OEL-53G-OXXX-H2

53Gbd EML Chip, O-Band 200GHz DWDM, For 100G ER1-40km

OEL-53G-OXXX-H2 is a high output power, lumped electro-absorption modulator laser (EML) 33diode; 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 DFB for high output power and EA structure for high extinction ratio (ER) operation
- ✧ Superb chip bandwidth > 40GHz enabled by modulator passivation layer design
- ✧ Suitable for 25G/53G NRZ and PAM4 modulation
- ✧ O-Band 200GHz DWDM

APPLICATION

- ✧ 100G ER1-40

RECOMMENDED OPERATION TEMPERATURE RANGE

Symbol	Parameter	Min.	Max.	Unit
Tc	Test Temperature	48	58	℃

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			23	30	mA
V_{OP}	Operating Voltage	Vea=0V		1.3	1.8	V
Po	Optical Output Power, Broad Area PD	Iop=90mA, Vea=0V	14.5			mW
Vea	EA Operating Voltage	Iop=90mA, Vpp=1V	-2		-0.2	V
λc	Center Wavelength*	Iop=90mA	Note.1			nm
SMSR	Side Mode Suppression Ratio	Iop=90mA	35			dB
Fv	Far-field Angle, Vertical	Iop=90mA		38		deg
Fh	Far-field Angle, Horizontal	Iop=90mA		33		deg
Pav	Average power output	53.125GBaud, PAM4, Iop=120mA, Vea biased at linear absorption, 1.5Vpp	7			dBm
OMA	Optical Modulation Amplitude		7.5			dBm
ER	Extinction Ratio		5.4			dB

*All wavelengths are available upon request by customers.

Note.1:

Lane	Part Number	Min	Center	Max
O304	OEL-53G-O304-H2	1304.06	1304.58	1305.1
O305	OEL-53G-O305-H2	1305.2	1305.72	1306.24
O306	OEL-53G-O306-H2	1306.33	1306.85	1307.37
O308	OEL-53G-O308-H2	1307.48	1308	1308.52
O309	OEL-53G-O309-H2	1308.62	1309.14	1309.66
O310	OEL-53G-O310-H2	1309.76	1310.28	1310.8
O311	OEL-53G-O311-H2	1310.91	1311.43	1311.95
O312	OEL-53G-O312-H2	1312.06	1312.58	1313.1

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		150	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			23	30	mA
Po	Optical Output Power, Broad Area PD	Iop=90mA, Vea=0V	14.5			mW
DC ER	DC Extinction Ratio, Broad Area PD	Iop=90mA, Vpp=1V	6			dB
λ c	Center Wavelength*	Iop=90mA	Note.1			nm
SMSR	Side Mode Suppression Ratio	Iop=90mA	35			dB

Note.1

Lane	Part Number	Min	Center	Max
O304	OEL-53G-O304-H2	1304.06	1304.58	1305.1
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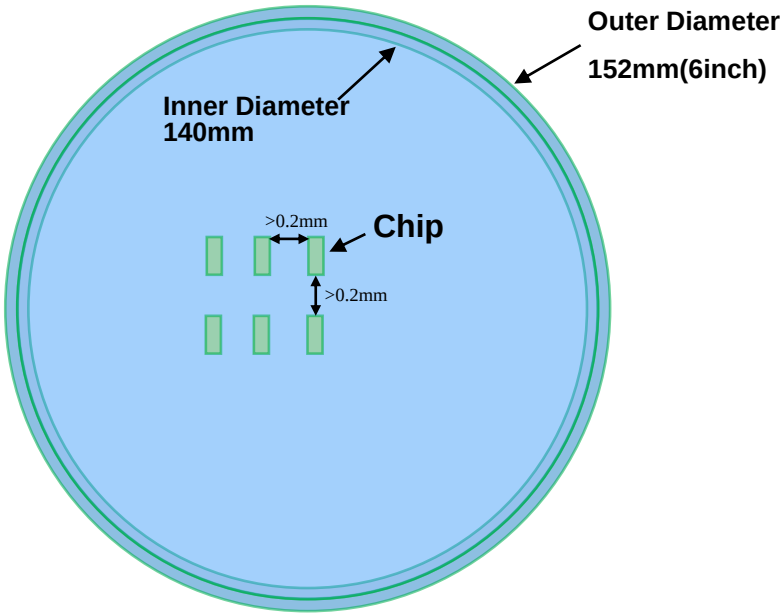
O312	OEL-53G-O312-H2	1312.06	1312.58	1313.1

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	2023/11/1