OEL-53G-LXX

53Gbd EML Chip, LWDM

OEL-53G-LXX is a lumped electro-absorption modulator laser (EML) diode. It is designed for high-speed digital operation at a controlled temperature range.

KEY FEATURES

- ✧ Reliable InGaAsP DFB laser diode butt-joint coupled with electro-absorption (EA) modulator
- ✧ Optimized EA structure for high extinction ratio (ER) operation
- ✧ Superb chip bandwidth > 40GHz enabled by modulator passivation layer design
- ✧ Suitable for 25G/50G NRZ and 53Gbd PAM4 modulation
- ✧ In compliance with GR-468-CORE Damp Heat requirements

APPLICATION

- ✧ 100G LR4
- ✧ 100G ER4

RECOMMENDED OPERATION TEMPERATURE RANGE

Symbol	Parameter	Min.	Max.	Unit
Tc	Test Temperature	43	53	°C

ELECTRICAL AND OPTICAL CHARACTERISTICS

Expected performance after mounted on chip carrier, not guaranteed. Assembly process may impact the parameter values.

ELECTRICAL AND OPTICAL CHARACTERISTICS (Test temperature=53°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{th}	Threshold Current			15	25	mA
V_{OP}	Operating Voltage	Vea=0V		1.3	1.8	V
Po	Optical Output Power, Broad Area PD	Iop=70mA,Vea=0V	6			mW
DC ER	DC Extinction Ratio, Broad Area PD	Iop=70mA,Vea=-2.5V	8			dB
λc	Center Wavelength	Iop=70mA	Note.1			nm
SMSR	Side Mode Suppression Ratio	Iop=70mA	35			dB
Fv	Far-field Angle, Vertical			38		deg
Fh	Far-field Angle, Horizontal			33		deg
f3dB	Small Signal Modulation Bandwidth	Iop=70mA,Vea at operation point		40		GHz

Note.1:

Lane	Part Number	Min	Center	Max
L00	OEL-53G-L00	1294.53	1295.56	1296.59
L01	OEL-53G-L01	1299.02	1300.05	1301.09
L02	OEL-53G-L02	1303.54	1304.58	1305.63
L03	OEL-53G-L03	1308.09	1309.14	1310.09

ABSOLUTE MAXIMUM RATINGS

Values should not be exceeded in any conditions to avoid permanent device damage.

ABSOLUTE MAXIMUM RATINGS				
Symbol	**Parameter**	**Min**	**Max**	**Unit**
V_{RL}	LD Reverse Voltage		2	V
If	LD Forward Current		120	mA
Po	Optical Output Power		40	mW
V_{RM}	EA Modulator Reverse Bias	-4	0.5	V
T_{stg}	Storage Temperature	-40	85	ºC

RECOMMENDED BONDING CONDITIONS

Process	Recommended Condition	
Die Attach* (Die Bonding)	Solder	AuSn 70:30,3um
	Temperature	330 °C
	Dwell time	4.5 sec
	Weight	2.5g
	Atmosphere	N2 flow
Wire Bonding*	Wire	Au 25um Wire
	Bond type	Ball bond
	Weight	20-25g

*****The conditions might be adjusted depending on the bonding equipment.

BURN-IN CONDITIONS

Optoway will provide recommended burn-in condition. Optoway will further help customers define new burn-in conditions depending on different TOSA structures or materials.

WAFER QUALIFICATION

Optoway performs the wafer qualification test which includes die bonding / wire bonding test, burn-in test, and O/E characteristics test. Only the chips from qualified wafers will be shipped. All tests are carried out on chip carrier and TO CAN.

