

UOS Laser Diode Products Map and Road Map

The logo for Ushio, consisting of the word "USHIO" in a bold, white, sans-serif font, positioned on a solid teal background.

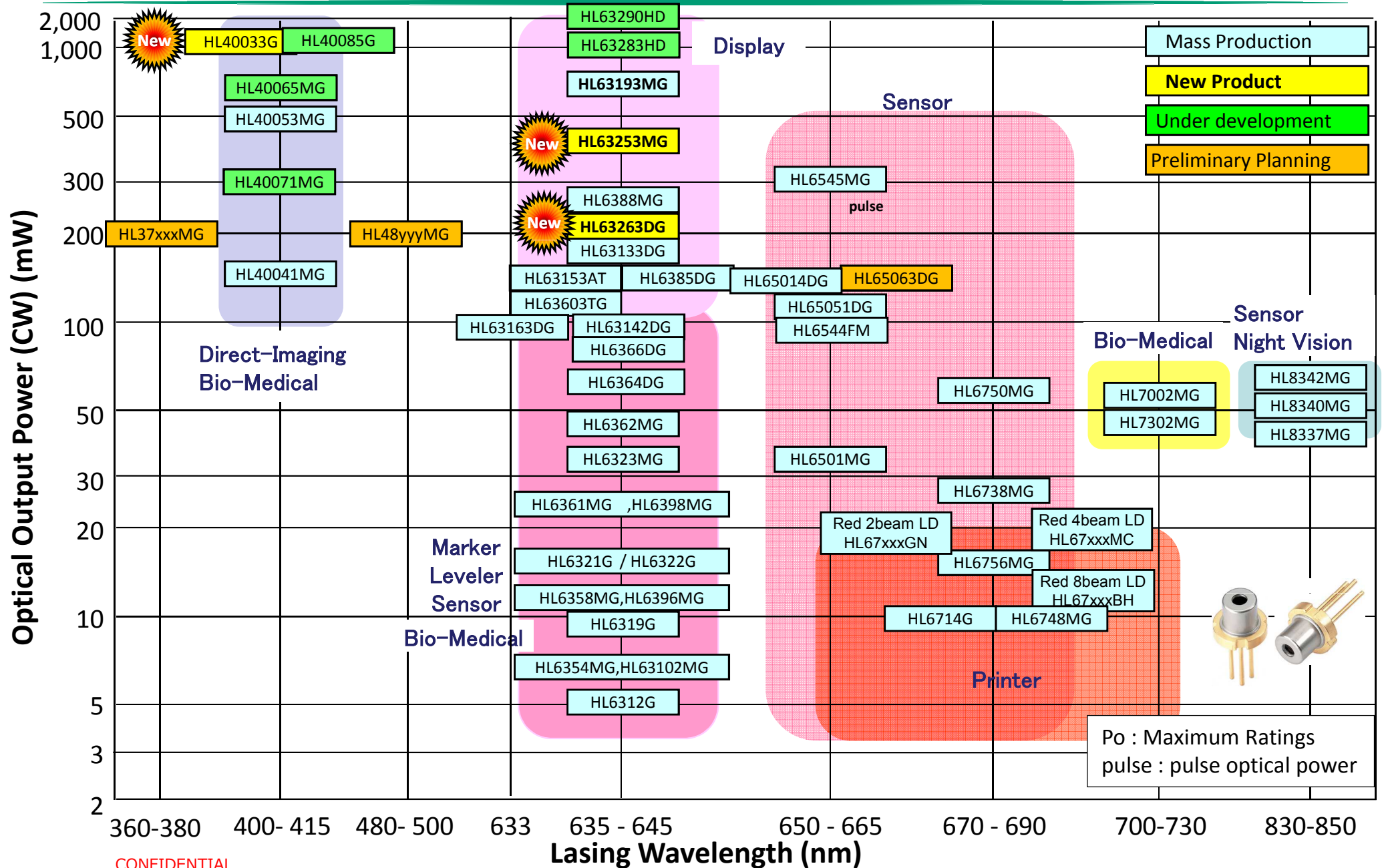
USHIO OPTO SEMICONDUCTORS, INC.
Marketing Dept.

