
SemiNex
LASER DIODES

MISSION

SemiNex is dedicated to advancing next generation semiconductor infrared laser diodes and optical amplifiers

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and to making a positive impact in the world through our technologies

OUR COMMITMENT

We deliver best-in-class optical power, as well as superior thermal and electrical efficiencies:

- to advance our customers' applications
- improve the quality of our lives

We offer world-class customized epitaxial designs for best-in-class power and amplification

- to meet our customers' unique requirements
- to help them win market share

MANAGEMENT TEAM

Ronald Moore

President

Dr. Daniel Chu

VP of Marketing and Product Management

Dr. Sidi Aboujja

VP of Engineering | CTO

Dennis Donahue

VP of Operations

JENOPTIK · mks · OSRAM · LUMINUS · EXCELITAS TECHNOLOGIES · PERKINELMER OPTOELECTRONICS · INNOVATIONS IN OPTICS · COVARIS progress through knowledge engineering

CORE COMPETANCIES

1. **PATENTED EPI STRUCTURE**

   High power with single and triple-junction at elevated temperatures

2. **LOW-COST PACKAGING**

   Ideal for high-volume commercial and industrial applications

3. **TECHNOLOGY INTEGRATION**

   Most sophisticated supply chain

4. **QUALIFIED SUPPLY CHAIN**

   Rapid scaling for volume

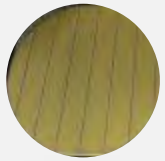
5. **CUSTOM DESIGN CAPABILITY**

VALUE STREAM

STEP 01

Epitaxial Crystal Growth

STEP 02



Wafer Fab

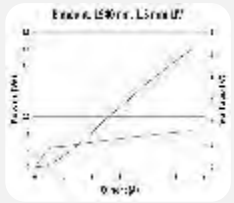
STEP 03

Bar / Chip Processing

STEP 04

Chip on Submount

STEP 05

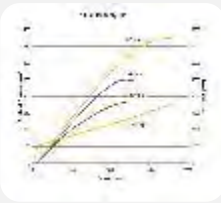


Chip Testing & Burn-in

STEP 06

Diode Assembly & Packaging

STEP 07



Assembly & Burn-in

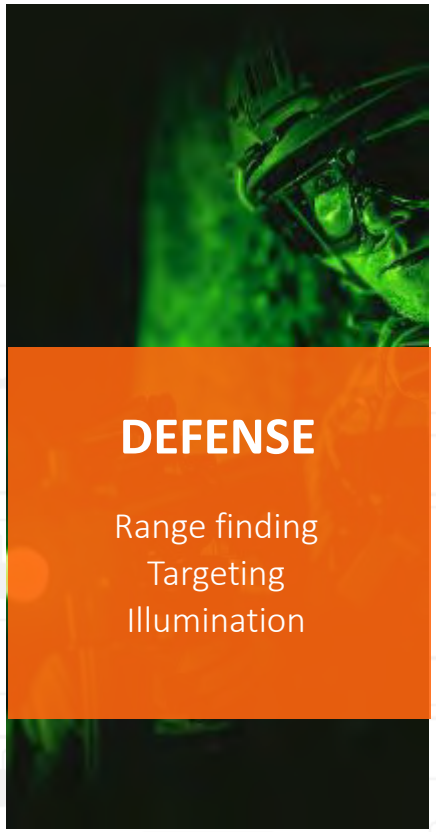
OPERATIONAL MODEL

- Americas and EU based semiconductor front-end wafer processing partners
  - Highest capabilities for each process step
- Long-standing SemiNex partners
- Highly controlled, highly scalable operations
- Global partners for back-end include in low-cost regions for packaging
- High-volume testing and low-volume packaging in-house

MARKETS SERVED

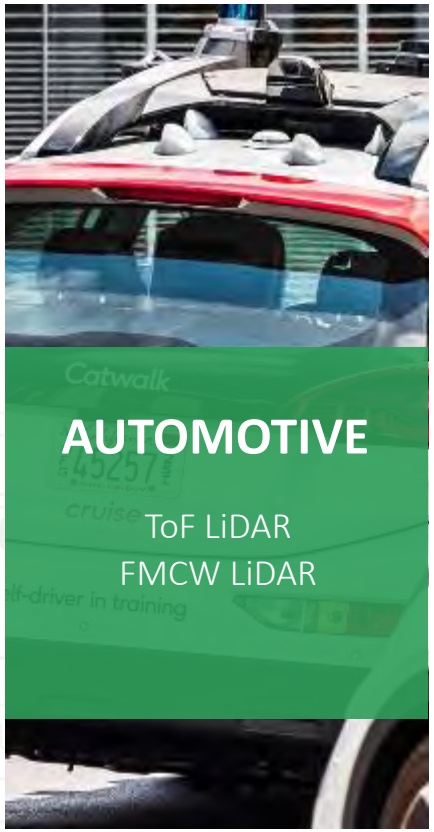
MEDICAL

Professional
Home



DEFENSE

Range finding
Targeting
Illumination

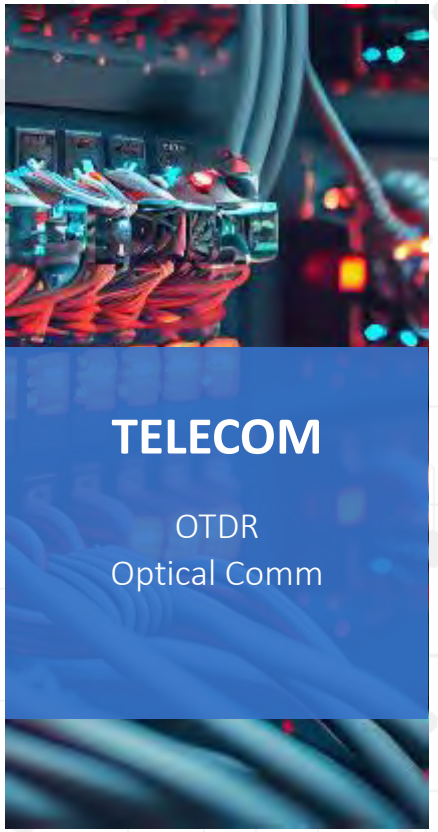


AUTOMOTIVE

ToF LiDAR
FMCW LiDAR

INDUSTRIAL

Machine Vision
Materials Processing
Sensing



TELECOM

OTDR
Optical Comm

MARKET DRIVERS

- Cost ($/w) per watt
- Higher power to achieve longer range
- High reliability across a wide thermal spec
- Small form factor
- Higher performance for critical applications
- Custom designs for Si PIC integration
- US Supplier

QUALITY SYSTEMS

- Controlled Process Specifications
- Controlled Part & Assembly Drawings
- Controlled Tooling Drawings
- Workmanship Standards
- Integrated Document Control
- Full Lifecycle Traceability
- SemiNex ISO Certified
- Supply Chain fully ISO Certified


CERTIFICATE

TUV USA Inc.

