

# Uncooled FP/DFB Laser in TO Package (TOLS)

# Wavelength Specific Laser Sources (WSLS)

Agilecom's TO series laser is an uncooled semiconductor in AlGaAs FP or DFB laser working at 1310/1550nm wavelength. The device is delivered in a hermetic TO package with photodiode for optical power monitoring.

Agilecom's WSLS series laser is fabricated in a hermetically sealed 14-pin butterfly package that contains thermoelectric cooler (TEC), thermistor, monitor photodiode, optical isolator. Customized packages of the laser sources with the same performance and qualification can also be manufactured.

## 1310nm TO Laser Electrical/Optical Characteristics (Tc=25°C)

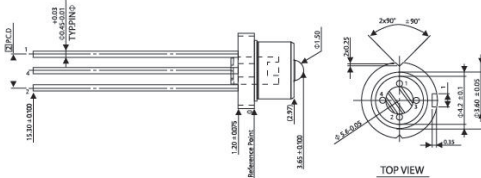
Parameter	Symbol	Test Conditions	Min	Type	Max	Unit
Threshold current	I <sub>th</sub>	CW		10	15	mA
Output Power	04	CW, I <sub>f</sub> =I <sub>th</sub> +20mA	4			mW
	05	CW, I <sub>f</sub> =I <sub>th</sub> +20mA	5			
	06	CW, I <sub>f</sub> =I <sub>th</sub> +20mA	6			
Operating voltage	V <sub>op</sub>	CW, I <sub>f</sub> =I <sub>th</sub> +20mA		1.15	1.5	V
Slope efficiency	H	CW, I <sub>f</sub> =I <sub>th</sub> +20mA	0.3(0.2)	0.5(0.35)		mW/mA
Center Wavelength	λ <sub>c</sub>	CW, I <sub>f</sub> =I <sub>th</sub> +20mA	1290	1310	1330	nm
Spectral width (RMS)	Δλ	CW, I <sub>f</sub> =I <sub>th</sub> +20mA		1.5	3	nm
Beam divergence angle (parallel)	θ <sub>∥</sub>	CW, I <sub>f</sub> =I <sub>th</sub> +20mA		25(8)		Deg.
Beam divergence angle (perpendicular)	θ <sub>⊥</sub>	CW, I <sub>f</sub> =I <sub>th</sub> +20mA		38(13)		Deg.
Rise and fall time	T <sub>r,Tr</sub>	I <sub>f</sub> =I <sub>th</sub> +20mA, 10-90%		200	240	Ps
Monitor current (photodiode)	I <sub>m</sub>	CW, V <sub>r</sub> =1V	0.1	0.5		mA
Dark current (photodiode)	I <sub>d</sub>	V <sub>r</sub> =10V		0.01	0.1	μA
Capacitance (photodiode)	C <sub>t</sub>	V <sub>r</sub> =10V, f=1MHz		10	20	PF
Focus Length	F	Aspheric lens	7.2	7.5	8.0	mm
		Φ2.0 Ball lens	5.8	6.3	6.8	
		Φ1.5 Ball lens	5.5	5.8	6.3	

## Absolute Maximum Ratings

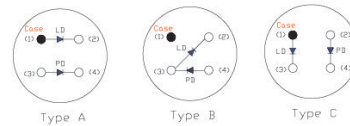
Parameter	Symbol	Max	Unit
Forward Voltage (Laser diode)	V <sub>f</sub>	2	V
Forward current (Laser diode)	I <sub>f</sub>	100	mA
Reverse Voltage (photodiode)	V <sub>r</sub>	20	V
Monitor current (photodiode)	I <sub>m</sub>	2	mA
Case temperature	T <sub>c</sub>	-40~+85	°C
Storage temperature	T <sub>stg</sub>	-40~+100	°C



## Diagram



## Bottom View



## Ordering Information

TO	Code	Wavelength (nm)	Code	Output power (dB)	Code	Modulation (GHz)	Code	LD Type	Code	Package Leas-cap	Code	Pin-Out
1310	03	1310	03	3	1	1.25	F	FP-LD	A	Aspheric lens	A	Type A pin
1550	05	1550	05	5	2	2.5	D	DFB-LD	B	Ball lens	B	Type B pin
XXXX	07	Customize	07	7	3	10	C	CWDM	F	Flat window	C	Type C pin
	XX	Customize	XX	Customize	X	Customize	X	Customize	X	Customize	X	Customize

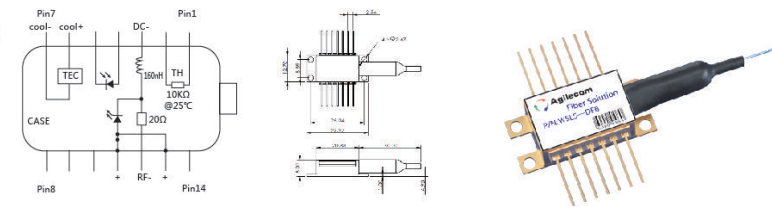
## Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Peak Output Power	P <sub>r</sub>	0	10	13	dBm
Threshold Current	I <sub>th</sub>	--	15	--	mA
Laser Forward Current	I <sub>f</sub>	--	--	150	mA
Laser Reverse Voltage	V <sub>r</sub>	--	--	2	V
Wavelength	λ <sub>c</sub>	ITU grid			nm
Optical Isolation	I <sub>so</sub>	30	--	--	dB
Line width	LW	--	3	--	MHz
Band width	BW	2.5	--	--	GHz
Monitor Current	I <sub>MON</sub>	100	--	--	μA
Monitor Dark Current	I <sub>D</sub>	--	--	100	nA
Monitor Reverse Voltage	V <sub>MON</sub>	--	--	10	V
Thermistor Resistance(25°C)	R <sub>th</sub>	9.5	10	10.5	kΩ
Cooler Current	I <sub>TEC</sub>	--	--	1.9	A
Cooler Voltage	V <sub>TEC</sub>	--	--	6	V
Operating Temperature	T <sub>o</sub>	-40	--	70	°C
Storage Temperature	T <sub>stg</sub>	-40	--	85	°C
Soldering Temperature		--	--	230	°C

## Pin Information

PIN No	PIN assignment
1	Thermistor
2	Thermistor
3	Laser DC Bias (Cathode) (-)
4	Monitor Anode (-)
5	Monitor Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Case Ground
9	Case Ground
10	NC
11	Laser Anode (+)
12	RF Laser Input Cathode (-)
13	Laser Anode (+)
14	NC

## Diagram



## Ordering Information

Code	wavelength (nm)	Code	Output power (dBm)	Code	Modulation	Code	Fiber Type	Code	Pigtail	Code	Fiber Length (m)	Code	Connector
1270	1270	03	03	C	CW	1	SMF-28e	0	250μm Bare Fiber	1	0.5	0	None
1290	1290	07	07	2	2.5GHz	2	G657A	1	0.9mm Loose Tube	2	1.0	1	SC/UPC
1610	1270~1290	10	10	X	Customize	3	1310nm PM Fiber	4	0.9mm Tight Tube	3	1.5	2	SC/APC
8620	DWDM ITU	XX	Customize			4	1550nm PM Fiber	X	Customize	4	2.0	3	FC/UPC
9625	通道代码									5	2.5	4	FC/APC
XXXX	Customize									6	3.0	5	LC/UPC
										A	1.25	6	LC/APC
										B	1.75	7	ST/UPC
										C	2.25	X	Customize
										X	Customize		