



Laser Chips

High Power SemiNex lasers
 Multi Mode and Single Mode
 6.2 Watts of CW Power
 1310, 1470, 1532, 1550 and 1650 nm
 Custom Wavelengths Available

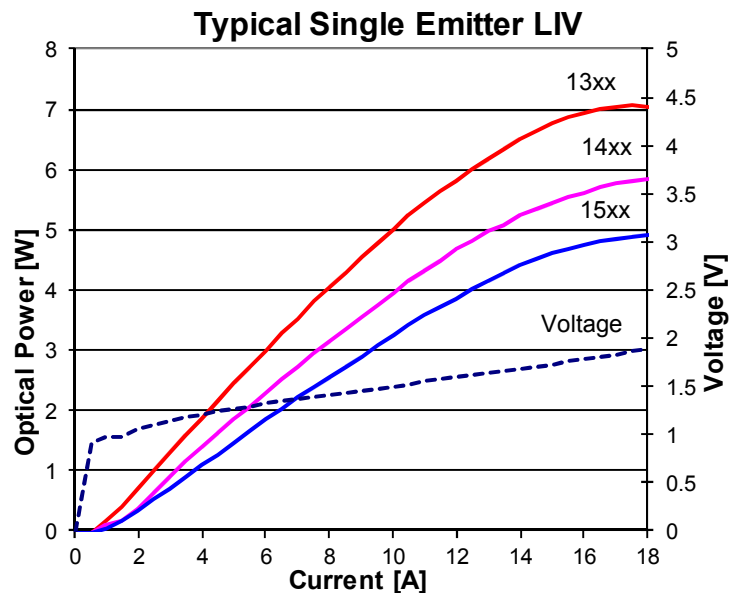
Features

- High Output Power
- High Dynamic Power Range
- High Efficiency

Applications

- Medical Lasers
- LIDAR
- Free Space Communications
- Targeting, Range Finding
- Military / Aerospace

SemiNex delivers the highest available power at infrared wavelengths between 13xx and 17xx nm. When necessary we will further optimize the design of our InP laser chips to meet our customers' specific optical and electrical performance needs. Diodes, bars and packages are tested to meet customer and market performance demands. Typical results and packaging options are shown. Contact SemiNex for additional details or to discuss your specific requirements





Laser Chips

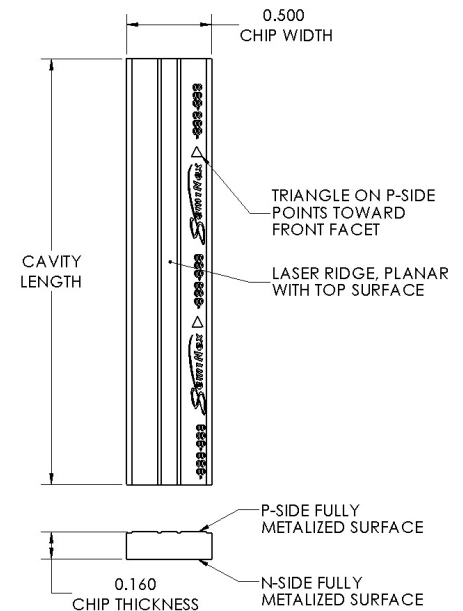


Symbol	CHP-103	CHP-132	CHP-188	CHP-105	CHP-108	CHP-113	CHP-124	CHP-190	CHP-191	Units	
Optical											
Wavelength	λ_c	1310	1320	1350	1470	1480	1532	1550	1625	1650	nm (± 20)
Output Power*	P_o	6.2	6.2	6.2	5.0	5	4.2	4.2	3.5	3.2	watts
Chip Cavity Length		2500	2500	2500	2500	2500	2500	2500	2500	2500	μm (± 10)
Emitter Width	W	95	95	95	95	95	95	95	95	95	μm
Emitter Height	H	1	1	1	1	1	1	1	1	1	μm
Spectral Width	$\Delta\lambda$	15	15	15	15	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	0.5	0.5	0.5	0.4	0.4	0.35	0.35	0.3	0.22	W/A
Fast Axis Div.	θ_{perp}	28	28	28	28	28	28	28	28	28	deg FWHM
Slow Axis Div.	θ_{parallel}	9	9	9	9	9	9	9	9	9	deg FWHM
Electrical											
Power conversion Eff	η	0.27	0.27	0.27	0.21	0.21	0.18	0.18	0.15	0.13	
Threshold Current	I_{th}	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	A
Operating Current	I_{op}	16	16	16	14	14	14	14	14	14	A
Operating Voltage	V_{op}	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	V
Series Resistance	R_s	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	ohm
Mechanical											
Weight											<0.01 g
Operating Temp.											10 to 30 °C
Storage Temp.											-20 to 80 °C

