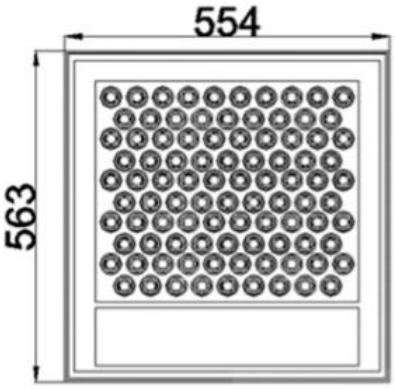
940nm 500mW VCSEL Chip

Part No. VCC-94A500H

Features

- 940nm multi emitter VCSEL chip
- Typical 500mW output power at 600mA
- High PCE (Power Conversion Efficiency): 40%
- Number of emitters: 95
- Chip size: 554 x 563 ± 15 um
- Chip thickness: 120 ± 15 um
- Electrode side: Gold alloy on both anode P (emission side) and cathode N (backside)



Applications

- Moving sensor / gesture
- Photoelectric sensors
- Optical encoders
- 3D sensing

Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Storage Temperature	T_{stg}	-40 to 125	°C	
Operating Temperature	T_{op}	-20 to 85	°C	
Maximum package SMT solder reflow temperature	-	260	°C	10 seconds

Note: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above. Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

Electro-Optical Characteristics (T_a=25ºC unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I_{th}		65		mA	
Slope Efficiency	η	0.9	1.0		W/A	I_f=600mA
Optical Output Power	P_o		500		mW	I_f=600mA
Center Wavelength	λ_C	930	940	950	nm	I_f=600mA
Power Conversion Efficiency	PCE		40		%	I_f=600mA
Beam Divergence	Θ		25		°	Full width 1/e^2
Forward Voltage	V_f	1.7	2.1	2.3	V	I_f=600mA
Wavelength Shift	$\Delta\lambda/\Delta T$		0.07		nm/°C	I_f=600mA

Notes:

- Forward Voltage (V_f) measurement allowance is ±0.1V.
- Center Wavelength (λ_C) measurement allowance is ±1.5nm.
- Others measurement allowance is ±10%.
- Test DUTs are mounted on star board and measured with operating bias current @ 600mA, Duty Cycle: 10%.

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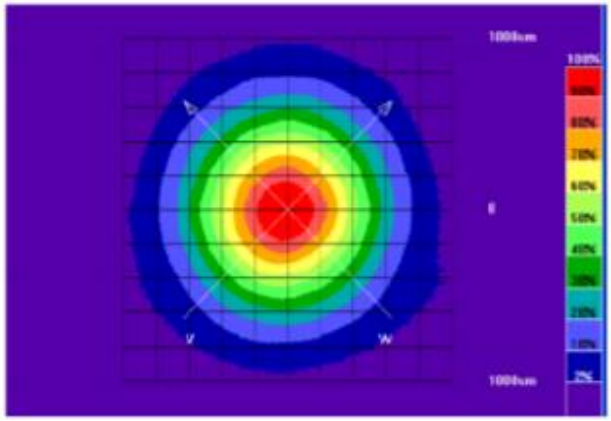
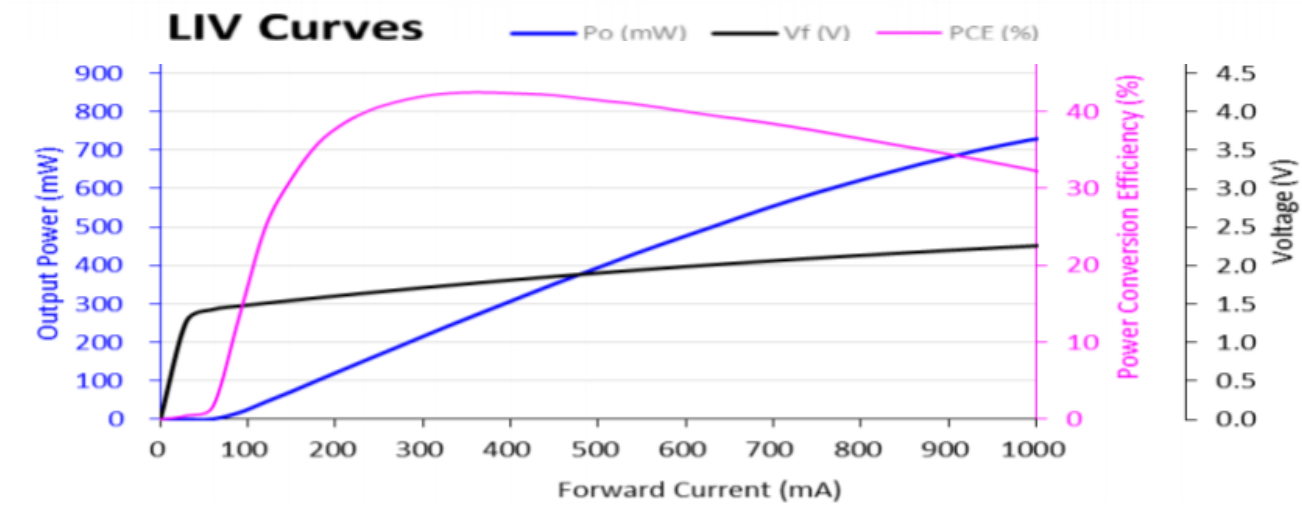
Typical Characteristics

Beam Divergence



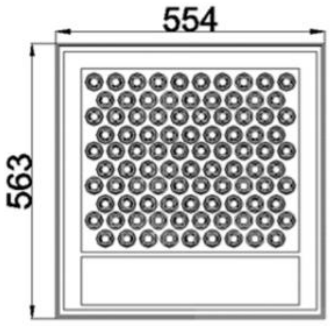
Full Width $1/e^2$: 25 degrees

LIV Graph at 25°C



Note: Curves measurement at 0 ~ 1A current sweep with 10% duty cycle.

Outline Dimensions (unit: μm)



Specification	Min.	Typ.	Max.
Chip width	539	554	569
Chip length	548	563	578
Chip thickness	105	120	135
Bond pad width	-	100	-

Additional Notes

- The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.
- Specifications are subject to change without notice.

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