Feb/2016
APD No.16044

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UOS LD Products Map

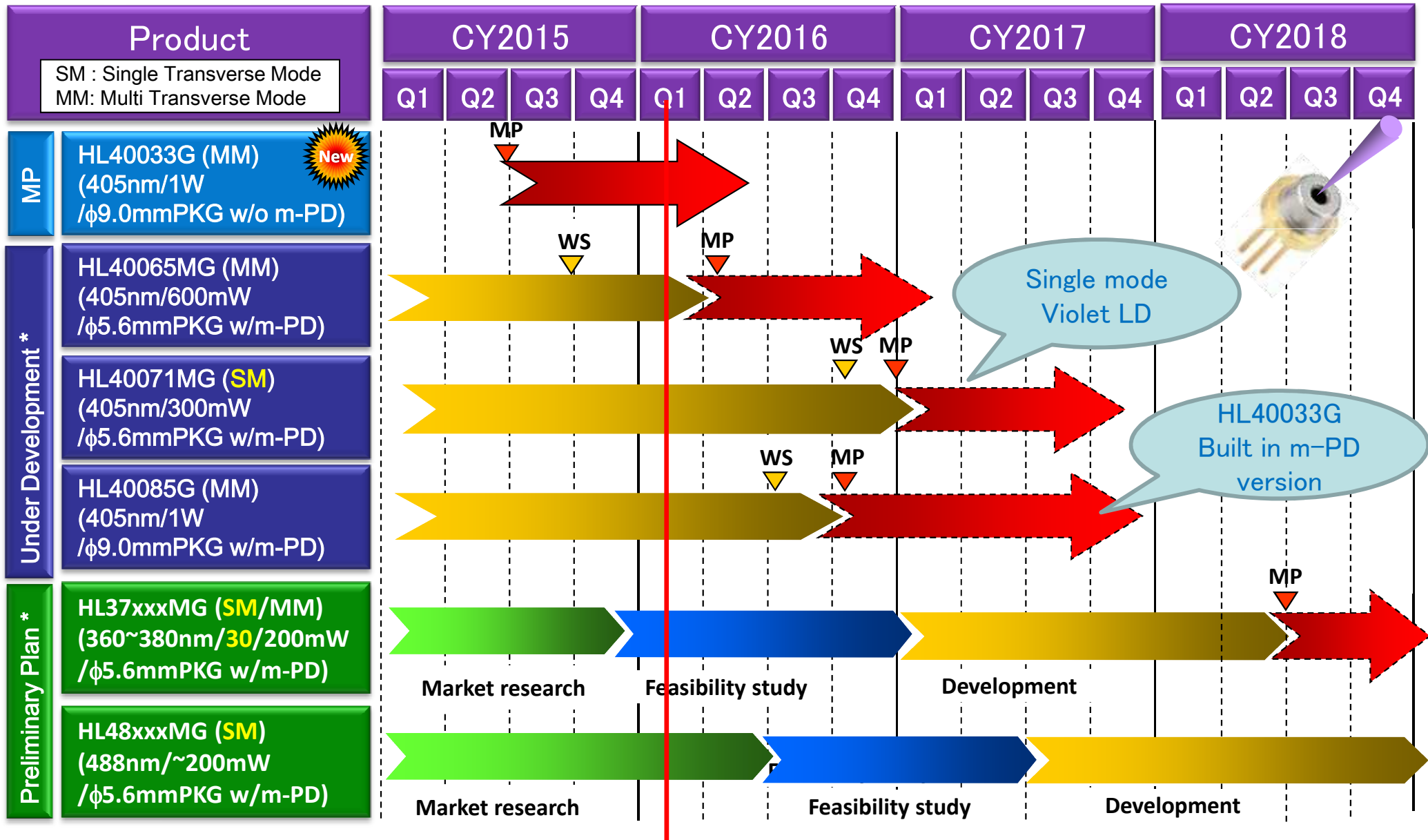


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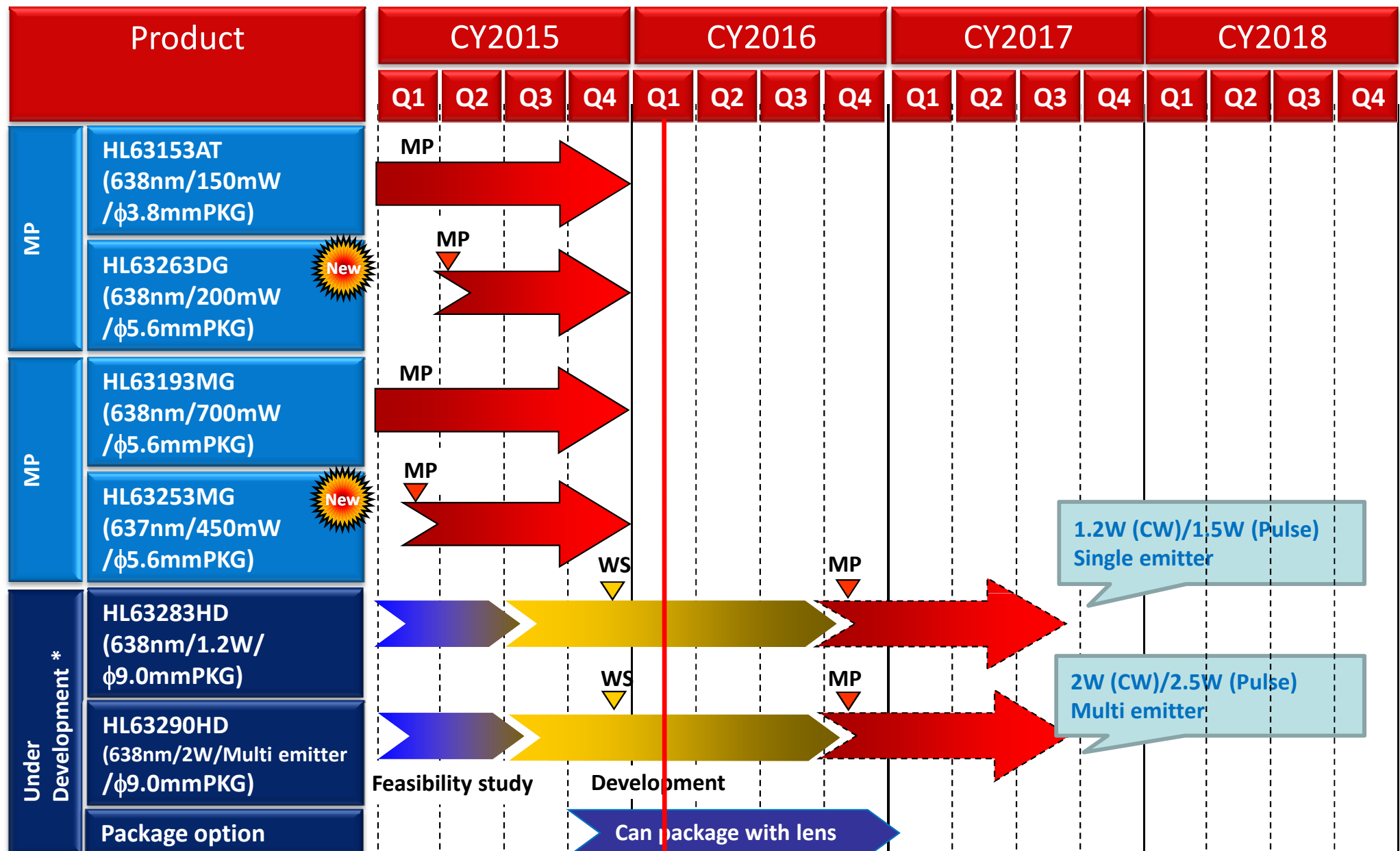
UOS Violet LD Road Map



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* Development and preliminary plan is changed without any notice.

UOS Red LD Road Map



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* Development and preliminary plan is changed without any notice.

Product outline:

- WL:405nm
- Po: 1W
- Multi transverse mode
- 9.0mmPKG

Advantage:

- Shorter wavelength Violet color
- High Power Violet LD in 9.0mm PKG
- Suitable for Industry/Medical

Schedules: MP now available

Laser Diode for Direct Imaging

UOS violet LDs are suitable as light sources
for Direct Imaging system for PCB and various industrial applications.

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Violet LD : HL40033G Specifications

New Product

Absolute Maximum Ratings (Tc=25°C)

Items	Unit	Ratings	
Po	mW	1100	
V _{R(LD)}	V	2	
Topr	°C	0 to +30	Note 1
Tstg	°C	-40 to +85	

Note1) Operating temperature "Topr" is defined by Case temperature "Tc".

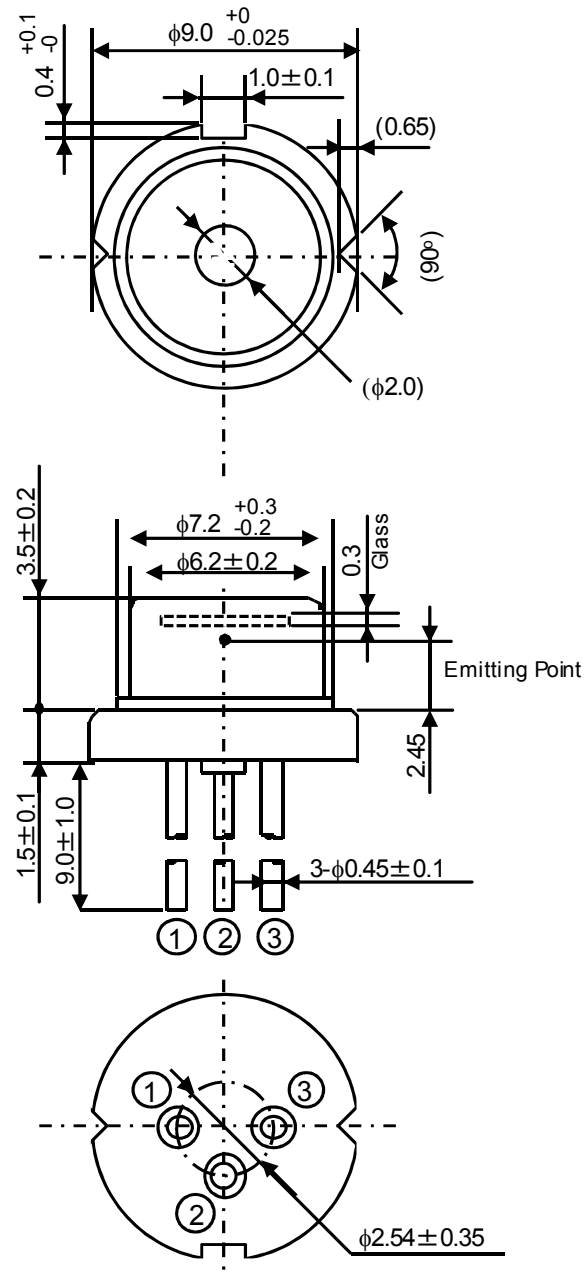
Optical and Electrical Characteristics (Tc=25°C,CW)

