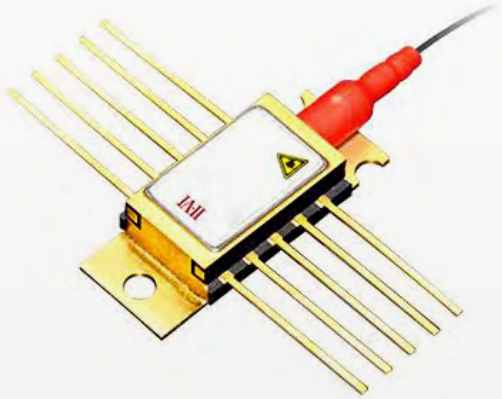
MATERIALS THAT MATTER



CM97-1000-76PM

976nm Mini-Butterfly Laser Diode Pump Module with FBG and PM Fiber

The II-VI CM97-1000-76PM wavelength stabilized high power single mode laser diode module has been designed as a pump source for industrial pulsed fiber pre- amplifiers as well as for erbium doped fiber amplifier (EDFA) laser applications. Processes and techniques of coupling the fiber to the laser allow very high output powers that are stable with both time and temperature. The pump module utilizes a Polarization maintaining fiber pigtail and a fiber Bragg grating design for enhanced wavelength and power stability performance. Devices achieve high kink free output powers of 1W.

976nm Mini-Butterfly Laser Diode Pump Module with FBG and PM Fiber

Features:

- High output power, 1W kink free
- Wavelength stabilized at 976nm
- Polarization maintaining single- mode optical fiber
- Internal thermoelectric heat pump and monitor diode
- Hermetically sealed 10-pin mini- butterfly package
- Telcordia GR-468-CORE compliant
- RoHS compliant

Applications:

- Fiber lasers
- Sensing
- EDFA

Characteristics

Conditions unless otherwise stated:

Case temperature: -20 to +75°C, Submount temperature: 25°C, Monitor diode bias: -5 V, CW operation

Parameter	Min	Typ	Max	Unit
Threshold current		60	80	mA
Forward current			1360	mA
Operating power	910			mW
Kink free current			1500	mA
Kink free power	1000			mW
Operating forward voltage		2	2.2	V
Peak wavelength	975	976	977	nm
Spectral width (-13dB)		0.2	1	nm
Signal to noise ratio	20			dB
Monitor detector responsivity (at -5V bias voltage)	1		10	μA/mW
Monitor dark current (at -5V bias voltage)			50	nA
Thermistor resistance (at 25°C)	9.5	10	10.5	kΩ
Heat pump current (ΔT = 50°C, If = If max)			2.0	A
Heat pump voltage (ΔT = 50°C, If = If max)			3.0	V
Polarization extinction ratio		13		dB

Absolute Maximum Ratings

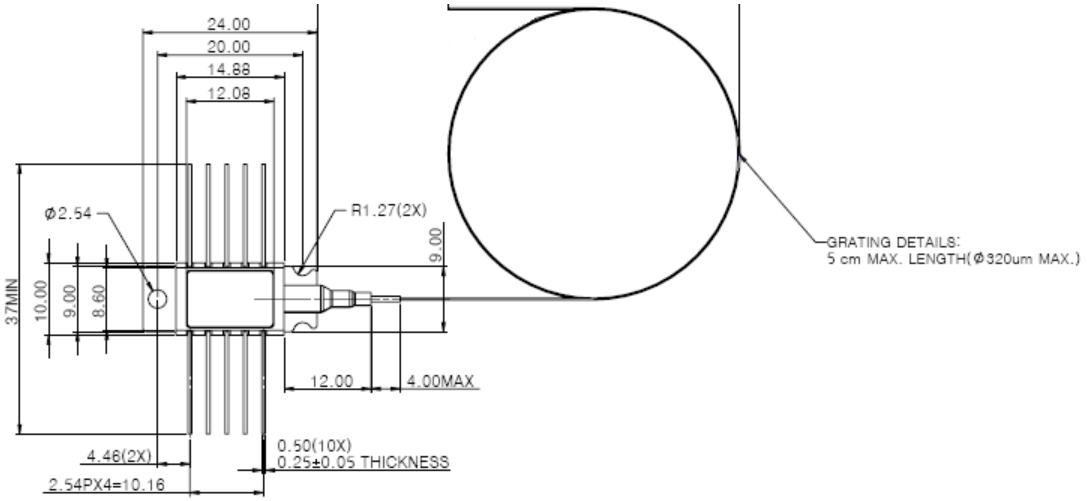
Parameter	Min	Max	Unit
Storage temperature	-40	85	°C
CW laser forward current (10s max)		1.5	A
Laser reverse voltage		2	V
Heat pump current	-2.2	2.2	A
Heat pump voltage	-3.5	3.5	V
Lead soldering temperature (10s max)		350	°C
Fiber bend radius	20		mm