SemiNex Corporation
100 Corporate Place, Suite 401
Peabody, MA 01960 USA

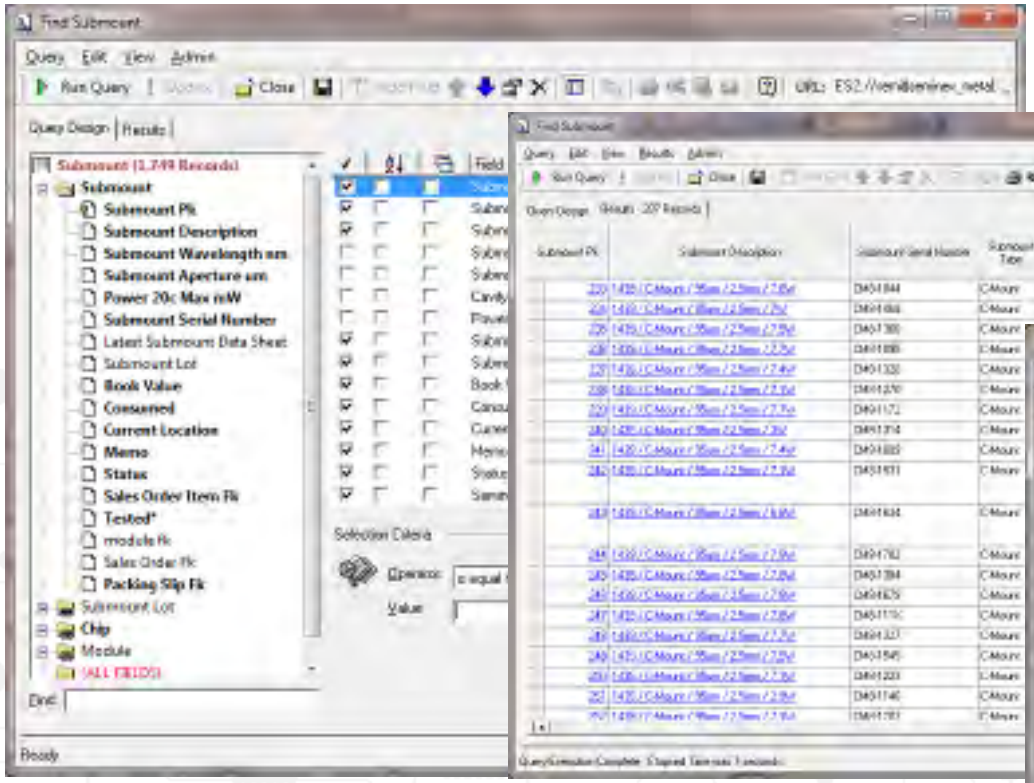
Design and Manufacture and Sale of Laser Diodes and Related Products and Services

ISO 9001:2008

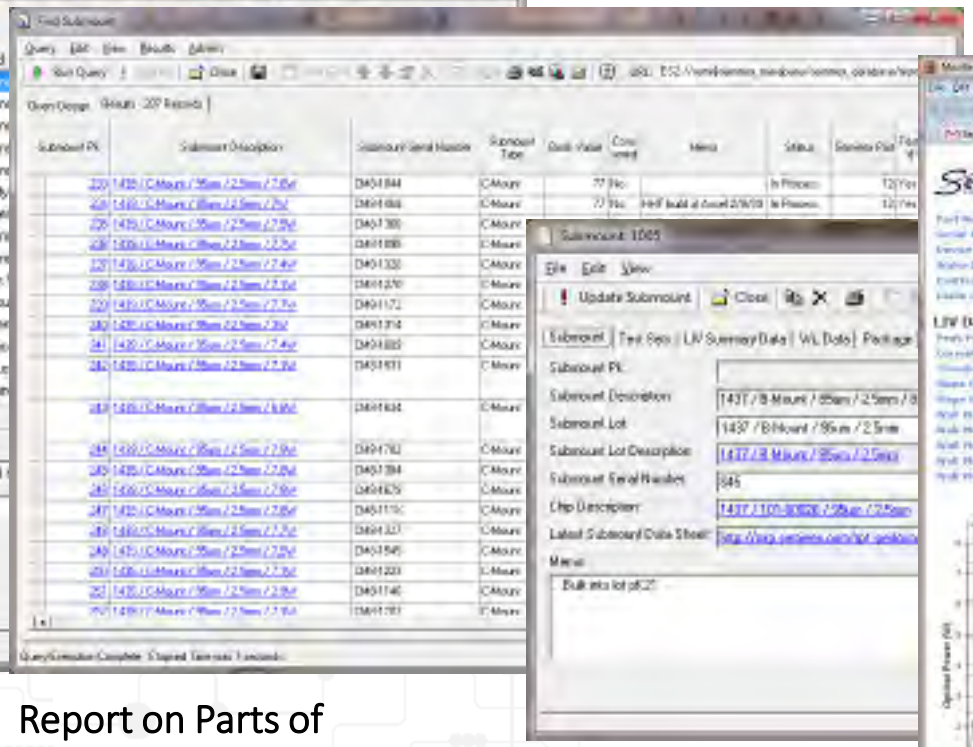
Certificate Registration No.

13-1411

INTEGRATED TRACKING AND REPORTING



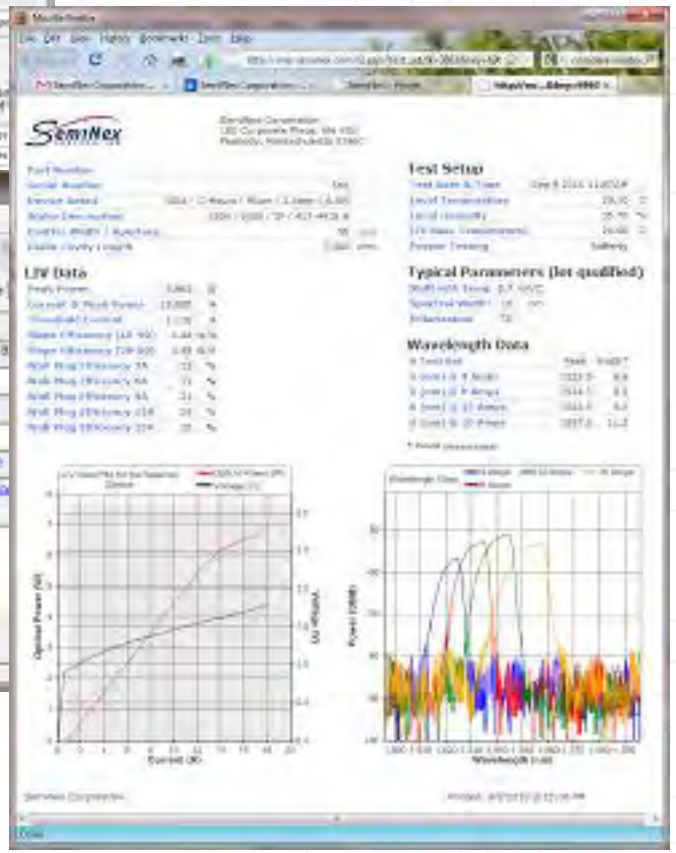
ES2 Query Tool



Report on Parts of Interest

Drill-down to details on a given part

Detailed Test Reports



PRODUCT PORTFOLIO

PORTFOLIO

- Laser chips in uncooled packages
- Chip & bar-on-submount forms
- Multi-chip modules
- 4-pin fiber coupled devices
- High heat load devices
- Our patented laser engines

We offer a wide range of diode products

PORTFOLIO

Product Family	λ (nm)	MM/SM	Aperture (um)	Package Types	Operation
Fabry-Perot	12xx 13xx 14xx 15xx 16xx 1940*	MM	50 95 180 350 150*	B/C TO9/56 COC **Fiber Packages** - 4PN - Butterfly - 2CM/MCM	CW Pulsed
		SM	4 5		
SOA	1310 1550	SM	4	COC Butterfly	CW
DFB					Modulated

* *1940nm only has 150um aperture.*

Single Junction
Most products are based on single junction

Triple Junction
Implemented in "Fabry-Perot 1550nm MM for pulsed operation"

STANDARD WAVELENGTH CLASSES

Wavelength Range	Std Wavelength Class	Markets
12xx	1250 1270	Industrial Medical
13xx	1310* 1350	Medical Telecom Automotive
14xx	1450 1470	Medical
15xx	1532 1550*	Medical Telecom Automotive
16xx	1625 1650 1670	Medical Telecom
19xx	1940	Medical Industrial

** Standard wavelength for SOA/RSOA and DFB*

Std wavelength class for Fabry Perot laser diodes.

Center wavelength with typical tolerance of +/- 20nm

Center wavelength spec may vary slightly due to operating conditions, such as CW or Pulse, and power levels.

