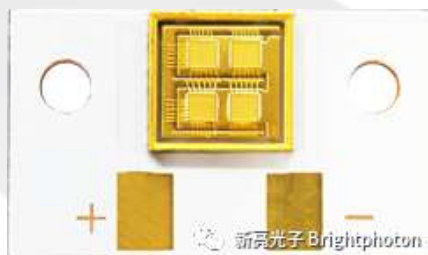


808nm High Power Assembly



- Wavelength : 808nm
- Optical Power: 10W, 25W, 50W, 100W, 300W

The laser hair removal device uses the melanin in the hair follicle to absorb laser, and generates heat to destroy the roots of the hair follicles and make hair fall off.

Studies have shown that if too short wavelength will be absorbed by melanin and hemoglobin on the skin surface, which will damage the skin and cannot reach the hair follicles. Therefore, the most effective wavelength for hair removal is 680nm-980nm giving harmlessness to the skin.

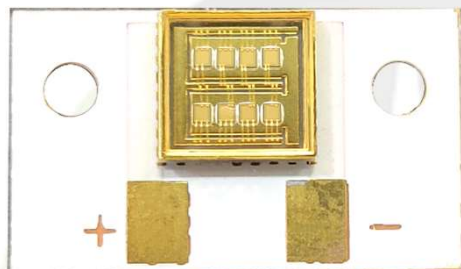


Comparison of light sources of hair removal instrument

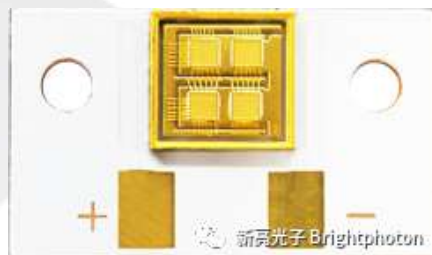
IPL	VCSEL
IPL has weak energy and poor focus. Because its penetration is not enough to completely remove hair, it may affect the effect of hair removal.	The higher laser intensity can remove thick hair more effectively.
IPL emits light through a series of filters to produce a band of wavelengths, including the wavelength cause cancer. Compared with single wavelength laser, IPL is more likely to affect normal skin and even cause skin damage and complications.	The laser only produces a very specific single wavelength of light. Specific wavelength of light make the treatment more specific. 808nm wavelength is the best for hair removal.
Usually, more IPL treatment is required, and the effect of permanent hair removal is relatively unsatisfactory.	Less laser treatments is required; the permanent hair removal effect lasts long.
Because higher energy is required to reach deeper targets, it may cause pigmentation or burns.	The laser has stronger penetrating power, reaches the target directly, and is less likely to be absorbed by tissue and less side effect.
How much pain you feel depends on your skin structure and pain tolerance. However, people with darker skin may experience worse.	Most people feel less discomfort.
Suitable for lighter skin tones and darker hair	Suitable for all skin tones and hair color. Safer to use.

VCSEL for hair removal achieve safer, excellent hair removal effect and high stability.

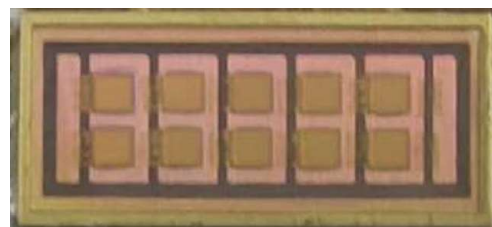
808nm High Power Assembly



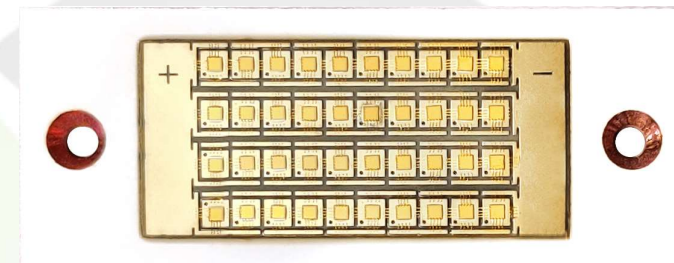
CW 20W T-mount



Pulsed 50W T-mount
(Pulse width 0.6s, duty cycle 20%)



