

QDLASER

QLF131F-P16

1305 nm 16 mW FP LASER DIODE

Preliminary

C00158-01 April 2015



1. DESCRIPTION

QLF131F-P16 is a 1305 nm quantum dot FP laser diode chip for use in telecom and datacom applications up to 110 deg.C temperature. Since quantum dot technologies are equipped with active layers of the device, it realizes excellent temperature characteristics and low power consumptions.

2. FEATURES

- 1305nm FP-LD Chip
- Wide temperature operation: -10 to 110 °C

3. APPLICATION

- Optical communication

4. ABSOLUTE MAXIMUM RATING

($T_c = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Light Output Power	P_o	22	mW
LD Forward Current	I_F	120	mA
LD Reverse Voltage	V_{RLD}	2	V
Operation Temperature (T_c)	T_c	-10 to +110	°C
Storage Temperature *1)	T_{stg}	-40 to +85	°C
Soldering Temperature (<1.5s)	T_{sld}	390	°C

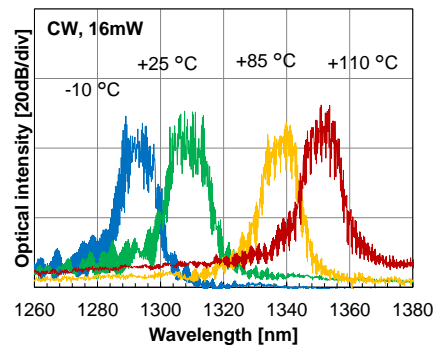
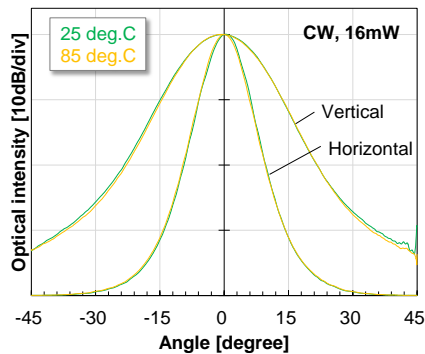
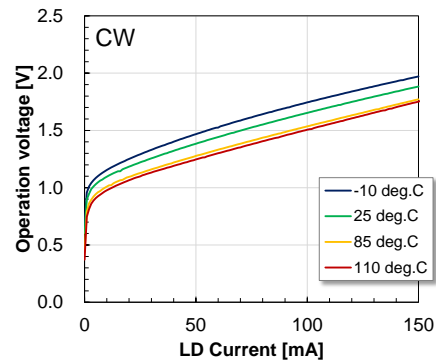
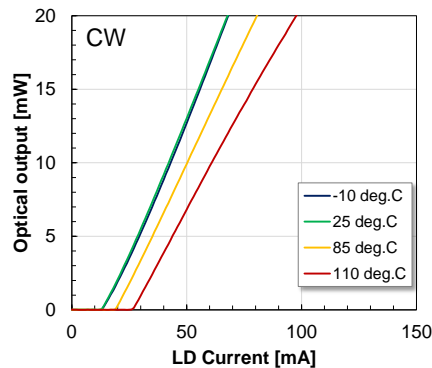
*1)no condensation

5. OPTICAL AND ELECTRICAL CHARACTERISTICS

All chips are screened at 85°C by the criteria shown in the table 5-1, using wafers which pass wafer qualification process described in section 6.

Table 5-1

PARAMETER	SYMBOL	TEST CONDITION	T _c	MIN	TYP	MAX	UNIT
Threshold current	I _{th}	CW	25°C	-	13	-	mA
			85°C	-	17	25	
Operation current	I _{op}	CW, P _o =16 mW	25°C	-	48	-	mA
			85°C	-	68	95	
Operation voltage	V _{op}	CW, P _o =16 mW	25°C	-	1.43	-	V
			85°C	-	1.37	1.6	
Slope efficiency	η	CW	25°C	-	0.33	-	W/A
			85°C	0.25	0.30	-	
Saturation power	P _{sat}	CW	85°C	20	-	-	mW
Center wavelength	λ _c	CW, P _o =16 mW	25°C	-	1305	-	nm
			85°C	1325	1335	1353	
Spectral width	Δλ	CW, P _o =16 mW RMS(-20dB)	25°C	-	2.7	-	nm
			85°C	-	2.2	-	
Beam divergence angle Pararell	θ//	CW, P _o =16 mW, FWHM	25°C	-	18	-	deg.
Beam divergence angle Perpendicular	θ⊥		25°C	-	44	-	deg.



6. WAFER QUALIFICATION

After wafer process, wafers are qualified based on the following criteria in table 6-1, and chips for shipment are screened from passed wafers.

