



DOC.IV-7
EDITION: 2025-Q3

VERTICALLY INTEGRATED SYSTEMS

PRODUCT CATALOG

FIBER OPTICS & PHOTONICS

2025

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) AND PIN PHOTODIODES DELIVERING SPEEDS UP TO 224 GBPS PER CHANNEL, ALONGSIDE DRIVER AND AMPLIFIER ICS OPERATING UP TO 56 GBPS. OUR LATEST GENERATION COMPONENTS ENABLE ENERGY-EFFICIENT 400 GBPS PAM-4 TRANSMISSION USING SHORT WAVE DIVISION MULTIPLEXING (SWDM).



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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.

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.

INTEGRATED VCSEL
DRIVER WITH VCSEL
CHIP PHOTO

CONCEPTUAL GRAPHIC:
ICS + OPTICAL
COMPONENTS
INTEGRATION

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.

SEMI-AUTOMATIC WAFER PROBER AND
ALIGNMENT CAMERA PHOTO

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

HIGH-FREQUENCY TEST LABORATORY
SETUP PHOTO

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.

OPTICAL PARAMETERS:

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

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

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.

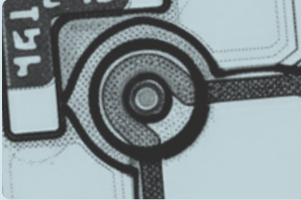
STEREO MICROSCOPE WITH
TEMPERATURE CHUCK

HIGH-RESOLUTION OPTICAL
MICROSCOPE

TEM ANALYSIS PHOTO

THERMAL
DISTRIBUTION
GRAPHIC

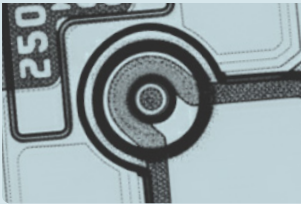
06. VCSEL TRANSMITTER MODULES



V25-850M

DATA RATE	28 GBPS (NRZ)
WAVELENGTH	850 NM
FIBER TYPE	50/125 MM

DATASHEET 



V50-850M

DATA RATE	56 GBPS (PAM-4)
WAVELENGTH	850 NM
FIBER TYPE	50/125 MM

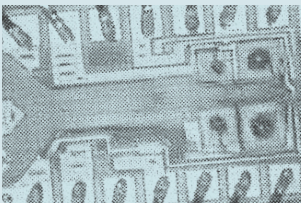
DATASHEET 



VM100-850M


DATA RATE	112 GBPS (PAM-4)
WAVELENGTH	850 NM
FIBER TYPE	50/125 MM

DATASHEET 



T56-850

DATA RATE	56 GBPS (NRZ)
WAVELENGTH	850 NM
FIBER TYPE	50/125 MM

DATASHEET 

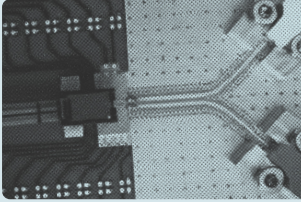


V25-1550M

WAVELENGTH	1550 NM
DATA RATE	25 GBPS (NRZ)
FIBER TYPE	9/125 MM

DATASHEET 

07. OPTICAL RECEIVERS & PHOTODETECTORS



R56-850

INPUT 700-870 NM
WAVELENGTH
DATA RATE (NRZ) 56 GBPS
FIBER TYPE 50/125 MM

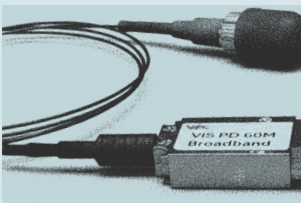
DATASHEET 



D30-850M


3 DB BANDWIDTH > 30 GHZ
WAVELENGTH 840-1650 NM
FIBER TYPE 50/125 MM

DATASHEET 



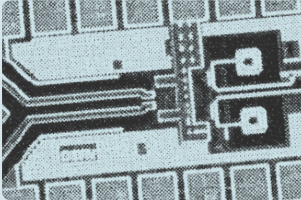
D60M FC

INPUT 400-1650 NM
WAVELENGTH
3 DB BANDWIDTH > 60 GHZ
FIBER TYPE MMF/SMF

DATASHEET 

08. INTEGRATED CIRCUITS (ICS)

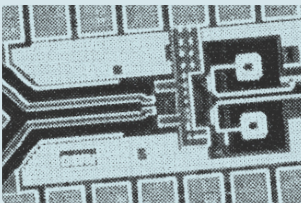
HIGH SPEED VCSEL DRIVERS



A56-230C

DATA RATE	UP TO 100 GBPS
SUPPLY VOLTAGE	3.3 V
POWER DISSIPATION	200 MW

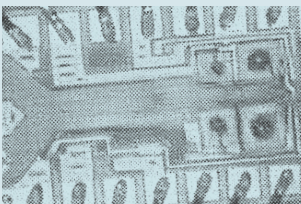
DATASHEET 



A56-105C

DATA RATE	UP TO 56 GBPS
SUPPLY VOLTAGE	3.3 V
POWER DISSIPATION	105 MW

DATASHEET 



T56-250C

DATA RATE	UP TO 56 GBPS (NRZ)
DIFFERENTIAL GAIN	3.0 KΩ
POWER	150 MW

DATASHEET 

09. ULTRA HIGH-SPEED VCSEL CHIPS

SERIES: VM100