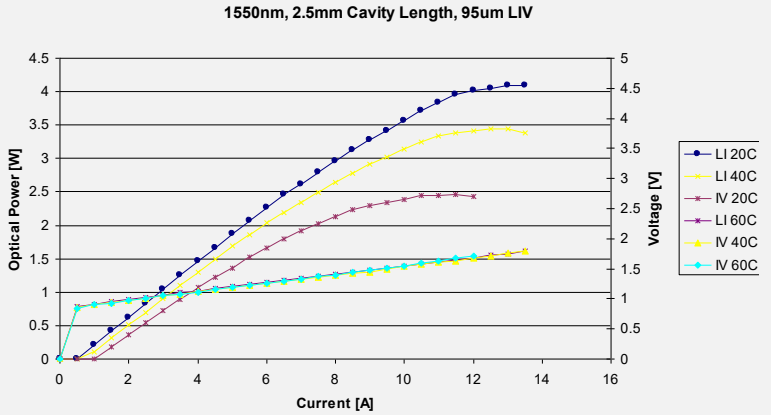
FABRY-PEROT SINGLE JUNCTION TEMPERATURE PERFORMANCE

Robust material and laser diode design.

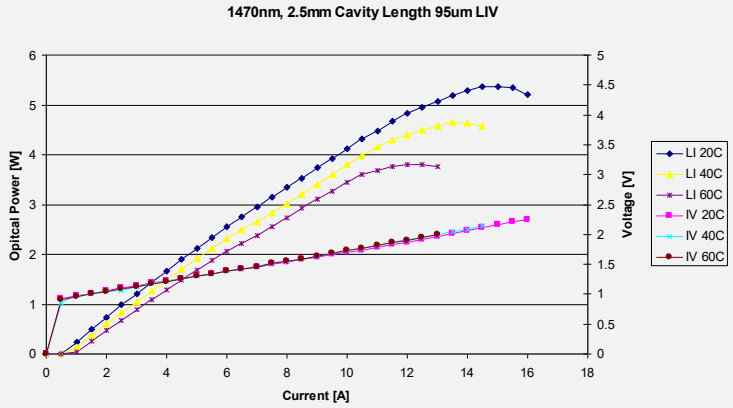
The highest Power limited by thermal rollover

No COD (catastrophic optical damage)

Temp	Ith	Slope
20	0.448	0.42
40	0.648	0.4
60	0.876	0.38
C	A	W/A



Temp	Ith	Slope
20	0.511	0.39
40	0.99	0.36
60	0.904	0.31
C	A	W/A



LONG LIFETIME & HIGH RELIABILITY

01

Extensive burn-in and lifetest in house

02

Over 20 years proven long term reliability with customers

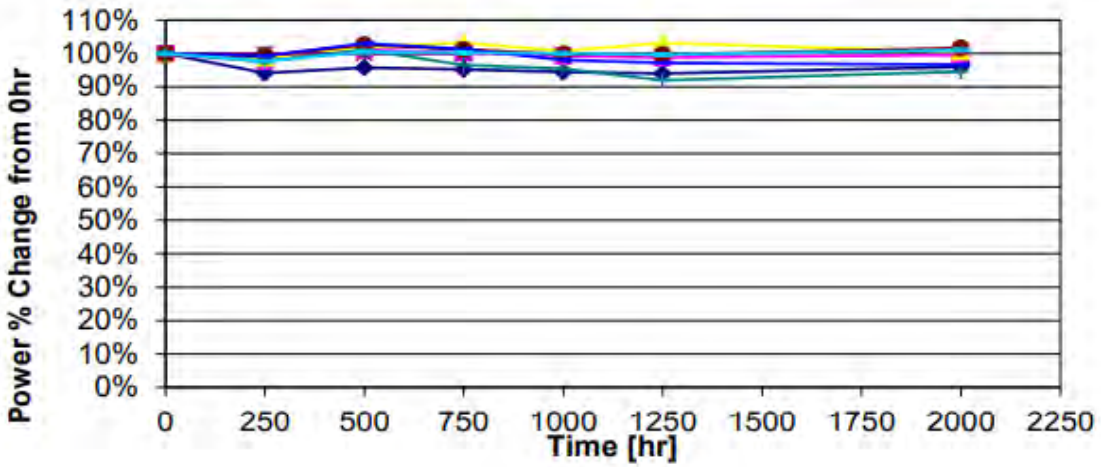
03

Long MTTF (mean time to failures) for applications in defense, automotive, and medical

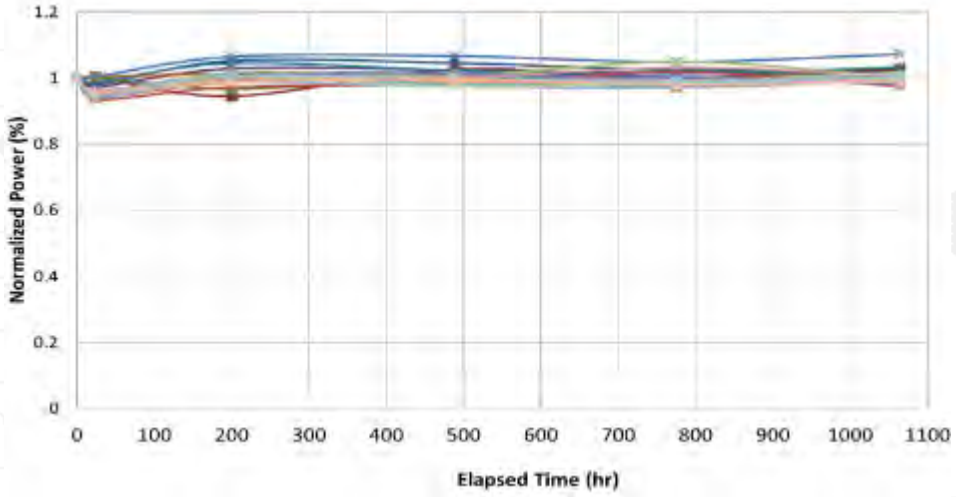
04

Lifetime and Reliability report available upon request

1470nm high power lifetest over 2000 hours



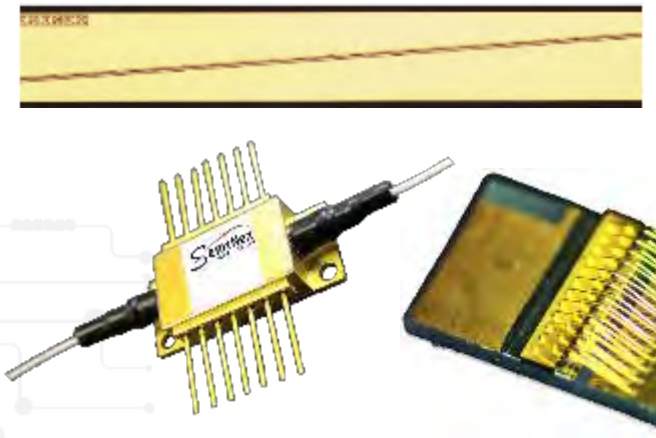
Triple Junction lifetest over 1000 hours



SOA & RSOA
COC OR BUTTERFLY

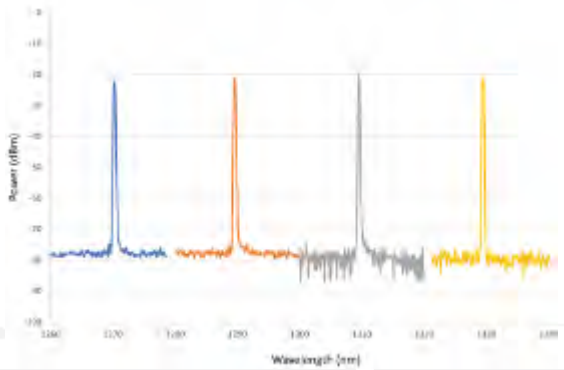
- 1310nm O-band, and 1550nm C-band available
- SOA tilted straight or curved waveguide
- RSOA (reflective SOA, gain chip) curved waveguide,
- Standard waveguide angled at 6°, beam emitting angle at 19.5 °,
- SOA offers COC and 14-pin butterfly
- RSOA offers COC only
- Achieve the highest output power and wide 3dB gain bandwidth
- For optical communications and FMCW LiDAR
- 2023 LFW Innovators Award
- SOA/RSOA Array available upon request

