Confidential

KLC310FL01WW
Technical Data

Aug. 3rd, 2023

Laser & GaN Technology Business Group
Nuvoton Technology Corporation Japan

Contents

- Specification
- Outline, Pin connection
- Technical data
  - L-I, V-I
  - Wavelength
  - FFP
  - Aging test
  - ESD failure level

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Specification

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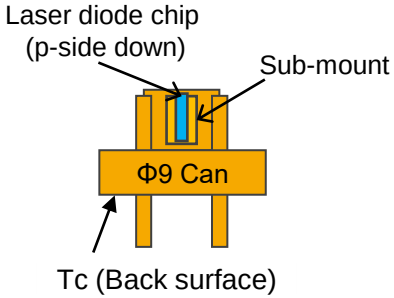
Features

- Multi transverse mode
- Φ9.0mm TO-CAN package
- Emitter size : 15um x 1um

Absolute maximum ratings

Item	Symbol	Value	Unit	Condition
Optical output power	P_{max}	600	mW	CW
Reverse voltage	Vr	5.0	V	
Operating temperature (Case)	T_c	+20 to +30	ºC	-
Storage temperature	T_{stg}	-40 to +85	ºC	-



Electrical and optical characteristics

[Conditions] CW, Tc=25±3 ºC

Item		Symbol	Value			Unit	Condition
			Min	Typ.	Max		
Threshold current		Ith	-	340	500	mA	-
Operating current		Iop	420	620	820	mA	Po=500mW
Operating voltage		Vop	-	5.0	5.5	V	Po=500mW
Slope efficiency		Se	1.3	1.8	2.4	W/A	Po=200-500mW
Peak wavelength		λ	370	378	380	nm	Po=500mW
Beam divergence[1)]	Parallel	θh	10	18	28	deg.	Po=500mW
	Perpendicular	θv	32	39	46	deg.	Po=500mW
Angle accuracy of beam center	Parallel	θx	-3	-	+3	deg.	Po=500mW
	Perpendicular	θy	-3	-	+3	deg.	Po=500mW

1) Full width at $1/e^2$ of the peak intensity

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Outline, Pin connection

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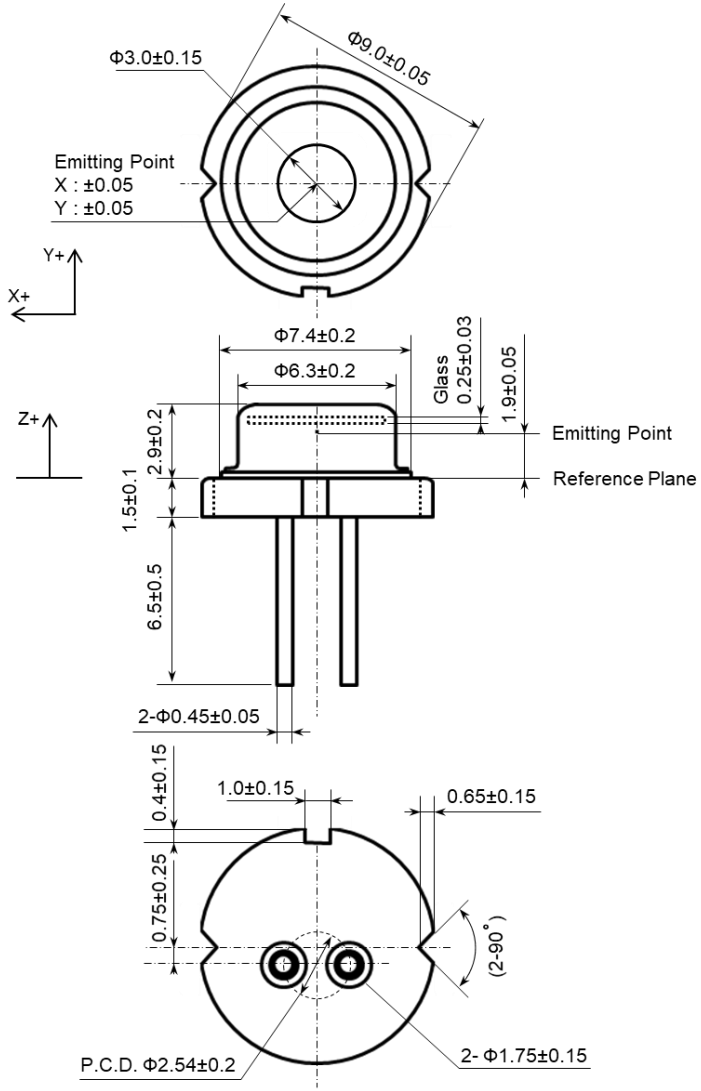
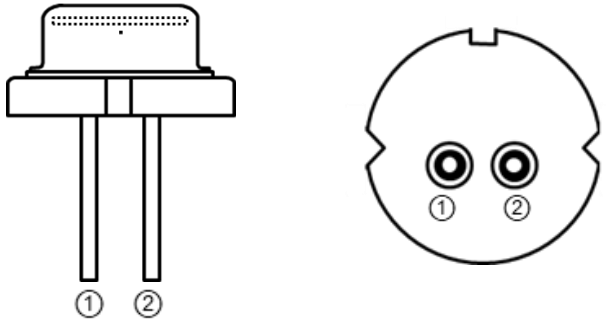
Outline