Specified values are rated at a constant heat sink temperature of 20°C

Symbol	CHP-106	CHP-107	CHP-162	CHP-121	CHP-123	Units	
Optical							
Wavelength	λ_c	1475	1488	1540	1550	1568	nm (± 20)
Output Power*	P_o	3.7	7.0	5.6	2.5	5.6	watts
Chip Cavity Length		1500	2500	2500	1500	2500	μm (± 10)
Emitter Width	W	95	180	180	95	180	μm
Emitter Height	H	1	1	1	1	1	μm
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	0.37	0.37	0.37	0.37	0.37	W/A
Fast Axis Div.	θ_{perp}	28	28	28	28	28	deg FWHM
Slow Axis Div.	θ_{parallel}	9	9	9	9	9	deg FWHM
Electrical							
Power conversion Eff	η	0.21	0.21	0.21	0.21	0.21	
Threshold Current	I_{th}	0.5	0.5	0.5	0.5	0.5	A
Operating Current	I_{op}	14	14	14	14	14	A
Operating Voltage	V_{op}	1.7	1.7	1.7	1.7	1.7	V
Series Resistance	R_s	0.05	0.05	0.05	0.05	0.05	ohm
Mechanical							
Weight							<0.01 g
Operating Temp.							10 to 30 °C
Storage Temp.							-20 to 80 °C

Specified values are rated at a constant heat sink temperature of 20°C



CHIP ATTRIBUTES	
APERTURE WIDTH	$\pm 3\mu$
CHIP WIDTH	$500\mu\text{m} \pm 3\mu\text{m}$
THICKNESS	$160\mu\text{m} \pm 3\mu\text{m}$
CAVITY LENGTH	$\pm 3\mu\text{m}$

P METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	50	± 10
Pt	125	± 25
Av	250	± 50
N METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	30	± 10
Pt	125	± 25
Av	400	± 40



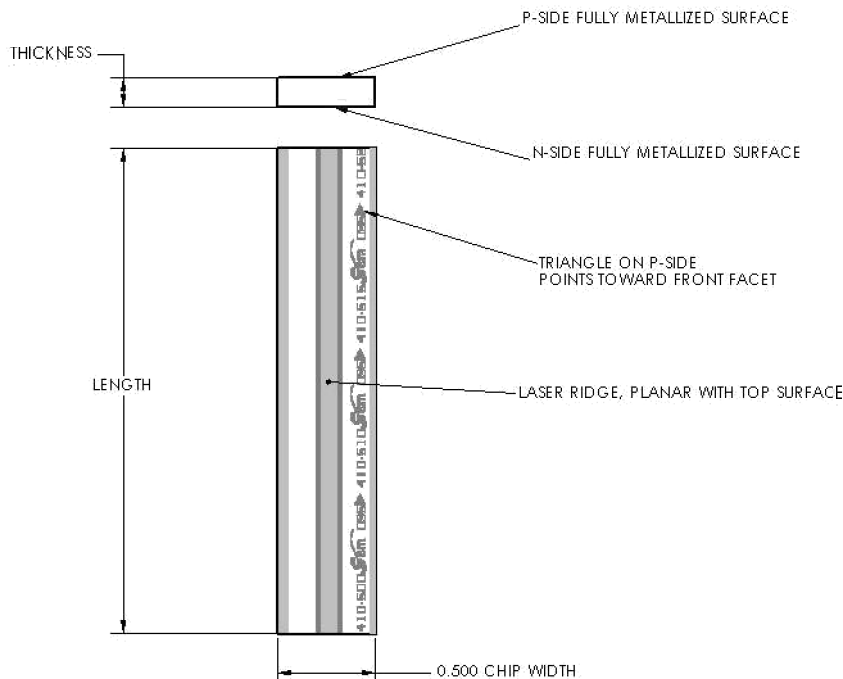
Single Mode Laser Chips



Symbol CHP-156 CHP-131 CHP-176 CHP-179 CHP-115 CHP-144 CHP-127 CHP-155 Units

Optical										
Wavelength	λ_c	1305	1310	1315	1550	1550	1625	1630	1650	nm (± 20)
Power	P_o	720	590	590	400	400	300	300	450	mW
Emitter Width	W	5	5	5	4	4	4	4	5	μm (± 10)
Emitter Height	H	1	1	1	1	1	1	1	1	μm (nom)
Cavity Length	L	1.5	1.25	1.25	1.5	1.25	1.25	1.25	1.25	mm
Spectral Width	$\Delta\lambda$	15	15	15	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.35	W/A
Fast Axis Div.	θ_{perp}	30	30	30	30	30	30	30	30	deg FWHM*
Slow Axis Div.	θ_{parallel}	13	13	13	13	13	13	13	13	deg FWHM*
Electrical										
Power Conversion Eff.	η	29	14	14	14	11	9	9	9	Min*
Threshold Current	I_{th}	50	50	50	50	50	50	50	50	mA*
Operating Current	I_{op}	1.3	1.2	1.2	1.2	1.8	1.6	1.6	1.6	A*
Operating Voltage	V_{op}	2.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7	V*
Series Resistance	R_s	1	1	1	1	1	1	1	1	ohm*
Mechanical										
Weight		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	g
Operating Temp.		10 to 30	10 to 30	10 to 30	10 to 30	10 to 30	10 to 30	10 to 30	10 to 30	$^{\circ}\text{C}$
Storage Temp.		-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	$^{\circ}\text{C}$

