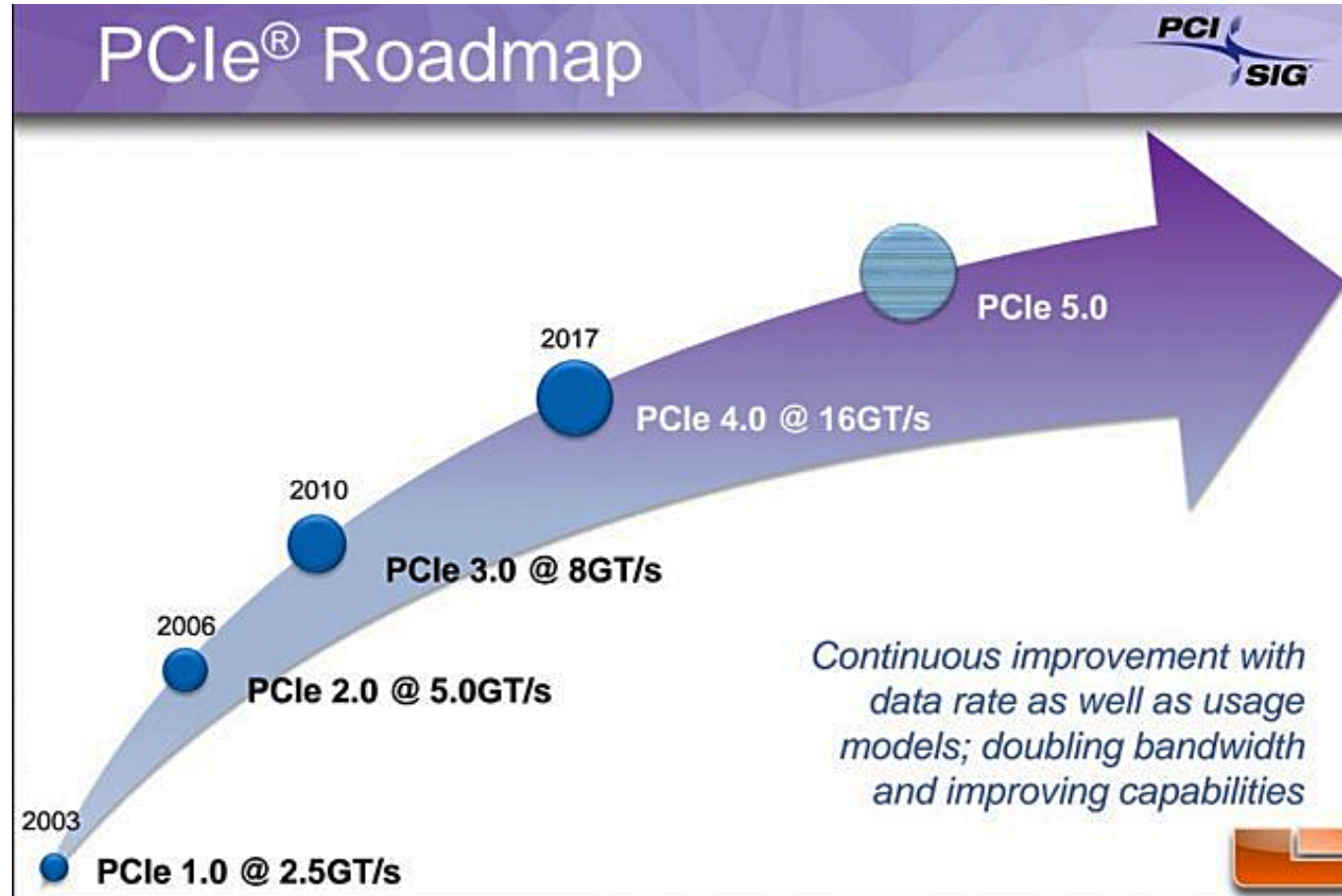
# Connector Trends



**Smaller  
Faster  
Cheaper**



# Connector Trends



## PCIe 4.0

Scheduled to arrive in 2017



# Connector Trends



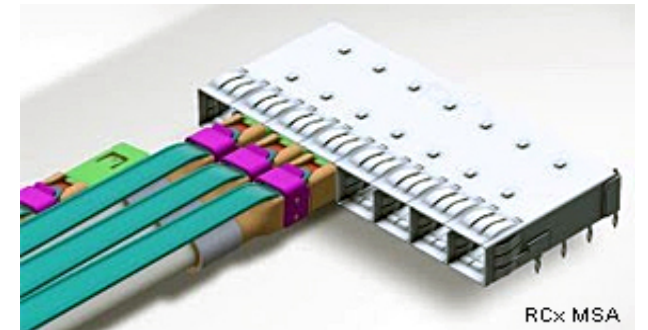
## I/O Panel Speed / Signal Density



TE Connectivity



