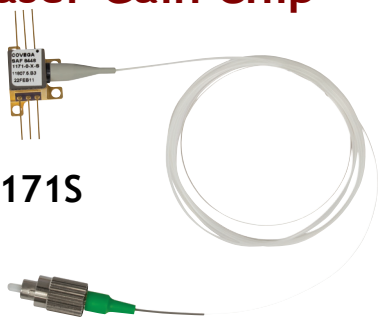
Tunable Laser Gain Chip with TEC



SAF1171S

Description

The SAF1171S 1050 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 (ECL's) the highest power and widest tuning range available in the market. The butterfly assembly features a TEC.

Laser Cavity Performance*

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

SAF1171S				
		Min	Typical	Max
Reference Laser Cavity		Littman Cavity: TLK-L1050M		
Center Wavelength		1040 nm	1050 nm	1060 nm
Tuning Range[a]		45 nm	60 nm	-
Peak Power		5 mW	8 mW	-
Wavelength Tuning Resolution		2 pm	-	-
Tuning Speed		-	-	30 nm/s
Linewidth		-	100 kHz	130 kHz
Side Mode Suppression Ratio (SMSR)		45 dB	-	-
Polarization Extinction Ratio		-	-	-
Power Stability[b]	30 s	1%	-	-
	24 hr	10%	-	-
Wavelength Stability[b]	30 s	-	-	1 pm
	24 hr	-	-	50 pm

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

ASE Performance

T_{OP} = 25 °C

SAF1171S			
	Min	Typical	Max
Center Wavelength	1030 nm	1060 nm	1090 nm
3 dB Bandwidth	30 nm	60 nm	-
Operating Current	-	-	150 mA
Chip Forward Voltage	-	-	2.5 V
Gain Ripple, RMS[a]	-	-	2.5 dB
Power, Front Facet[b]	3 mW	6 mW	-

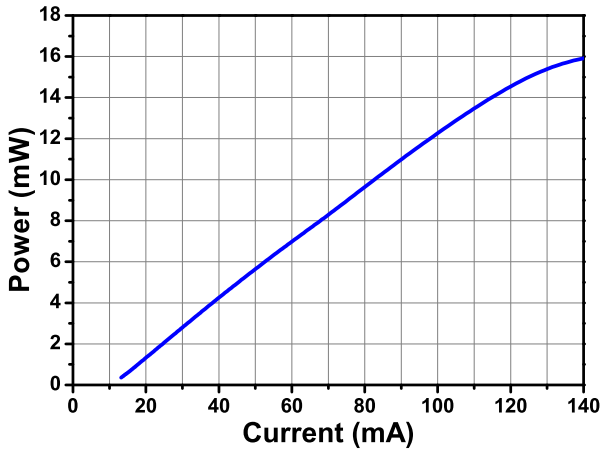
[a] @ I_{OP}, Measured using OSA with 0.1 nm resolution bandwidth; [b] Free-space output power

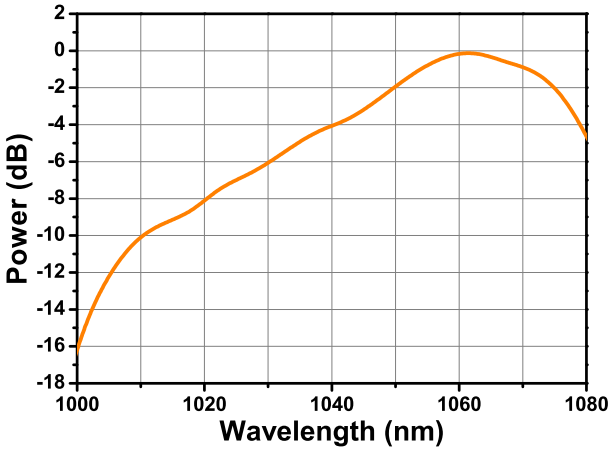
Additional Specifications

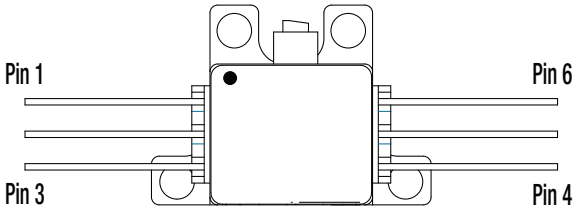
SAF1171S				
		Min	Typical	Max
Chip Gain[a]		-	30 dB	-
Angled Facet Reflectivity[b] (R_1)		-	.005%	0.01%
Normal Facet Reflectivity (R_2)		-	10%	-
Lateral Beam Exit Angle		-	26.5°	-
Beam Divergence (FWHM)	θ_T	25°	40°	55°
	θ_L	10°	20°	35°
Operating Current[c]		-	-	150 mA
Operating Temperature (Non-Condensing)		-	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		HI1060, 1.5 m Long		
Fiber Connector		FC/APC		
Peak Optical Isolation		-	-	-
Fiber Coupling Efficiency		-	50%	-

[a] Single pass optical gain at center of gain curve; [b] SAF chip reflectivity diagram (see above); [c] @ T_{OP}

Graphs and Drawings



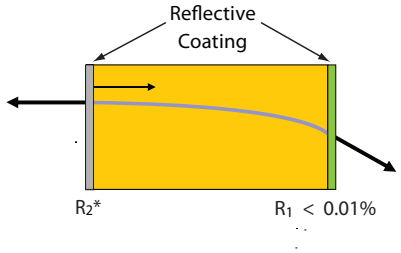




Pin Identification

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

SAF Gain Chip



*R_2 is between 10 and 30%, depending on model.