Multiplex, Inc.
Photonics for Communications

T620 & T62E Series

2.67Gb/s CWDM Uncooled Directly Modulated Lasers (DML) TOSA
4 Pin TO-Can Package with Receptacle
80km and 120km (LR-2 and VR-2) Service
Commercial and Industrial Operating Temperatures

The Multiplex T620 & T62E series DML TOSA module consists of an uncooled directly modulated DFB laser in a hermetically sealed metalized TO-56 package. State-of-the-art, epoxy-free laser welding is utilized. The laser module also contains an integral monitor photodiode for optical output power monitoring.

The T620GC & T62EGC series modules are optimized to operate at bit-rates of 2.67Gbps transmission. It's designed to be fully compliant with Telcordia GR-253-CORE OC-48 VR-2 applications up to 120km. The modules use a high performance DML platform operating at 1470nm to 1610nm.

The tightly controlled design allows the device to operate over a case temperature range of -5°C to +80°C (or -40°C to +85°C for the extended temperature version).

The T620GC & T62EGC come with a receptacle optical connector. Other connector types may be specified as options.

Applications:

- T620GC & T62EGC series is designed for high-speed telecom and datacom transmissions in accordance with VR-2 SONET/SDH OC-3/STM-1, OC-12/STM-4, OC48/STM-16, Gigabit Ethernet and Fiber Channel

Features:

- Low threshold current.
- High output power.
- Available for 8 standard CWDM channels on 6nm spacing.
- Low cost TO-56 package.
- Extended temperature -40°C to +85°C option available.
- High-speed design optimized for modulation at 2.67Gbps.

Compliance:

- Conforms to the requirements of the European Union Directive 2002/95/EC for the Restriction of Hazardous Substance (RoHS)

Optical and Electrical Characteristics (T=25°C, unless otherwise noted)					
PARAMETER	**SYMBOL**	**CONDITION**	**MIN**	**MAX**	**UNIT**
DFB Laser:					
Threshold Current	I_{th}	CW	8.0	15.0	mA
Operating Current	I_{op}		35	45	mA
Laser Forward Bias Voltage	Vop	CW, P_O=2mW		1.6	V
Peak Wavelength	λo	$I_{op,}$ 2.67Gb/s, 2^{31} - 1 PRBS NRZ modulated	1468 1488 1508 1528 1548 1568 1588 1608	1474 1494 1514 1534 1554 1574 1594 1614	nm
Side Mode Suppression Ratio	SMSR	CW, P_O=2mW, At 2.67Gb/s, 2^{31} - 1 PRBS NRZ modulated	30	-	dB
Spectral Width (-20dB)	Δλ	P_f=1.0mW		0.12	nm
Slope Efficiency	η	CW	0.20	0.25	W/A
Bandwidth	BW	P_o=5mW; at -3dB	2.0		GHz
Wavelength Stability Over Temperature	dλo/dTc			+0.1	nm/°C
Module:					
Operating Case Temperature	T_{case}	Standard Temperature Extended Temperature	-5 -40	80 85	°C
RF Dynamic Extinction Ratio	Er	At 2.67Gb/s, 2^{31} - 1 PRBS NRZ modulated	8.2	-	dB
Rise/Fall Times	t_R/t_F	$I_F=I_{th,}$ P_o=2mW, 20%~80%		150	ps
Monitor Photodiode Current	I_m	$I_f=I_{th}$+20mA, V_R=5V	0.1	1.0	mA
Monitor Dark Current	I_d	V_R=5V		0.1	μA
Monitor Capacitance	C	V_R=5V, f=1MHz		10	pF
Optical Output Power	P_f	CW, $I_f=I_{th}$+20mA		4.0	mW
Optical Isolation	-		30	-	dB
Transmission Penalty (due to dispersion)	Pp	80km at 2.67Gb/s, 2^{31} - 1 PRBS NRZ modulated, 1600 ps/nm dispersion. BER = 10^{-10}	-	2.0	dB
		120km at 2.67Gb/s, 2^{31} - 1 PRBS NRZ modulated, 2400 ps/nm dispersion. BER = 10^{-10}	-	2.0	
Connector Type		LC Receptacle			

Table Notes:

1. All modules are tested to pass the SONET OC-48 eye-mask criteria.
2. Optimal thermal contact between the TOSA housing and the application heat-sink is required.

Absolute Maximum Operating Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device.
Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

PARAMETER	SYMBOL	CONDITION	MIN	MAX	UNIT
Laser Diode Reverse Voltage	V_{RL}	CW	-	2	V
Laser Diode Forward Current	I_{FL}	CW	-	150	mA
Optical Output Power	P	CW	-	10	mW
Photodiode Reverse Voltage	V_{RPD}		-	20	V
Photodiode Forward Current	I_{FPD}		-	2	mA
Operating Case Temperature Range[1]	T_{Opr}	Standard Temperature Extended Temperature	-10 -45	+85 +95	°C
Storage Case Temperature Range	T_{stg}		-50	+100	°C
Storage Relative Humidity	RH			85	%
Lead Solder Temp. and Time	T	Soldering temperature 260℃		10	s

Table Notes: 1. Optimal thermal contact between the TOSA housing and the application heat-sink is required.

