HL7859MG

Visible High Power Laser Diode

HITACHI

ADE-208-229C (Z)
4th Edition
May 1, 1998

Description

The HL7859MG is a 0.78 μm band GaAlAs laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for optical disc memories and various other types of optical equipment. Hermetic sealing of the small package (ϕ 5.6 mm) assures high reliability.

Application

- Optical disc memories

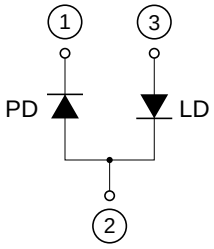
Features

- High output power : 35 mW (CW)
- Visible light output : λp = 775 to 795 nm
- Small package : ϕ 5.6 mm dia.
- Low astigmatism : 5 μm Typ (P_O = 5 mW)

Package Type
• HL7859MG: MG



Internal Circuit



Absolute Maximum Ratings (T_C = 25°C)

Item	Symbol	Value	Unit
Optical output power	P_O	35	mW
Pulse optical output power	P_O (pulse)	42 *	mW
Laser diode reverse voltage	$V_{R\ (LD)}$	2	V
Photo diode reverse voltage	$V_{R\ (PD)}$	30	V
Operating temperature	Topr	–10 to +60	°C
Storage temperature	Tstg	–40 to +85	°C

Note: Pulse condition : Pulse width = 1 μs, duty = 50%

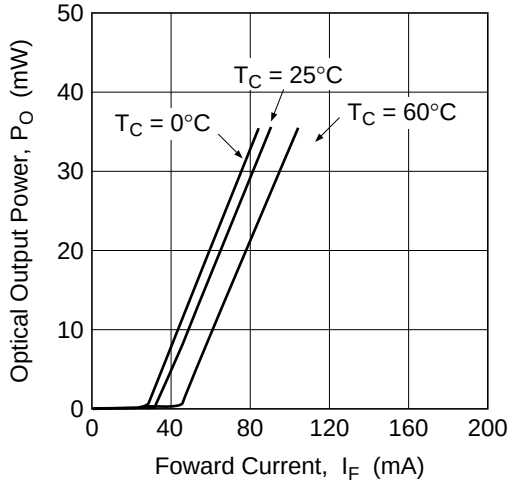
Optical and Electrical Characteristics (T_C = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	35	—	—	mW	Kink free *
Threshold current	Ith	—	35	60	mA	—
Operating voltage	V_{OP}	—	2.1	2.5	V	P_O = 35 mW
Slope efficiency	ηs	0.35	0.65	0.80	mW/mA	21(mW) / ($I_{(28mW)}$ – $I_{(7mW)}$)
Lasing wavelength	λp	775	785	795	nm	P_O = 35 mW
Beam divergence parallel to the junction	θ//	8	9.5	12	deg.	P_O = 35 mW
Beam divergence parpendicular to the junction	θ⊥	18	23	28	deg.	P_O = 35 mW
Monitor current	I_S	0.2	—	2	mA	P_O = 35 mW, $V_{R\ (PD)}$ = 5 V
Asitgmatism	A_S	—	5	—	μm	P_O = 5 mW, NA = 0.4

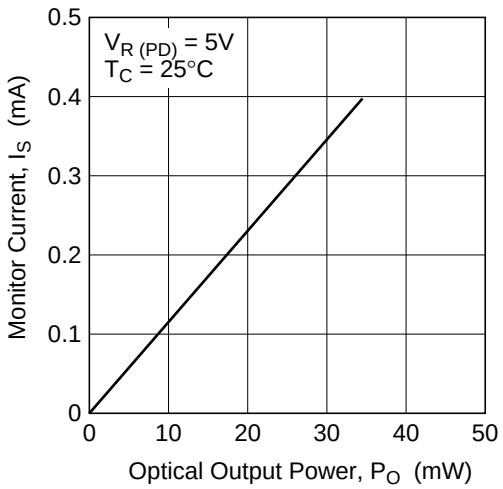
Note: Kink free is confirmed at the temperature of 25°C.

