

<b>Preliminary Technical Specifications</b>		Customer	
		Standard	
Product	Tunable Laser Module	Ver #	V00
Model #	TLC(L)13-xx-ST00	Page	1 / 8

## 1. Description

ChemOptics TL series is external cavity laser based on the polymer waveguide grating, and it is designed for use in WDM System and where the capability to change wavelength on demand over C-band and L-band with 100GHz channel spacing is essential. Using thermo-optic effect of polymer, it can be tuned more than 26nm and it is also capable of 2.5Gbps. It is intended for the application of WDM-PON which need low cost and colorless optical source.

## 2. Features

- > 26nm Operating Range(C & L band)
- 100GHz Channel Spacing
- Compact Size
- Based on Polymer Planar Lightwave Circuit
- High Reliability (no moving part)
- Direct Modulation

## 3. Applications

- Low Cost Tunable Laser Source
- WDM-PON System
- Solution of Colorless and LD Inventory

Design	Park Nam Hoon	Approval	
Date	09. 01. 14.	Date	

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#### 4. Absolute Maximum Ratings

(The specifications are applied over  $T_{ambient} = 0 \sim 60^{\circ}C$  unless noted otherwise)

Parameters	Symbol	Ratings	Units	Conditions
Storage Temperature	$T_{stg}$	-20 ~ 80	$^{\circ}C$	-
Operating Temperature	$T_{op}$	0 ~ 60	$^{\circ}C$	Ambient
Lead Soldering Temperature/Time	-	260/10	$^{\circ}C/sec$	-
Bend Radius of Pigtail Fiber	$R_B$	30	mm	-

#### 5. Specifications

(The specifications are applied over  $T_{ambient} = 0 \sim 60^{\circ}C$  unless noted otherwise)

Parameters	Symbol	Values				Conditions
		Min.	Typ.	Max.	Units	
<b>Optical Characteristics</b>						
Tuning Range	$\Delta\lambda_t$	13	16		nm	
Initial Wavelength	C-Band	$\lambda_i$	1543		nm	Grating TEC setting temp. is $40^{\circ}C$ .
	L-Band		1583		nm	
Output Power	$P_f$	0	3		dBm	CW, At the Ith+ 20mA. LD TEC setting temp. is $40^{\circ}C$ .
Slope Efficiency	SE	0.05	0.1		W/A	LD TEC setting temp. is $40^{\circ}C$ .
Power Variation	$\Delta P$	-1		1	dB	At all tuning wavelength
Wavelength Shift Rate	$\Delta\lambda/^{\circ}C$	0.24		0.3	nm/ $^{\circ}C$	
Side Mode Suppression Ratio	SMSR	30	40			CW, At the Ith+ 20mA.
Tracking Error <sup>(Note1)</sup>	TE	-1.0		1.0		
Linewidth	LW		0.2	0.3	nm	CW, At the Ith+20mA, (RMS, -20dB)
<b>Electrical characteristics</b>						
Threshold Current	$I_{th}$	8	13	20	mA	LD TEC setting temp. is $40^{\circ}C$ .

(Note 1) TE = 10 Log [(SE @-20,+70 $^{\circ}C$ )/SE@25 $^{\circ}C$ ]

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Parameters	Symbol	Values				Conditions
		Min.	Typ.	Max.	Units	
<b>Electrical characteristics</b>						
Grating driving Voltage	$V_g$		2.3		V	
LD Setting Temperature	$T_{LD\_set}$		40		°C	
LD TEC	$Q_{max}$		2.5		W	
	$I_{max}$		1.2		A	
	$V_{max}$		1.5		V	
	$\Delta T$	70			°C	
LD Thermistor Resistance			10		k $\Omega$	
Grating Setting Temperature	$T_{G\_set}$		40		°C	
Grating TEC	$Q_{max}$		3.4		W	
	$I_{max}$		2		A	
	$V_{max}$		3.2		V	
		70				
Grating Thermistor Resistance			10		k $\Omega$	
<b>Mechanical Characteristics</b>						
Fiber Type		SMF-28, 900um or Pure Access				

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## 6. Thermistor Characteristics

### 1) LD Thermistor

Temp(°C)	R(KΩ)	Beta Constant	Temp(°C)	R(KΩ)	Beta Constant
-40	327.800	3732	45	4.369	3927
-35	238.300	3753	50	3.607	3930
-30	175.000	3773	55	2.995	3932
-25	129.900	3794	60	2.500	3934
-20	97.180	3814	65	2.098	3936
-15	73.310	3833	70	1.770	3937
-10	55.680	3849	75	1.500	3938
-5	42.570	3860	80	1.277	3940
0	32.820	3871	85	1.092	3941
5	25.490	3880	90	0.938	3942
10	19.960	3890	95	0.809	3943
15	15.740	3897	100	0.700	3945
20	12.500	3901	105	0.608	3946
25	10.000	3930	110	0.530	3948
30	8.053	3914	115	0.464	3948
35	6.528	3918	120	0.408	3947
40	5.325	3922			3927

### 2) Grating Thermistor

Temp(°C)	R(KΩ)	Beta Constant	Temp(°C)	R(KΩ)	Beta Constant
-40	200.8	3208	45	4.913	3370
-35	152.9	3227	50	4.164	3377
-30	117.2	3244	55	3.543	3384
-25	90.51	3260	60	3.028	3391
-20	70.40	3273	65	2.597	3398
-15	55.14	3285	70	2.235	3407
-10	43.51	3296	75	1.930	3415
-5	34.57	3306	80	1.671	3425