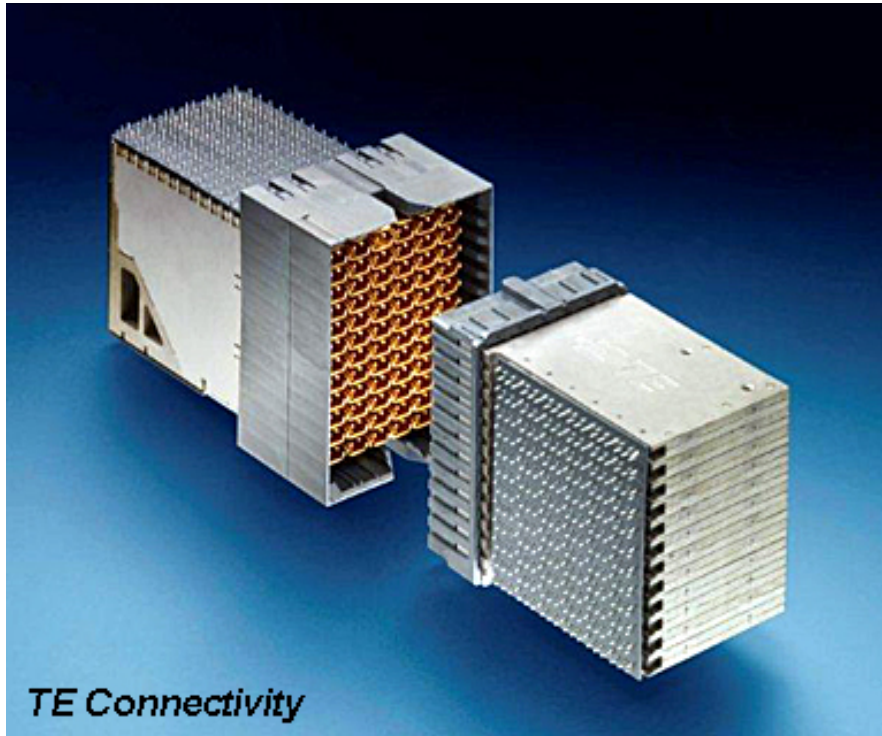
QSFP-DD MSA



RCx MSA

# Connector Trends

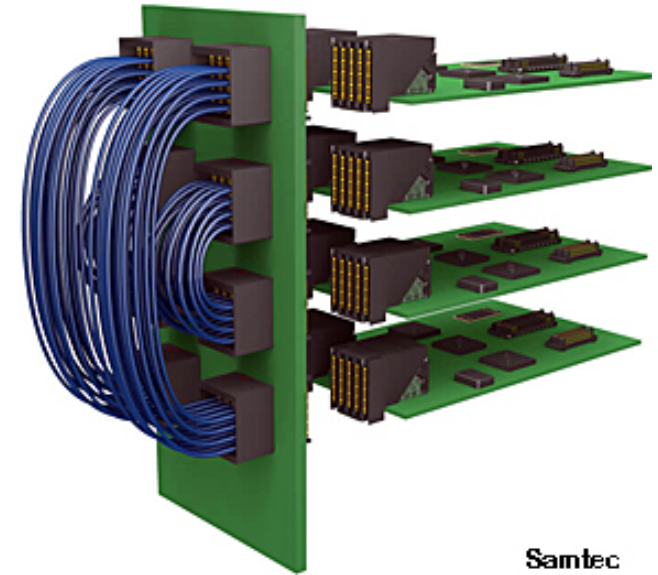
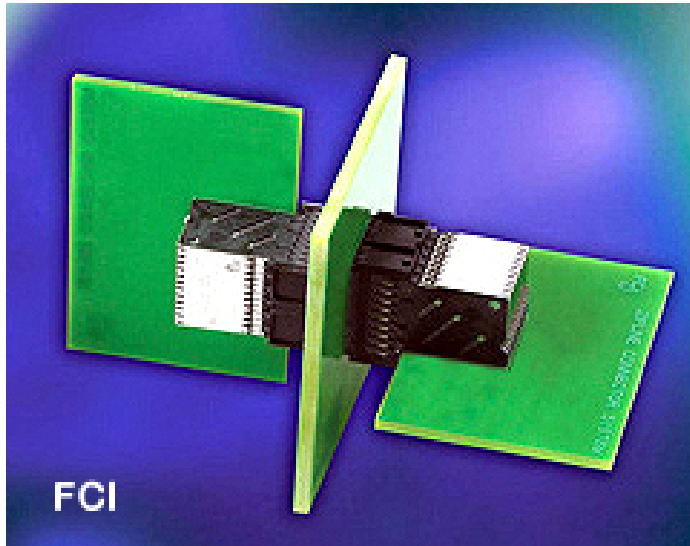
## Backplane Connectors



- Data rates to 56 Gb/s
- Limited Channel length
- NRZ to PAM4 signaling
- Reaching Practical limit of copper?