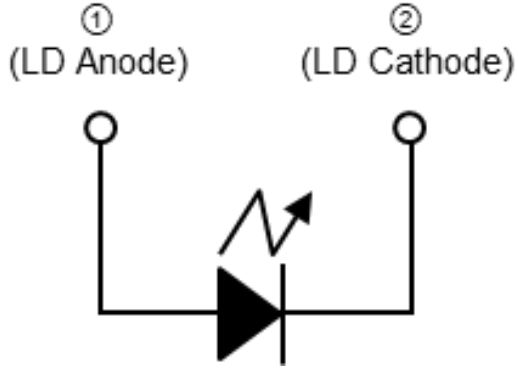


Note
1. X-Y tolerance of lead is specified on the plane of package bottom.
2. Unit: mm

Projection

Pin connection





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L-I,V-I characteristics

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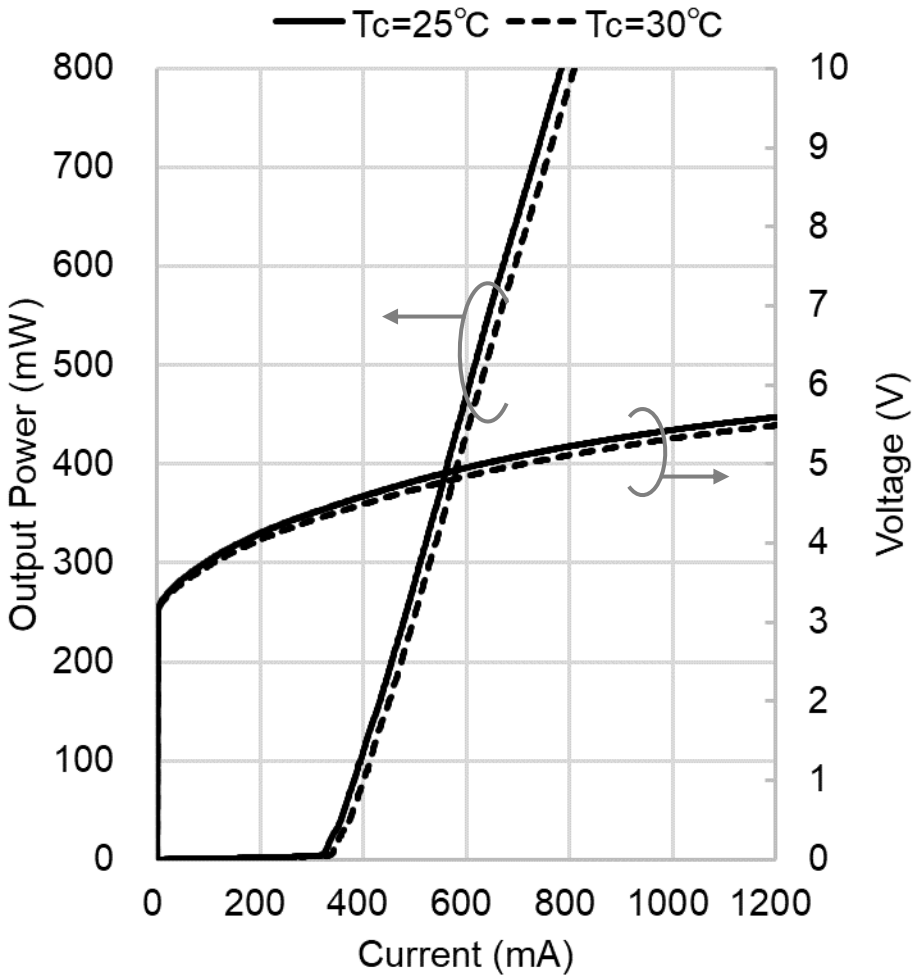
