VERTICALLY INTEGRATED SYSTEMS

DOC.IV-7
EDITION: 2026

PRODUCT CATALOG

FIBER OPTICS & PHOTONICS

2026

SCOPE: Optoelectronic Components & Solutions

APPLICATIONS: Optical Communication, Consumer & Automotive

KEY TECH: VCSELs, PIN Photodiodes, SiGe BICMOS

01. WELCOME TO VI SYSTEMS

VI SYSTEMS (VIS) DEVELOPS AND MANUFACTURES CUTTING-EDGE OPTOELECTRONIC COMPONENTS FOR COMMUNICATION, CONSUMER, AND AUTOMOTIVE APPLICATIONS. LOCATED IN THE HEART OF BERLIN, WE ARE A FABLESS COMPANY SPECIALIZING IN ULTRA-FAST SOLUTIONS FOR OPTICAL INTERCONNECTS AND SENSORS.

OUR PORTFOLIO INCLUDES VERTICAL CAVITY SURFACE-EMITTING LASERS (VCSELS) UP TO 246 GB/S AND PIN PHOTODIODES UP TO 400GB/S PER CHANNEL, ALONGSIDE DRIVER AND AMPLIFIER ICS OPERATING UP TO 80GBAUD. OUR COMPONENTS ENABLE ENERGY-EFFICIENT 400 GB/S PAM-4 TRANSMISSION PER 4 WAVELENGTH CHANNELS USING SHORT WAVE DIVISION MULTIPLEXING (SWDM) OVER 300M OF MULTIMODE FIBER. 100GB/S SINGLE MODE FIBER DATA TRANSMISSION OVER KM-LONG DISTANCES IS POSSIBLE.

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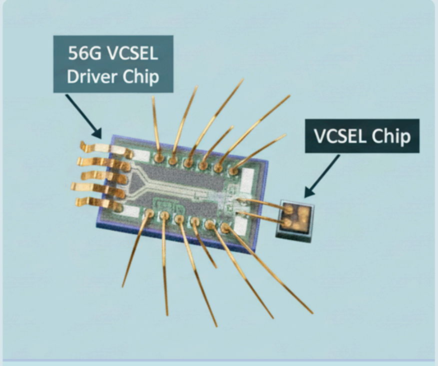
03. TECHNOLOGY & SERVICES

INTEGRATED OPTICAL SOLUTIONS

VIS CUSTOMIZES STATE-OF-THE-ART SIGE BICMOS INTEGRATED CIRCUITS TO MATCH ULTRAHIGH-SPEED VCSEL TRANSMITTER AND PIN RECEIVER COMPONENTS.

BOTH KEY ELEMENTS ARE ASSEMBLED IN A PROPRIETARY HIGH-FREQUENCY DESIGN DELIVERING OUTSTANDING PERFORMANCE OVER A WIDE TEMPERATURE RANGE.



SINGLE CHANNEL NRZ VCSEL DRIVER WITH VCSEL CHIP

KEY ADVANTAGES:

- HIGH SPEED PERFORMANCE
- LOW POWER CONSUMPTION
- SMALL FOOTPRINT DESIGN
- HIGH RELIABILITY
- LOW COST MANUFACTURING

OUR UNIQUE SELLING POINT IS THE COMBINATION OF MICRO-ASSEMBLY INTEGRATION OF ADVANCED ELECTRO-OPTIC COMPONENTS, DEVELOPMENT OF HIGH-SPEED ICS AND MODULATION APPROACHES.

VIS OPERATES A FABLESS MODEL ENSURING RELIABILITY AND SCALABILITY.

04. WAFER MAPPING & HIGH-FREQUENCY TESTING

WAFER MAPPING SERVICES

VIS'S SEMI-AUTOMATIC PROBER STATION PERFORMS HIGH-SPEED ELECTRICAL AND OPTICAL TESTING EARLY IN THE MANUFACTURING PROCESS, REDUCING COSTS BY ELIMINATING OUT-OF-SPEC WAFERS.

FULL WAFER CHARACTERISATION: 100% CHARACTERISATION OF 2"–8" WAFERS USING AN ALIGNMENT CAMERA WITH PATTERN RECOGNITION; AUTOMATIC ALIGNMENT TO CHIPS; TEMPERATURE RANGE 25°C–150°C.