Items	Unit	HL40033G			Test conditions
		Min.	Ave.	Max.	
I _{th}	mA	250	320	400	-
I _{op}	mA	-	1,000	1,300	Po=1000mW
V _{op}	V	-	-	5.0	Po=1000mW
λ _p	nm	400	405	410	Po=1000mW
θ _{//}	°	5	13	25	Po=1000mW,FW@1/e ²
θ _⊥	°	30	42	50	Po=1000mW,FW@1/e ²

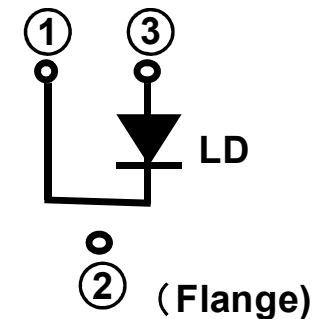
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HL40033G Outline and internal circuit

New Product



Internal Circuit



Unit: mm

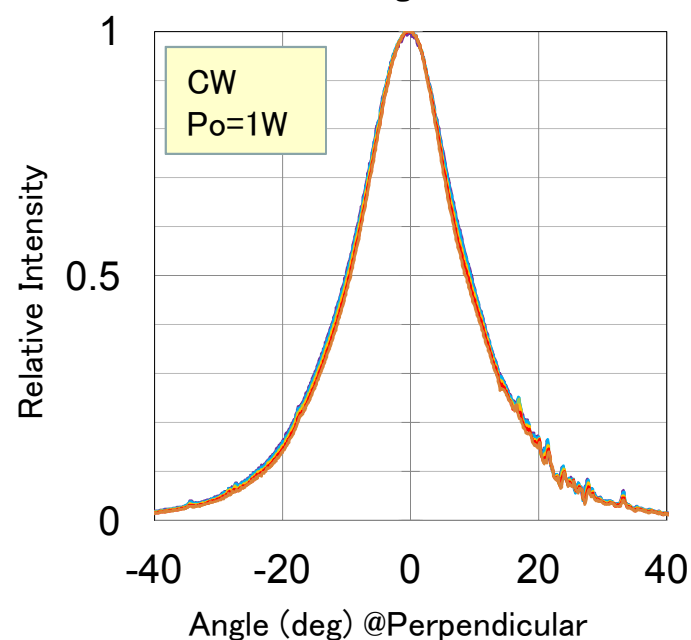
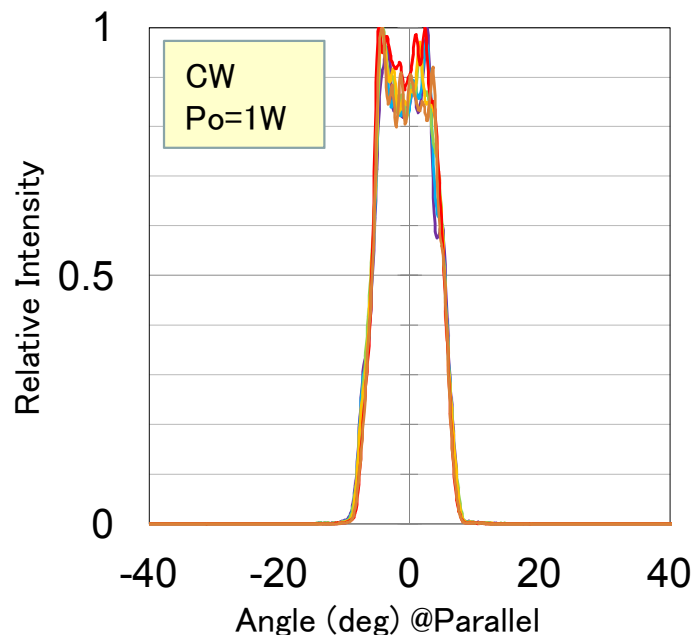
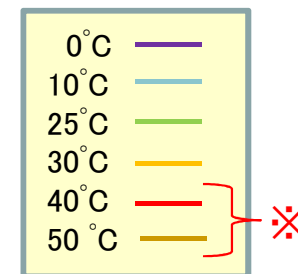
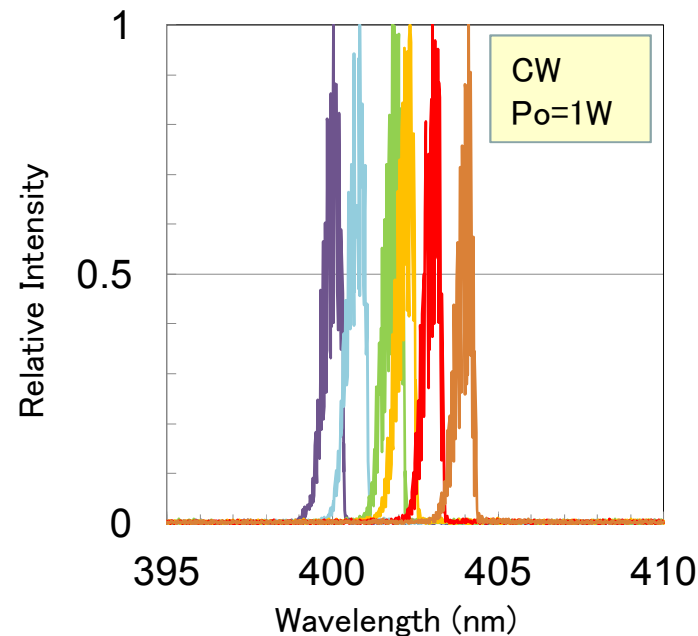
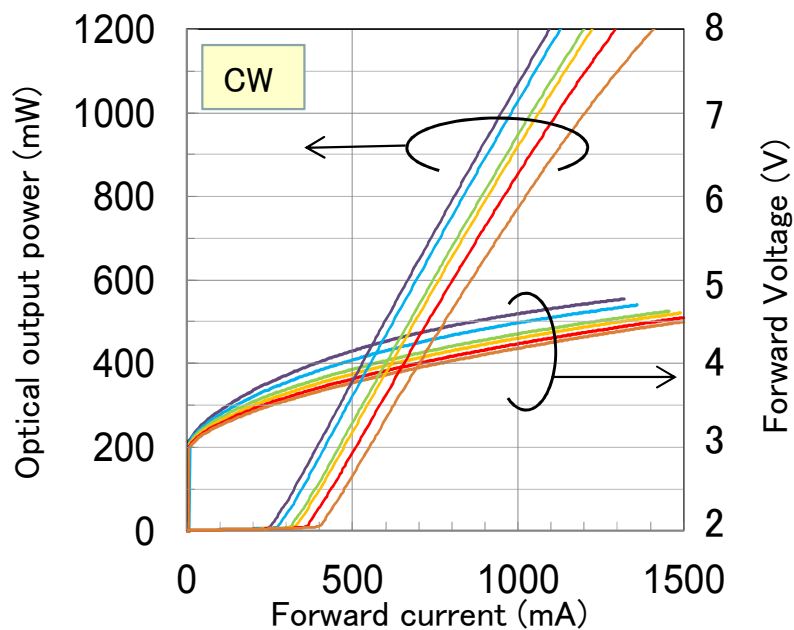
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HL40033G main characteristics chart

