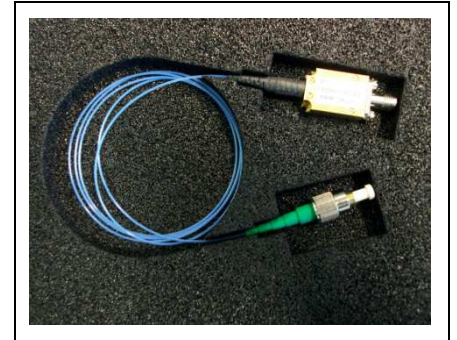


## Up to 50 Gbit/s PAM-4 VCSEL Multi-Mode Fiber-Coupled Module (850 nm)



Sample image only. Actual product may vary

Product Code: VM50-850M

### Product Description

High-speed transmitter module for test purpose with integrated 850nm VCSEL fiber coupled to an OM3 multimode fiber for optical output. Low RIN VCSEL suitable for multilevel modulations. The module is designed as engineering sample for high speed test applications.

Multi mode and single mode VCSEL versions are available.

### Features

- OM3 MMF Pigtail (50  $\mu$ m core, 1 m length)
- FC/PC optical output connector
- Anritsu V electrical connector
- Multi Mode and Single Mode VCSEL versions

### Applications

- Research and development
- 50G 4-PAM testing

Parameter	VM50-850M-MM	VM50-850M-SM
VCSEL type	Multi mode	Single mode
Emission Wavelength	850 nm (available 835 – 865 nm)	850 nm (available 835 – 865 nm)
Data rate	Up to 50 Gbit/s (4-PAM)	Up to 50 Gbit/s (4-PAM)
Peak Output Power	4 mW	1 mW
Relative intensity noise	<-140 dB/Hz	<-150 dB/Hz

All product specifications and descriptions are subject to change without notice.

Please contact our sales department for additional information and to receive a quotation: [sales@v-i-systems.com](mailto:sales@v-i-systems.com)

# Datasheet

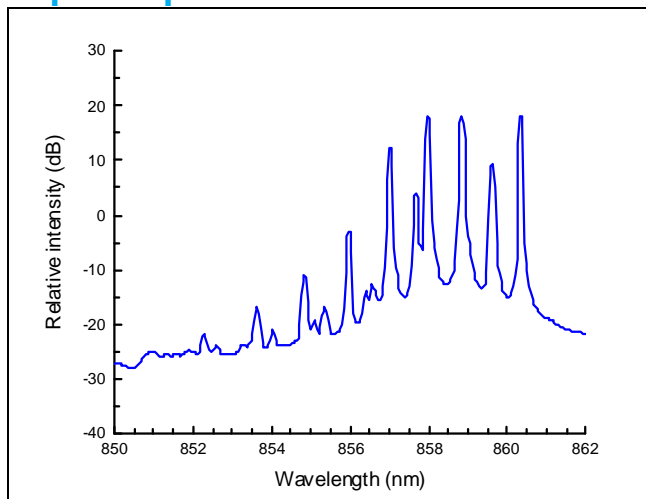
## VM50-850M



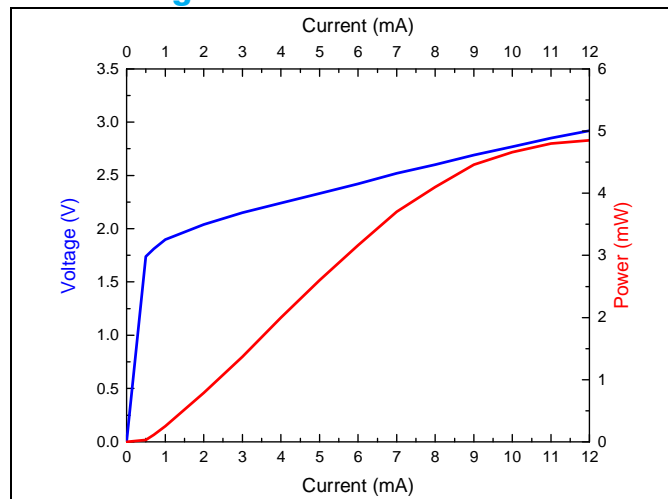
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### VM50-850M-MM: Multi mode VCSEL version