CHIP TEST FOR SHIPMENT

ELECTRICAL AND OPTICAL CHARACTERISTICS (Test temperature=53°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{th}	Threshold Current			15	25	mA
Po	Optical Output Power, Broad Area PD	Iop=70mA,Vea=0V	6			mW
DC ER	DC Extinction Ratio, Broad Area PD	Iop=70mA,Vea=-2.5V	8			dB
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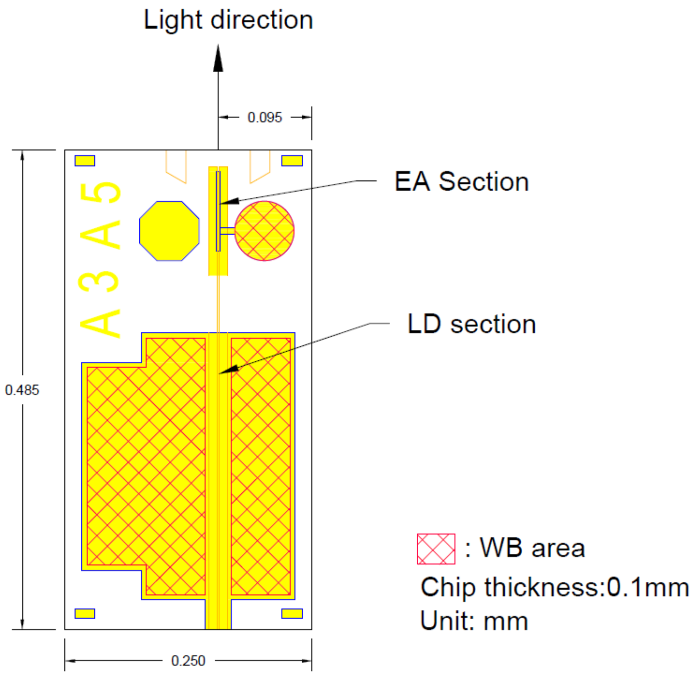
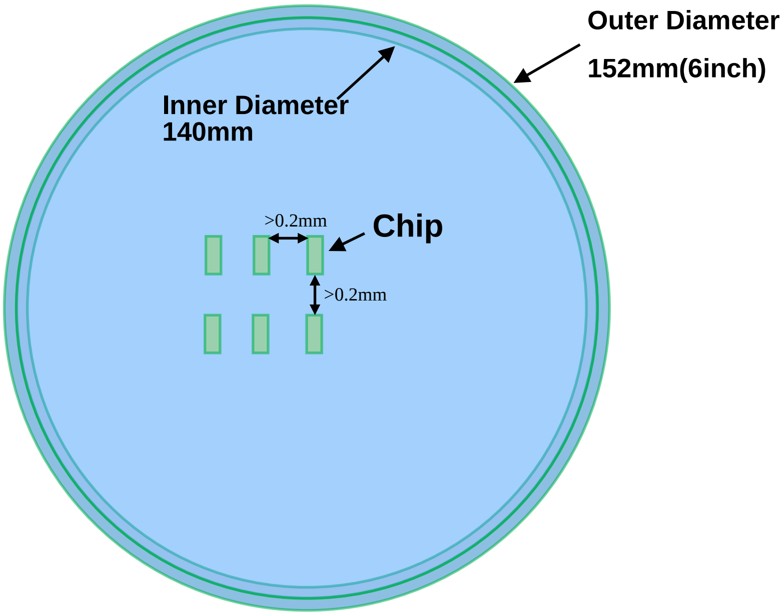
MECHANICAL DIMENSIONS (mm)



PACKAGE INFORMATION

- ✧ Chips will be put on the blue tape, as below figure shown.
- ✧ Distance between chips >0.2mm



DEVICE HANDLING

- ✧ The chip is sensitive and should be handled with care. Both waveguide section and cavity facets should not be touched to avoid any damage.
- ✧ Electrostatic discharge may cause direct or latent damage to laser diodes. During laser chip assembly, precautions for handling electrostatically sensitive devices must be observed.

REVISION HISTORY

Version	Subject	Release Date
1.0	Initial release	2023/4/19
2.0	Add Package information & Device handling information	2023/6/13
3.0	Correct application description	2024/1/30