Curve Characteristics

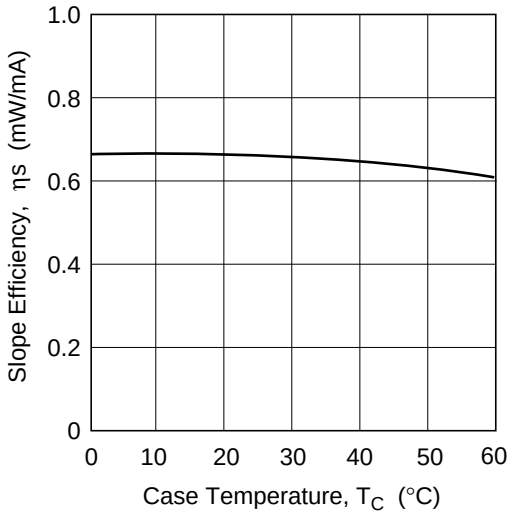
Optical Output Power vs. Forward Current



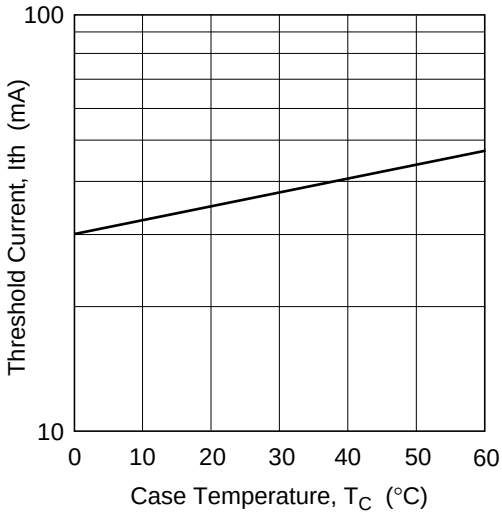
Monitor Current vs.Optical Output Power



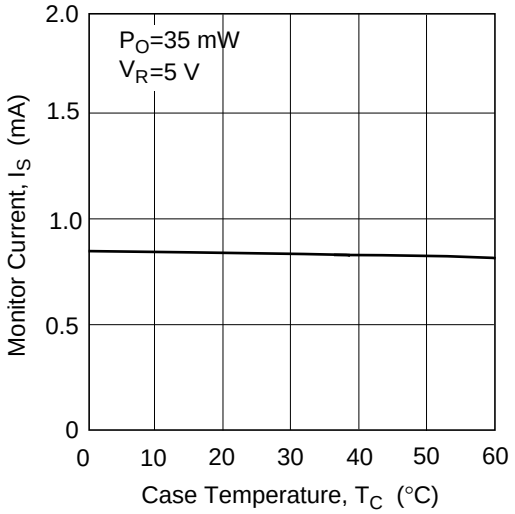
Slope Efficiency vs. Case Temperature



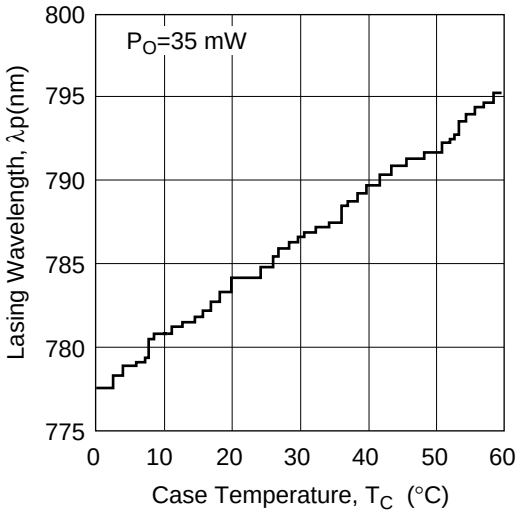