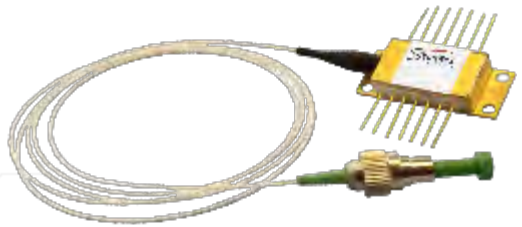
SOA **RSOA**



- *1550nm SOA can achieve 375mW (25.74 dBm) output with a seed laser of 50mW (17dBm). The over saturated output power is important to LiDAR and long-range optical communications.*
- *The butterfly package achieves >70% coupling efficiency.*

DFB LASER DIODES
COC & 14-PIN BUTTERFLY





1310nm
O-band

1550nm
C-band

High
Optical Power

COC and 14-pin butterfly
For optical communications and FMCW LiDAR

DFB Array and Multi-
wavelength available upon request

Optical	Symbol			Units
Center Wavelength	λc	1310	1550	nm
Output Power@250mA	P_{OUT}	>100	80	mW
Linewidth	σf	<30	<30	kHz
Side Mode Suppression Ratio	SMSR	>50	>50	dB
Relative Intensity Noise	RIN	-150	-150	dB/Hz
Electrical				
Power Conversion Eff.	η	23	18	%
Operating Voltage	V_{op}	1.75	1.75	V
Operating Current	I_{op}	250	250	mA
Threshold Current	I_{TH}	<30	<30	mA
Mechanical				
Operating Temp.**	ºC	-20 to 85	-20 to 85	ºC
Storage Temp.	ºC	-40 to 95	-40 to 95	ºC

MEDICAL

Major Applications

Professional Medical

- Aesthetic Dermatology
- Varicose Veins
- Eye Surgery

Home Medical

- Skin Rejuvenation
- Home Acne Treatment

SemiNex Advantages

- Wavelengths: 13xx, 14xx, 15xx, 19xx
- High power density
- Various package options
- High performance

MEDICAL
PROFESSIONAL

Features

- Fabry Perot MM CW
- InP and GaSb materials

Benefits

- High power
- Integrated microlens available
- Various package choices for easy design-in
- Fiber coupled packages

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
B-104*	1450	5	95	1.7	14	CW	Download
B-106*	1470	5	95	1.8	14	CW	Download
B-122*	1470	7	180	1.7	20	CW	Download
B-149*	1940	1.1	150	1.3	4	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
C-105*	1470	7	180	1.7	21	CW	Download
C-106*	1470	5	95	1.7	14	CW	Download
C-128*	1450	5	95	1.7	14	CW	Download
C-156*	1940	1.1	150	1.3	4	CW	Download

MEDICAL
PROFESSIONAL

Features

- Fabry Perot MM CW
- InP and GaSb materials

Benefits

- High power
- Integrated microlens available
- Various package choices for easy design-in
- Fiber coupled packages

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-126*	1470	1.8	95	1.7	8	CW	Download
TO9-181*	1450	16	95	7	50	Pulsed	Download
TO9-182*	1470	14	95	5.3	50	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
4PN-101	1450	4	105	1.6	12	CW	Download
4PN-104	1470	3.8	105	1.7	12	CW	Download
4PN-134	1470	5	200	1.6	17	CW	Download
4PN-108	1550	3.3	105	1.7	12	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
2CM-103	1470	6.5	105	3.1	10.5	CW	Download
2CM-105	1470	8	200	2.9	13.5	CW	Download
4CM-104	1470	18	400	5.4	14	CW	Download

MEDICAL
HOME

Features

- High Power CW laser on copper sub-mounts
- Laser engines available

Benefits

- Small form factor
- Cost ($/W) per watt
- Easy design-in
- Compact package designs

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-184*	1310	20	95	6.2	60	Pulsed	Download
TO9-185*	1350	19	95	8	60	Pulsed	Download
TO9-126*	1470	1.8	95	1.7	8	CW	Download
TO9-181*	1450	16	95	7	50	Pulsed	Download
TO9-182*	1470	14	95	5.3	50	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56-114*	1310	19	95	6.2	60	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
LEQ-126*	1450	1.6	95	1.4	7	CW	Download

MEDICAL
PROFESSIONAL & HOME

Features

- High Power CW laser on copper sub-mounts
- Laser engines available

Benefits

- Small form factor
- Cost ($/W) per watt
- Easy design-in
- Compact package designs

*Available Lenses & Caps

TO9 Cans

Suffix	Description
-114	TO-9 Cap, 4.6mm Tall
-115	TO-9 5.8mm Tall Cap, Lens Collimated <5mrad f=590µm, 5mm Lg
-140	TO-9 5.8mm Tall Cap, Lens Matched f=171µm, 5.0 Lg
-161	TO-9 Cap 5.8mm Tall

TO56 Cans

Suffix	Description
-116	TO-56 Cap FAC f=590µm, 2.8mm Lg
-126	TO-56 Cap, Lens Matched f=171µm, 2.8mm Lg
-138	TO-56 Cap

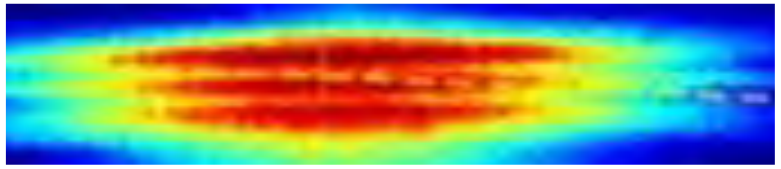
Laser Engines

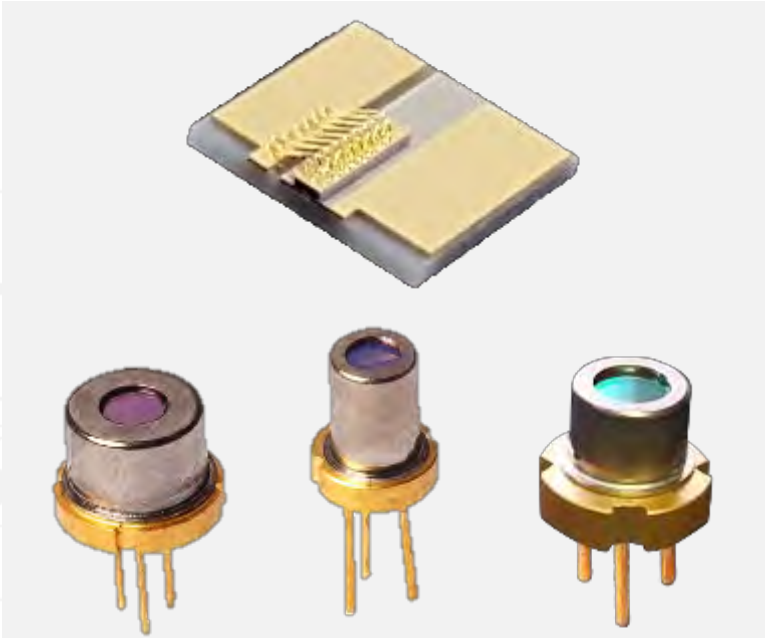
Suffix	Description
-144	Lens Matched f=7.7mm
-145	Lens Collimated f=7.7mm