MEASURED PARAMETERS:

- L/I/V CURVES
- THRESHOLD CURRENT
- SLOPE EFFICIENCY
- OPTICAL SPECTRUM
- PHOTODIODE SENSITIVITY
- REVERSE BIAS AND DARK CURRENT

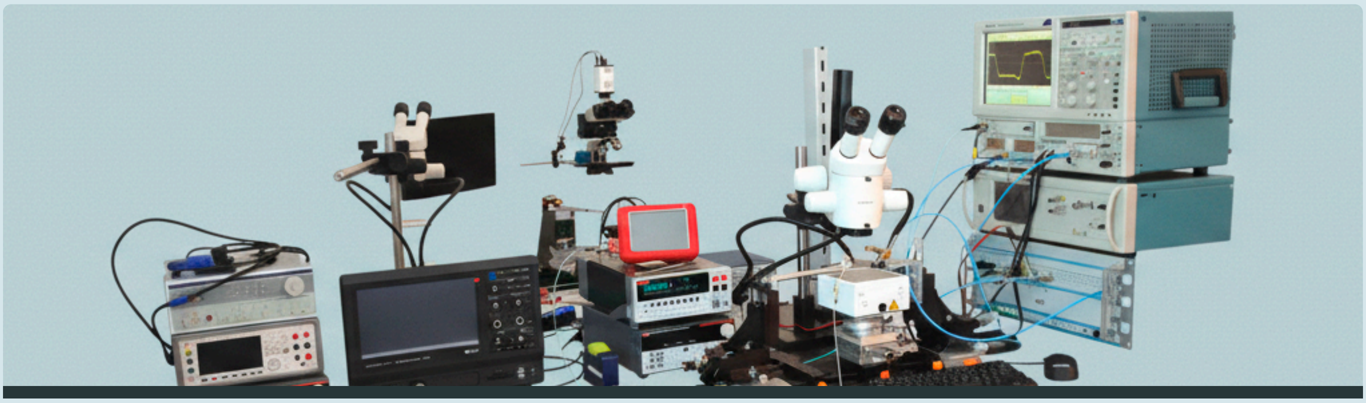
EMISSION ANALYSIS: NEARFIELD AND FARFIELD ANALYSIS FOR EMITTING DIAMETER, MODE CHARACTERISTICS, POLARIZATION AND ANGULAR POWER DISTRIBUTION.

HIGH-FREQUENCY TEST & CHARACTERISATION

THE HIGH-FREQUENCY LAB ANALYSES ELECTRO-OPTICAL PERFORMANCE USING A SINE-WAVE GENERATOR UP TO 38 GHz WITH A 70 GHz SAMPLING OSCILLOSCOPE.

LABORATORY CAPABILITIES:

- 32 GHz DETECTOR COVERS 700–1600 NM
- EYE-DIAGRAM AND MODULATION TESTS UP TO 128 GBIT/S
- PRBS7/PRBS31 PATTERN GENERATION
- PHOTODETECTOR MODULES UP TO 112 GBIT/S AT 850 NM

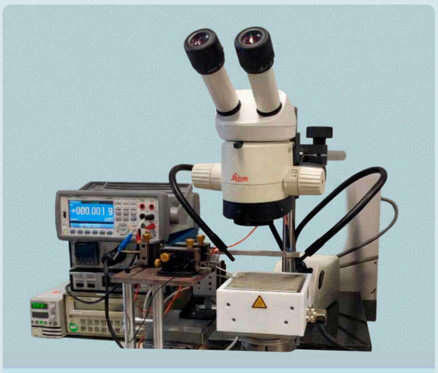


06. OPTICAL & MECHANICAL INSPECTION, MODELLING & SIMULATION

OPTICAL & MECHANICAL INSPECTION

THE LABORATORY'S OPTICAL MICROSCOPES UP TO 1000× MAGNIFICATION AND THICKNESS ANALYSIS TECHNOLOGY RESOLVING 0.1 MM (HORIZONTAL) AND 0.5 MM (VERTICAL).

MICROPROBER STATION: ON-WAFER CHARACTERISATION OVER A WIDE TEMPERATURE RANGE; STATIC TESTS MEASURE FORWARD/REVERSE VOLTAGE, CURRENT AND DIFFERENTIAL RESISTANCE.