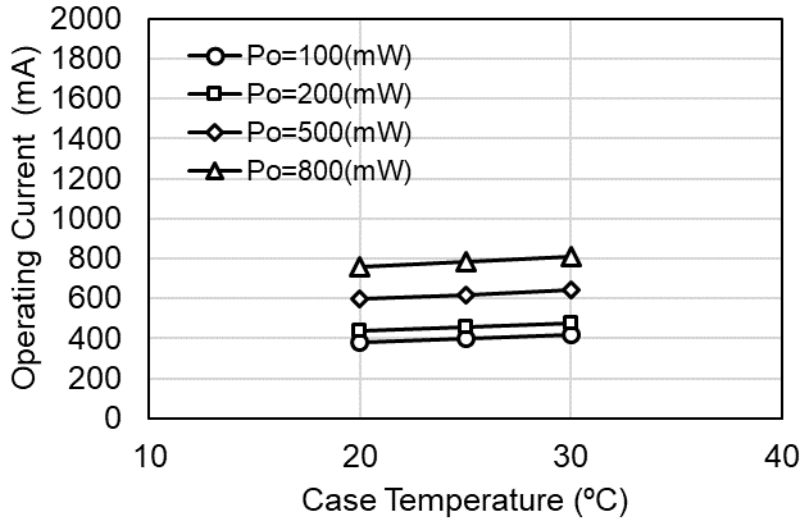
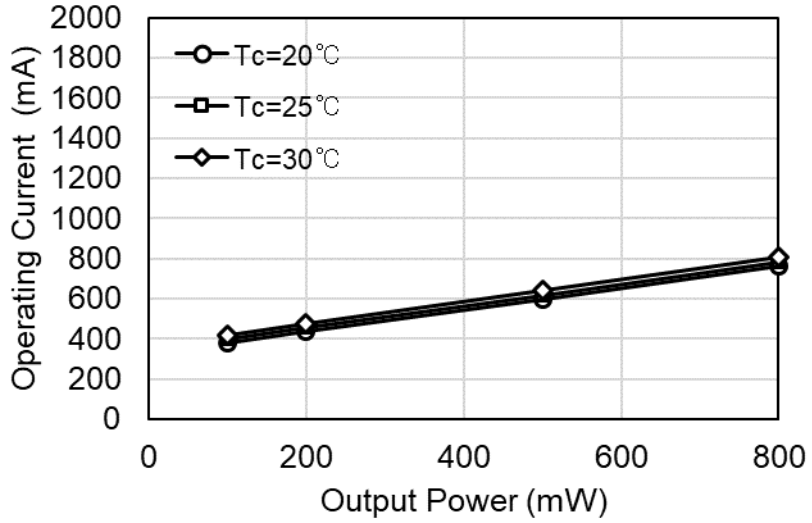
L-I, V-I

[Conditions] CW



Temperature and power dependence





Wavelength characteristics

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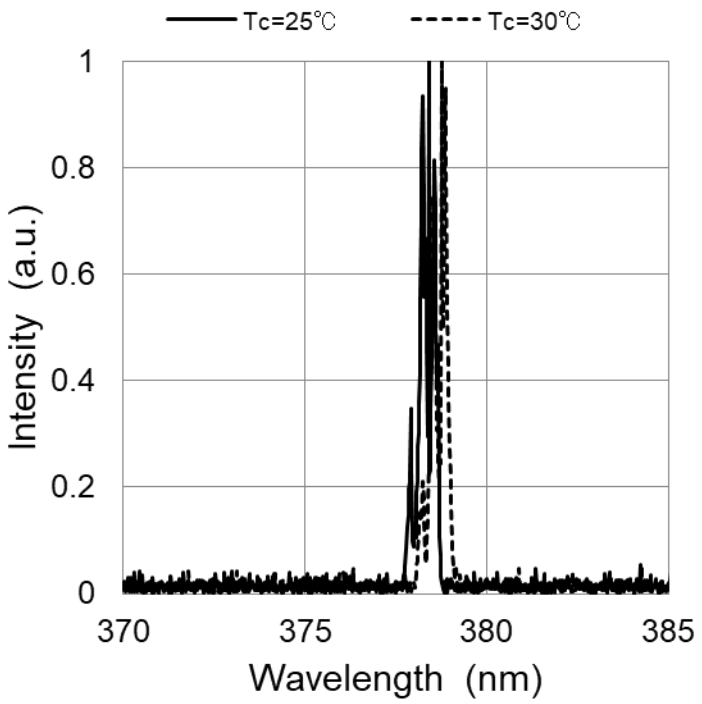
Spectrum