Threshold Current vs. Case Temperature



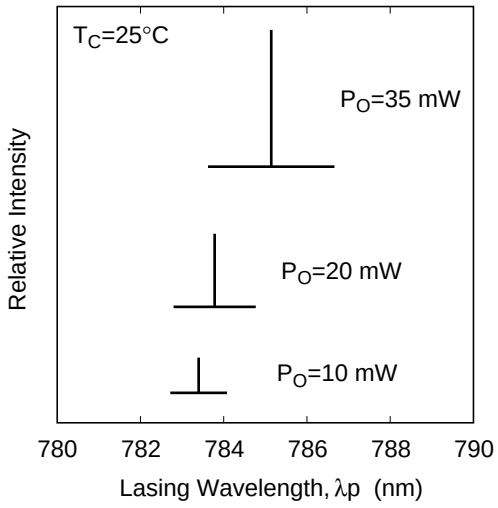
Monitor Current vs. Case Temperature



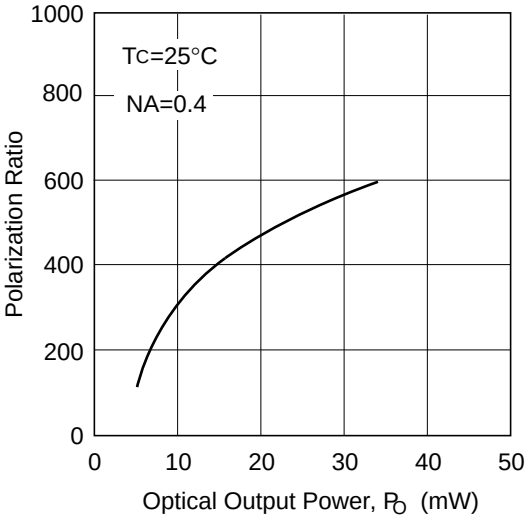
Lasing Wavelength vs. Case Temperature



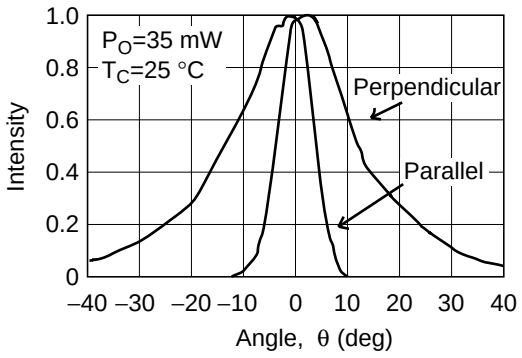
Lasing Spectrum



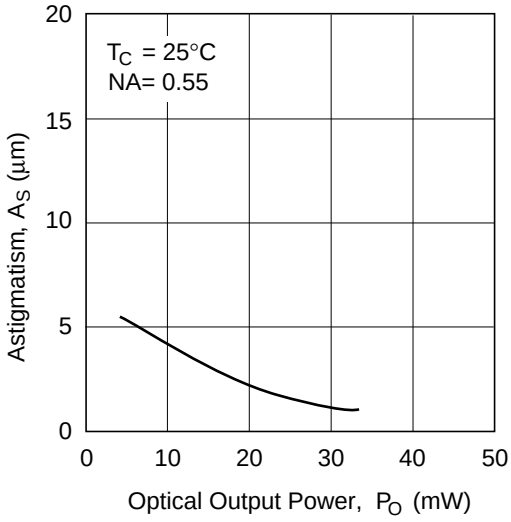
Polarization Ratio vs. Optical Output Power