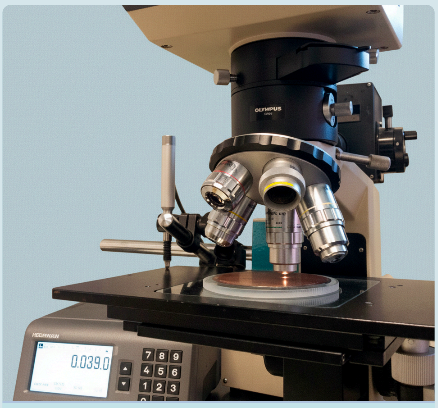


STEREO MICROSCOPE WITH TEMPERATURE CHUCK

OPTICAL PARAMETERS:

- POWER
- SPECTRUM
- SENSITIVITY
- EFFICIENCY
- THRESHOLD CURRENT
- SLOPE EFFICIENCY
- AMPLIFICATION

ADVANCED STUDIES: COMPLEX ANALYSES USE FIB, SEM AND TEM WITH EXTERNAL PARTNERS.

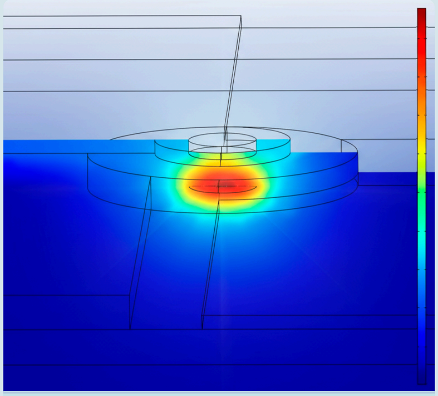


HIGH RESOLUTION OPTICAL MICROSCOPE

MODELLING & SIMULATION

THERMAL MODELLING OF SEMICONDUCTOR PACKAGES USES MODERN FEA/CFD TOOLS INTEGRATED WITH MECHANICAL CAD.

VCSEL SIMULATION: MODELLING OF VCSEL OPTICAL MODES (FUNDAMENTAL AND EXCITED MODES) AND THERMAL DISTRIBUTIONS, WHICH INFORM DESIGN IMPROVEMENTS.



THERMAL DISTRIBUTION IN A VCSEL

06. VCSEL CHIPS: DATACOM

PRODUCT FOCUS

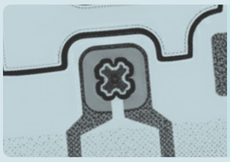
VCSEL CHIPS

VIS VCSEL CHIPS COVER SHORT-WAVELENGTH DATACOM, SENSING, LIFI, AND AI INTERCONNECT WORK WITH HIGH MODULATION BANDWIDTH, COMPACT CHIP FORMATS, AND QUALIFIED OR SAMPLE-READY VARIANTS FROM 840 TO 960 NM.

RANGE **840-960 NM**	SPEED **25G TO 200G CLASS**
STATUS **QUALIFIED / SAMPLES**	DATASHEETS **AVAILABLE**

VCSEL DATACOM PRODUCTS

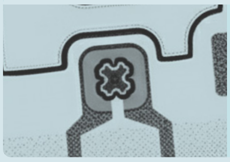
DATACOM VCSELS FOR 50G/56G, 100G/112G, AND 200G-CLASS PAM-4 OR NRZ LINKS, INCLUDING MULTI-MODE AND MULTI-APERTURE SINGLE-MODE VARIANTS.



VM100 850 MA SM

CHIP TYPE	multi-aperture single-mode
CONTACT	GSG
WAVELENGTH	840-860 nm
COMMENT	112 Gbit/s PAM-4

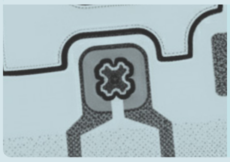
DATASHEET



VM100 880 MA SM

CHIP TYPE	multi-aperture single-mode
CONTACT	GSG
WAVELENGTH	870-890 nm
COMMENT	RMS ~0.1 nm

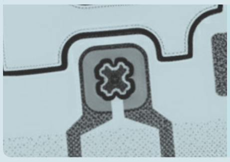
DATASHEET



VM100 910 MA SM

CHIP TYPE	multi-aperture single-mode
CONTACT	GSG
WAVELENGTH	900-920 nm
COMMENT	FF ~20 deg

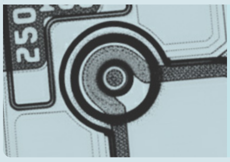
DATASHEET



VM100 940 MA SM

CHIP TYPE	multi-aperture single-mode
CONTACT	GSG
WAVELENGTH	930-950 nm
COMMENT	25 C - 75 C