#### Optical spectrum



#### L-I-V Diagram



#### Electro-optical characteristics (at T<sub>case</sub> = 25 °C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	$\lambda$		835		865	nm
Maximum data rate	BR	4-PAM		50		Gbit/s
Bandwidth	BW ( $f_{3dB}$ )			21		GHz
Rise / Fall time	$\tau_R / \tau_F$	20%-80%		12 / 12		ps
Slope efficiency	$\eta$	5-10 mA	0.3		0.45	W/A
Threshold current	$I_{th}$				0.5	mA
Peak output power	$P_{max}$				4	mW
Relative intensity noise	RIN				140	dB/Hz
Optical spectrum				Multi mode		
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$		0.2	0.4	0.6	nm

#### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage temperature	$T_{st}$	-40	+90	°C
Maximum forward current	$I_f$		9	mA
Maximum reverse voltage	$V_{rv}$		5	V

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[www.v-i-systems.com](http://www.v-i-systems.com)

VI Systems GmbH Hardenbergstrasse 7 D-10623 Berlin

# Datasheet

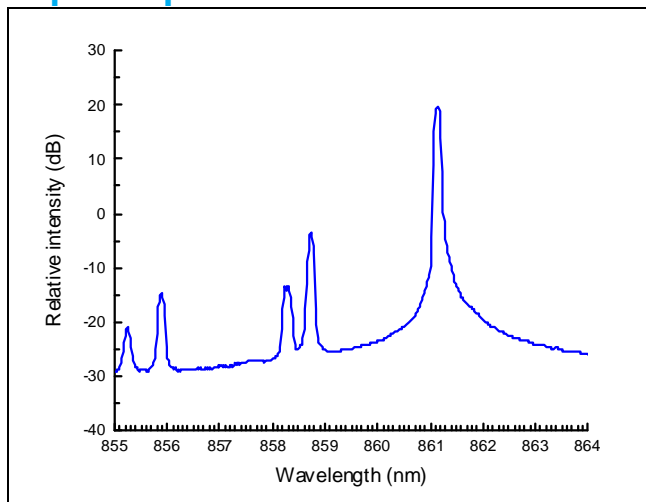
## VM50-850M



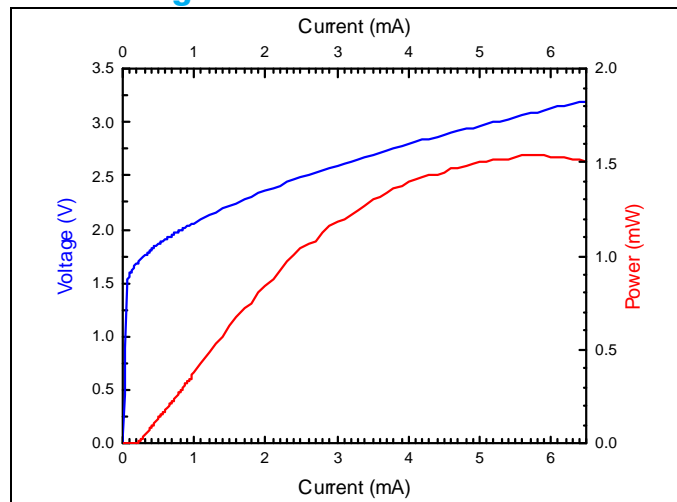
Vertically Integrated Systems

### VM50-850M-SM: Single mode VCSEL version

#### Optical spectrum



#### L-I-V Diagram



#### Electro-optical characteristics (at T<sub>case</sub> = 25 °C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	$\lambda$		835		865	nm
Maximum data rate	BR	4-PAM		50		Gbit/s
Bandwidth	BW ( $f_{3dB}$ )			21		GHz
Rise / Fall time	$\tau_R / \tau_F$	20%-80%		12 / 12		ps
Slope efficiency	$\eta$	2-4 mA	0.2		0.35	W/A
Threshold current	$I_{th}$				0.5	mA
Peak output power	$P_{max}$				1	mW
Relative intensity noise	RIN				150	dB/Hz
Optical spectrum				Single mode		
Side mode suppression ratio	SMSR			15		dB

#### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage temperature	$T_{st}$	-40	+90	°C
Maximum forward current	$I_f$		4	mA
Maximum reverse voltage	$V_{rv}$		5	V

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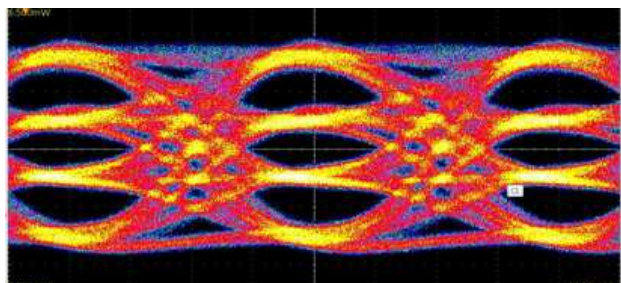
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## VM50-850M



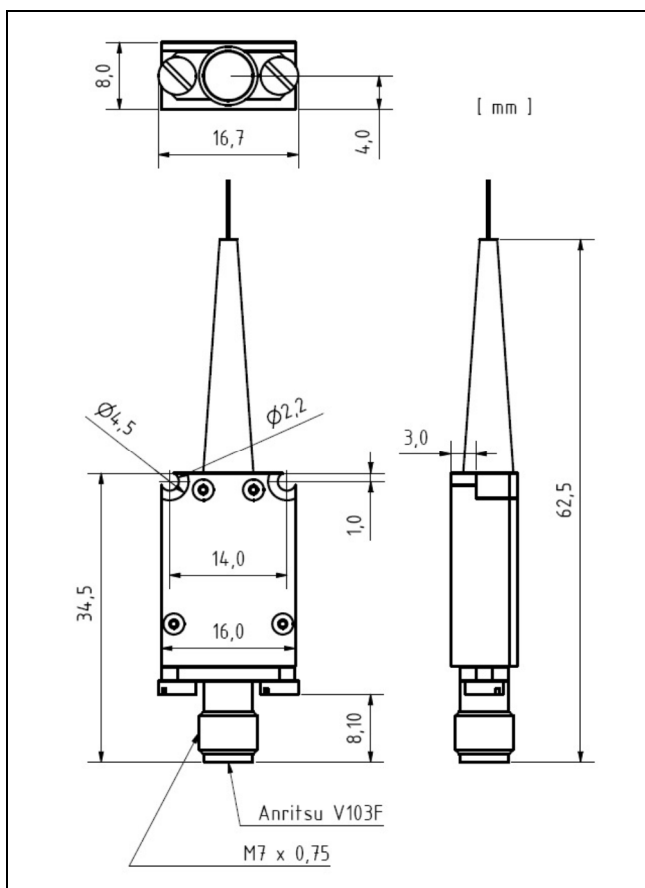
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### Eye diagram at 25GBaud 4-PAM

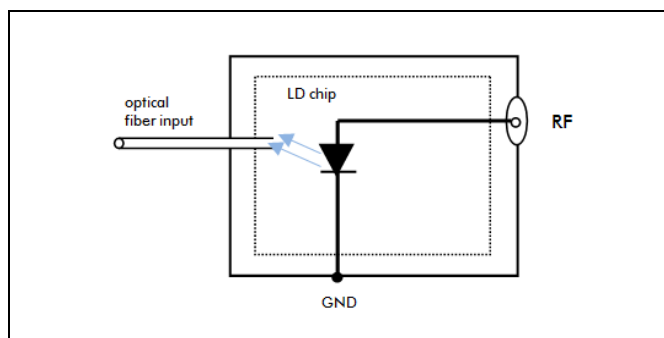


Receiver: Tektronix 80C15-32 GHz

### Mechanical dimensions



### Schematic diagram



LASER RADIATION. DO NOT VIEW  
DIRECTLY WITH OPTICAL  
INSTRUMENTS  
CLASS 1M LASER PRODUCT



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