



YOUR PARTNER IN RF, OPTICAL & MICROELECTRONIC DESIGN.

Integrated RF & Optical
Solutions Beyond
40GHz

Miniaturization &
Optimization of Free-
Space Optical
Environment

High-Speed RF
Modeling, Analysis
& Simulation

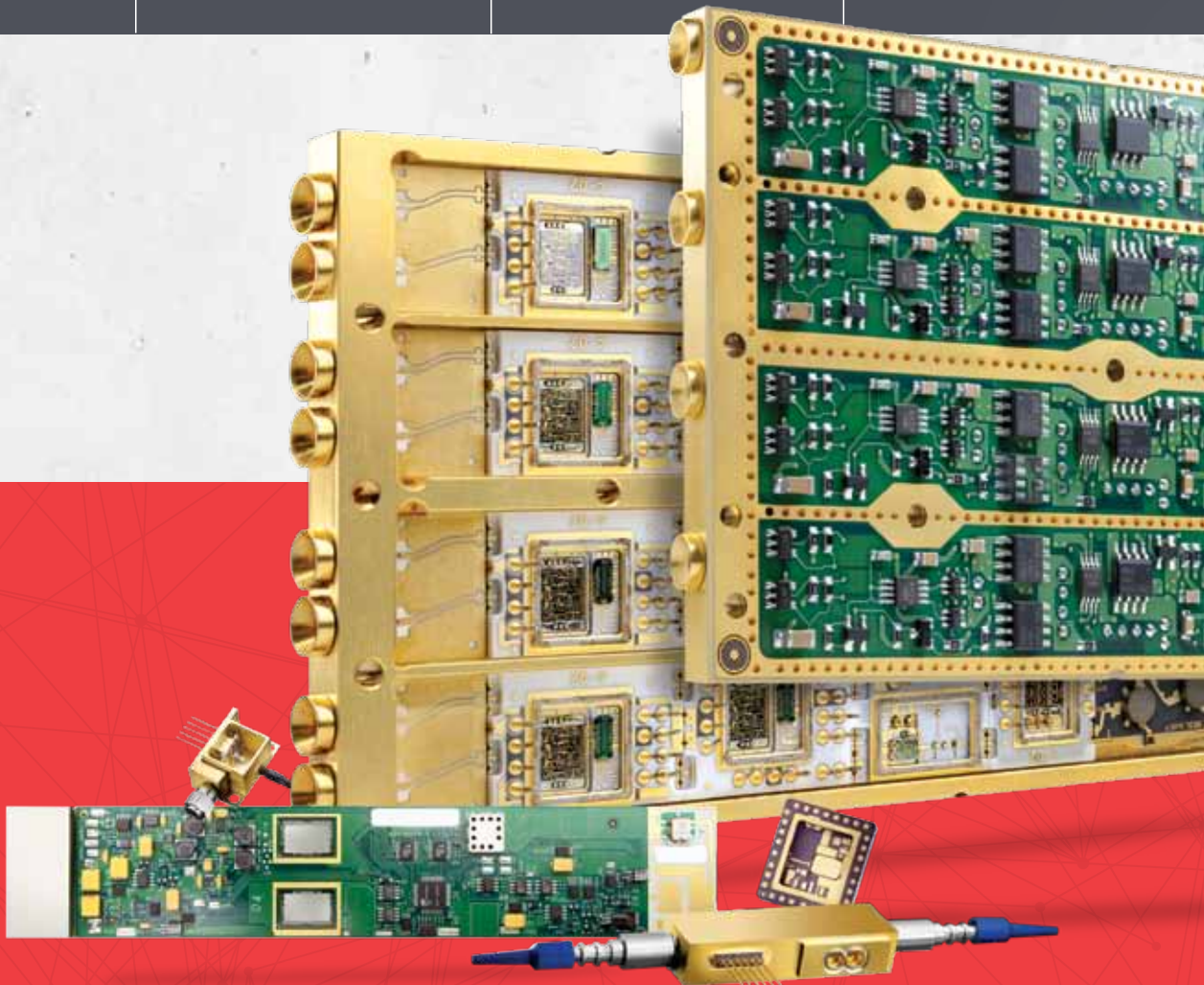
High-Speed RF/Optical
Packaging Design

Components, Modules,
Blade Solutions

High Speed Electro-
Optical Test Systems
Development

Integrated RF &
Optical Components

High Frequency Array
Interconnections



COMPLETE END-TO-END SOLUTIONS



TECHNOLOGY

- ▶ Advanced microelectronic technologies – bare die packaging, wire bonding, flip-chip, optical interconnection
- ▶ High-speed RF & Optical multi-chip modules (MCM)
- ▶ High-speed materials & interconnections (advanced ceramics & organic laminates, build-up, flex)
- ▶ Precision optical alignment & interconnection



PRODUCT DESIGN

- ▶ Product design for RF, Microwave & Optical applications (analog/digital)
- ▶ Computer modeling for Optical, RF/EM, Electrical, Thermal, Mechanical
- ▶ Test systems development (HW/SW)
- ▶ 10/40/100/200Gb/s & beyond – Components, Modules, Blades
- ▶ Communication, Medical, Industrial, Defense & Aerospace



MANUFACTURING

- ▶ Assembly & test processes for complex RF & Opto-electronic products (Circuit cards, Modules, Components)
- ▶ Advanced microelectronic & micro-optic processes (chip & wire, flip-chip, active/passive alignment, hermetic sealing)
- ▶ Flexible manufacturing for early NPI prototypes
- ▶ Test processes for RF/Optical
- ▶ Global manufacturing

MICROELECTRONIC TECHNOLOGIES

Bare die interconnections – Optical alignment, wire-bonding, micro flip-chip

Microelectronic components & materials

Microelectronic & optical process engineering & manufacturing

Miniaturization & Optimization of Free-space optical environments

Customize 2.5D & 3D miniaturization

MODULES/SUB-SYSTEM & BLADE DESIGN

RF, Optical System design – specifications to detailed implementation

Multidisciplinary solutions including optical, analog, high-speed, FPGA, embedded software, physical & thermal design

Modules, blades, systems

HIGH-SPEED MODELING & DESIGN

Optical modeling & design (components, interconnections) up to 100 GHz

RF, Signal Integrity modeling & design

Power & decoupling networks

Die impedance matching circuits

Free space, guided interconnections

Optical path optimization for Next Gen (PAM4) Systems

RF, OPTICAL TEST ENGINEERING

High-speed, RF, Optical test development for manufacturing & customer specific test environments

Structural, functional, system test

Design validation – high end testing capabilities (110GHz)

RF, OPTICAL COMPONENT DESIGN

RF, Optical, Thermal interconnection design

Substrate/package design

Hermetic, non-hermetic

Package to system interconnection

Components: Drivers, Amplifiers, TRX, Modulators, antennas, lasers

RELIABILITY ENGINEERING & REGULATORY TESTING

Reliability analysis, FMEA

Custom product qualification

Failure analysis

Regulatory compliance



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