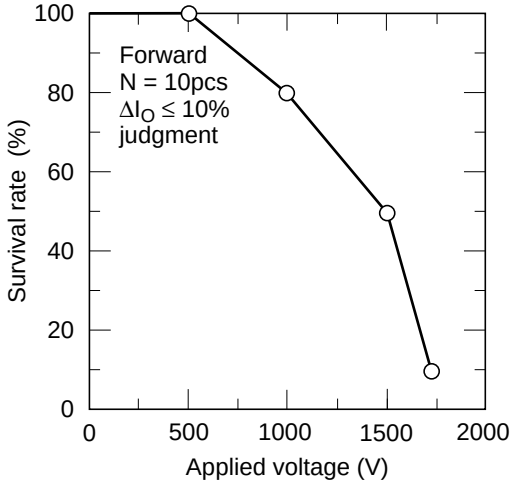
Far Feild Pattem



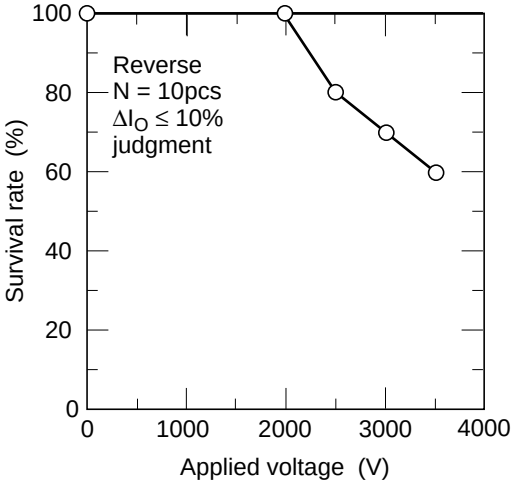
Astigmatism vs. Optical Output Power



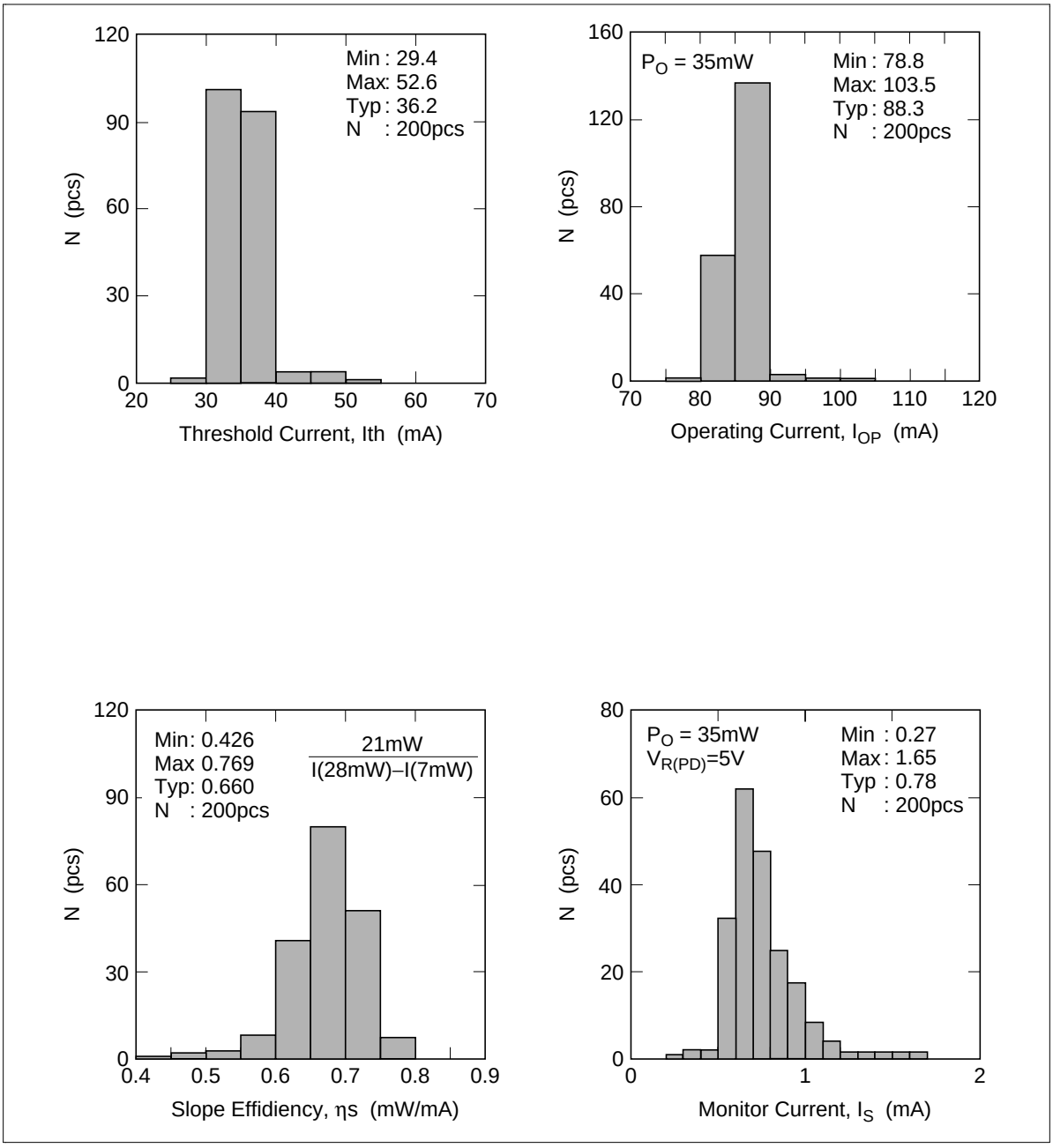
Electrostatic Destruction(MIL standard)

