

OEL-53G-C310

53Gbd EML Chip

OEL-53G-C310 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 LR1
- ✧ 100G DR4
- ✧ 400G DR4
- ✧ 800G DR8

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	V _{ea} =0V		1.3	1.8	V
P _o	Optical Output Power, Broad Area PD	I _{op} =70mA, V _{ea} =0V	6			mW
DC ER	DC Extinction Ratio, Broad Area PD	I _{op} =70mA, V _{ea} =-2.5V	8			dB
λ _c	Center Wavelength	I _{op} =70mA	1304.5	1311	1317.5	nm
SMSR	Side Mode Suppression Ratio	I _{op} =70mA	35			dB
F _v	Far-field Angle, Vertical			38		deg
F _h	Far-field Angle, Horizontal			33		deg
f _{3dB}	Small Signal Modulation Bandwidth	I _{op} =70mA, V _{ea} at operation point		40		GHz

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
I _f	LD Forward Current		120	mA
P _o	Optical Output Power		40	mW
V _{RM}	EA Modulator Reverse Bias	-4	0.5	V
T _{stg}	Storage Temperature	-40	85	°C

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.

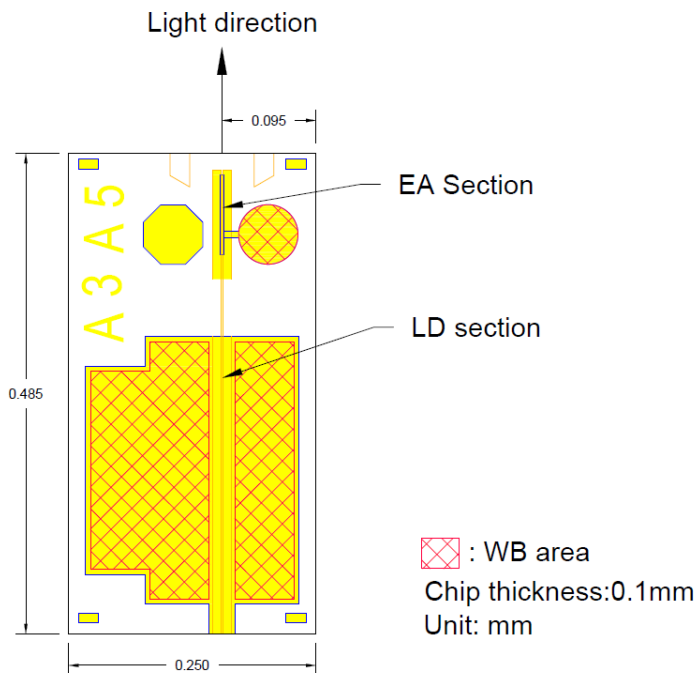
WAFER QUALIFICATION

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

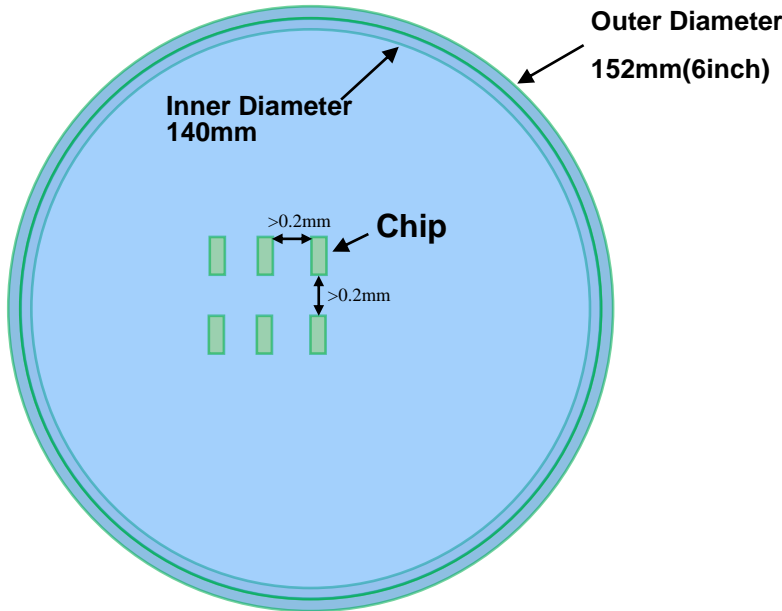
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MECHANICAL DIMENSIONS (mm)



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	Add more product support in application description	2024/1/30