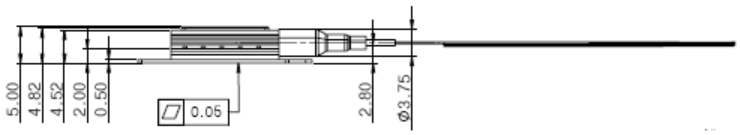
976nm Mini-Butterfly Laser Diode Pump Module with FBG and PM Fiber

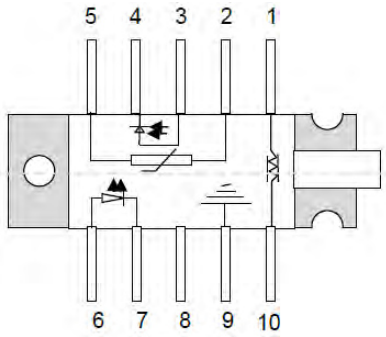
Fiber Characteristics

Parameter	Min	Typ	Max	Unit
Fiber type: Polarization maintaining Nufern PM980-XP or Corning PM 98-U25				
Mode field diameter	5.6	6.6	7.6	um
Buffer diameter	230	250	270	um
Pigtail length (module case to fibre end)	2.1			m
Module case to FBG center	1.4			m
Pristine fiber proof test level	200			psi
Fiber pull to housing	150			psi

Module Outline Drawing and Pin Connections







Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

976nm Mini-Butterfly Laser Diode Pump Module with FBG and PM Fiber

RoHS Compliance

II-VI is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

CM97-1000-76PM 976nm Mini-Butterfly Laser Diode Pump Module with FBG and PM Fiber

Important Notice

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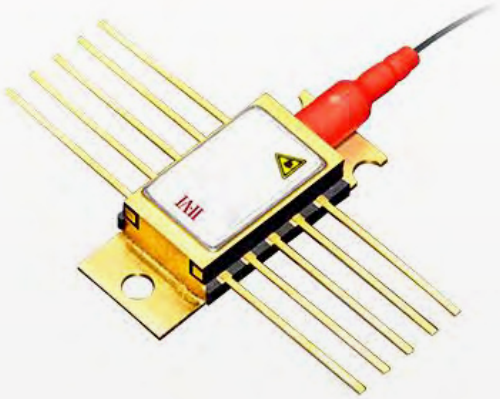
Safety Labels

II-VI



CM97A1064

Pulsed 1064nm High Power Mini-Butterfly Laser Diode Module

The II-VI CM97A1064FBG next generation high power single mode laser module has been designed as a light source for pulsed fiber lasers and CW applications that require 1064nm single mode light. Processes and techniques of coupling the fiber to the laser allow high output powers that are very stable with both time and temperature. Devices achieve high kink free output powers of 1.5W pulse peak.

Pulsed 1064nm High Power Mini-Butterfly Laser Diode Module

Features:

- High kink free pulse output power, up to 1.5W peak
- Wavelength: 1064 ± 5nm
- Short pulse operation of 5ns-500ns
- Polarization maintaining single- mode optical fiber
- Internal thermoelectric heat pump and monitor diode
- Hermetically sealed 10-pin mini-butterfly package
- RoHS compliant

Applications:

- Fiber lasers
- Sensing

Characteristics

Conditions unless otherwise stated:

Case temperature: -20 to +75°C, Submount temperature: 25°C, Monitor diode bias: -5 V, CW operation