	<div>VM100 850</div> <table><tr><td>CHIP TYPE</td><td>MULTI-MODE</td></tr><tr><td>WAVELENGTH</td><td>840-860 NM</td></tr><tr><td>CONTACT</td><td>GSG</td></tr></table>	CHIP TYPE	MULTI-MODE	WAVELENGTH	840-860 NM	CONTACT	GSG	DATASHEET 
CHIP TYPE	MULTI-MODE							
WAVELENGTH	840-860 NM							
CONTACT	GSG							
	<div>VM100 880</div> <table><tr><td>CHIP TYPE</td><td>MULTI-MODE</td></tr><tr><td>WAVELENGTH</td><td>870-890 NM</td></tr><tr><td>CONTACT</td><td>GSG</td></tr></table>	CHIP TYPE	MULTI-MODE	WAVELENGTH	870-890 NM	CONTACT	GSG	DATASHEET 
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	<div>VM100 910</div> <table><tr><td>CHIP TYPE</td><td>MULTI-MODE</td></tr><tr><td>WAVELENGTH</td><td>900-920 NM</td></tr><tr><td>CONTACT</td><td>GSG</td></tr></table>	CHIP TYPE	MULTI-MODE	WAVELENGTH	900-920 NM	CONTACT	GSG	DATASHEET 
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CONTACT	GSG							
	<div>VM100 940</div> <table><tr><td>CHIP TYPE</td><td>MULTI-MODE</td></tr><tr><td>WAVELENGTH</td><td>930-950 NM</td></tr><tr><td>CONTACT</td><td>GSG</td></tr></table>	CHIP TYPE	MULTI-MODE	WAVELENGTH	930-950 NM	CONTACT	GSG	DATASHEET 
CHIP TYPE	MULTI-MODE							
WAVELENGTH	930-950 NM							
CONTACT	GSG							

10. ULTRA HIGH-SPEED VCSEL CHIPS

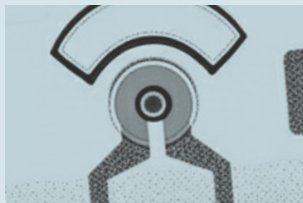
SERIES: VM100 (MA-SM / QSM)



VM100 850 MA-SM


CHIP TYPE	MA-SM
WAVELENGTH	840-860 NM
CONTACT	GSG

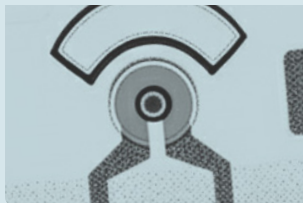
DATASHEET 



VM100 880 MA-SM


CHIP TYPE	MA-SM
WAVELENGTH	870-890 NM
CONTACT	GSG

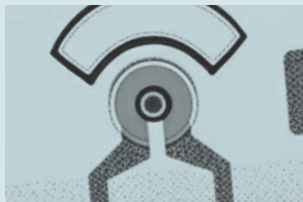
DATASHEET 



VM100 910 MA-SM


CHIP TYPE	MA-SM
WAVELENGTH	900-920 NM
CONTACT	GSG

DATASHEET 



VM100 940 MA-SM


CHIP TYPE	MA-SM
WAVELENGTH	930-950 NM
CONTACT	GSG

DATASHEET 



VM100 850 QSM

CHIP TYPE	QSM
WAVELENGTH	840-860 NM
CONTACT	GSG

DATASHEET 



VM100 910 QSM

CHIP TYPE	QSM
WAVELENGTH	900-920 NM
CONTACT	GSG

DATASHEET 

11. HIGH-SPEED VCSEL CHIPS

SERIES: V50 / VM50 / V25



V50 850

CHIP TYPE	MULTI-MODE
WAVELENGTH	840-860 NM
CONTACT	SG / GS

DATASHEET 



VM50 940

CHIP TYPE	MULTI-MODE
WAVELENGTH	930-950 NM
CONTACT	GSG

DATASHEET 



V25 940 HP MA


FEATURE	HIGH POWER (LIFI)
WAVELENGTH	930-950 NM
CONTACT	SG / GS

DATASHEET 



VM50 850

CHIP TYPE	MULTI-MODE
WAVELENGTH	840-860 NM
CONTACT	GSG

DATASHEET 



V25 850 HT

FEATURE	HIGH TEMP (125°C)
WAVELENGTH	840-860 NM
CONTACT	SG / GS

DATASHEET 

12. HIGH-SPEED PHOTODIODES (PDS)

SWDM-OPTIMIZED



D40 SWDM

CONTACT TYPE	GSG
DIAMETER	20 MM
BANDWIDTH	~40 GHZ

DATASHEET 



D35 SWDM

CONTACT TYPE	GSG
DIAMETER	25 MM
BANDWIDTH	~35 GHZ

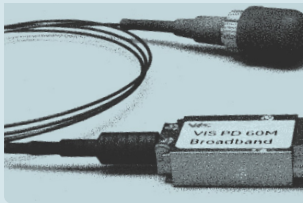
DATASHEET 



D30 SWDM


CONTACT TYPE	GSG
DIAMETER	~23 MM
BANDWIDTH	~30 GHZ

DATASHEET 



D70 SWDM


CONTACT TYPE	GSG
DIAMETER	~25 MM
BANDWIDTH	~70 GHZ

DATASHEET 



D400G

CONTACT TYPE	GSG
DIAMETER	~16 MM
BANDWIDTH	~60 GHZ (25Ω)

DATASHEET 

13. CONTACT INFORMATION

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

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