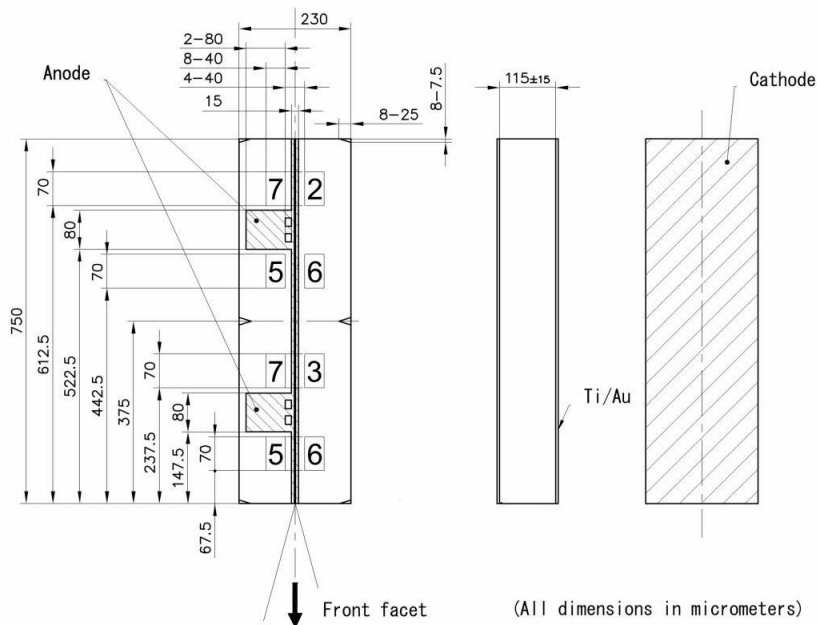
Table 6-1

Item	Quantity	Criteria	Criteria of Go/No judgment
DB and WB check	1pc/wafer	DB shear strength > 1.4N WB pull strength > 0.03N	100%
Burn-in	≥ 10pcs /wafer	Condition: 100deg.C, 180mA, 12hrs, ACC Criteria: $\Delta I_{th} < +/- 1.0mA$, $\Delta I_{op} < +/- 10\%$, $\Delta \eta < +/- 10\%$	≥ 70%
CW characteristics	≥ 10pcs /wafer	Based on table 6-2 at 85-110°C	≥ 70%

Table 6-2

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit	
Threshold current	I_{th}		25°C	-	13	20	mA
			85°C	-	17	25	
			110°C	-	25	50	
Operating current	I_{op}	$P_o = 16 \text{ mW}$	25°C	-	48	80	mA
			85°C	-	68	85	
			110°C	-	82	100	
Operating voltage	V_{op}	$P_o = 16 \text{ mW}$	25°C	-	1.43	1.6	V
			85°C	-	1.37	1.6	
			110°C	-	1.42	1.7	

7. OUTLINE DRAWING



8. SHIPPING FORM

LD chips are shipped on an antistatic sheet of 6 inch- ϕ ring.
Product name, lot number and quantity are printed on labels.

9. NOTICE OF ASSEMBLING CHIPS

LD chips are easily damaged by external stress, such as physical contact, excess temperature and ESD.
QD Laser shall not take any responsibility for reliability and characteristics after assembly.
Please pay attention to handling chips, and use within range of maximum ratings.

(1) Chip handling

When handling LD chips, please do not use tweezers and use a capillary with a head shape to prevent the damage of the chip surface and the mesa structure.

(2) Die and wire bonding

Appropriate conditions should be used for die and wire bonding.

Die should be mounted into an anode-side up configuraion. Wire bonding should not be on an mesa structure.

(3) Burn-in

Burn-in can not be done on a chip level. After assembly, burn-in process is recommended to be done.

Suggested condition: $T_{chip}=100deg.C$, $I_{op}=180mA$, 12hrs,

Criteria: $T_{chip}=25deg.C$, $\Delta I_{th}\leq\pm 1.0mA$, $\Delta I_{op}\leq\pm 10\%$, $\Delta\eta\leq\pm 10\%$

10. NOTICE

- Safety Information

This product is classified as Class III-R laser product, and complies with 21 CFR Part 1040.10.

Please do not take a look laser lighting in operations since laser devices may cause troubles to human eyes.

Please do not eat, burn, break and make chemical process of the products since they contain GaAs material.

- Handling products

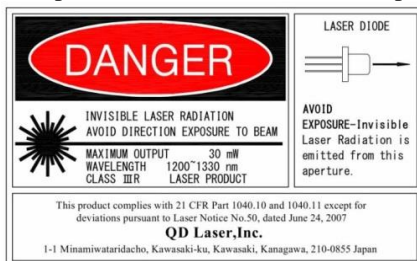
Semiconductor lasers are easily damaged by external stress such as excess temperature and ESD.

Please pay attention to handling products, and use within range of maximum ratings.

QDL takes no responsibility for any failure or unusual operation resulting from improper handling, or unusual physical or electrical stress.

- RoHS

This product conforms to RoHS compliance related EU Directive 2011/65/EU.



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