Parameter	Min	Typ	Max	Unit
Threshold current	40	60	90	mA
CW Operating power at 1.1 A	600	700		mW
Operating pulsed peak power (<500ns / 500kHz)	1.2	1.4		W
Operating pulsed peak current (<500ns / 500kHz)			2.2	A
Forward voltage		1.7	2.5	V
Peak wavelength (pulsed operation)	1059	1064	1069	nm
Pulse width	5		500	ns
Repetition rate			500	kHz
Duty cycle			5	%
Rise time			1.6	ns
Monitor detector responsivity	0.5		40	µA/mW
Monitor dark current			50	nA
Thermistor resistance (at 25°C)	9	10	11	kΩ
Heat pump current (ΔT = 50°C, If = If max)			1.5	A
Heat pump voltage (ΔT = 50°C, If = If max)			3.0	V
Polarization extinction ratio		13		dB

Pulsed 1064nm High Power Mini-Butterfly Laser Diode Module

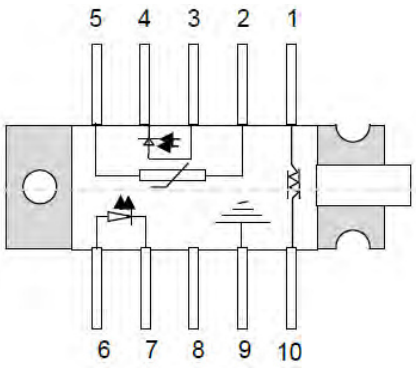
Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage temperature	-40	85	°C
CW laser forward current (10s max)		1.5	A
Laser reverse voltage		2	V
Heat pump current	-2.2	2.2	A
Heat pump voltage	-3.5	3.5	V
Lead soldering temperature (10s max)		350	°C
Fiber bend radius	20		mm

Fiber Characteristics

Parameter	Min	Typ	Max	Unit
Fiber type: Polarization maintaining Nufern PM980-HP or equivalent (e.g. Fujikura SM98)				
Mode field diameter	5.6	6.6	7.6	µm
Buffer diameter	230	250	270	µm
Fiber length (module to fiber end)	1			m
Pristine fiber proof test level	200			psi
Fiber pull to housing	150			psi

Connections



Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

Pulsed 1064nm High Power Mini-Butterfly Laser Diode Module

RoHS Compliance

II-VI is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

CM97A1064	1064nm High Power Laser Diode Mini-Butterfly Module without FBG

Important Notice

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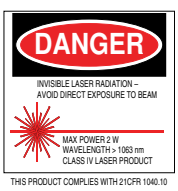
Safety Labels



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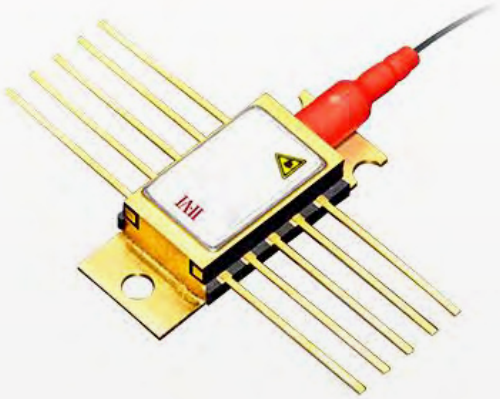


CM97A1064BFBG

Pulsed 1064nm Ultra Broad Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

The II-VI CM97A1064BFBG next generation wavelength stabilized high power single mode laser module has been designed as a light source for pulsed fiber laser applications. Processes and techniques of coupling the fiber to the laser allow high kink free peak output powers that are very stable with both time and temperature. An ultra broad bandwidth grating enables a controlled broad spectrum that helps to suppress SBS generation in pulsed fiber lasers

Pulsed 1064nm Ultra Broad Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

Features:

- High kink free pulse output power, up to 1.5W peak
- Wavelength stabilized at 1064nm
- Ultra broad controlled bandwidth emission of 1-2nm for SBS suppression in pulsed fiber lasers
- Short pulse operation of 5ns-500ns
- Polarization maintaining single- mode optical fiber
- Internal thermoelectric heat pump and monitor diode
- Hermetically sealed 10-pinmini butterfly package
- RoHS compliant

