

Single Emitter Laser Diodes F-Mount

Up to 10W CW
Center Wavelength: 635-1550nm

Introduction

Apollo Instruments' single emitter laser diodes deliver up to 10W in CW. They are available in the following wavelengths:

635 nm
808 nm
915 nm / 940 nm / 976 nm
1470 nm / 1550 nm

The single emitter laser diodes have been demonstrated to be of high quality with long lifetime making them suitable for robust industrial applications.

Key Features

- High reliability
- High stability
- High brightness
- AuSn bonding
- Harsh environment application
- Wavelength 635-1550nm
- CW operation
- Fast delivery time

Applications

- DPSSL & Fiber Laser Pumping
- Medicine
- Selective Soldering/Desoldering
- Heat Treatment
- Welding/Blazing
- Quick Cure of Epoxy
- Transformation Hardening
- And more

Single Emitter Laser Diodes – Specification Sheet

FM-CW-092011

Specifications

	Units	FM01 -0.35-635	FM01 -0.5-635	FM01 -5-808	FM01 -8-808	FM01 -10-808
Optical Specifications ^{3,6}						
Center wavelength, λ	nm	635 \pm 5	635 \pm 5	808 \pm 3	808 \pm 3	808 \pm 3
Output power ²	W	0.35	0.5	5	8	10
Emitter width	μ m	100	150	200	190	200
Spectral width FWHM	nm	\leq 1		\leq 2		\leq 3
Spectral width FW90%E	nm	\leq 2	\leq 3	\leq 3	\leq 4	\leq 5
Fast axis divergence (FWHM) ⁴	°	40		35		
Slow axis divergence (FWHM)	°	5	5	8	10	8
Polarization mode	-	TE	TE	TM	TE	TE
Wavelength temp. coefficient	nm/°C	\sim 0.25		\sim 0.28		
Electrical Parameters ^{3,6}						
Operating current, I_{op}	A	\leq 0.8	\leq 1.3	\leq 5.5	\leq 8	\leq 12
Threshold current, I_{th}	A	\leq 0.45	\leq 0.8	\leq 1	\leq 1.05	\leq 1.75
Operating voltage, V_{op}	V	\leq 2.3	\leq 2.3	\leq 2		
Slope efficiency	W/A	\geq 0.9	\geq 0.85	\geq 1.1	\geq 1.1	\geq 1
Power conversion efficiency	%	\geq 20	\geq 18	\geq 48	\geq 50	\geq 42
Thermal Parameters						
Operating temperature	°C	15-20		15-35		15-25
Storage temperature ⁵	°C	-40 to 60				
Recommended Heatsink Capacity	W	\geq 1	\geq 2	\geq 10	\geq 16	\geq 20

2. Reduced lifetime if used above nominal operating conditions.
3. Data at 25°C temperature, unless otherwise stated.
4. For fast axis collimation: divergence $<4^\circ$.
5. A non-condensing environment is required for storage and operation below ambient dew point.
6. If there are any other requirements, please contact us.

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FM-CW-092011

	Units	FM01 -5-915	FM01 -10-915	FM01 -5-940	FM01 -5-976	FM01 -5-976	FM01 -10-976
Optical Specifications ^{3,6}							
Center wavelength, λ	nm	915 \pm 5	915 \pm 3	940 \pm 5	976 \pm 5	976 \pm 5	976 \pm 3
Output power ²	W	5	10	5	5	5	10
Emitter width	μ m	100	100	100	100	150	100
Spectral width FWHM	nm	\leq 3	\leq 4	\leq 4	\leq 3	\leq 3	\leq 4
Spectral width FW90%E	nm	\leq 5	\leq 6	\leq 6	\leq 5	\leq 5	\leq 6
Fast axis divergence (FWHM) ⁴	°	35					
Slow axis divergence (FWHM)	°	8					
Polarization mode	-	TE					
Wavelength temp. coefficient	nm/°C	~0.32	~0.32	~0.33	~0.32	~0.34	~0.34
Electrical Parameters ^{3,6}							
Operating current, I_{op}	A	\leq 5.3	\leq 10	\leq 5.3	\leq 5.5	\leq 5.3	\leq 9.8
Threshold current, I_{th}	A	\leq 0.5	\leq 0.7	\leq 0.5	\leq 0.5	\leq 0.5	\leq 0.7
Operating voltage, V_{op}	V	\leq 2					
Slope efficiency	W/A	\geq 1.1	\geq 1.1	\geq 1.1	\geq 1	\geq 1	\geq 1.1
Power conversion efficiency	%	\geq 55	\geq 55	\geq 58	\geq 52	\geq 55	\geq 55
Thermal Parameters							
Operating temperature	°C	15-35					
Storage temperature ⁵	°C	-40 to 60					
Recommended Heatsink Capacity	W	\geq 10	\geq 20	\geq 10	\geq 10	\geq 10	\geq 20

2. Reduced lifetime if used above nominal operating conditions.
3. Data at 25°C temperature, unless otherwise stated.
4. For fast axis collimation: divergence $<4^\circ$.
5. A non-condensing environment is required for storage and operation below ambient dew point.
6. If there are any other requirements, please contact us.

