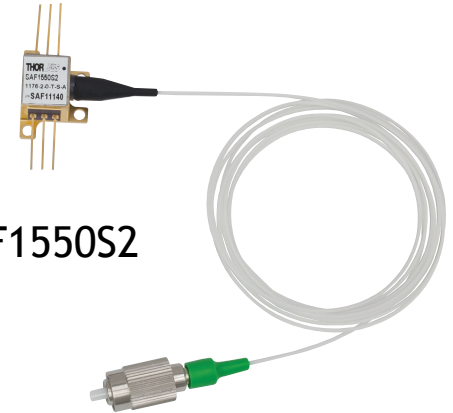


Tunable Laser Gain Chip with TEC



SAF1550S2

Description

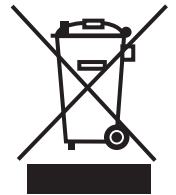
The SAF1550S2 1550 nm Single-Angled-Facet (SAF) gain chip (AR-coated laser diode) features an angled waveguide, AR coating, and a proven gain structure, which gives designers of external cavity lasers (ECLs) the highest power and widest tuning range available in the market. The butterfly assembly features 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.

SAF1550S2				
		Min	Typical	Max
Reference Laser Cavity		Littrow Cavity: TLK-L1550R		
Operating Current			400 mA	
Center Wavelength		1530 nm	1550 nm	1570 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} = 28 °C

SAF1550S2			
	Min	Typical	Max
Center Wavelength	1500 nm	1550 nm	1600 nm
3 dB Bandwidth	60 nm	80 nm	-
Operating Current	-	300 mA	600 mA
Chip Forward Voltage	-	1.1 V	1.8 V
Gain Ripple, RMS ^a	-	-	0.6 dB
Power, Front Facet ^b	0.4 mW	-	-

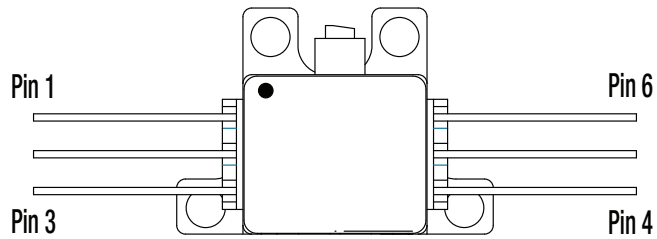
^a @ I_{OP}, Measured using OSA with 0.1 nm resolution bandwidth; ^b Free-space output power

Additional Specifications

SAF1550S2			
	Min	Typical	Max
Chip Gain ^a	-	17 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	27°	31°
	θ _L	14°	17°
Operating Current ^c	-	300 mA	600 mA
Operating Temperature (Non-Condensing)	-	25 °C	-
TEC Forward Voltage	-	-	3.6 V
TEC Forward Current	-	-	2.1 A
Chip Length	-	1 mm	-
Waveguide Refractive Index	-	3.2	-
Astigmatism	-	1 μm	3 μm
Fiber Type	SMF-28e, 1.5 m Long		
Fiber Connector	FC/APC		
Peak Optical Isolation	32 dB ^d	-	-
Fiber Coupling Efficiency	-	50%	-

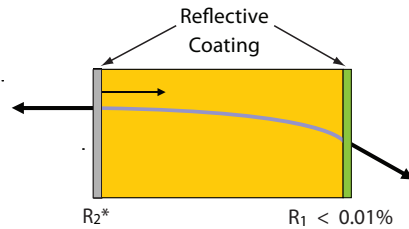
^a Single pass optical gain at center of gain curve; ^b SAF chip reflectivity diagram (see above); ^c @ T_{OP}; ^d @ 1550 nm, 23 °C

Drawings



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

SAF Gain Chip



* $R_2 = 10\%$ for the SAF1550S2.

Plots (TLK-L1550R)