New Product



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Product outline:

- WL:400-405nm
- Po: 600mW
- Multi transverse mode
- 5.6mmPKG

Advantage:

- Shorter wavelength Violet color
- High power Violet LD
- Suitable for Industry/Medical

Schedules: WS: Done ES: Mar/'16 MP: Apr/'16

Laser Diode for Direct Imaging

UOS violet LDs are suitable as light sources
for Direct Imaging system for PCB and various industrial applications.

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Violet LD : HL40065MG Specifications

Under Development

Absolute Maximum Ratings (Tc=25°C)

Items	Unit	Ratings	
Po	mW	700	
V _{R(LD)}	V	5	
Topr	°C	0 to +30	Note 1
Tstg	°C	-35 to +85	

Note1) Operating temperature "Topr" is defined by Case temperature "Tc".

Optical and Electrical Characteristics (Tc=25°C,CW)

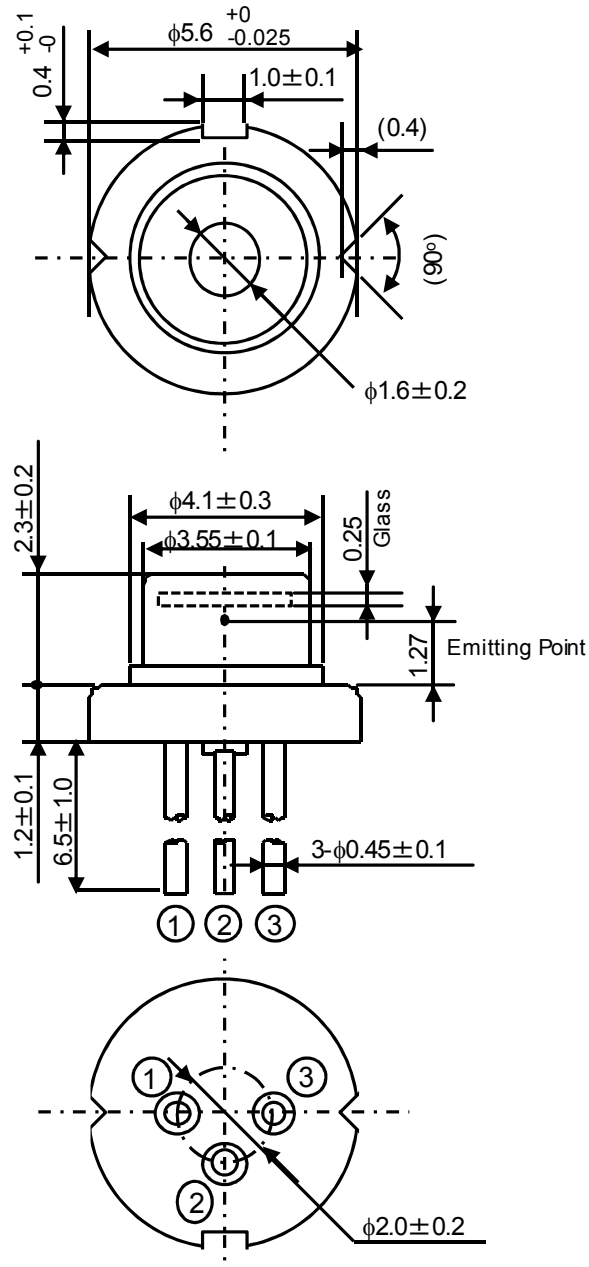
Items	Unit	HL40065MG			Test conditions
		Min.	Ave.	Max.	
I _{th}	mA	100	140	180	-
I _{op}	mA	450	550	650	Po=600mW
V _{op}	V	3.8	4.1	4.6	Po=600mW
λ _p	nm	400	-	405	Po=600mW
θ _{//}	°	12	18	24	Po=600mW,FW@1/e ²
θ _⊥	°	35	40	50	Po=600mW,FW@1/e ²
I _s *	mA	1	2	5	Po=600mW, V _{R(PD)} =5V

* Monitor PD is for initial checking purpose only

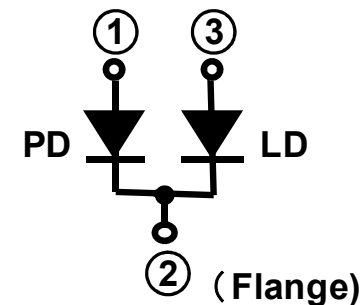
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Violet LD : HL40065MG Outline & Internal circuit

Under Development



Internal Circuit



Unit: mm

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Product outline:

- WL:405nm
- Po: 300mW
- Single transverse mode
- 5.6mmPKG

Advantage:

- Shorter wavelength Violet color
- High power Single mode LD
- Suitable for Industry/Medical

Schedules: WS: Oct/'16 ES: Dec/'16 MP: Jan/'17

Laser Diode for Direct Imaging

UOS violet LDs are suitable as light sources
for Direct Imaging system for PCB and various industrial applications.

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Violet LD : HL40071MG Specifications

Under Development

Absolute Maximum Ratings (Tc=25°C)

Items	Unit	Ratings
Po	mW	360
VR(LD)	V	2
Topr	°C	0 to +70 Note1 Fig.1
Tstg	°C	-40 to +85

Note1) Operating temperature “Topr” is defined by Case temperature “Tc”.