DATASHEET



VM50 850

CHIP TYPE	multi-mode
CONTACT	SG / GS
WAVELENGTH	840-860 nm
COMMENT	56 Gbit/s PAM-4

DATASHEET

07. VCSEL CHIPS: SENSING / LIFI / AI

PRODUCT FOCUS

SENSING, LIFI AND AI VCSELS

VIS VCSEL CHIPS COVER SHORT-WAVELENGTH DATACOM, SENSING, LIFI, AND AI INTERCONNECT WORK WITH HIGH MODULATION BANDWIDTH, COMPACT CHIP FORMATS, AND QUALIFIED OR SAMPLE-READY VARIANTS FROM 840 TO 960 NM.

RANGE
840-960 NM

SPEED
25G TO 200G CLASS

STATUS
QUALIFIED / SAMPLES

DATASHEETS
AVAILABLE

HIGH-TEMPERATURE AND HIGH-POWER VCSELS

HIGH-TEMPERATURE, HIGH-POWER, AND MULTI-APERTURE VCSELS FOR SENSING, LIFI, BEAM SWITCHING, STEERING, AND OPTICAL AI TEST SETUPS. INDIVIDUALLY ADDRESSABLE COUPLED-APERTURE VARIANTS ARE AVAILABLE ON DEMAND.

V25 850 HT

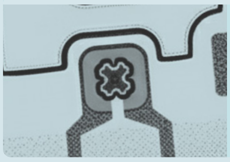
CHIP TYPE	multi-mode
CONTACT	SG / GS
WAVELENGTH	840-860 nm
COMMENT	Up to 125 C

DATASHEET

V25 940 HP MA

CHIP TYPE	multi-aperture multi-mode
CONTACT	SG / GS
WAVELENGTH	930-950 nm
COMMENT	High power 50G LiFi

DATASHEET



V-MA HP 850C1

CHIP TYPE	multi-aperture x4 coherent
CONTACT	GSG
WAVELENGTH	930-960 / 840-860 nm
COMMENT	20 mW CW, >40 Gbaud

DATASHEET

S-940-MC46

CHIP TYPE	multi-aperture
CONTACT	GSG
WAVELENGTH	934-948 nm
COMMENT	Up to 40 GBaud

DATASHEET

S-940-SG-MA-HP

CHIP TYPE	multi-aperture
CONTACT	SG / GS
WAVELENGTH	930-950 nm
COMMENT	Up to 56 Gbit/s PAM-4

DATASHEET

VM100 850

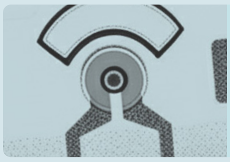
CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	840-860 nm
COMMENT	112 Gbit/s PAM-4

DATASHEET

08. VCSEL CHIPS: VM100 / S-SERIES / QSM

VM100, S-SERIES AND QSM SENSING VARIANTS

CONTINUATION OF THE VCSEL SENSING PORTFOLIO, INCLUDING SINGLE-APERTURE VM100 VARIANTS, S-SERIES DEVICES, AND QSM CHIPS FOR 200G-CLASS PAM-4 EXPERIMENTS.



VM100 880

CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	870-890 nm
COMMENT	RMS ~0.5 nm

DATASHEET

VM100 910

CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	900-920 nm
COMMENT	FF ~30 deg

DATASHEET

VM100 940

CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	930-950 nm
COMMENT	25 C - 75 C

DATASHEET

S-850-MA

CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	845-855 nm
COMMENT	Up to 25 GBaud

DATASHEET

S-940-MC60

CHIP TYPE	multi-mode
CONTACT	GSG
WAVELENGTH	935-945 nm
COMMENT	Up to 25 GBaud

DATASHEET

VM100 850 QSM

CHIP TYPE	quasi single-mode
CONTACT	SG / GS
WAVELENGTH	840-860 nm
COMMENT	200 Gbit/s PAM-4

DATASHEET

VM100 910 QSM

CHIP TYPE	quasi single-mode
CONTACT	SG / GS
WAVELENGTH	900-920 nm
COMMENT	200 Gbit/s PAM-4

DATASHEET

09. HIGH-SPEED PHOTODIODE CHIPS

PRODUCT FOCUS

HIGH-SPEED PHOTO-DIODES

VIS HIGH-SPEED PHOTODIODES COMBINE BROAD 400 TO 1650 NM SENSITIVITY WITH STRONG RESPONSIVITY AND VERY HIGH BANDWIDTH FOR SWDM RECEIVERS, BROADBAND MEASUREMENTS, AND CUSTOM COATING REQUIREMENTS.