DEFENSE

Major Applications

- Laser Range Finder
- Target Illumination





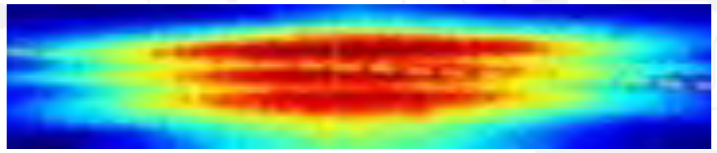
SemiNex Advantages

- Highest pulsed optical power available with patented Triple Junction technology
- 3x the output vs. single junction
- 2x higher wall plug efficiency
- Achieve longer detection range
- Eye safe with small spot size at distance
- Packages with small form factor
- High reliability 228k hrs MTTF
- @50°C & 0.1% DC
- and 57k hrs MTTF @50°C & 0.4% DC

DEFENSE
LASER RANGE FINDER

Advantages

- Highest pulsed optical power available with Triple Junction
- 3x the output and 2x WPE vs. single junction
- Achieve longest detection range
- Eye safe with small spot size at distance
- Packages with small form factor
- High reliability w/ proven data



Triple Junction MM Pulsed

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-264	1550	20	50	9	25	Pulsed	Download
COC-265	1550	35	95	10	40	Pulsed	Download
COC-266	1550	52	180	11	56	Pulsed	Download
COC-267	1550	75	350	11	75	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-101	1550	30	350	5	100	Pulsed	Download
COC-105	1550	9	50	8.6	35	Pulsed	Download
COC-106	1550	24	180	7	80	Pulsed	Download
COC-107	1550	14	95	7	50	Pulsed	Download

DEFENSE
LASER RANGE FINDER & TARGET ILLUMINATION

Advantages

- Achieve long detection range
- Eye safe with small spot size at distance
- Packages with small form factor
- Superior thermal performance
- High reliability

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-264*	1550	15	50	9	20	Pulsed	Download
TO9-265*	1550	35	95	10	40	Pulsed	Download
TO9-266*	1550	52	180	10	56	Pulsed	Download
TO9-267*	1550	75	350	11	75	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-126*	1470	1.8	95	1.7	8	CW	Download
TO9-181*	1450	16	95	7	50	Pulsed	Download
TO9-182*	1470	14	95	5.3	50	Pulsed	Download
TO9-105*	1550	0.4	4	2.5	1.2	CW	Download
TO9-116*	1550	1.6	95	1.7	8	CW	Download
TO9-117*	1550	9	50	6	35	Pulsed	Download
TO9-133*	1550	14	95	5	50	Pulsed	Download
TO9-148*	1550	24	180	9.5	80	Pulsed	Download
TO9-149*	1550	30	350	6.6	100	Pulsed	Download

DEFENSE
LASER RANGE FINDER & TARGET ILLUMINATION

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High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56-264*	1550	21	50	22	25	Pulsed	Download
TO56-266*	1550	52	180	24	56	Pulsed	Download
TO56-267*	1550	75	350	12	75	Pulsed	Download
TO56-275*	1550	35	95	12	40	Pulsed	Download

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56x-264*	1550	21	50	22	25	Pulsed	Download
TO56x-265*	1550	35	95	12	40	Pulsed	Download
TO56x-266*	1550	52	180	24	56	Pulsed	Download
TO56x-267*	1550	75	350	12	75	Pulsed	Download

DEFENSE
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Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56-101*	1550	9	50	8.5	35	Pulsed	Download
TO56-102*	1550	14	95	6.2	50	Pulsed	Download
TO56-103*	1550	24	180	9.5	80	Pulsed	Download
TO56-104*	1550	27	350	9	100	Pulsed	Download

Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56m-300*	1550	20	180	10	60	Pulsed	Download
TO56m-302*	1550	8	95	9.5	60	Pulsed	Download

DEFENSE
LASER RANGE FINDER & TARGET ILLUMINATION

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- Packages with small form factor
- Superior thermal performance
- High reliability

Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
4PN-101	1450	4	105	1.6	12	CW	Download
4PN-104	1470	3.8	105	1.7	12	CW	Download
4PN-134	1470	5	200	1.6	17	CW	Download

DEFENSE
LASER RANGE FINDER & TARGET ILLUMINATION

Advantages

- Achieve long detection range
- Eye safe with small spot size at distance
- Packages with small form factor
- Superior thermal performance
- High reliability

*Available Lenses & Caps

TO9 Cans

Suffix	Description
-114	TO-9 Cap, 4.6mm Tall
-115	TO-9 5.8mm Tall Cap, Lens Collimated <5mrad f=590µm, 5mm Lg
-140	TO-9 5.8mm Tall Cap, Lens Matched f=171µm, 5.0 Lg
-161	TO-9 Cap 5.8mm Tall

TO56 Cans

Suffix	Description
-116	TO-56 Cap FAC f=590µm, 2.8mm Lg
-126	TO-56 Cap, Lens Matched f=171µm, 2.8mm Lg
-138	TO-56 Cap
-173	TO-56m Cap

DEFENSE
LASER RANGE FINDER & TARGET ILLUMINATION

Advantages

- Achieve long detection range
- Eye safe with small spot size at distance
- Packages with small form factor
- Superior thermal performance
- High reliability

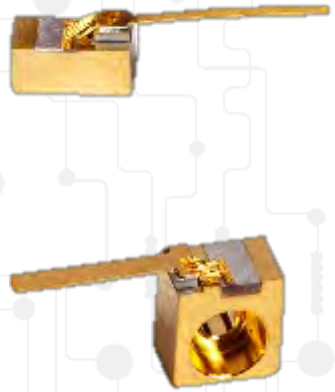
*Available Lenses & Caps

B-Mount

Suffix	Description
-108	Lens Matched f=171µm, 5mm Lg
-118	Lens Collimated <10mrad f=274µm, 5mm Lg
-134	Lens Matched f=274µm, 5mm Lg
-141	Lens, FAC, f=590µm, 5mm Lg, Collimated 5mrad

C-Mount

Suffix	Description
-118	Lens Collimated <10mrad f=274µm, 5mm Lg
-134	Lens Matched f=274µm, 5mm Lg
-141	Lens, FAC, f=590µm, 5mm Lg, Collimated 5mrad
-186	Lens, FAC, f=590µm, 5mm Lg, WD=50µm



DEFENSE
MILITARY SYSTEMS

Advantages

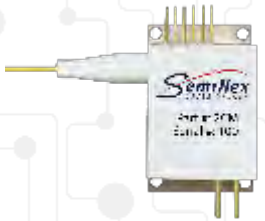
- High power performance
- Various packaging options
- High reliability

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
B-115*	1550	0.6	4	3.2	1.8	CW	Download
B-118*	1550	4.2	95	1.7	14	CW	Download

Part Number	λ (nm)	Output Power (W)	Core Diameter (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
2CM-104	1550	5.5	105	3.2	10.5	CW	Download
4CM-107	1550	16	400	5.4	14	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
B-124*	1650	0.45	5	2.2	1.4	CW	Download
B-134*	1650	3.2	95	1.7	12	CW	Download
B-146*	1625	0.4	4	3.1	1.6	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
C-123*	1625	0.4	4	3.1	1.6	CW	Download
C-131*	1650	0.45	5	3	1.6	CW	Download
C-132*	1650	3.5	95	1.7	13	CW	Download



DEFENSE
MILITARY SYSTEMS

Advantages

- High power performance
- Various packaging options
- High reliability

TO9 Cans

Suffix	Description
-114	TO-9 Cap, 4.6mm Tall
-115	TO-9 5.8mm Tall Cap, Lens Collimated <5mrad f=590µm, 5mm Lg
-140	TO-9 5.8mm Tall Cap, Lens Matched f=171µm, 5.0 Lg
-161	TO-9 Cap 5.8mm Tall

B-Mount

Suffix	Description
-108	Lens Matched f=171µm, 5mm Lg
-118	Lens Collimated <10mrad f=274µm, 5mm Lg
-134	Lens Matched f=274µm, 5mm Lg
-141	Lens, FAC, f=590µm, 5mm Lg, Collimated 5mrad

C-Mount

Suffix	Description
-118	Lens Collimated <10mrad f=274µm, 5mm Lg
-134	Lens Matched f=274µm, 5mm Lg
-141	Lens, FAC, f=590µm, 5mm Lg, Collimated 5mrad
-186	Lens, FAC, f=590µm, 5mm Lg, WD=50µm