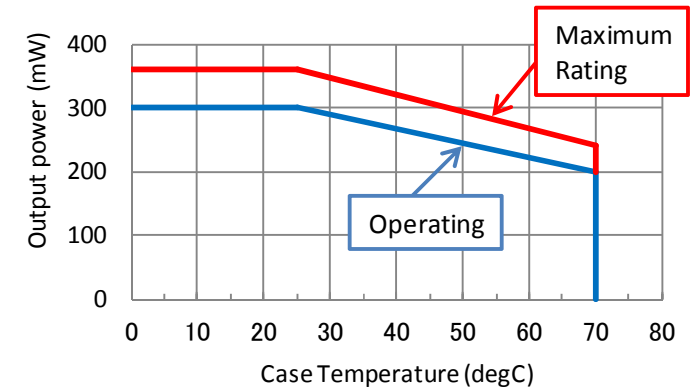


Fig.1)

Optical and Electrical Characteristics (Tc=25°C,CW)

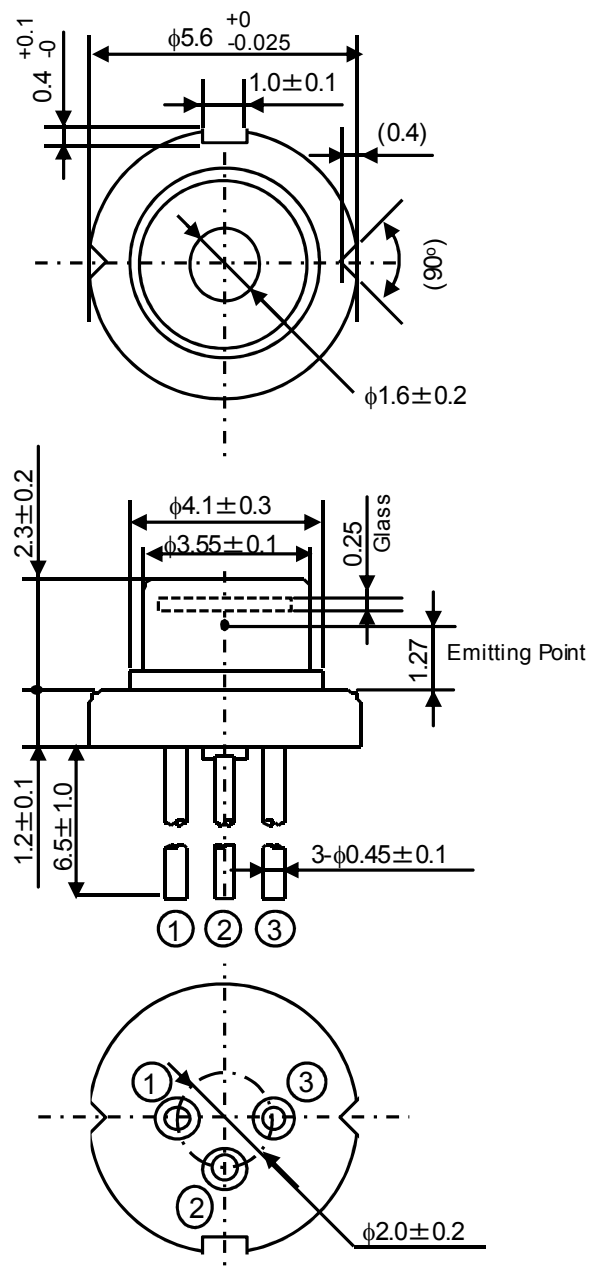
Items	Unit	HL40071MG			Test conditions
		Min.	Ave.	Max.	
Ith	mA	-	33	-	-
Iop	mA	-	230	-	Po=300mW
Vop	V	-	5.3	-	Po=300mW
λp	nm	-	405	-	Po=300mW
θ//	°	-	10	-	Po=300mW, @FWHM
θ⊥	°	-	19	-	Po=300mW, @FWHM
Is *	mA	-	T.B.D	-	Po=300mW, VR(PD)=5V

* Monitor PD is for initial checking purpose only

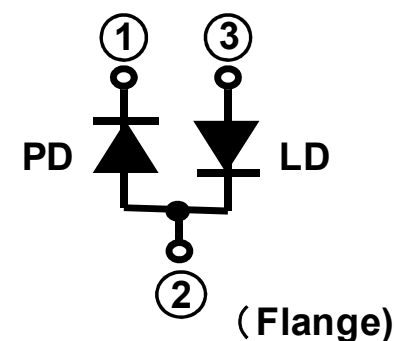
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Violet LD : HL40071MG Outline & Internal circuit

Under Development



Internal Circuit



Unit: mm

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Product outline:

- WL:405nm
- Po: 1W
- Multi transverse mode
- 9.0mmPKG

Advantage:

- Shorter wavelength Violet color
- High Power Violet LD in 9.0mm PKG
- Suitable for Industry/Medical

Schedules: WS: Jun/'16 ES: Sep/'16 MP: Oct/'16

Laser Diode for Direct Imaging

UOS violet LDs are suitable as light sources
for Direct Imaging system for PCB and various industrial applications.

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Absolute Maximum Ratings (Tc=25°C)

Items	Unit	Ratings	
Po	mW	1100	
VR(LD)	V	2	
Topr	°C	0 to +30	Note 1
Tstg	°C	-40 to +85	

Note1) Operating temperature "Topr" is defined by Case temperature "Tc".

Optical and Electrical Characteristics (Tc=25°C,CW)

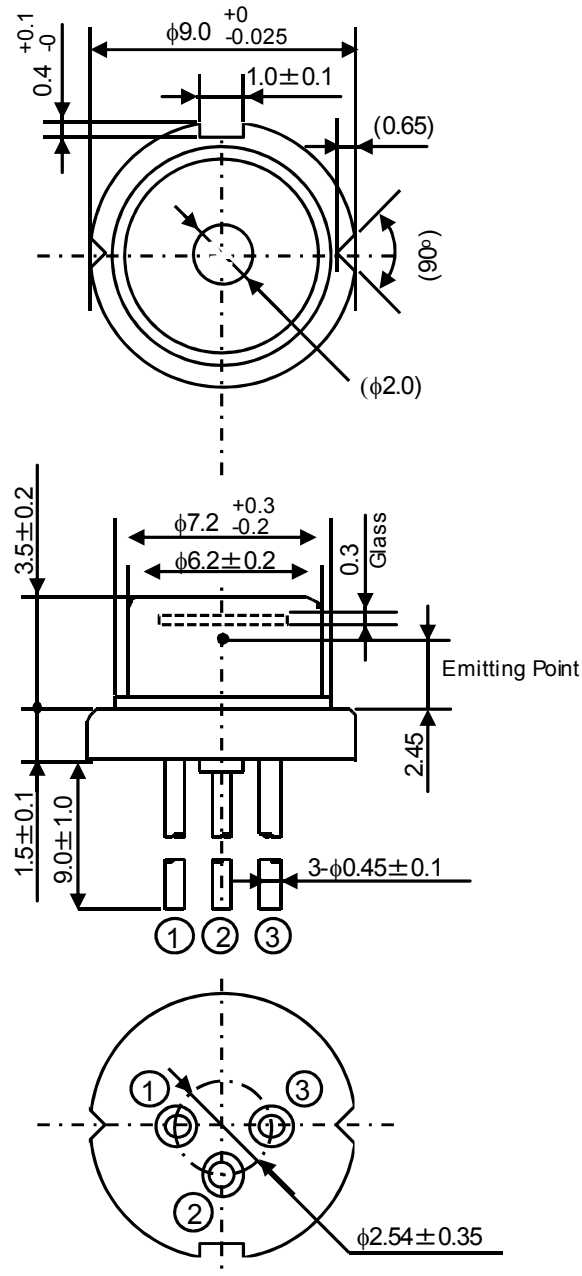
Items	Unit	HL40033G			Test conditions
		Min.	Ave.	Max.	
Ith	mA	250	320	400	-
Iop	mA	-	1,000	1,300	Po=1000mW
Vop	V	-	-	5.0	Po=1000mW
λp	nm	400	405	410	Po=1000mW
θ//	°	5	13	25	Po=1000mW,FW@1/e ²
θ⊥	°	30	42	50	Po=1000mW,FW@1/e ²
Is *	mA	-	T.B.D	-	Po=300mW, VR(PD)=5V