RANGE
400-1650 NM

RESPONSIVITY
0.5 A/W CLASS

COATING
SWDM OPTIMIZED

CUSTOM
ON REQUEST

107 GBIT/S PD

PD VERSIONS ARE OPTIMIZED FOR SWDM OPERATION IN 840-960 NM, WHILE COVERING A BROADER 400-1600 NM RANGE.

D35-50-SWDMC1

CONTACT	GSG
DIAMETER	25 um
WAVELENGTH	400-1600 nm
COMMENT	F-3dBo ~35 GHz (50 ohm)

DATASHEET

D25 50 SWDMC1

CONTACT	GSG
DIAMETER	26 um
WAVELENGTH	400-1600 nm
COMMENT	F-3dBo ~25 GHz (50 ohm)

DATASHEET

200 GBIT/S PD / 428 GBIT/S PD

D85 SWDMC1 EXTENDS THE PD PORTFOLIO WITH UP TO 200 GBAUD PER CHANNEL AND ABOUT 85 GHZ BANDWIDTH FOR SWDM LINKS. HIGHEST-SPEED PD OPTION IN THE CATALOG, INTENDED FOR 400G-CLASS RECEIVER EXPERIMENTS AND COMPACT HIGH-BANDWIDTH OPTICAL LINKS.

D70 SWDMCX

CONTACT	GSG
DIAMETER	~25 um
WAVELENGTH	400-1600 nm
COMMENT	F-3dBo ~70 GHz (15 ohm)

DATASHEET

D85 SWDMC1

CONTACT	GSG
DIAMETER	20 um
WAVELENGTH	400-1650 nm
COMMENT	F-3dBo ~85 GHz (15 ohm)

DATASHEET

D400G

CONTACT	GSG
DIAMETER	~16 um
WAVELENGTH	400-1600 nm
COMMENT	F-3dBe ~60 GHz (25 ohm)

DATASHEET

10. OPTICAL MODULES

PRODUCT FOCUS

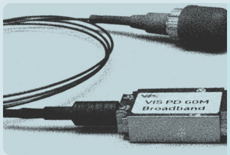
OPTICAL MODULES

FIBER-COUPLED VIS MODULES PACKAGE PHOTODETECTOR AND VCSEL TRANSMITTER TECHNOLOGY INTO READY TEST ASSEMBLIES, REDUCING SETUP TIME FOR HIGH-SPEED OPTICAL LINK VALIDATION.

ROLES **PD / TRANSMITTER**	FIBER **MMF / SMF**
SPEED **28G TO 100G**	DATASHEETS **AVAILABLE**

OPTICAL PHOTODETECTOR MODULES

FIBER-COUPLED PIN PHOTODETECTOR MODULES FOR HIGH-SPEED OPTICAL INPUT PATHS.



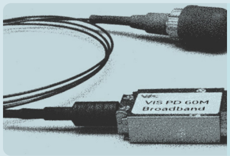
D60M FC

ROLE	PIN photodetector module
WAVELENGTH	400-1650 nm
BANDWIDTH	>60 GHz
FIBER	MMF / SMF

DATASHEET

VCSEL TRANSMITTER MODULES

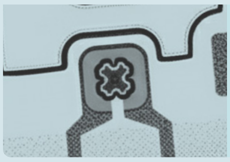
VCSEL TRANSMITTER MODULES AND TRANSMITTER SUBASSEMBLIES FOR 850 NM, SWDM, AND 1550 NM TEST LINKS.



VM100-850M

ROLE	VCSEL transmitter module
WAVELENGTH	850 nm
DATA RATE	Up to 100 Gbaud; PAM-4, DMT, mCAP
FIBER	50/125 um

DATASHEET



HF MA MODULES

ROLE	VCSEL HF module with MA chips
WAVELENGTH	850 / 880 / 910 / 940 nm
DATA RATE	16-25 GHz bandwidth
FIBER	On demand

DATASHEET

11. INTEGRATED CIRCUITS

PRODUCT FOCUS

INTEGRATED CIRCUITS

VIS DRIVER AND TIA ICS COMPLETE THE HIGH-SPEED OPTICAL LINK AROUND VCSELS AND PHOTODIODES, WITH COMPACT LOW-POWER DESIGNS AND EVALUATION BOARDS FOR TRANSMITTER AND RECEIVER PROTOTYPES.