# Connector Trends

## Expanding Backplane options

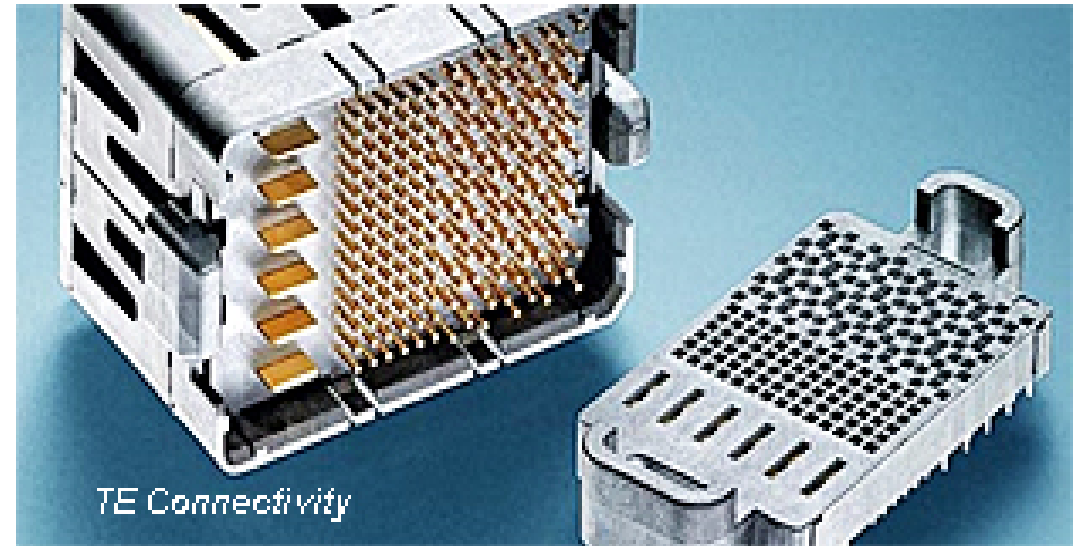


# Connector Trends

## Mezzanine Connectors



Molex



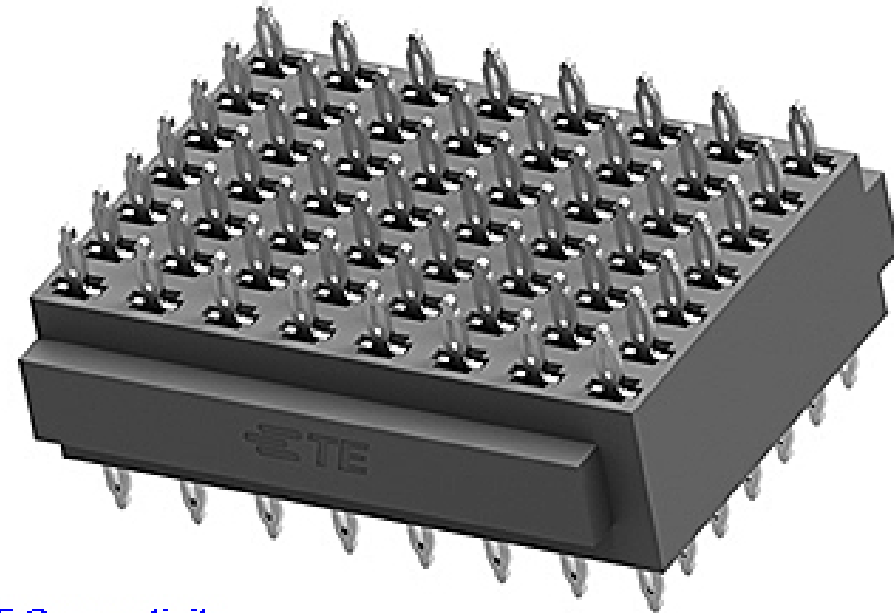
TE Connectivity



# Connector Trends

## Mezzanine Connectors

- Addition to Multigig VPX product line
- Press-fit between parallel PCBs
- 4mm stack height
- 56 position / end stackable modules
- 100 ohm impedance
- Rated to 10 Gb/s