* Monitor PD is for initial checking purpose only

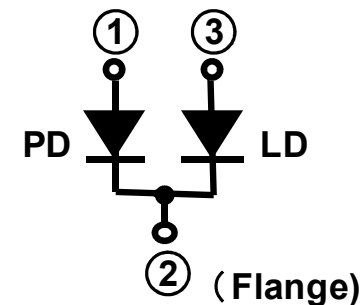
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Violet LD : HL40085G Outline & Internal circuit

Under Development



Internal Circuit



Unit: mm

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Features:

- Wavelength: 638nm
- High optical output power: 200mW
- Single transverse mode
- $\phi 5.6\text{mm}$ CAN Package
- Suitable for Show Laser System

Schedules: Under Mass production now

Laser Diode for Laser Projector

UOS provides world class red LDs with high power and short wavelength red LDs for laser projection systems such as laser projector and laser TV. Our red LDs enable projectors to achieve the vivid color, high brightness, image quality and set downsizing.

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Red LD : HL63263DG Specifications

New Product

Absolute Maximum Ratings (Tc=25°C)

Items	Symbols	Unit	Ratings	Note
Optical output power(1)	Po(1)	mW	200 (-10~30°C)	
Optical output power(2)	Po(2)	mW	180 (40°C)	
LD reverse voltage	V _{R(LD)}	V	2	
Operating temperature	Topr	°C	-10 to 40	Note 1
Storage temperature	Tstg	°C	-40 to 85	

Note1) Operating temperature “Topr” is defined by Case temperature “Tc”.

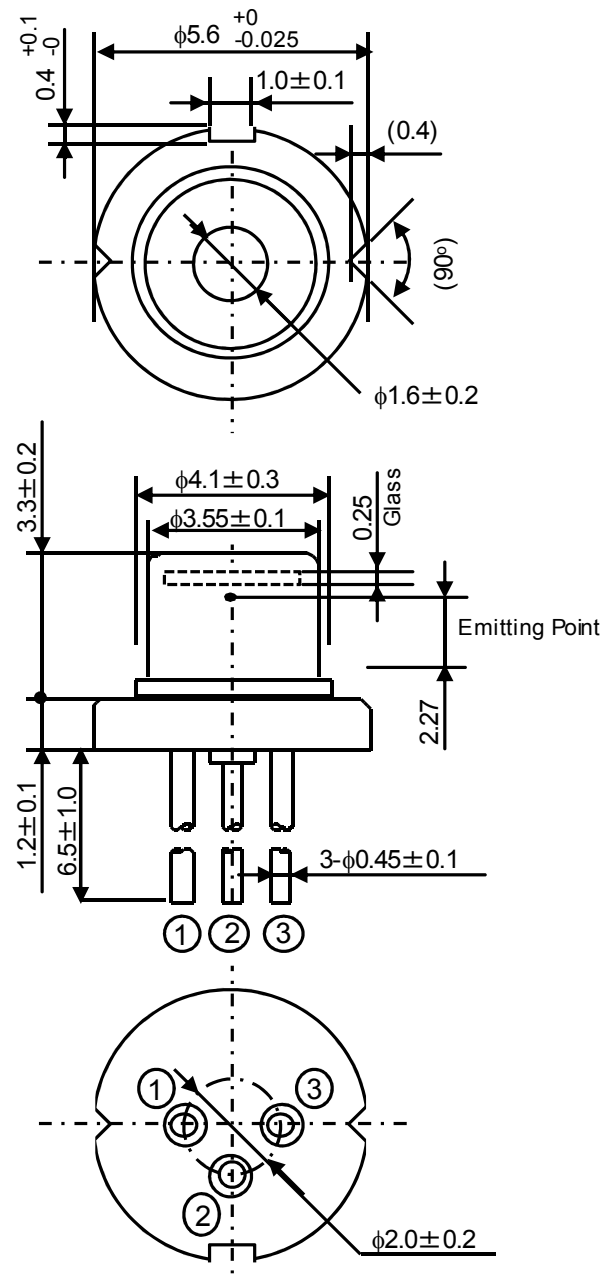
Optical and Electrical Characteristics (Tc=25°C,CW)

Items		Symbols	Unit	HL63263DG			Test conditions	Note
				Min.	Ave.	Max.		
Threshold current		I _{th}	mA	-	75	100	-	
Operating current		I _{op}	mA	-	280	330	Po=200mW	
Operating voltage		V _{op}	V	-	2.9	3.3	Po=200mW	
Lasing wavelength		λ _p	nm	633	638	643	Po=200mW	
Beam Divergence	parallel	θ//	°	5	8	11	Po=200mW,FWHM	
	Perpendicular	θ⊥	°	10	14	18	Po=200mW,FWHM	

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Red LD : HL63263DG Outline & Internal Circuit

New Product



Red LD : HL63193MG

Features :

- Wavelength:638nm
- High output power: 700mW
- Multi transverse mode
- $\phi 5.6\text{mm}$ CAN Package
- Suitable for Laser Projector

Schedules: Under Mass production now

Laser Diode for Laser Projector

UOS provides world class red LDs with high power and short wavelength red LDs for laser projection systems such as laser projector and laser TV. Our red LDs enable projectors to achieve the vivid color, high brightness, image quality and set downsizing.

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Red LD : HL63193MG Specifications

Absolute Maximum Ratings (Tc=25°C)

Items	Symbols	Unit	Ratings	Note
Optical output power(1)	Po(1)	mW	700(Tc=-10~+30°C)	
Optical output power(2)	Po(2)	mW	550(Tc=+30~+40°C)	
Pulse optical output power	Po(Pulse)	mW	1000	Pulse frequency≥50Hz,duty≤33%
LD reverse voltage	VR(LD)	V	2	
Operating temperature	Topr	°C	-10 to 40	Note 1
Storage temperature	Tstg	°C	-40 to 85	