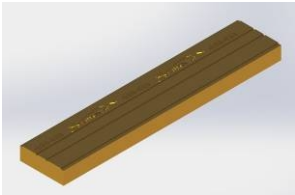
*CW As measured on a C-Mount with Indium solder
Specified values are rated at a constant heat sink temperature of 20 $^{\circ}\text{C}$



CHIP ATTRIBUTES	
APERTURE WIDTH	$\pm 3\mu$
CHIP WIDTH	500 μm $\pm 3\mu\text{m}$
THICKNESS	160 μm $\pm 3\mu\text{m}$
CAVITY LENGTH	$\pm 3\mu\text{m}$

P METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	50	± 10
Pt	125	± 25
Av	250	± 50

N METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	30	± 10
Pt	125	± 25
Av	400	± 40



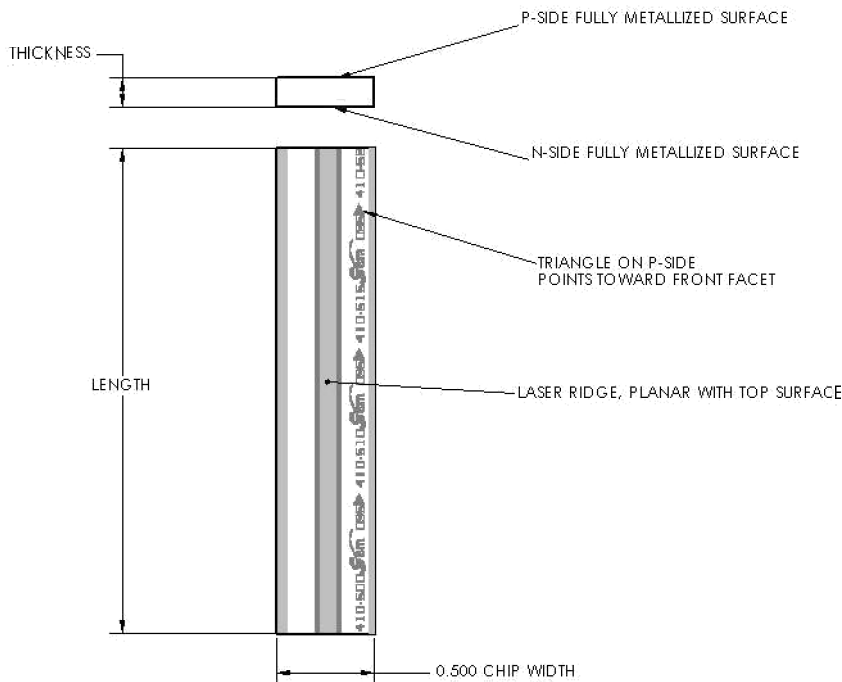
Single Mode Laser Chips
Long Cavity



Symbol CHP-177 CHP-194 CHP-122 CHP-184 CHP-128 Units

Optical							
Wavelength	λ_c	1320	1532	1555	1630	1650	nm (± 20)
Power*	P_o	800	600	600	450	450	mW
Emitter Width	W	5	4	4	4	4	μm (± 10)
Emitter Height	H	1	1	1	1	1	μm (nom)
Cavity Length	L	2.5	2.5	2.5	2.5	2.5	mm
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	0.5	0.5	0.5	0.5	0.5	W/A
Fast Axis Div.	θ_{perp}	30	30	30	30	30	deg FWHM*
Slow Axis Div.	θ_{parallel}	13	13	13	13	13	deg FWHM*
Electrical							
Power Conversion Eff.	η	14	14	14	14	14	Min*
Threshold Current	I_{th}	50	50	50	50	50	A*
Operating Current	I_{op}	1.8	1.8	1.8	1.6	1.6	A*
Operating Voltage	V_{op}	3.6	3.6	3.6	3.6	3.6	V*
Series Resistance	R_s	1	1	1	1	1	ohm*
Mechanical							
Weight				<0.01			g
Operating Temp.				10 to 30			$^{\circ}\text{C}$
Storage Temp.				-20 to 80			$^{\circ}\text{C}$