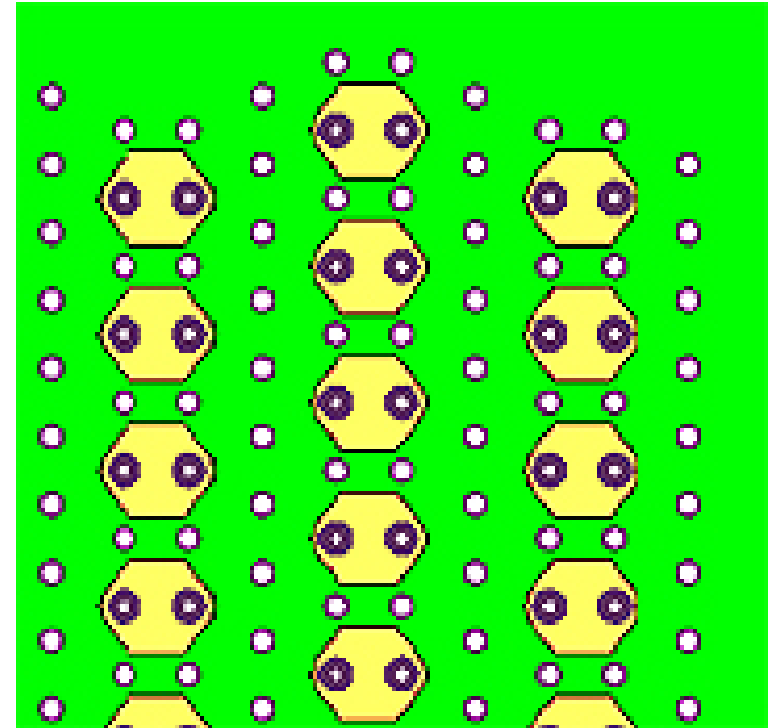


TE Connectivity

# Connector Trends

## Fine Tuning Connectors

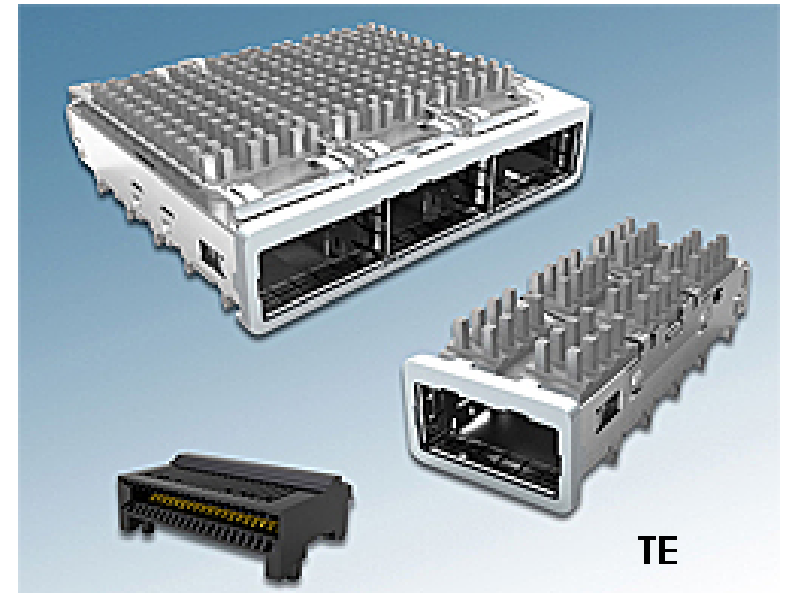
- Controlled impedance
- Smaller compliant pins
- Backdrilled PTH stubs
- More ground pins
- Staggered footprint