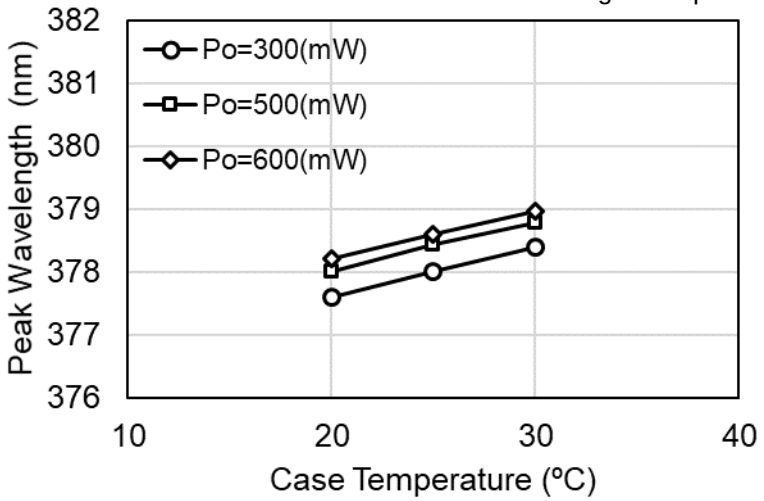
[Conditions] CW, Po=500mW



Temperature and power dependence

[Conditions] CW

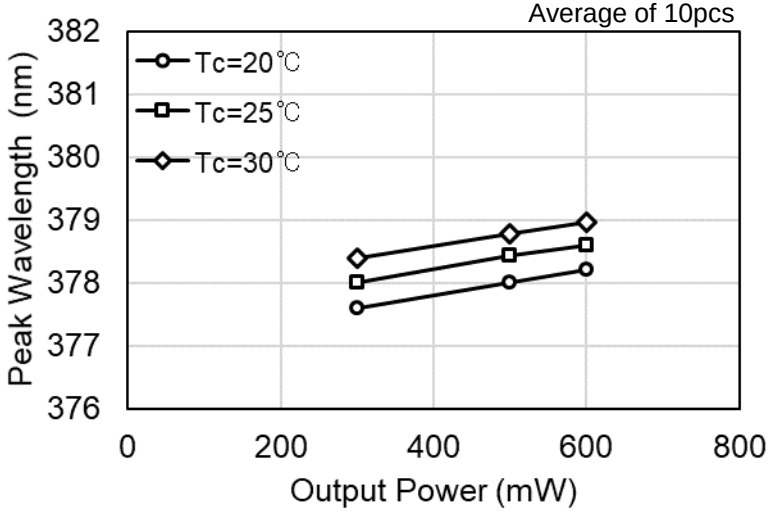
Average of 10pcs



Po(mW)	⊿(nm/°C)
300	0.079
500	0.079
600	0.074

*1 Between 20 and 30℃

Average of 10pcs



Tc(°C)	⊿(nm/mW)
20	0.0012
25	0.0012
30	0.0011

*1 Between 300 and 600mW

FFP characteristics