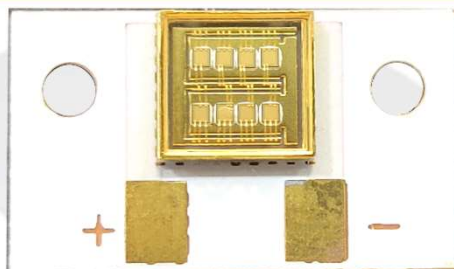
Pulsed 50W T-mount
(Pulse width 100s, duty cycle 10%)



CW 200W T-mount

Part number	Application	Wavelength (nm)	Optical power	Illuminated area	Package
VD-0808I-020W-XX-2A0	Portable hair removal device	808	20W	Φ6mm @6mm	T=7471 (7.4mm x 7.1mm), K=T-mount (22mm x 13mm)
VD-0808I-050W-XX-3A0			50W	Φ6mm @6mm	K=T-mount (TBD)
VD-0808I-050W-XX-3A0			50W	6*12mm @6mm	K=T-mount (13mmx5.9mm)
VD-0808I-100W-XX-3A0	Clinical hair removal device		100W	/	T=7471 (37.8mmx14.58mm)
VD-0808I-200W-XX-3A0			200W	Φ25mm @15mm	K=T-mount (51mmx20mm)

808nm High Power Assembly



VD-0808I-020W-6K-2A0

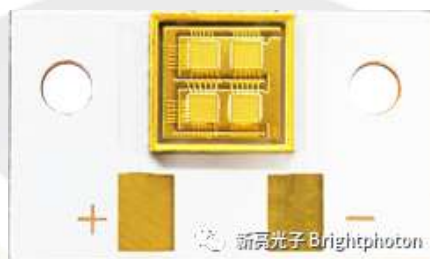
VD-0808I-020W-1T-2A0

- Wavelength: 808
- Power: 20W
- Application: Home handheld, portable hair removal device

VCSEL Parameters	Symbol	Conditions	Min.	Typ.	Max.	Units
Optical Power Output	P_o	$I_F=24A$	-	20	-	W
Threshold Current	I_{th}	-	-	5	-	A
Forward Current	-	-	-	24	-	A
Slope Efficiency	-	-	-	1.01	-	W/A
Power Conversion Efficiency	η	$I_F=24A$	-	32	-	%
Peak Wavelength	λ_p	$P_o=20W$	800	808	816	nm
Laser Forward Voltage	V_F	$I_F=24A$	-	2.64	-	V
Series Resistance	R_s	$I_F=24A$	-	0.11	-	Ω
Emission area	-	-	-	4.31*3.45	-	mm
Beam Angle	$(1/e^2)$ FWHM	$I_F=24A$	-	25	-	Degrees
Wavelength shift	$\partial\lambda_p/\partial T$	$I_F=24A$	-	-	0.07	nm/°C
Soldering Temperature	-	-	-	-	260(10s)	°C

Frequency (Hz)	Illuminated Area	Current (A)	Voltage(V)	Pulse width (ms)	Energy Density (J/cm ²)	Heat dissipation suggestion
1	Φ6mm @distance 6mm	30	2.88	100	7.6	Wind Fan
2				200	16	
3				300	23.9	
4				400	31.8	

808nm High Power Assembly



VD-808I-050W-1K-3A0

- Wavelength: 808
- Optical power: 50W

808nm 50W VCSEL diode:

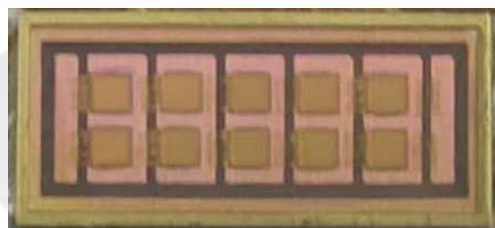
- Single wavelength, stable performance;
- Less affected by temperature, low wavelength drift 0.07nm/°C;
- The electro-optical conversion efficiency (PCE) is as high as 37.2%,
- Threshold current as low as 1A, high real-time performance, cost effective
- Used in laser beauty (such as photon hair removal device, freezing point laser hair removal device)



II. Optical-electrical characteristics @25°C (pulsewidth 0.6s, 20% duty cycle)

Parameters	Symbol	Conditions	Min.	Typ.	Max.	Unit
Optical Power	P_o	$I_F=55A$	-	50	55	W
Threshold Current	I_{TH}	-	-	1	-	A
Forward Current	-	-	-	55	60	A
Power Conversion Efficiency	η	$I_F=55A$	-	37.2	-	%
Slope Efficiency	-	-	-	0.93	-	W/A
Peak Wavelength	-	$P_o=50W$	800	808	816	nm
Laser Forward Voltage	V_F	$I_F=55A$	-	2.2	2.5	V
Beam Angle	-	$I_F=55A$	-	25	-	Degrees
Differential resistance	Ω	$I_F=55A$	-	4.1	-	R
Wavelength Temp. Drift	-	$I_F=55A$	-	-	0.07	nm/°C
Soldering Temperature	-	-	-	-	260(10s)	°C

808nm High Power Assembly



VD-808I-50W-1X-2A0

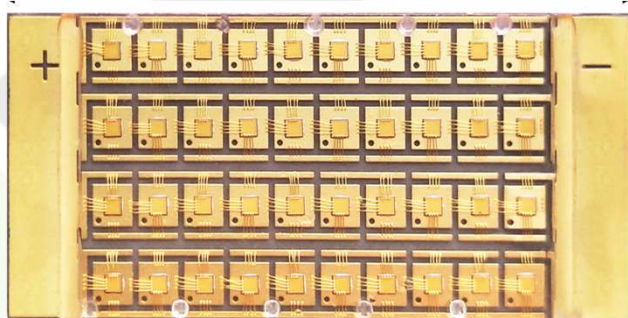
VD-808I-50W-6K-2A0

- Wavelength: 808
- Optical power: 50W
- Application: Home handheld, portable hair removal device

Parameters	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold Current	I_{th}		-	2	-	A
Forward Current	I_F		-	12.5	-	A
Optical Power	P_o	$I_F=12.5A$	-	50	-	W
Laser Forward Voltage	V_f	$I_F=12.5A$	-	12	-	V
Power conversion efficiency	η	$I_F=12.5A$	-	33.6	-	%
Slope efficiency	SE	$P_o=50W$	-	1.0	-	W/A
Series Resistance	R	$I_F=12.5A$	-	0.16	-	Ω
Peak Wavelength	-	$I_F=12.5A$	800	808	816	nm
Wavelength-Temp. Drift	$\Delta\lambda/\Delta T$	$I_F=12.5A$	-	-	0.07	nm/ $^{\circ}C$
Beam divergence	$(1/e^2)\theta$	$I_F=12.5A$	-	25	-	deg
Emission area			-	6*12	-	mm ²
Duty Cycle			-	10	-	%

Frequency (Hz)	Illuminated Area	Current (A)	Voltage(V)	Pulse width (ms)	Energy Density (J/cm ²)	Heat dissipation suggestion
1	6*12mm @distance 6mm	12.5	12	100	8.20	Wind Fan
2				200	16.68	
3				300	24.87	
4				400	32.61	

808nm High Power Assembly



VD-808I-100W-1X-2A0

- Wavelength: 808
- Optical power: 100W

808nm 200W VCSEL diode:

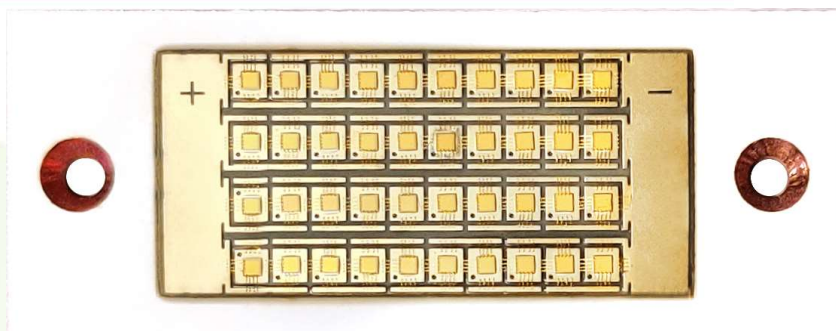
- Single wavelength, stable performance;
- Less affected by temperature, low wavelength drift 0.07nm/°C;
- The electro-optical conversion efficiency (PCE) is as high as 41%,
- Threshold current as low as 0.5A, high real-time performance, cost effective
- Used in laser beauty (such as photon hair removal device, freezing point laser hair removal device)

II. Optical-electrical characteristics @25°C , CW mode

Parameters	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold Current	I_{th}		-	0.5	-	A
Forward Current	I_F		-	10	-	A
Optical Power	P_o	$I_F=10A$	90	100	105	W
Laser Forward Voltage	V_f	$I_F=10A$	22.1	24.6	-	V
Power conversion efficiency	η	$I_F=10A$	-	41	-	%
Slope efficiency	SE	$P_o=100W$	-	0.9	-	W/A
Series Resistance	R	$I_F=10A$	-	2.46	-	Ω
Peak Wavelength	-	$I_F=10A$	800	808	816	nm
Wavelength-Temp. Drift	$\Delta\lambda/\Delta T$	$I_F=10A$	-	0.07	-	nm/°C
Beam divergence	$(1/e^2)_B$		-	25	-	deg



808nm High Power Assembly



VD-808I-200W-1X-2A0

VD-808I-200W-6K-2A0

- Wavelength: 808
- Optical power: 200W

808nm 200W VCSEL diode:

- Single wavelength, stable performance;
- Less affected by temperature, low wavelength drift 0.07nm/°C;
- The electro-optical conversion efficiency (PCE) is as high as 40%;
- Threshold current as low as 5A, high real-time performance, cost effective
- Used in laser beauty (such as photon hair removal device, freezing point laser hair removal device)

II. Optical-electrical characteristics @25°C, pulsewidth 100ms, dutycycle 10%

VCSEL Parameters	Symbol	Conditions	Min.	Typ.	Max.	Units
Optical Power Output	P _o	I _F = 19A	-	170	-	W
Threshold Current	I _{th}	-	-	5	-	A
Forward Current	-	-	-	19	-	A
Slope Efficiency	-	-	-	1.01	-	W/A
Power Conversion Efficiency	η	I _F = 19A	-	40.3	-	%
Peak Wavelength	λ _p	P _o = 170W	800	808	816	nm
Laser Forward Voltage	V _F	I _F = 19A	-	22	22.2	V
Series Resistance	R _S	I _F = 19A	-	0.11	-	Ω
Emission area	-	-	-	31.47×14.58	-	mm
Beam	(1/e ²)	I _F = 19A	-	25	-	Degrees
Angle	FWHM	I _F = 19A	-	-	-	Degrees
Duty cycle	-	-	-	10	-	%
Illuminance area	-	@15mm	-	2.52	-	cm ²
Energy density	-	1Hz, I _F = 19A	-	6.74	-	J/cm ²
	-	2Hz, I _F = 18A	-	11.69	-	J/cm ²
	-	3Hz, I _F = 17A	-	16.59	-	J/cm ²
	-	4Hz, I _F = 15A	-	18.72	-	J/cm ²
Wavelength shift	∂λ _p /∂T	I _F = 19A	-	-	0.07	nm/°C
Soldering Temperature	-	-	-	-	180(10s)	°C
Substrate	Cu					