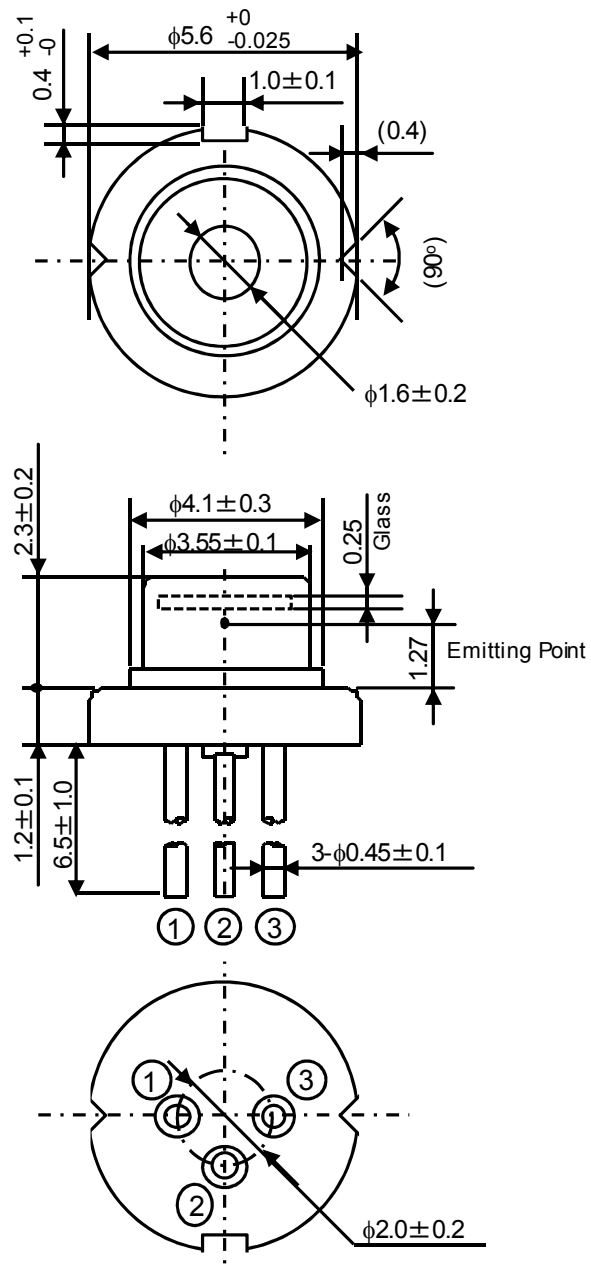
Note1) Operating temperature “Topr” is defined by Case temperature “Tc”.

Optical and Electrical Characteristics (Tc=25°C,CW)

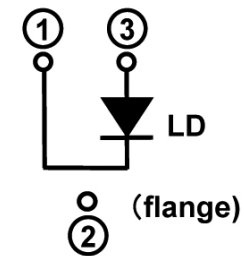
Items		Symbols	Unit	HL63193MG			Test conditions	Note
				Min.	Ave.	Max.		
Threshold current		Ith	mA	-	200	250	-	
Operating current		Iop	mA	-	820	1000	Po=700mW	
Operating voltage		Vop	V	-	2.2	2.6	Po=700mW	
Lasing wavelength		λp	nm	632	638	643	Po=700mW	
Beam Divergence	parallel	θ//	°	1	9	20	Po=700mW,FWHM	
	Perpendicular	θ⊥	°	25	35	45	Po=700mW,FWHM	

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Red LD : HL63193MG Outline & Internal Circuit



Internal Circuit



Unit: mm

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Features :

- Wavelength: 638nm
- High optical output power : 1.2 W CW, 1.5 W Pulse
- Single emitter, Multi transverse mode
- $\phi 9$ mm CAN Package
- Suitable for Laser Projector , Show laser

Schedules: WS: Dec/'15 MP: Oct/'16

Laser Diode for Laser Projector

UOS provides world class red LDs with high power and short wavelength red LDs for laser projection systems such as laser projector and laser TV.
Our red LDs enable projectors to achieve the vivid color, high brightness, image quality and set downsizing.

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Red LD : HL63283HD Specifications (1) Under Development

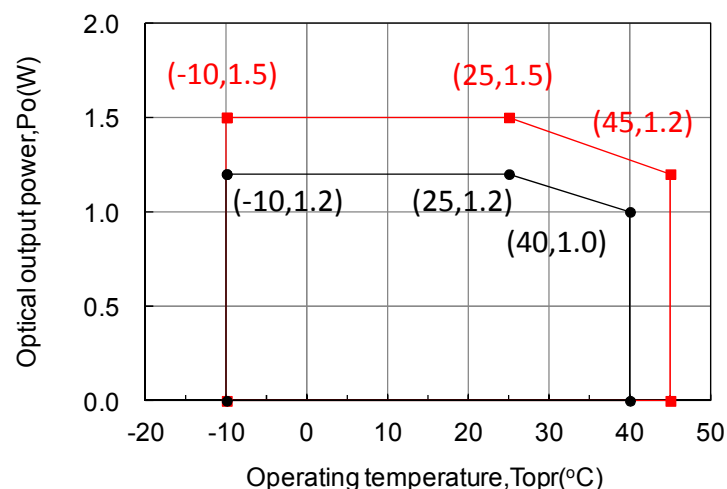
Absolute Maximum Ratings (Tc=25°C)

Items	Symbols	Unit	Ratings	Note
Optical output power	Po	W	1.2	CW, Note 2
Pulse optical output power	Po(Pulse)	W	1.5	Pulse frequency $\geq 50\text{Hz}$, duty $\leq 33\%$, Note 2
LD reverse voltage	V _{R(LD)}	V	2	
Operating temperature	Topr	°C	-10 to 40	Note 1, Note 2
Pulse Operating temperature	Topr(Pulse)	°C	-10 to 45	Note 1, Note 2
Storage temperature	Tstg	°C	-40 to 85	

Note1) Operating temperature “Topr” is defined by Case temperature “Tc”.

Note2) Relation of Optical output power Po and Operating temperature Topr.

- Topr vs Po (CW)
- Topr vs Po(Pulse) (Pulse frequency $\geq 50\text{Hz}$, duty $\leq 33\%$)



This is a preliminary target specification. The specification may be changed without any notice.

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Red LD : HL63283HD Specifications (2) Under Development

Optical and Electrical Characteristics (Tc=25°C,CW)

Items		Symbols	Unit	HL63283HD			Test conditions	Note
				Min.	Ave.	Max.		
Threshold current		I _{th}	mA	-	300	-	-	
Operating current		I _{op}	mA	-	1500	-	P _o =1.2W	
Operating voltage		V _{op}	V	-	2.4	-	P _o =1.2W	
Lasing wavelength		λ _p	nm	-	638	-	P _o =1.2W	
Beam Divergence	parallel	θ//	°	-	10	-	P _o =1.2W, FWHM	
	Perpendicular	θ⊥	°	-	35	-	P _o =1.2W, FWHM	

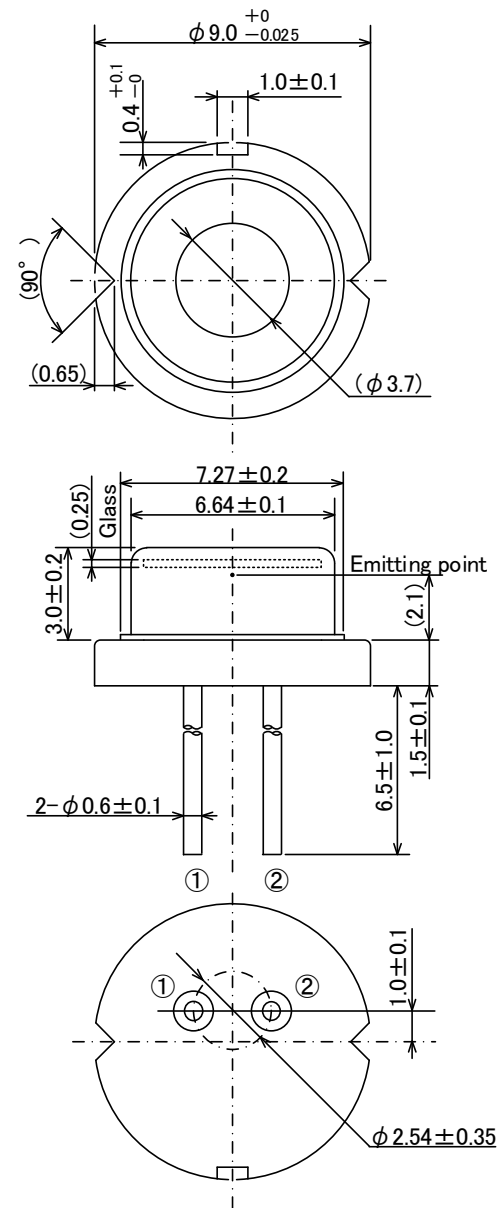
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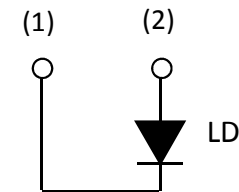
Red LD : HL63283HD