- High-performance PCB materials



# Connector Trends

## Power / Thermal Issues

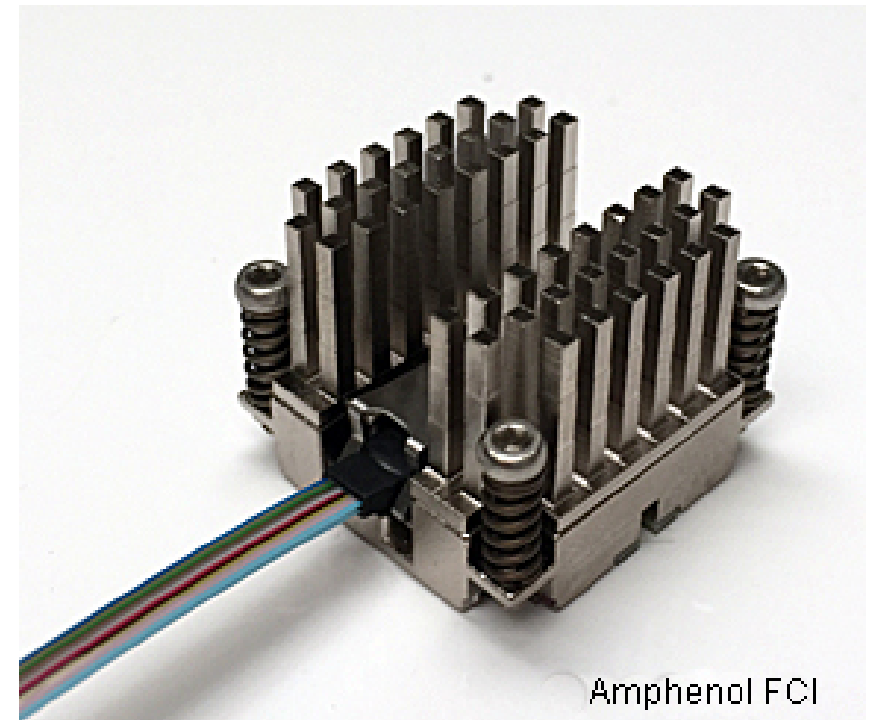
- Improved contact design
- Higher conductivity contact alloys
- Low profile connectors
- Vented housings
- Integrated heat sinks