DRIVER
A56 SERIES

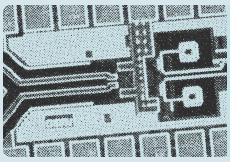
AMPLIFIER
T56 SERIES

TESTBOARDS
TX / RX EVALUATION

USE
VCSEL / RECEIVER

VCSEL DRIVER ICS

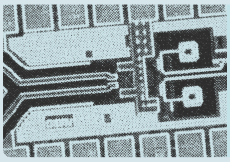
VCSEL DRIVER ICS FOR HIGH-SPEED OPTICAL TRANSMITTERS, WITH SUPPLY AND POWER VALUES SHOWN FOR QUICK COMPARISON.



A56-230C

ROLE	VCSEL driver IC
DATA RATE	up to 100G
SUPPLY	3.3 V
POWER	200 mW

DATASHEET



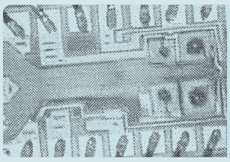
A56-105C

ROLE	VCSEL driver IC
DATA RATE	up to 56G
SUPPLY	3.3 V
POWER	105 mW

DATASHEET

TRANSIMPEDANCE AMPLIFIERS / IC EVALUATION BOARDS

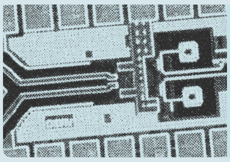
TRANSIMPEDANCE AMPLIFIER ICS FOR RECEIVER-SIDE SIGNAL CONVERSION IN HIGH-SPEED OPTICAL LINKS. EVALUATION BOARDS EXPOSE THE INSTALLED VIS DRIVER AND RECEIVER-SIDE ICS IN FIBER-COUPLED TX/RX TEST SETUPS.



T56-250C

ROLE	TIA IC
DATA RATE	up to 56G NRZ
DETAIL	3.0 kohm differential
POWER/PATH	150 mW

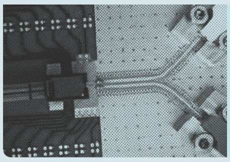
DATASHEET



DRIVER EVALUATION BOARD

ROLE	Transmitter-side evaluation
DATA RATE	A56-230C VCSEL driver
DETAIL	Up to 56 Gbit/s NRZ
POWER/PATH	850 nm VCSEL

DATASHEET



RECEIVER EVALUATION BOARD

ROLE	Receiver-side evaluation
DATA RATE	T56-250C TIA
DETAIL	Up to 56 Gbit/s NRZ
POWER/PATH	800-1550 nm receiver

DATASHEET

12. OPTICAL ASSEMBLY

PRODUCT FOCUS

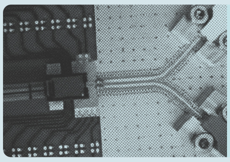
OPTICAL ASSEMBLY

VIS OPTICAL ASSEMBLIES PACKAGE HIGH-SPEED RECEIVER AND TRANSMITTER FUNCTIONALITY INTO READY TX/RX DEVICES FOR OPTICAL LINK VALIDATION AND PRODUCT-DEVELOPMENT LABS.

APPLICATION	WAVELENGTHS
TX / RX ASSEMBLIES	**800-1550 NM**
SPEED	DATASHEETS
56G NRZ	**AVAILABLE**

OPTICAL TX / RX ASSEMBLIES

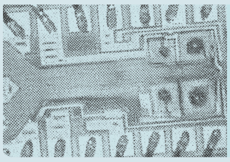
SINGLE-CHANNEL OPTICAL TX/RX ASSEMBLIES FOR 56G NRZ LINK VALIDATION.



RECEIVER

DATA RATE	Up to 56 Gbit/s NRZ
WAVELENGTH	800-1550 nm
FIBER	50/125 um
INSTALLED IC	T56-250C TIA

DATASHEET



TRANSMITTER

DATA RATE	Up to 56 Gbit/s NRZ
WAVELENGTH	850 nm
FIBER	50/125 um
INSTALLED IC	A56-230C VCSEL driver

DATASHEET

13. CONTACT INFORMATION

FOR ADDITIONAL INFORMATION OR TO RECEIVE A QUOTATION, PLEASE CONTACT OUR SALES DEPARTMENT.

ADDRESS

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