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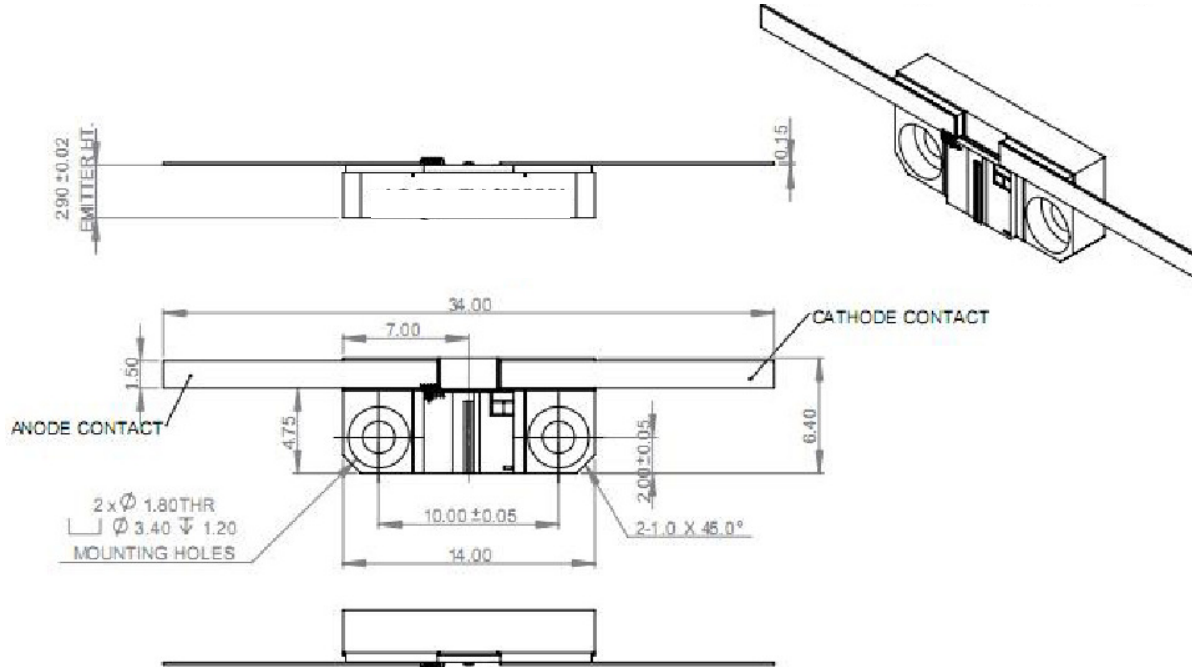
	Units	FM01 -1-1470	FM01 -1-1550
Optical Specifications ^{3,6}			
Center wavelength, λ	nm	1470 \pm 20	1550 \pm 20
Output power ²	W	1	
Emitter width	μ m	100	
Spectral width FWHM	nm	\leq 10	
Spectral width FW90%E	nm	\leq 15	
Fast axis divergence (FWHM) ⁴	$^{\circ}$	32	
Slow axis divergence (FWHM)	$^{\circ}$	8	
Polarization mode	-	TE	
Wavelength temp. coefficient	nm/ $^{\circ}$ C	\sim 0.4	
Electrical Parameters ^{3,6}			
Operating current, I_{op}	A	\leq 2.8	\leq 3.5
Threshold current, I_{th}	A	\leq 0.4	\leq 0.5
Operating voltage, V_{op}	V	\leq 1.5	
Slope efficiency	W/A	\geq 0.35	
Power conversion efficiency	%	\geq 33	\geq 24
Thermal Parameters			
Operating temperature	$^{\circ}$ C	15-35	
Storage temperature ⁵	$^{\circ}$ C	-40 to 60	
Recommended Heatsink Capacity	W	\geq 33	\geq 3

2. Reduced lifetime if used above nominal operating conditions.
3. Data at 25 $^{\circ}$ C temperature, unless otherwise stated.
4. For fast axis collimation: divergence $<$ 4 $^{\circ}$.
5. A non-condensing environment is required for storage and operation below ambient dew point.
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Dimensions Diagram (measurements in mm unless specified)

- FM01



Ordering Information

To make an order or request for further information on this or other products, please contact our sales representative by phone (949) 756-3111 or email contact@apolloinstruments.com.

Laser Safety

High Power Diode Lasers emit radiation in the visible and infrared region of the spectrum. When in use, safety precautions should be taken to avoid possibility of eye damage. For Class IV lasers, extreme care must be exercised during their operation. Do not allow exposure of the eye or skin to direct or scattered radiation. If viewing is required, the beam should be observed by reflection from matte surface utilizing an image converter or a suitable fluorescent screen. Serious injury may result if any part of the body is exposed to the beam. The eye is extremely sensitive to the infrared radiation and therefore, proper eyewear must be worn at all times.

The laser products made by Apollo Instruments emit visible and invisible radiation power. The devices are intended for use by qualified personnel who recognize shock hazards or laser hazards and are familiar with safety precautions required to avoid possible injury.

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ESD - Like most semiconductor devices, laser diodes can be easily damaged or destroyed by inadvertent electrical or static discharges. Laser Diodes are very sensitive to electrostatic discharge (ESD) and may suffer latent catastrophic damage unless they are handled according to proper ESD procedures. The resulting decreased performance of the laser may appear immediately, or long after the damage occurs. A static free environment is mandatory. Grounded tweezers and a grounded wrist strap on the user, a grounded work surface, anti-static floors and case ground for the laser diode all reduce risk of damaging static discharge through the diode. Retain the laser diode in a static free environment when not in use (such as the shipping container). Short the diodes at all times when not in use. (Note: An unshorted laser can be damaged by ESD even without touching it!) The user should never try to service and repair the device without authorization of Apollo Instruments. Apollo Instruments is not responsible to any damages resulted by unauthorized repair and services. Any attempt to opening the laser unit will void the limited warranty to the device.

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