# Connector Trends

## Optical Interfaces

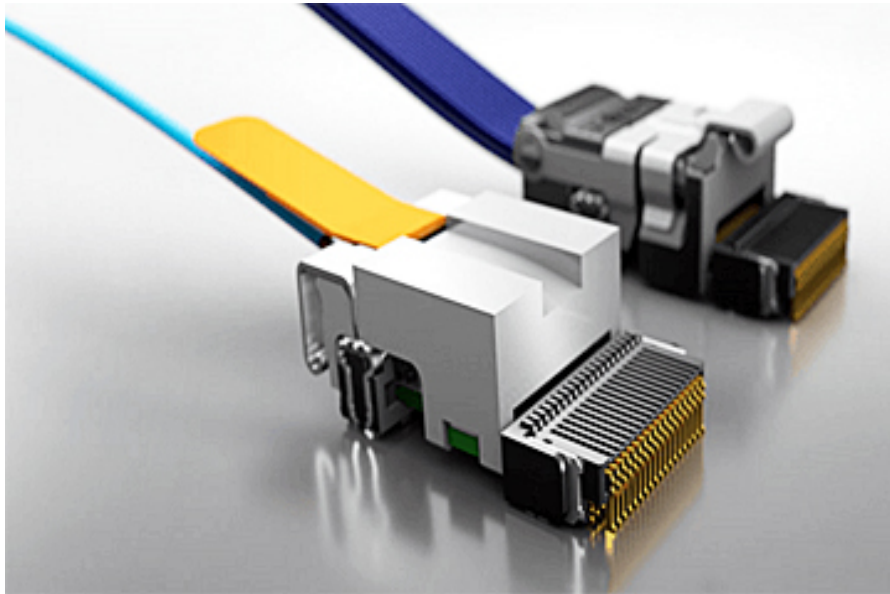
- Active optical cables
- Pluggable I/O
- Optical backplane
- Mid-board optical Transceivers





# Connector Trends

## "Flyover" Concept



# Connector Trends

## Connector Tech Support

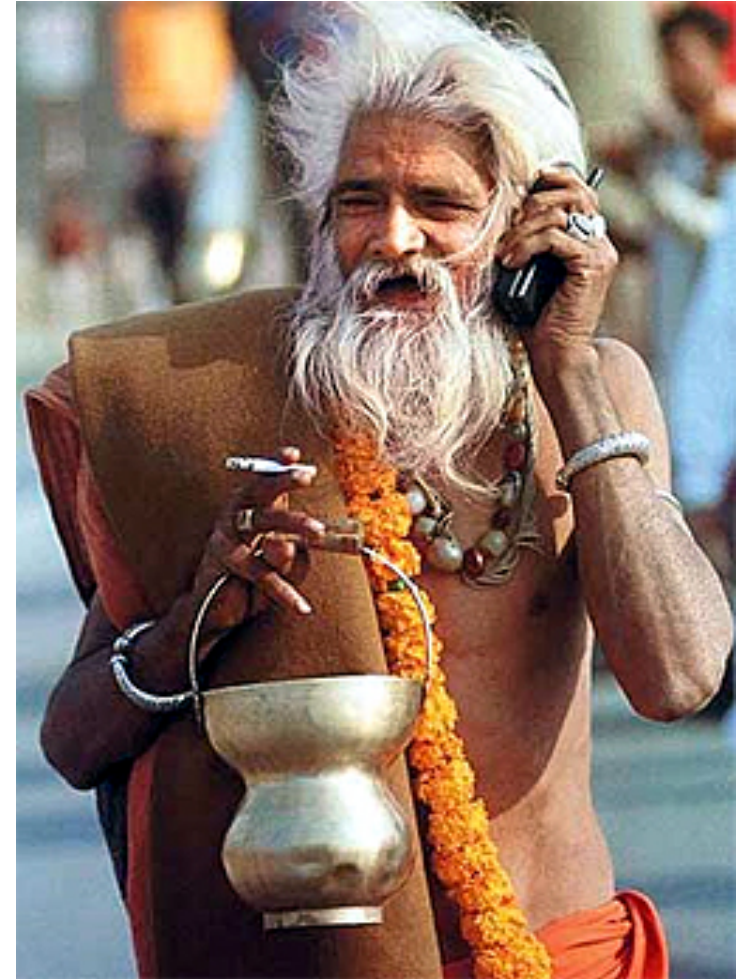
- 3-D Models
- Eye diagrams
- Evaluation boards
- PCB reference footprints
- S-Parameter data
- On-Line simulation tools
- Direct engineering support