Applications:

- Fiber lasers
- Sensing

Characteristics

Conditions unless otherwise stated:

Case temperature: -20 to +75°C, Submount temperature: 25°C, Monitor diode bias: -5 V, CW operation

Parameter	Min	Typ	Max	Unit
Threshold current	40	60	80	mA
CW Operating power at 1.1 A	550	650		mW
Operating pulsed peak power (<500ns / 500kHz)	1.2	1.4		W
Operating pulsed peak current (<500ns / 500kHz)			2.2	A
Forward voltage		1.7	2.5	V
Peak wavelength (pulsed operation)	1062	1064	1066	nm
Spectral width (FWHM)		1-2	4	nm
Pulse width	5		500	ns
Repetition rate			500	kHz
Duty cycle			5	%
Rise time			1.6	ns
Monitor detector responsivity	0.5		40	µA/mW
Monitor dark current			50	nA
Thermistor resistance (at 25°C)	9	10	11	kΩ
Heat pump current (ΔT = 50°C, If = If max)			1.5	A
Heat pump voltage (ΔT = 50°C, If = If max)			3.0	V
Polarization extinction ratio		13		dB

Pulsed 1064nm Ultra Broad Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

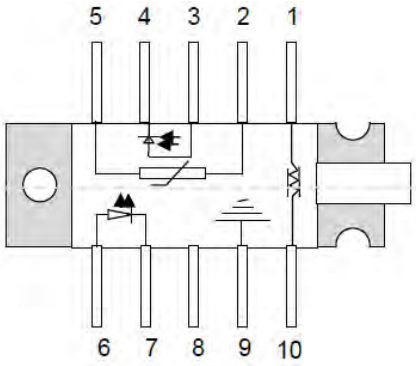
Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage temperature	-40	85	°C
CW laser forward current (10s max)		1.5	A
Laser reverse voltage		2	V
Heat pump current	-2.2	2.2	A
Heat pump voltage	-3.5	3.5	V
Lead soldering temperature (10s max)		350	°C
Fiber bend radius	20		mm

Fiber Characteristics

Parameter	Min	Typ	Max	Unit
Fiber type: Polarization maintaining Nufern PM980-HP or equivalent (e.g. Fujikura SM98)				
Mode field diameter	5.6	6.6	7.6	µm
Buffer diameter	230	250	270	µm
Fiber length (module to fiber end)	1			m
Lens to FBG center	45	55	65	cm
Pristine fiber proof test level	200			psi
Fiber pull to housing	150			psi

Connections



Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

Pulsed 1064nm Ultra Broad Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

RoHS Compliance

II-VI is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

CM97A1064BFBG 1064nm Ultra Broadband FBG High Power Laser Diode Mini-Butterfly Module

Important Notice

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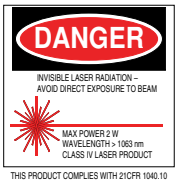
Safety Labels



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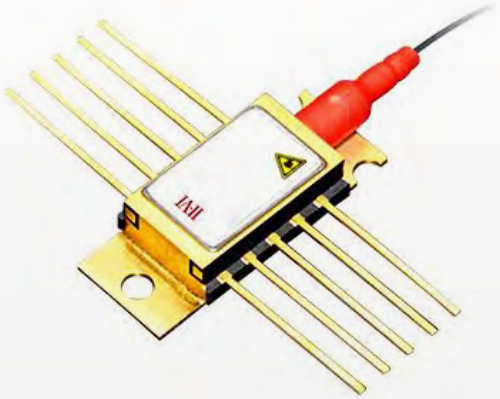


CM97A1064NFBG

Pulsed 1064nm Narrow Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

The II-VI CM97A1064NFBG next generation wavelength stabilized high power single mode laser module has been designed as a light source for pulsed narrow bandwidth fiber laser and direct frequency conversion applications. Processes and techniques of coupling the fiber to the laser allow high peak output powers that are very stable with both time and temperature. A narrow bandwidth grating located in the polarization maintaining optical fiber close to the package allows for short pulse operation

Pulsed 1064nm Narrow Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

Features:

- High kink free pulse output power, up to 1.5W peak
- Wavelength stabilized at 1064nm
- Narrow bandwidth emission of <0.3nm
- Short pulse operation of 5ns-500ns
- Polarization maintaining single- mode optical fiber
- Internal thermoelectric heat pump and monitor diode
- Hermetically sealed 10-pin mini-butterfly package
- RoHS compliant

Applications:

- Fiber lasers
- Frequency conversion
- Spectroscopy

Characteristics

Conditions unless otherwise stated:

Case temperature: -20 to +75°C, Submount temperature: 25°C, Monitor diode bias: -5 V, CW operation

Parameter	Min	Typ	Max	Unit
Threshold current	40	60	80	mA
CW Operating power at 1.1 A	600	700		mW
Operating pulsed peak power (<500ns / 500kHz)	1.2	1.4		W
Operating pulsed peak current (<500ns / 500kHz)			2.2	A
Forward voltage		1.7	2.5	V
Peak wavelength (pulsed operation)	1063	1064	1065	nm
Spectral width (FWHM)		0.15	0.3	nm
Pulse width	5		500	ns
Repetition rate			500	kHz
Duty cycle			5	%
Rise time			1.6	ns
Monitor detector responsivity	2.5		40	µA/mW
Monitor dark current			50	nA
Thermistor resistance (at 25°C)	9	10	11	kΩ
Heat pump current (ΔT = 50°C, If = If max)			1.5	A
Heat pump voltage (ΔT = 50°C, If = If max)			3.0	V
Polarization extinction ratio		13		dB

Pulsed 1064nm Narrow Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

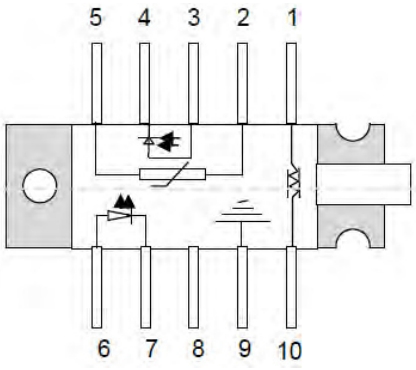
Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage temperature	-40	85	°C
CW laser forward current (10s max)		1.5	A
Laser reverse voltage		2	V
Heat pump current	-2.2	2.2	A
Heat pump voltage	-3.5	3.5	V
Lead soldering temperature (10s max)		350	°C
Fiber bend radius	20		mm

Fiber Characteristics

Parameter	Min	Typ	Max	Unit
Fiber type: Polarization maintaining Nufern PM980-XP or Corning PM 98-U25				
Mode field diameter	5.6	6.6	7.6	μm
Buffer diameter	230	250	270	μm
Pigtail length (module case to fibre end)	2.1			m
Module case to FBG center	1.4			m
Pristine fiber proof test level	200			psi
Fiber pull to housing	150			psi

Connections



Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

Pulsed 1064nm Narrow Bandwidth FBG High Power Mini-Butterfly Laser Diode Module

RoHS Compliance

II-VI is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

CM97A1064NFBG 1064nm Narrow Bandwidth FBG High Power Laser Diode Mini-Butterfly Module

Important Notice

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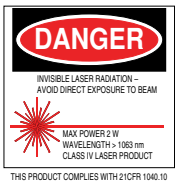
Safety Labels



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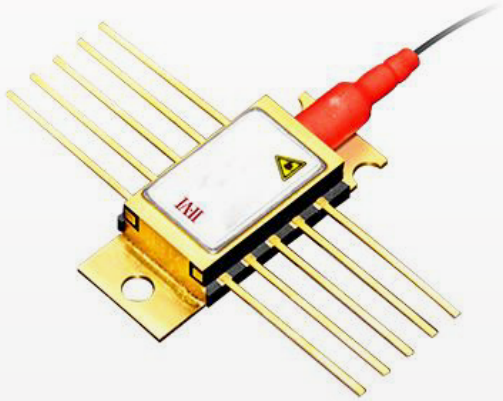


CMDFB1064A
CMDFB1030A

Wavelength Stabilized 1064nm / 1030nm High Power Mini-Butterfly DFB Laser Diode Module

The II-VI CMDFB10xxA wavelength stabilized high power single mode laser module has been designed as a light source for pulsed narrow bandwidth fiber laser and direct frequency conversion applications.

