

TO-9 Packaged Laser Diode



These High Power IR laser diodes use high precision indium phosphide semiconductor materials to convert electrical energy directly and efficiently into coherent optical energy. A non-conventional doping profile and unique application of quantum physics provides superior performance in the areas of thermal efficiency, electrical efficiency and total optical power.

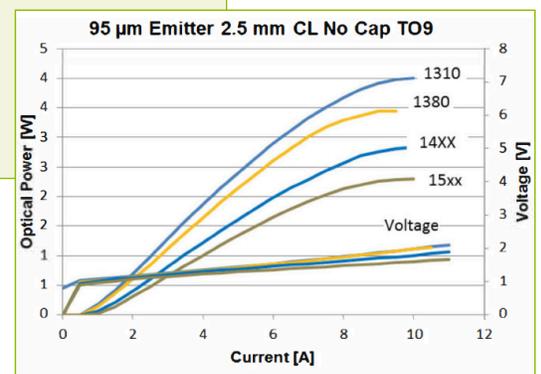
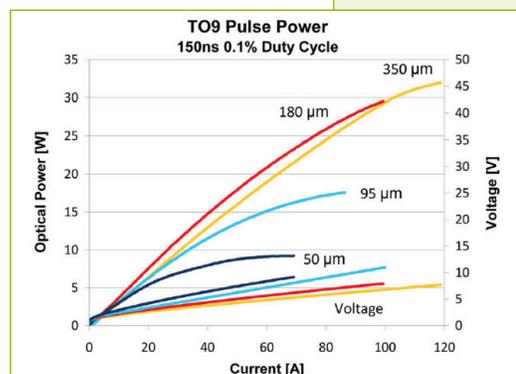
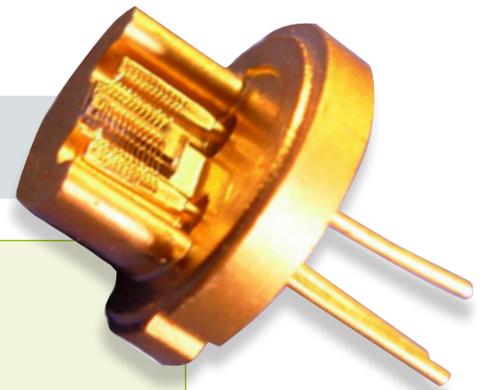
Electrical efficiency gains are achieved by ensuring less current leakage around the semiconductor quantum wells where electron energy is converted to photonic energy. Higher electrical efficiency, in turn, reduces the heat buildup caused by lost electrons. In addition, the unique design minimizes thermal resistance; thus, the heat generated from the diode is easy to dissipate. Lower heat generation significantly raises the optical power at which the laser can operate. The combination of higher electrical and thermal efficiency achieves power levels which exceed current industry performance by 2 to 6 times.

Product Features

- Cost Effective
- High Output Power
- High Dynamic Range
- High Efficiency
- Standard Low Cost Package

Applications

- OEM Medical
- Professional Medical
- LiDAR
- Military / Aerospace
- Illumination



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Specifications

	Symbol	TO9-121-161		TO9-147-161		TO9-148-161		TO9-152-161		Units	
		CW	Pulsed	CW	Pulsed	CW	Pulsed	CW	Pulsed		
Optical	Symbol										
Wavelength	λ_c	1465	1450	1595	1550	1595	1565	1330	1310	nm (± 20)	
Peak Output Power*	P_o	1.80	17.00	1.60	14.00	1.8	24.00	2.00	20.00	watts	
Average Output Power*	P_{AVG}	NA	17	NA	14	NA	24	NA	20	milliwatts	
Chip Cavity Length	CL	2500		2500		2500		2500		μm	
Emitter Width	W	95		95		180		95		μm	
Emitter Height	H	1		1		1		1		μm	
Spectral Width	$\delta\lambda$	10		15		15		10		nm 3dB	
Slope Efficiency	η_s	0.30		0.25		0.25		0.43		0.35	W/A
Fast Axis Div.	θ_{perp}	28		28		28		28		deg FWHM	
Slow Axis Div.	θ_{parallel}	9	9	14	14	9	14	9	9	deg FWHM	
Electrical											
Power Conversion Eff.	η	0.13	0.05	0.5	0.06	0.17	0.03	0.25	0.05	%	
Operating Current	I_{op}	6	50	7	50	8	80	8	60	A	
Threshold Current	I_{th}	0.5		1		1		0.5			
Operating Voltage	V_{op}	1.7	7	1.7	5	1.4	9.5	2	6.2	V	
Series Resistance	Rs	0.08	0.1	0.1	0.1	0.04	0.14	0.05	0.08	ohm	
Mechanical											
Weight		2		2		2		2		g	
Operating Temp.**		-40 to 60		-40 to 60		-40 to 60		-40 to 60		$^{\circ}\text{C}$	
Storage Temp.		-40 to 80		-40 to 80		-40 to 80		-40 to 80		$^{\circ}\text{C}$	

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

**Specified operating conditions are based on 20C heat sink temperature. High temperature operation will reduce performance and MTTF.

Unless otherwise indicated all values are nominal.

Uncapped TO9 specifications assume heatsinking underneath laser chip.

Capped TO9 specifications assume heatsinking only on flat surface where pins extend.

*Pulsed Power measured at 150ns pulse width and 0.1% duty cycle.