# Connector Trends

## Market Drivers

- IoT / IIoT
- Cloud Computing
- Automotive Electronics
- Industrial Automation
- Mobile Electronics



# Connector Trends

## Emerging Markets

- Autonomous transportation
- Wearable electronics
- Additive manufacturing
- Robotics
- Cloud/Fog/Mist computing
- Artificial intelligence

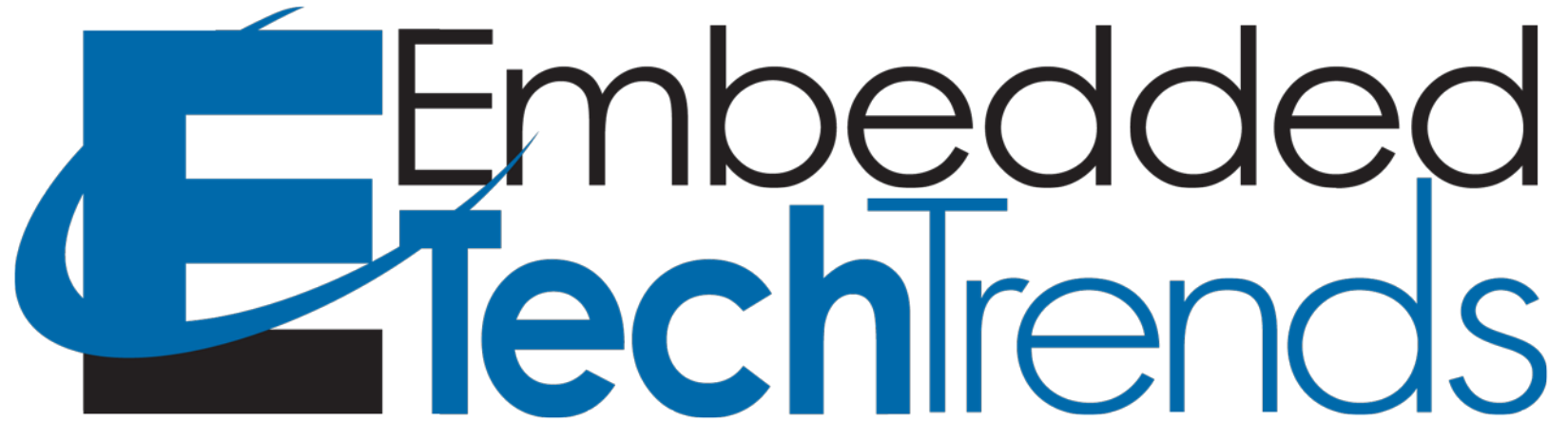




# Connector Trends

Always check  
your facts  
with an  
expert!





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Critical Embedded Systems”*

*The Voodoo Behind  
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