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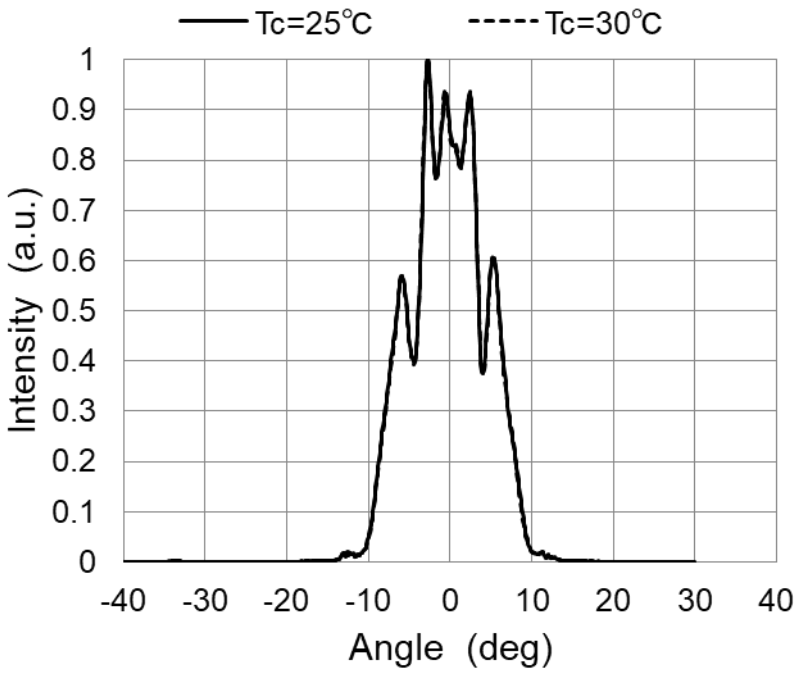
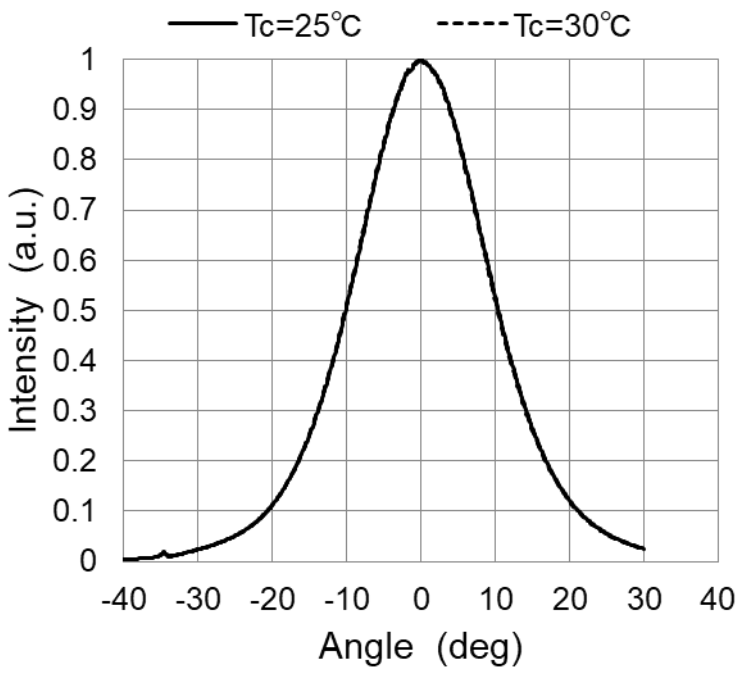
Far field pattern

[Conditions] CW, Po=500mW

Parallel



Perpendicular



FFP characteristics

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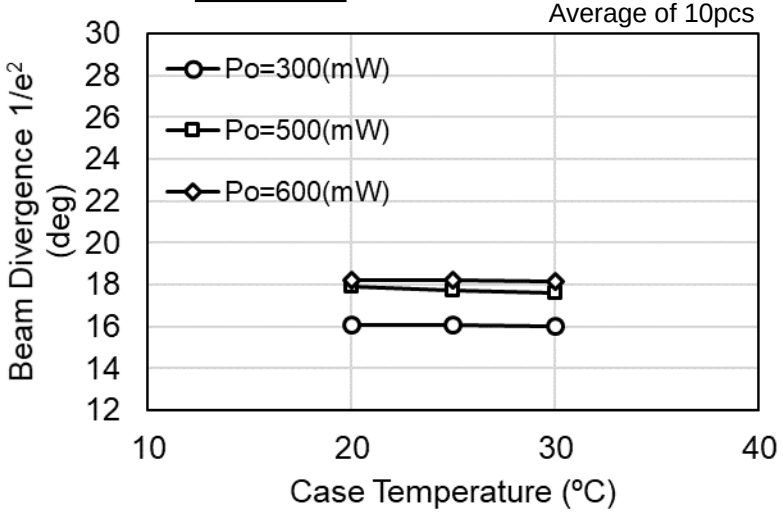
Temperature and power dependence

