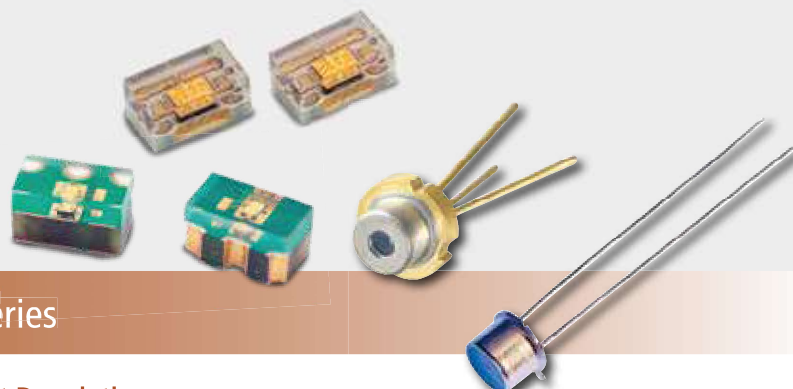


High Power Laser Diode For Range Finding

PULSED LASER DIODES ■

Pulsed Laser Diodes
PGA – PGEW Series



Pulsed Laser Diodes – PGA – PGEW Series

Applications

- LiDAR
- Range finders
- Safety light curtains
- Adaptive cruise control
- Autonomous vehicles
- Laser therapy

Features and Benefits

- Multi-cavity lasers concentrate emitting source size
- Quantum well structure
- High peak pulsed power into aperture
- Excellent power stability with temperature
- Customization available upon request

Product Description

Pulsed semiconductor lasers in the near IR are commonly used for long-distance time-of-flight or phase-shift range-finder or LiDAR systems. Excelitas offers a broad range of ideally-suited pulsed 905 nm laser designs including multi-cavity monolithic structures with up to 4 active areas per chip resulting in up to 100 W of peak optical output power. Physical stacking of laser chips is also possible, resulting in up to 300 W of peak optical output power.

Excelitas now offers monolithic laser arrays that combine our decades of experience in growing high reliability lasers with ultra-compact SMD packaging capabilities. These surface mount devices provide perfectly aligned adjacent lasers with minimal spacing between pixels. Each pixel has multiple cavities, and all chips can be either driven together or individually addressed, giving maximum flexibility to OEMs developing next generation LiDAR systems. Please also inquire about our ability to add drive electronics to our lasers for even greater levels of integration to reduce your time to market.

Critical parameters are pulse-width and rise/fall times. The pulse width may be reduced allowing for increased current drive and resulting in higher peak optical power. Quantum-well laser design offers rise and fall times of <1ns but the drive circuit lay-out and package inductance play the greater role in determining rise/fall times, and should be designed accordingly. Excelitas offers a variety of package types with different inductance values to assist to this end.

Our core competencies include: MOCVD wafer growth; wafer processing of the grown GaAs wafers; assembly using either epoxy or solder die attach; epoxy encapsulation of lasers mounted on lead frame; hermetically-sealed product qualification to MIL STD and custom requirements.

Product Table

PGA Pulsed Laser Family Selection Table, Typ. Wavelength 905 nm

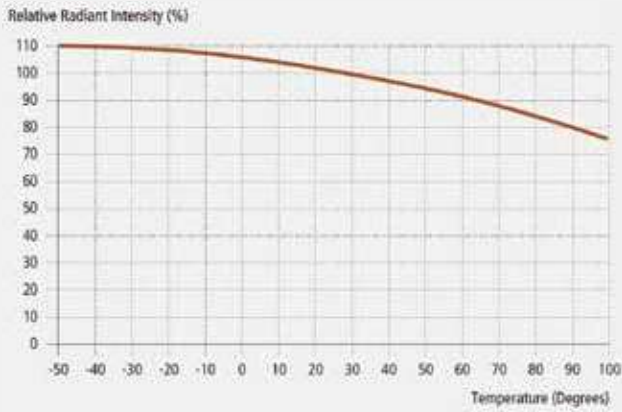
Device (X = pkg) (H = RoHS Compliance)	Description		Emitting Area		Typical Peak Power at 10A, 100 ns	Typical Peak Power at 30A, 100 ns	Beam Spread Parallel to Junction (FWHM)	Beam Spread Perpendicular to Junction (FWHM)	Typical Temperature Coefficient nm/°C	Preferred Packages		
	# of Chips	Total # of Emitting Stripes	Width μm	Height μm	75 μm (3 mils) Stripe Width	225 μm (9 mils) Stripe Width	Θ_{\parallel}	Θ_{\perp}		"S" Metal Can TO-18	"LU" High Volume Metal TO-56	"D" Epoxy Encapsulated SMT
PGAx1S03H	1	1	75	1	8W		10	25	0.25	✓		✓
PGAx1S09H	1	1	225	1		25W	10	25	0.25	✓		✓
DPGax1S03H	1	2	75	5	16W		10	25	0.25	✓	✓	✓
DPGax1S09H	1	2	225	5		50W	10	25	0.25	✓		✓
TPGax1S03H	1	3	75	10	23W		10	25	0.25	✓	✓	✓
TPGax1S09H	1	3	225	10		75W	10	25	0.25	✓	✓	✓
QPGax1S03H	1	4	75	15	30W		10	25	0.25	✓	✓	✓
QPGax1S09H	1	4	225	15		90W	10	25	0.25	✓	✓	✓
TPGax2S03H	2	6	75	175	45W		10	25	0.25	✓		
TPGax2S09H	2	6	225	175		150W	10	25	0.25	✓		
QPGax2S03H	2	8	75	225	58W		10	25	0.25	✓		
QPGax2S09H	2	8	225	225		175W	10	25	0.25	✓		
QPGax3S03H	3	12	75	450	85W		10	25	0.25	✓		
QPGax3S09H	3	12	225	450		255W	10	25	0.25	✓		