Ordering information:

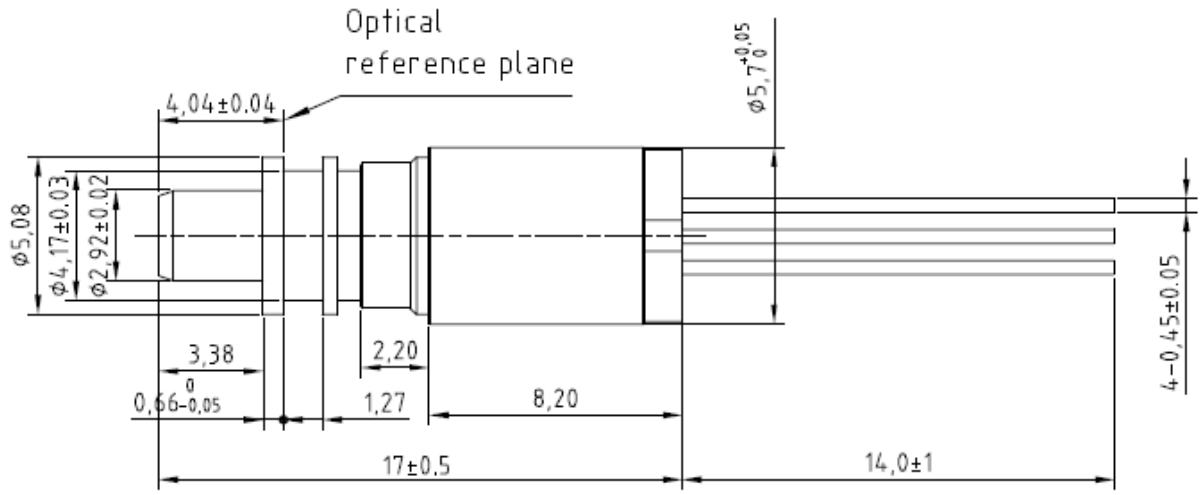
T62	X	G	C	XXX	X	X	X
	Temp Range: 0= -5°C to + 80°C E= -40°C to +85°C	**Data Rate:** G= 2.67Gb/s	**Wavelength:** C= CWDM	**CWDM Channel:** 2 digits in the middle of peak wavelength 47= 1471nm 49= 1491nm 51= 1511nm 53= 1531nm 55= 1555nm 57= 1570nm 59= 1590nm 61= 1610nm	**Optical Connector:** R=Receptacle (LC) Other optical connector options are available upon request.	**Reach:** L= 80km V= 120km	**Customized Information:** A= Bare Lead (pin Type A) B= Bare Lead (pin Type B) See p.5

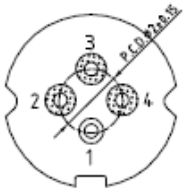
Coding Examples

T620GC47RLA uses an uncooled 1550nm DFB laser, TO-56 bare-lead package, an operating range of -5°C to + 80°C, Data rate 2.67Gb/s, CWDM Channel 1471nm, LC receptacle for an 80km application, Type A pin configuration.

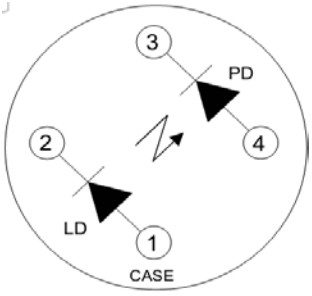
Note – actual ordering codes may change depending on the device configuration selected as per the table above.

Mechanical



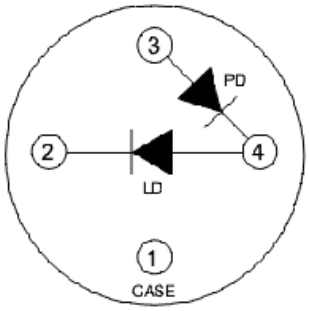


Pin Configuration



Type A

Pin Number	Pin Function (Type A)
1	LD Anode (CASE)
2	LD Cathode
3	PD Cathode
4	PD Anode



Type B

Pin Number	Pin Function (Type C)
1	CASE
2	LD Cathode
3	PD Anode
4	LD Anode / PD Cathode

WARRANTY

Multiplex warrants all standard laser products, when used within the operating limits, against defects in material and workmanship for a period of one year from date of shipment.

QUALITY

Multiplex is qualified to International Standard ISO 9001:2008.

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