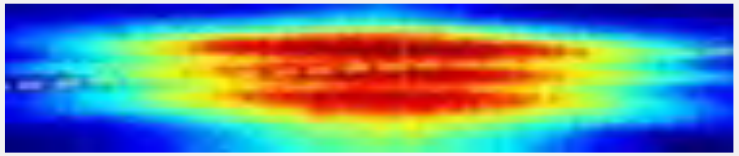
AUTOMOTIVE

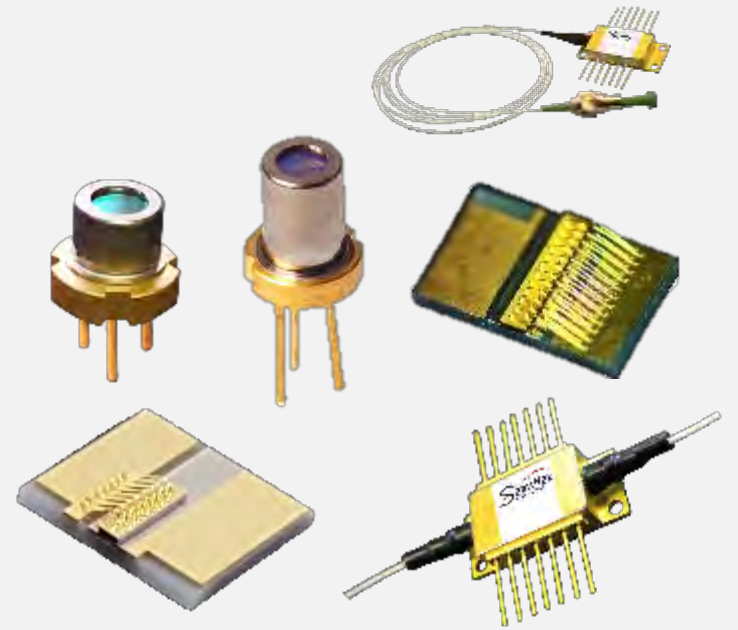
Major Applications

- ToF LiDAR
- FMCW LiDAR

SemiNex Advantages

- Advanced technologies in Triple Junction and SOA
- High output power
- Single emitter or array
- Standard packages for easy design in
- Customization available upon request
- Si PIC integration
- High reliability





AUTOMOTIVE - TOF LIDAR

Advantages

- Triple Junction has 3x output power and 2x WPE vs single junction
- Eye safe vs. 905nm
- Only need 2 – 4 emitters of 1550nm TJ to achieve >200m vs. 128 emitters of 905nm
- High reliability

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-264	1550	20	50	9	25	Pulsed	Download
COC-265	1550	35	95	10	40	Pulsed	Download
COC-266	1550	52	180	11	56	Pulsed	Download
COC-267	1550	75	350	11	75	Pulsed	Download

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-264*	1550	15	50	9	20	Pulsed	Download
TO9-265*	1550	35	95	10	40	Pulsed	Download
TO9-266*	1550	52	180	10	56	Pulsed	Download
TO9-267*	1550	75	350	11	75	Pulsed	Download

AUTOMOTIVE - TOF LIDAR

Advantages

- Triple Junction has 3x output power and 2x WPE vs single junction
- Eye safe vs. 905nm
- Only need 2 – 4 emitters of 1550nm TJ to achieve >200m vs. 128 emitters of 905nm
- High reliability

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56-264*	1550	21	50	22	25	Pulsed	Download
TO56-266*	1550	52	180	24	56	Pulsed	Download
TO56-267*	1550	75	350	12	75	Pulsed	Download
TO56-275*	1550	35	95	12	40	Pulsed	Download

High Power

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO56x-264*	1550	21	50	22	25	Pulsed	Download
TO56x-265*	1550	35	95	12	40	Pulsed	Download
TO56x-266*	1550	52	180	24	56	Pulsed	Download
TO56x-267*	1550	75	350	12	75	Pulsed	Download

AUTOMOTIVE - TOF LIDAR

Advantages

- Triple Junction has 3x output power and 2x WPE vs single junction
- Eye safe vs. 905nm
- Only need 2 – 4 emitters of 1550nm TJ to achieve >200m vs. 128 emitters of 905nm
- High reliability

TO-9 Cans

Suffix	Description
-114	TO-9 Cap, 4.6mm Tall
-115	TO-9 5.8mm Tall Cap, Lens Collimated <5mrad f=590µm, 5mm Lg
-140	TO-9 5.8mm Tall Cap, Lens Matched f=171µm, 5.0 Lg
-161	TO-9 Cap 5.8mm Tall

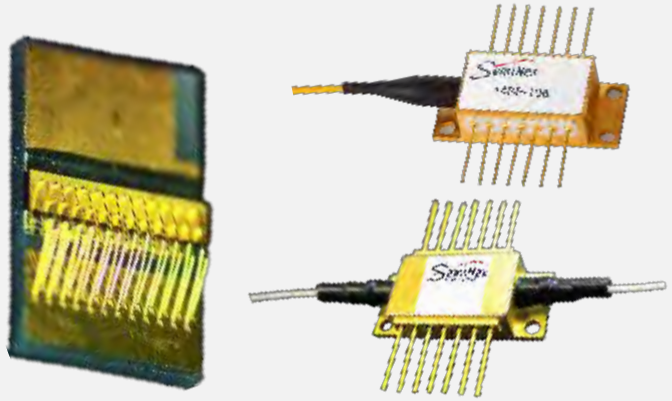
TO-56 Cans

Suffix	Description
-116	TO-56 Cap FAC f=590µm, 2.8mm Lg
-126	TO-56 Cap, Lens Matched f=171µm, 2.8mm Lg
-138	TO-56 Cap
-173	TO-56m Cap

AUTOMOTIVE - FMCW LIDAR

Advantages

- World class SOA platform
- Highest power for long range
- High reliability
- Thermal performance
- Custom designs for Si PIC integration



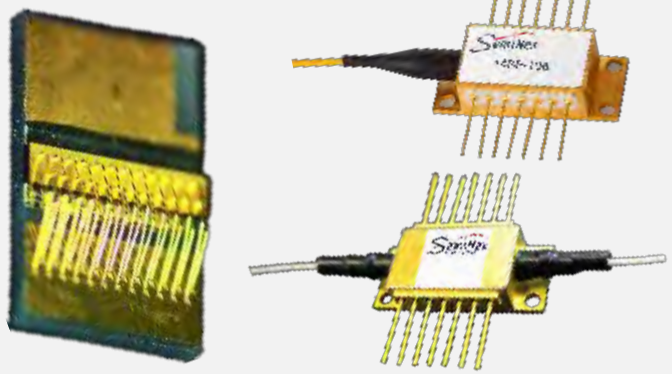
Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-181 (RSOA, 4CH)	1310	0.45	4	2	1	CW	Download
COC-288 (SOA, curved)	1310	0.45	4	2	1	CW	Download
COC-289 (RSOA, curved)	1310	0.45	4	2	1	CW	Download
COC-290 (SOA, tilted)	1310	0.45	4	2	1	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-177 (SOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
COC-179 (RSOA, 4CH, curved)	1550	0.35	4	2	4	CW	Download
COC-285 (SOA, curved)	1550	0.35	4	2	1	CW	Download
COC-286 (RSOA, curved)	1550	0.35	4	2	1	CW	Download
COC-287 (SOA, tilted)	1550	0.35	4	2	1	CW	Download

AUTOMOTIVE - FMCW LIDAR

Advantages

- World class SOA platform
- Highest power for long range
- High reliability
- Thermal performance
- Custom designs for Si PIC integration



