



SAF1450S2

Description

The SAF1450S2 1450 nm Single-Angled-Facet (SAF) gain chip (AR-coated laser diode) features an angled waveguide, AR coating, and a proven gain structure, which gives designers of external cavity lasers (ECLs) the highest power and widest tuning range available in the market. The butterfly assembly features a TEC and an optical isolator to improve the stability of the laser.

Laser Cavity Performance*

*Different external laser cavities will produce different performance specifications. The data given here is only valid for the specified reference cavity.

SAF1450S2			
	Min	Typical	Max
Reference Laser Cavity	Littrow Cavity: TLK-L1450R		
Operating Current		400 mA	
Center Wavelength	1430 nm	1450 nm	1470 nm
Tuning Range ^a	70 nm	120 nm	-
Peak Power	20 mW	40 mW	-
Wavelength Tuning Resolution	-	-	3 pm
Tuning Speed	-	-	33 nm/s
Linewidth	-	100 kHz	130 kHz
Side Mode Suppression Ratio (SMSR)	30 dB	45 dB	-
Polarization Extinction Ratio	-	-	-
Power Stability ^b	30 s	1%	-
	24 hr	10%	-
Wavelength Stability ^b	30 s	-	4 pm
	24 hr	-	50 pm

^a 10 dB, ^b Running open loop, measured using ITC4020 current controller.



ASE Performance

$T_{OP} = 25\text{ }^{\circ}\text{C}$

SAF1450S2			
	Min	Typical	Max
Center Wavelength	1400 nm	1450 nm	1500 nm
3 dB Bandwidth	80 nm	100 nm	-
Operating Current	-	-	500 mA
Chip Forward Voltage	-	1.4 V	1.7 V
Gain Ripple, RMS ^a	-	-	0.4 dB
Power, Front Facet ^b	1.5 mW	-	-

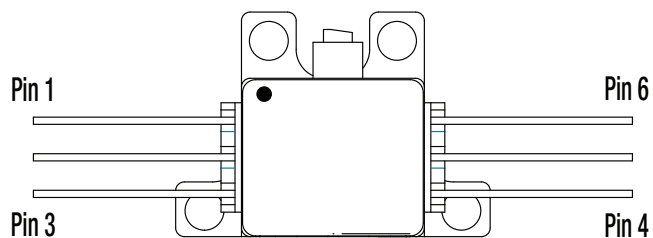
^a @ I_{OP} , Measured using OSA with 0.1 nm resolution bandwidth; ^b Free-space output power

Additional Specifications

SAF1450S2			
	Min	Typical	Max
Chip Gain ^a	-	20 dB	-
Angled Facet Reflectivity ^b (R_1)	-	0.005%	0.01%
Normal Facet Reflectivity (R_2)	8%	10%	12%
Lateral Beam Exit Angle	-	26.5°	-
Beam Divergence (FWHM)	θ_T	30°	40°
	θ_L	13°	25°
Operating Current ^c	-	-	500 mA
Operating Temperature (Non-Condensing)	-	25 °C	-
TEC Forward Voltage	-	-	3.6 V
TEC Forward Current	-	-	2.1 A
Chip Length	-	1.5 mm	-
Waveguide Refractive Index	-	3.2	-
Astigmatism	-	1 μm	3 μm
Fiber Type	SMF-28e, 1.0 m Long (Min)		
Fiber Connector	FC/APC		
Peak Optical Isolation	32 dB ^d	-	-
Fiber Coupling Efficiency	-	50%	-

^a Single pass optical gain at center of gain curve; ^b SAF chip reflectivity diagram (see above); ^c @ T_{OP} ; ^d @ 1450 nm, 25 °C

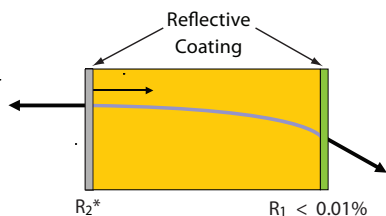
Drawings



Pin Identification

1. TEC +
2. Thermistor
3. Thermistor
4. Dev. Anode
5. Dev Cathode
6. TEC -

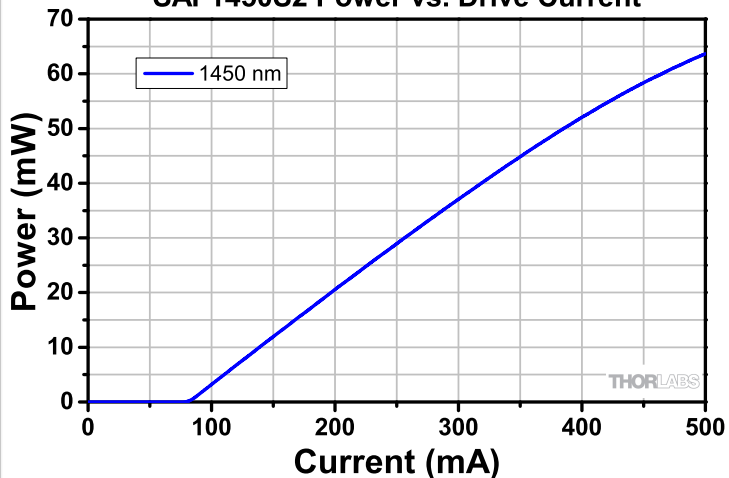
SAF Gain Chip



* R_2 values are listed in the table above.

Plots (TLK-L1450R)

SAF1450S2 Power vs. Drive Current



SAF1450S2 Power Spectrum