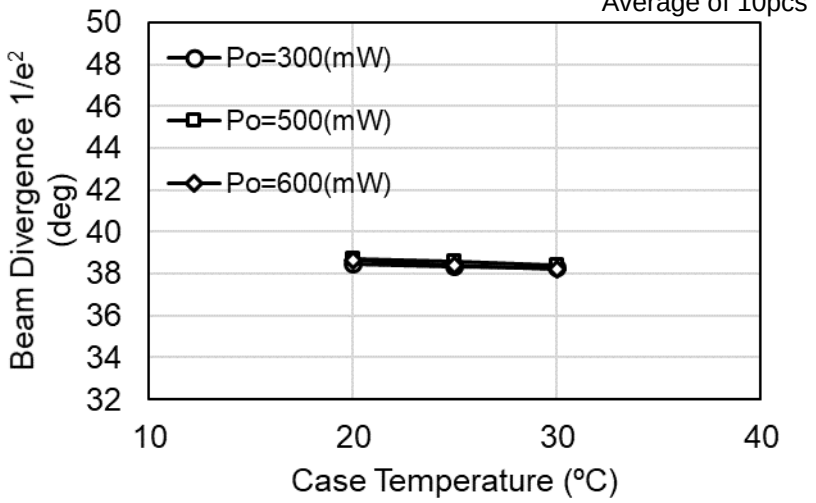
Parallel [Conditions] CW

Average of 10pcs

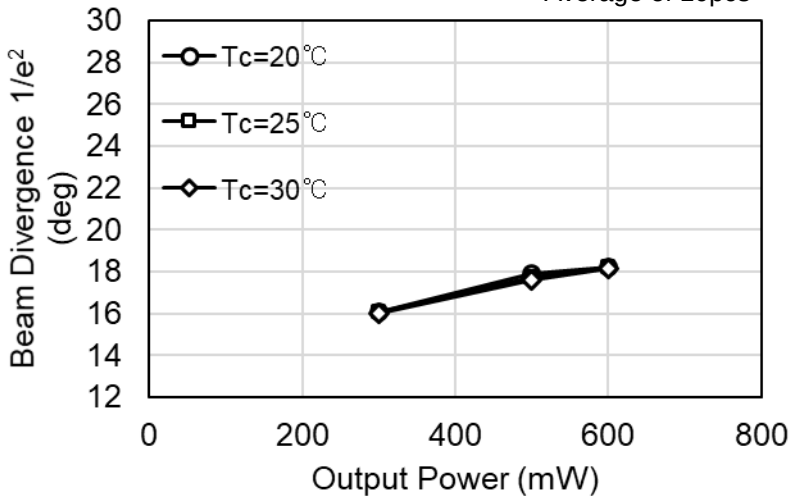


Perpendicular [Conditions] CW

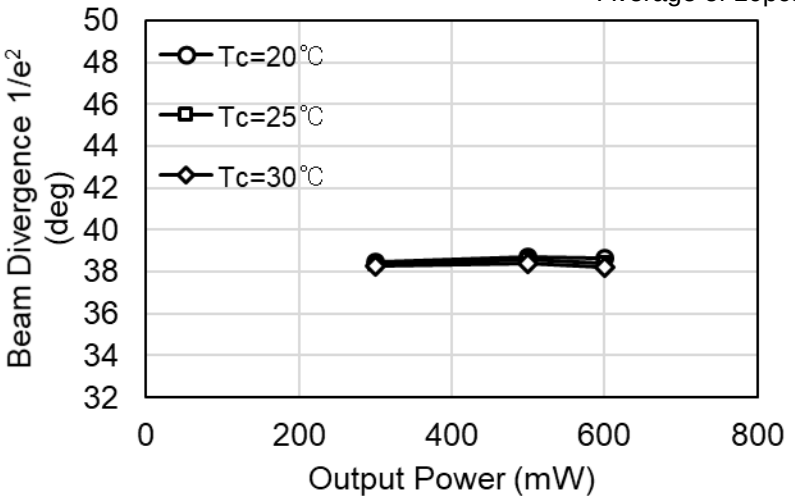
Average of 10pcs



Average of 10pcs



Average of 10pcs



Aging test

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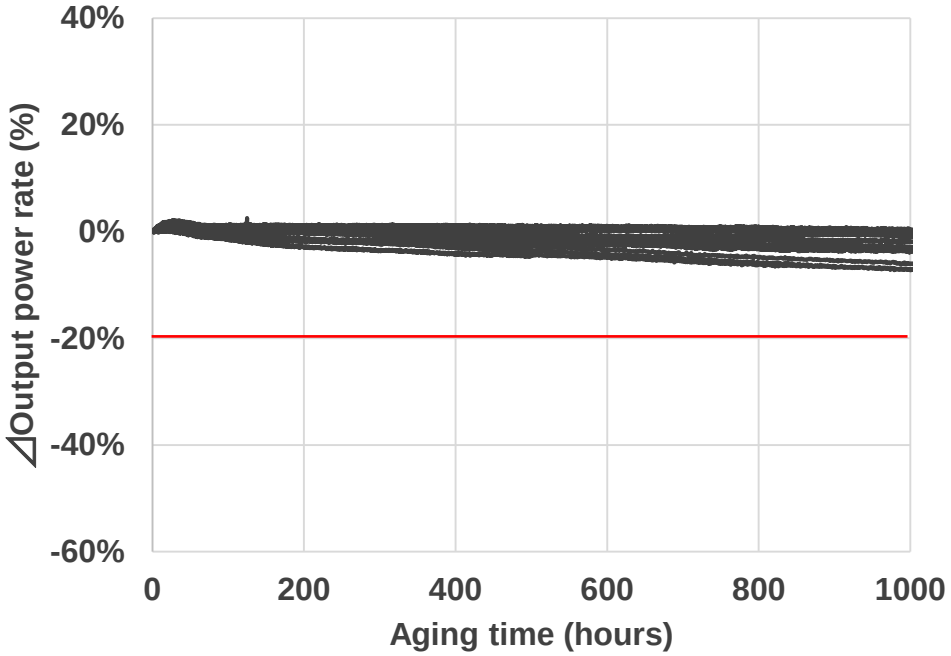