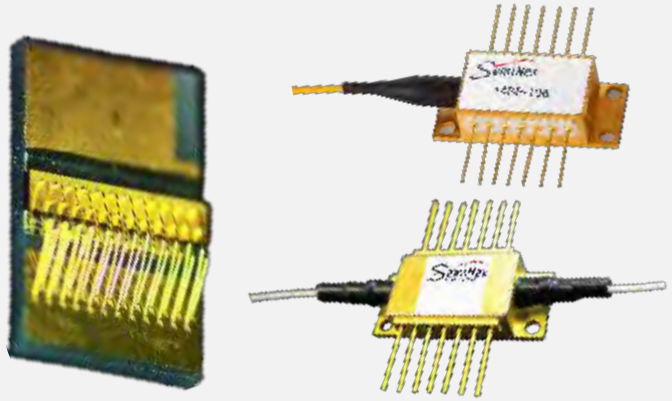
Part Number	λ (nm)	Output Power (W)	Core Diameter (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
14BF-290 (SOA, tilted)	1310	24.9dBm	105	2	1.2	CW	Download
14BF-285 (SOA, curved)	1550	24.5dBm	105	2	1.2	CW	Download
14BF-287 (SOA, tilted)	1550	24.5dBm	105	2	1.2	CW	Download

Part Number	λ (nm)	Output Power (W)	Core Diameter (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
14BF-450 (DFB)	1310		105			CW	Download
14BF-451 (DFB)	1550		105			CW	Download

AUTOMOTIVE - FMCW LIDAR

Advantages

- World class SOA platform
- Highest power for long range
- High reliability
- Thermal performance
- Custom designs for Si PIC integration



SOA/RSOA Chips

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
CHP-288 (SOA, curved)	1310	0.45	4	2	1	CW	Download
CHP-289(RSOA, curved)	1310	0.45	4	2	1	CW	Download
CHP-290 (SOA, tilted)	1310	0.45	4	2	1	CW	Download
CHP-285 (SOA, curved)	1550	0.35	4	2	1	CW	Download
CHP-286 (RSOA, curved)	1550	0.35	4	2	1	CW	Download
CHP-287 (SOA, tilted)	1550	0.35	4	2	1	CW	Download

SOA/RSOA Mini Bars

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
BARm-177 (SOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
BARm-179 (RSOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
BARm-183 (SOA, 4CH, tilted)	1550	0.35	4	2	1	CW	Download

DFB Chips

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
CHP-450 (DFB)	1310	>100		1.75	0.25	CW	Download
CHP-450 (DFB)	1550	80		1.75	0.25	CW	Download

TELECOM

Major Applications

- OTDR
- Optical Communications

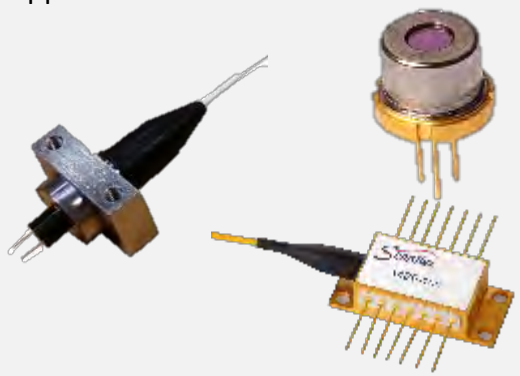
SemiNex Advantages

- Full range of 1310nm, 1550nm, 1625nm, and 1650nm
- Fabry-Perot single mode up to 450mW for 1550nm and 700mW for 1310nm
- Best-in-class SOA and DFB
- 14-pin butterfly or TO9 fiber packaging
- Si PIC integration support
- High reliability

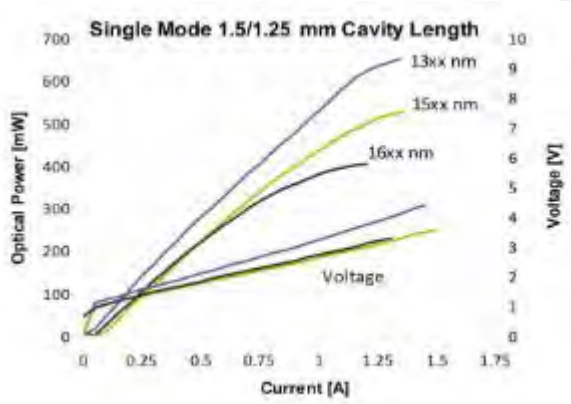
TELECOM
OTDR

Advantages

- Wavelength options
- TO or TO fiber package option
- Cost ($/w) per watt
- Higher power for longer fault detection
- High reliability for both data centers or field applications



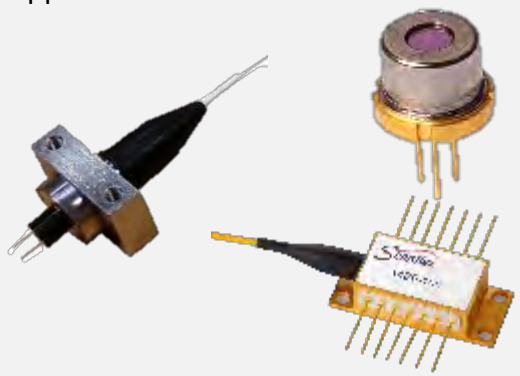
Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9-248*	1310	0.4	4	3.4	1.2	CW	Download
TO9-105*	1550	0.4	4	2.5	1.2	CW	Download
TO9-108*	1625	0.25	4	2.4	1	CW	Download
TO9-140*	1650	0.24	5	2.2	0.65	CW	Download
TO9-170*	1625	0.7	4	4.5	2.5	Pulsed	Download
TO9-174*	1650	0.5	5	3.2	2	Pulsed	Download
TO9-176*	1670	0.4	5	3.2	2	Pulsed	Download



TELECOM
OTDR

Advantages

- Wavelength options
- TO or TO fiber package option
- Cost ($/w) per watt
- Higher power for longer fault detection
- High reliability for both data centers or field applications



TO-9 Cans

Suffix	Description
-114	TO-9 Cap, 4.6mm Tall
-115	TO-9 5.8mm Tall Cap, Lens Collimated <5mrad f=590µm, 5mm Lg
-140	TO-9 5.8mm Tall Cap, Lens Matched f=171µm, 5.0 Lg
-161	TO-9 Cap 5.8mm Tall

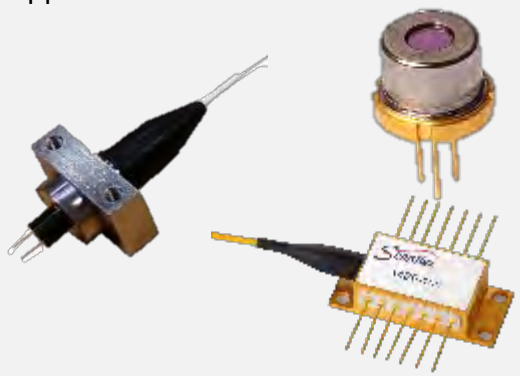
TO-56 Cans

Suffix	Description
-116	TO-56 Cap FAC f=590µm, 2.8mm Lg
-126	TO-56 Cap, Lens Matched f=171µm, 2.8mm Lg
-138	TO-56 Cap
-173	TO-56m Cap

TELECOM
OTDR

Advantages

- Wavelength options
- TO or TO fiber package option
- Cost ($/w) per watt
- Higher power for longer fault detection
- High reliability for both data centers or field applications



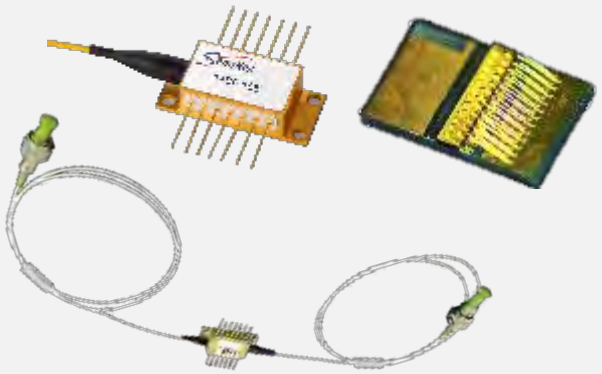
Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
TO9F-105*	1625	0.1	4	2.1	0.6	CW	Download
TO9F-106*	1650	0.1	5	2.1	0.6	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (µm)	Voltage (V)	Current (A)	Operation	Information Sheet
14BF-125	1310	0.28	9	2.5	1.1	CW	Download
14BF-106	1650	0.18	9	2	1	CW	Download
14BF-110	1625	0.16	9	2	1	CW	Download