*CW As measured on a C-Mount with Indium solder
Specified values are rated at a constant heat sink temperature of 20°C



CHIP ATTRIBUTES	
APERTURE WIDTH	$\pm 3\mu$
CHIP WIDTH	500 μm $\pm 3\mu\text{m}$
THICKNESS	160 μm $\pm 3\mu\text{m}$
CAVITY LENGTH	$\pm 3\mu\text{m}$

P METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	50	± 10
Pt	125	± 25
Av	250	± 50

N METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	30	± 10
Pt	125	± 25
Av	400	± 40



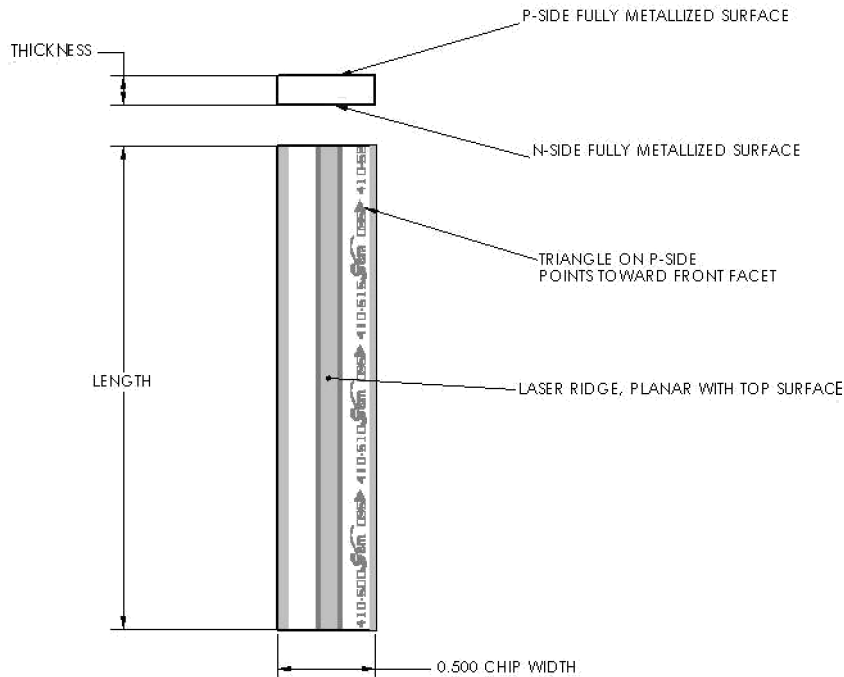
Pulsed Laser Chips



Symbol CHP-120 CHP-148 CHP-175 CHP-149 CHP-125 CHP-150 CHP-152 CHP-151 Units

Optical		CHP-120	CHP-148	CHP-175	CHP-149	CHP-125	CHP-150	CHP-152	CHP-151	Units	
Output Power*	P _o	5.5	9.0	10.0	16.0	15.0	25.0	20.0	30.0	watts	
Cavity Length	CL	1250	2500	1250	2500	1250	2500	1250	2500	μm	
Emitter Width	W	50	50	95	95	180	180	350	350	μm	
Emitter Height	H	1	1	1	1	1	1	1	1	μm	
Operating Current	I _{op}	16	40	30	50	35	100	50	100	A	
Threshold Current	I _{th}	0.5	0.5	0.5	1	1	2	2	2.5	A	
Operating Voltage	V _{op}	<i>Depends on packing type and pulse conditions - expect 3.0 to 8.0 volts.</i>								V	
Specifications		Min	Typical			Max					
Peak Wavelength	λ _c	1530	1550			1580				nm (±20)	
Spectral Width	Δλ	15				20				nm 3dB	
Temperature Coeff.	Δλ/ΔλT		0.55							nm/C	
Fast Axis Diverg.	θ _{perp}		30							deg FWHM	
Slow Axis Diverg.	θ _{parallel}		10							deg FWHM	
Pulse Width	PW		150							ns	
Duty Cycle	DC		0.1							%	
Mechanical											
Weight										<0.01	g
Operating Temp.										10 to 30	°C
Storage Temp.										-20 to 80	°C

*Pulsed as measured on a C-Mount with Indium solder - P-Side Down
Specified values are rated at a constant heat sink temperature of 20°C



CHIP ATTRIBUTES	
APERTURE WIDTH	±3μ
CHIP WIDTH	500 μm ±3 μm
THICKNESS	160 μm ±3 μm
CAVITY LENGTH	±3 μm

P METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	50	±10
Pt	125	±25
Av	250	±50

N METALLIZATION		
MATERIAL	THICKNESS (nm)	TOLERANCE
Ti	30	±10
Pt	125	±25
Av	400	±40

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