A distributed feedback grating(DFB) located in the laser cavity results in the wavelength stabilization within couple of round trips. The laser chip and package are optimized for subnanosecond pulse operation. Processes and techniques of coupling the fiber to the laser allow high peak output powers that are very stable with both time and temperature.

Wavelength Stabilized 1064nm/1030nm DFB Laser Diode Mini-Butterfly Module

Features:

- Wavelengths : 1064 or 1030nm
- High output CW and pulse power: 200 and 800mW, respectively
- Short pulse modulation, down to 100ps
- Lateral and longitudinal single mode in short pulse operation
- Polarization maintaining single mode optical fiber
- Internal thermoelectric heat pump and monitor diode
- Hermetically sealed 10-pin mini-butterfly package
- High reliability

Applications:

- Fiber laser systems
- Frequency conversion
- Spectroscopy

Optical Characteristics

Case temperature -20 to +75°C Submount temperature 25°C

Parameter	Min	Typ	Max	Unit	Conditions
Threshold current	15	40	70	mA	
Peak wavelength					
• CMDFB1064A	1061.5	1063.5	1065.5	nm	
• CMDFB1030A	1028	1030	1032	nm	
Operating CW current			400	mA	Also for current pulses >200 ns
CW Output Power	150	200		mW	
Forward voltage		2	2.5	V	
Pulse modulation:					
Optical pulse width	10		200	ns	
Operating pulsed peak current			0.8	A	
Pulsed peak power	300	400		mW	
Duty Cycle			5	%	
Short pulse modulation:					
Optical pulse width	~0.1		10	ns	~100 ps is achievable in gain switching regime with dedicated pulse driver
Operating pulsed peak current			1.6	A	
Pulsed peak power	600	800		mW	
SMSR	20			dB	Tested and guaranteed only at 1.5ns pulse width, 300kHz repetition rate, no bias
Duty Cycle			1	%	
Chip series resistance		2		Ohm	Small signal equivalent circuit parameters for laser chip
Chip capacitance		50		pF	

Wavelength Stabilized 1064nm/1030nm DFB Laser Diode Mini-Butterfly Module

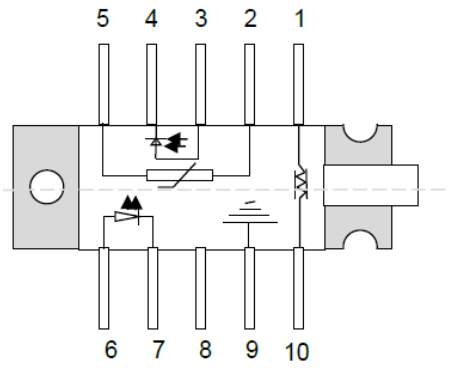
Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage temperature	-40	85	°C
CW laser forward current (10s max)		1.5	A
Laser reverse voltage		2	V
Heat pump current	-2.2	2.2	A
Heat pump voltage	-3.5	3.5	V
Lead soldering temperature (10s max)		350	°C
Fiber bend radius	20		mm

Fiber Characteristics

Parameter	Min	Typ	Max	Unit
Fiber type: Polarization maintaining Nufern PM980-HP or equivalent (e.g. Fujikura SM98)				
Mode field diameter	5.6	6.6	7.6	µm
Buffer diameter	230	250	270	µm
Fiber length (module case to fiber end)	1			m
Pristine fiber proof test level	200			psi
Fiber pull to housing	150			psi

Connections



Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

Wavelength Stabilized 1064nm/1030nm DFB Laser Diode Mini-Butterfly Module

RoHS Compliance

II-VI is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

CMDFB1064A	1064nm 10-pin miniBTF Module with DFB
Chip CMDFB1030A	1030nm 10-pin miniBTF Module with DFB Chip

Important Notice

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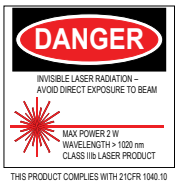
Safety Labels



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.