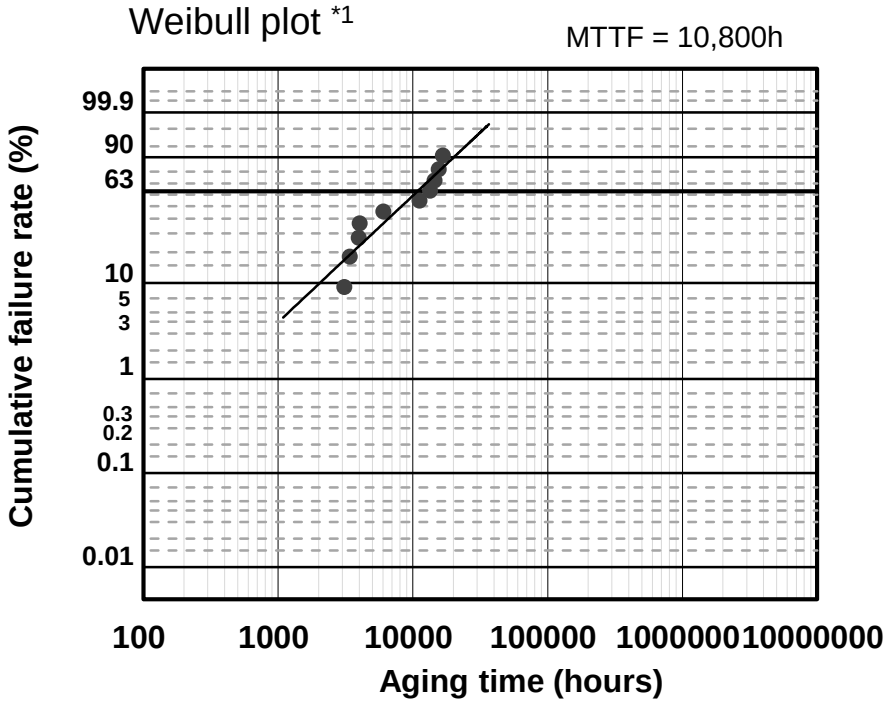
[Aging conditions]
- CW, Tc=25ºC, 10pcs
- ACC operation, initial output power P_{in}= 500mW





*1Estimated by liner extrapolation of degradation rate.
Failure criterion is defined as the time after which the output power drops to 80% of initial power.