Outline and Internal Circuit

Under Development



Internal circuit



Unit: mm

This is a preliminary target specification. The specification may be changed without any notice.

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Features :

- Wavelength:638nm
- High optical output power : 2 W CW, 2.5 W Pulse
- Multi emitters and Multi transverse mode
- $\phi 9$ mm CAN Package
- Suitable for Laser Projector and Show laser

Schedules: WS: Dec/'15 MP: Oct/'16

Laser Diode for Laser Projector

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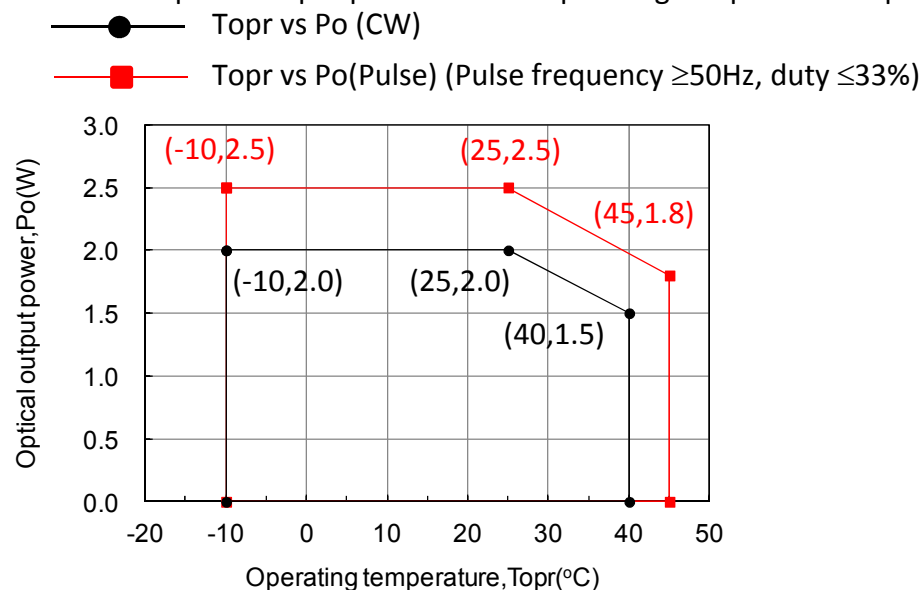
Red LD : HL63290HD Specifications (1) Under Development

Absolute Maximum Ratings (Tc=25°C)

Items	Symbols	Unit	Ratings	Note
Optical output power	Po	W	2	CW, Note 2
Pulse optical output power	Po(Pulse)	W	2.5	Pulse frequency $\geq 50\text{Hz}$, duty $\leq 33\%$, Note 2
LD reverse voltage	V _{R(LD)}	V	2	
Operating temperature	Topr	°C	-10 to 40	Note 1, Note 2
Pulse Operating temperature	Topr(Pulse)	°C	-10 to 45	Note 1, Note 2
Storage temperature	Tstg	°C	-40 to 85	

Note1) Operating temperature “Topr” is defined by Case temperature “Tc”.

Note2) Relation of Optical output power Po and Operating temperature Topr.



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Red LD : HL63290HD Specifications (2) Under Development

Optical and Electrical Characteristics (Tc=25°C,CW)

Items		Symbols	Unit	HL63290HD			Test conditions	Note
				Min.	Ave.	Max.		
Threshold current		I _{th}	mA	-	500	-	-	
Operating current		I _{op}	mA	-	2500	-	P _o =2W	
Operating voltage		V _{op}	V	-	2.4	-	P _o =2W	
Lasing wavelength		λ _p	nm	-	638	-	P _o =2W	
Beam Divergence	parallel	θ//	°	-	10	-	P _o =2W, FWHM	
	Perpendicular	θ⊥	°	-	35	-	P _o =2W, FWHM	

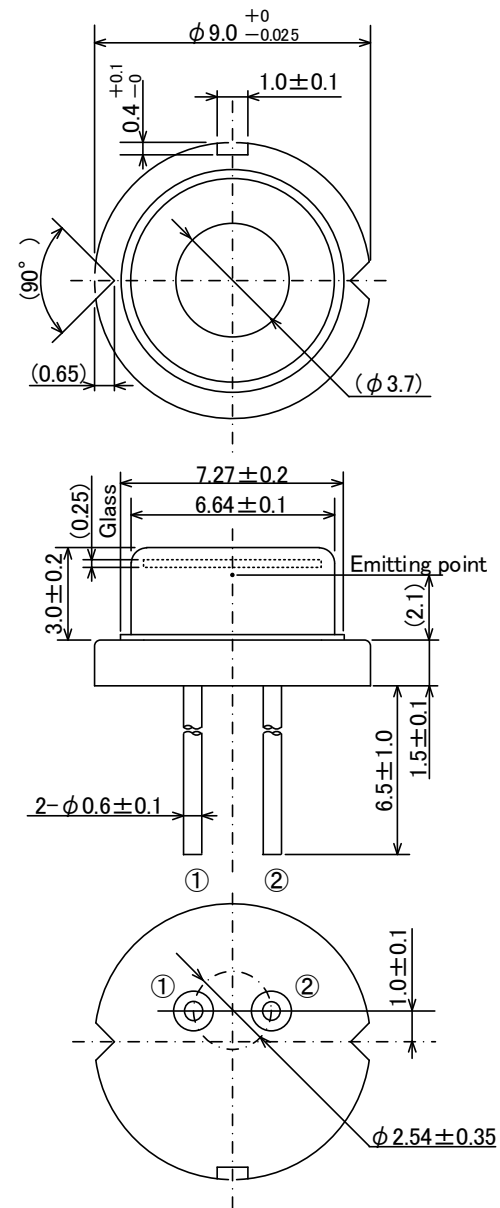
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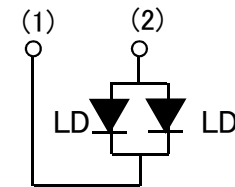
Red LD : HL63290HD

Outline and Internal Circuit

Under Development



Internal circuit



Unit: mm

This is a preliminary target specification. The specification may be changed without any notice.

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