Pulsed Semiconductor Laser 4-channel Array

Device	Description	Emitting Area		Typical Peak Power at 30A, 100 ns	Beam Spread Parallel to Junction (FWHM)	Beam Spread Perpendicular to Junction (FWHM)	Typical Temperature Coefficient nm/°C	Preferred Packages "D" Epoxy Encapsulated SMT
		Width μm	Height μm		Θ_{\parallel}	Θ_{\perp}		
TPGax1S11A-4A	1 x 4, Individually addressable	270	10	75 W	10	25	0.25	✓

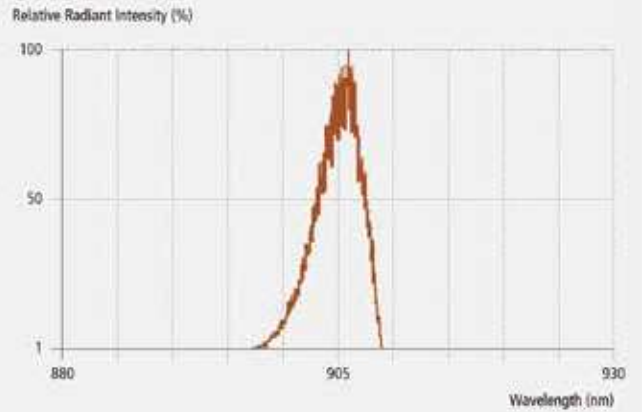
Graph 1

Peak Radiant Intensity vs. Temperature



Graph 2

Spectral Plot Distribution



Graph 3

Center Wavelength vs. Temperature

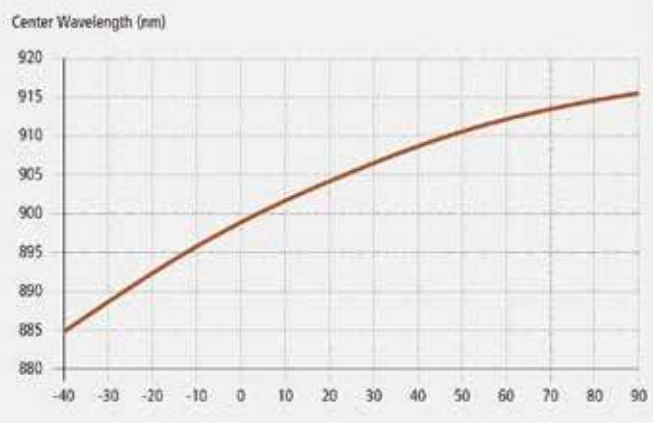
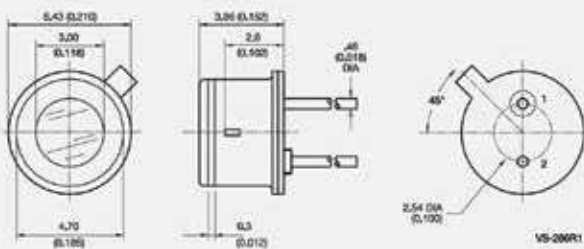


Figure 1

Package Drawing



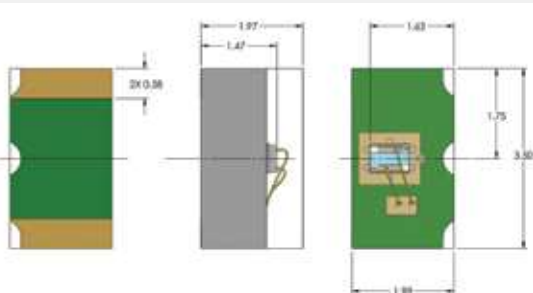
Package S (TO-18)



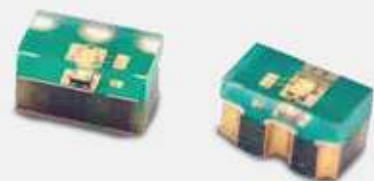
Pin out
 1. LD Anode (+),
 2. LD Cathode (-) Case,
 Inductance 5.2 nH

Figure 2

Package Drawing



Package D (Surface Mount)



Inductance 1.6 nH