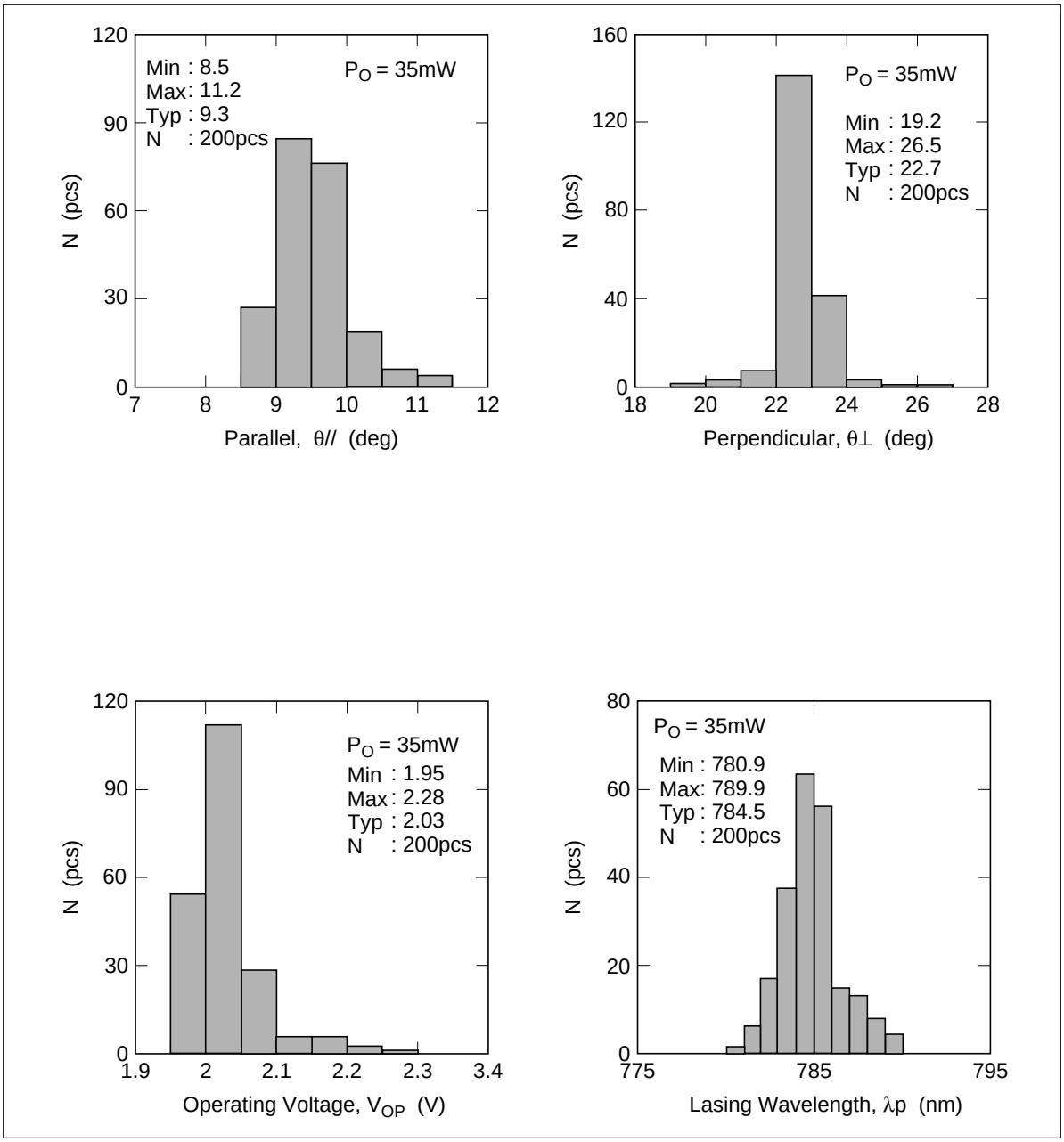


Electrostatic Distruction (MIL standard)



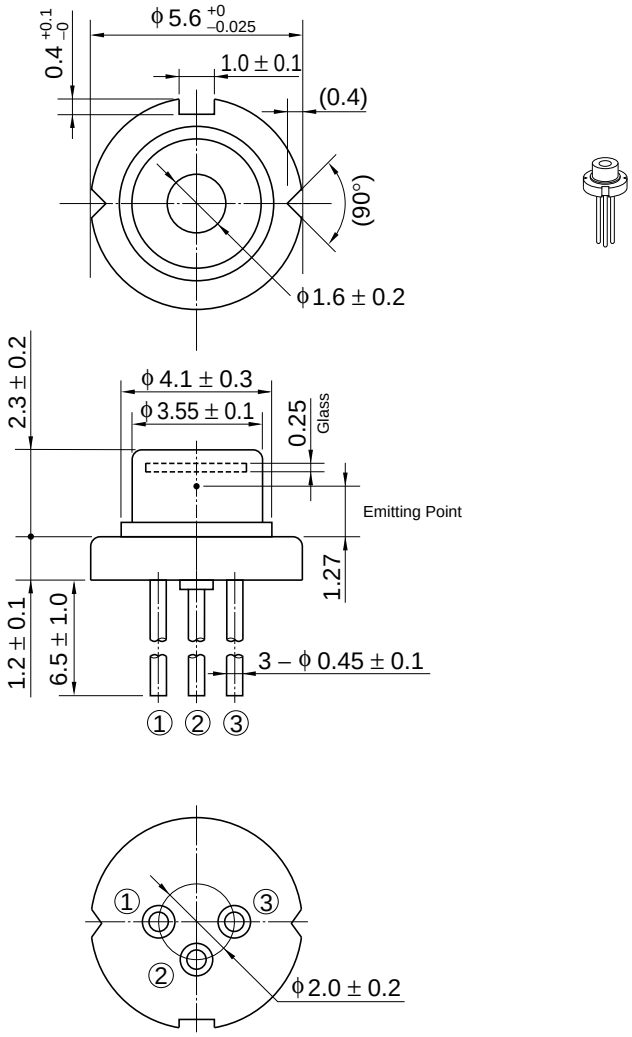
Characteristics Distribution




Min : 8.5
Max: 11.2
Typ : 9.3
N : 200pcs
P_O = 35mW
N (pcs)
Parallel, θ// (deg)
P_O = 35mW
Min : 19.2
Max: 26.5
Typ : 22.7
N : 200pcs
N (pcs)
Perpendicular, θ⊥ (deg)
P_O = 35mW
Min : 1.95
Max: 2.28
Typ : 2.03
N : 200pcs
N (pcs)
Operating Voltage, V_{OP} (V)
P_O = 35mW
Min : 780.9
Max: 789.9
Typ : 784.5
N : 200pcs
N (pcs)
Lasing Wavelength, λp (nm)

Package Dimensions

Unit: mm



Hitachi Code	LD/MG
JEDEC	Ñ
EIAJ	Ñ
Weight (reference value)	0.3 g

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