ESD failure level

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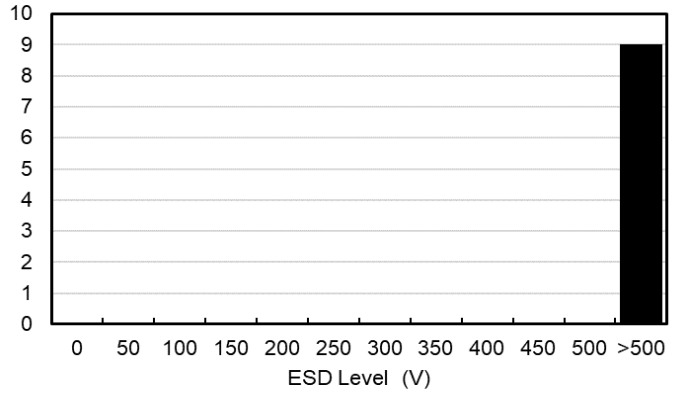
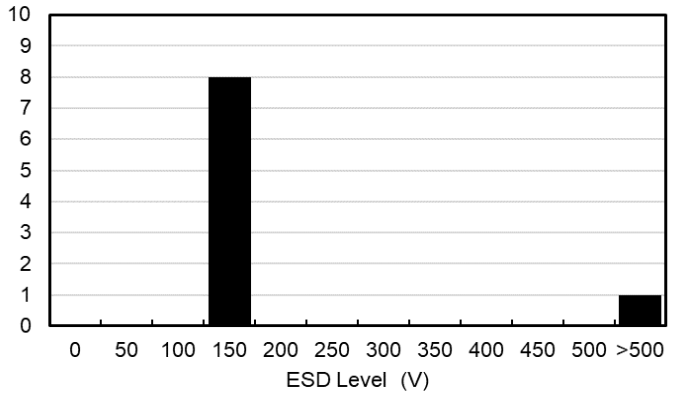
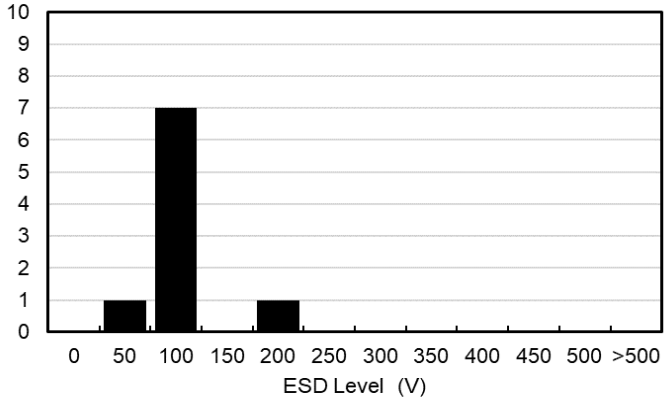
■ HBM+ (C=100pF, R=1.5kΩ)



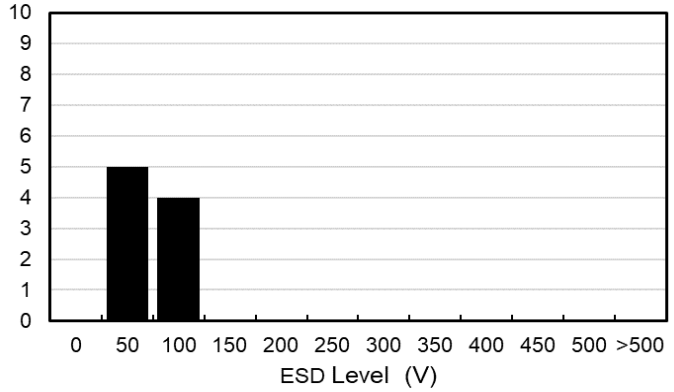
■ HBM- (C=100pF, R=1.5kΩ)



■ MM+ (C=200pF, R=0Ω)



■ MM- (C=200pF, R=0Ω)



Generally, laser diode is one of the most sensitive devices against ESD and Electrical surge from outside. Special cares are necessary to handle it. If electric pulses that may cause optical emission exceed the optical power specified as absolute maximum ratings is applied, the laser will be damaged by its own light intensity, resulting in the catastrophic degradation in a short time. Therefore, all possible measures against ESD and electrical surge are strongly required in design stage and production line.