TELECOM
OPTICAL COMM

Advantages

- World class SOA and DFB platform
- Highest power for long reach
- COC and butterfly packages
- High reliability for optical comm

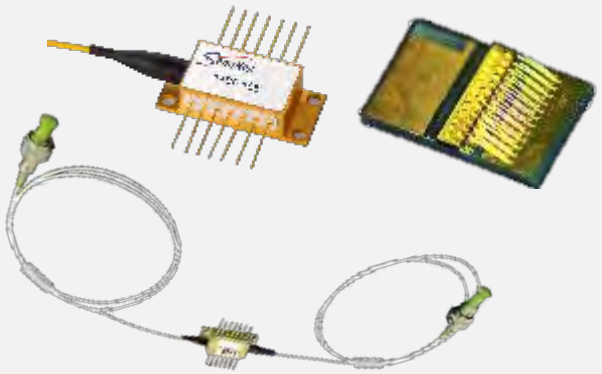


Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
COC-181 (RSOA, 4CH)	1310	0.45	4	2	1	CW	Download
COC-288 (SOA, curved)	1310	0.45	4	2	1	CW	Download
COC-289 (RSOA, curved)	1310	0.45	4	2	1	CW	Download
COC-290 (SOA, tilted)	1310	0.45	4	2	1	CW	Download
COC-177 (SOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
COC-179 (RSOA, 4CH, curved)	1550	0.35	4	2	4	CW	Download
COC-285 (SOA, curved)	1550	0.35	4	2	1	CW	Download
COC-286 (RSOA, curved)	1550	0.35	4	2	1	CW	Download
COC-287 (SOA, tilted)	1550	0.35	4	2	1	CW	Download

TELECOM
OPTICAL COMM

Advantages

- World class SOA and DFB platform
- Highest power for long reach
- COC and butterfly packages
- High reliability for optical comm



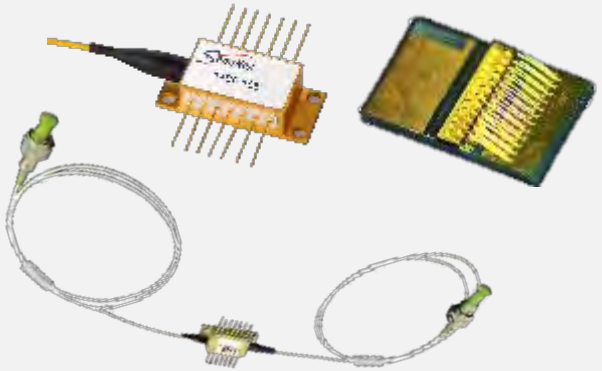
Part Number	λ (nm)	Output Power (W)	Core Diameter (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
14BF-290 (SOA, tilted)	1310	24.9dBm	9	2	1.2	CW	Download
14BF-285 (SOA, curved)	1550	24.5dBm	9	2	1.2	CW	Download
14BF-287 (SOA, tilted)	1550	24.5dBm	9	2	1.2	CW	Download

Part Number	λ (nm)	Output Power (W)	Core Diameter (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
14BF-450 (DFB)	1310		9			CW	Download
14BF-451 (DFB)	1550		9			CW	Download

TELECOM
OPTICAL COMM

Advantages

- World class SOA and DFB platform
- Highest power for long reach
- COC and butterfly packages
- High reliability for optical comm



Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
CHP-288 (SOA, curved)	1310	0.45	4	2	1	CW	Download
CHP-289(RSOA, curved)	1310	0.45	4	2	1	CW	Download
CHP-290 (SOA, tilted)	1310	0.45	4	2	1	CW	Download
CHP-285 (SOA, curved)	1550	0.35	4	2	1	CW	Download
CHP-286 (RSOA, curved)	1550	0.35	4	2	1	CW	Download
CHP-287 (SOA, tilted)	1550	0.35	4	2	1	CW	Download

Part Number	λ (nm)	Output Power (W)	Aperture (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
BARm-177 (SOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
BARm-179 (RSOA, 4CH, curved)	1550	0.35	4	2	1	CW	Download
BARm-183 (SOA, 4CH, tilted)	1550	0.35	4	2	1	CW	Download

Part Number	λ (nm)	Output Power (W)	Core Diameter (μm)	Voltage (V)	Current (A)	Operation	Information Sheet
CHP-450 (DFB)	1310	>100		1.75	0.25	CW	Download
CHP-451 (DFB)	1550	80		1.75	0.25	CW	Download

INDUSTRIAL

Major Applications

- Gas and Wind Sensing
- Material Processing
- Robots and Drones

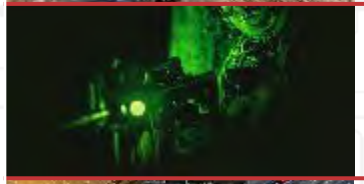
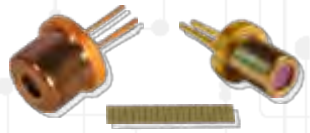
SemiNex Advantages

- Wide wavelength range in SWIR
- High power 1940nm for plastic material processing
- High power RSOA (gain chip) used in external cavity laser (ECL) instrumentations for sensing
- Custom DFB or RSOA available upon request for sensing applications

SUMMARY

	APPLICATION	PRODUCT	λ (nm)	AP	POWER	PACKAGE
	**Medical Professional** ▪ Varicose Veins ▪ Tissue Coagulation	FP-MM-CW	1470 1940	95 um 105 um 150 um	1 to 15W	
	**Medical Consumer** ▪ Acne ▪ Wrinkles	FP-MM-CW	1450 1470	95 um	.5 to 10W	
	**OTDR** ▪ Central Office ▪ Field Testing	FP-SM-Pulsed	1650 1625 1310	4 um	100 to 700 mW (pulsed)	
	**Optical Comm** ▪ Data Centers ▪ Free Space Optical Comm	SOA-CW DFB-Pulsed	1310 1550	4 um	100 to 500 mW (pulsed)	

SUMMARY

	APPLICATION	PRODUCT	λ (nm)	AP	POWER	PACKAGE
	**LRF** ▪ Defense ▪ Civilian	FP-MM-Pulsed	1450nm 1550nm 1650nm	50um 95um 180 um 350um	10 to 100W (pulsed)	
	**Target Illumination** ▪ Defense ▪ Security	FP-MM-Pulsed	1450nm 1550nm 1650nm	50um 95um 180 um 350um	10 to 100W (pulsed)	
	**FMCW LiDAR** ▪ Automotive ▪ Industrial	SOA-CW DFB-Pulsed	1310nm 1550nm	4 um	0.1 to 0.45W	
	**ToF LiDAR** ▪ Automotive ▪ Aerial	FP-MM-Pulsed	1550nm	50um 95um 180 um 350um	10 to 100W (pulsed)	

EXPORT COMPLIANCE

EXPORT COMPLIANCE

Following the Export Regulations and Sanctions set by the US government

- End user screening using CSL
- Declare the end use and end user using the BIS-711 form

No SemiNex products can be sold to or used by

- Huawei
- DJI
- Chinese Academy of Sciences
- and others

More info in the SemiNex selling guidelines

EXPORT COMPLIANCE

General Comments

- We are not ITAR registered
  - We offer commercial-off-the-shelf (COTS) products.
  - Our products are for dual-use.

- I can be reached at anytime to provide:
  - Pricing & lead time
  - Suggest alternate product(s)
  - Available for customer visits if required

SemiNex LASER DIODES

THANK YOU!