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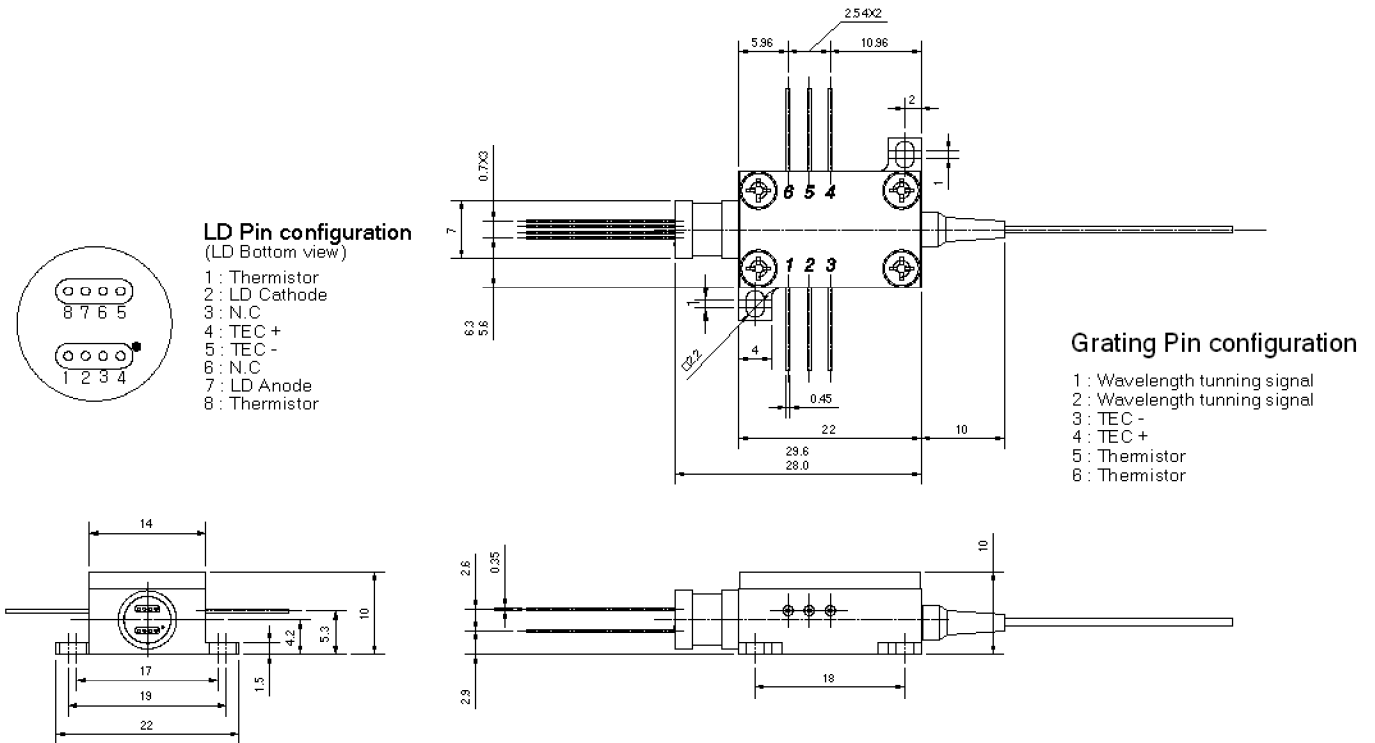
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Temp(°C)	R(KΩ)	Beta Constant	Temp(°C)	R(KΩ)	Beta Constant
0	27.66	3314	85	1.452	3435
5	22.28	3322	90	1.264	3445
10	18.07	3335	95	1.104	3456
15	14.74	3329	100	0.966	3466
20	12.11	3341	105	0.848	3478
25	10.00	3347	110	0.746	3489
30	8.307	3353	115	0.657	3500
35	6.938	3359	120	0.581	3511
40	5.824	3364			

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## 7. Outline dimensions and Pin configurations



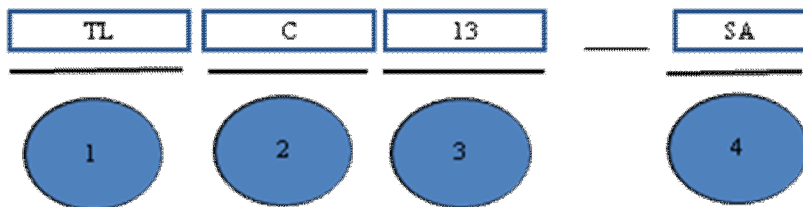
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## 8. Ordering Information

directly at 82-42-868-6861 in South Korea or via e-mail at [sales@chemoptics.co.kr](mailto:sales@chemoptics.co.kr)

Sample: TLC13-SA



Num.	Description	Type	Remark
1	Tunable Laser	TL	
2	Wavelength Band	C, L	Band
3	Tuning Range	13	nm
4	Connect Type	NC(No Connector), SA(SC/APC), FA(FC/APC) SP(SC/PC), FP(FC/PC), LC(LC)	

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- <b>Revision History</b> -		
Date	Ver#	Contents of Change
2009. 01. 14.	V00	All

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