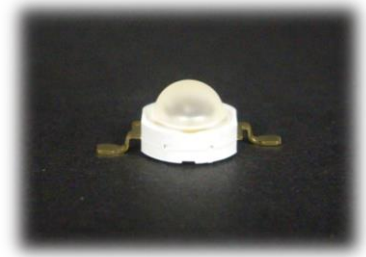


High Power VCSEL Emitter (850nm) YL-G1D-SK428001

Features

- High Slope Efficiency and Reliability
- Donut Free Beam Pattern
- Built-in ESD Protection Device (HBM > 2kV)
- Lead Free Reflow Solder JEDEC 020c Compatible
- RoHS Compliant



Application

- High power infrared illumination for surveillance systems
- Medical cosmetics
- Biometrics

Electro / Optical Characteristics⁽¹⁾

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Output Power	P_O	$I_F = 300\text{mA}$		140		mW
Forward Voltage	V_F	$I_F = 300\text{mA}$		2.1	2.5	V
Wavelength	λ_P	$I_F = 300\text{mA}$		850		nm
Spectral Width	$\Delta\lambda$	$I_F = 300\text{mA}$			4	nm
Beam Divergence ⁽²⁾	θ	$I_F = 300\text{mA}$			40	Degree

Notes:

1. All parameters except mentioned are measured at $I_F = 300\text{ mA}$, $T_a = 25^\circ\text{C}$.
2. Beam divergence is defined as the overall angle between the $1/e^2$ intensity points.

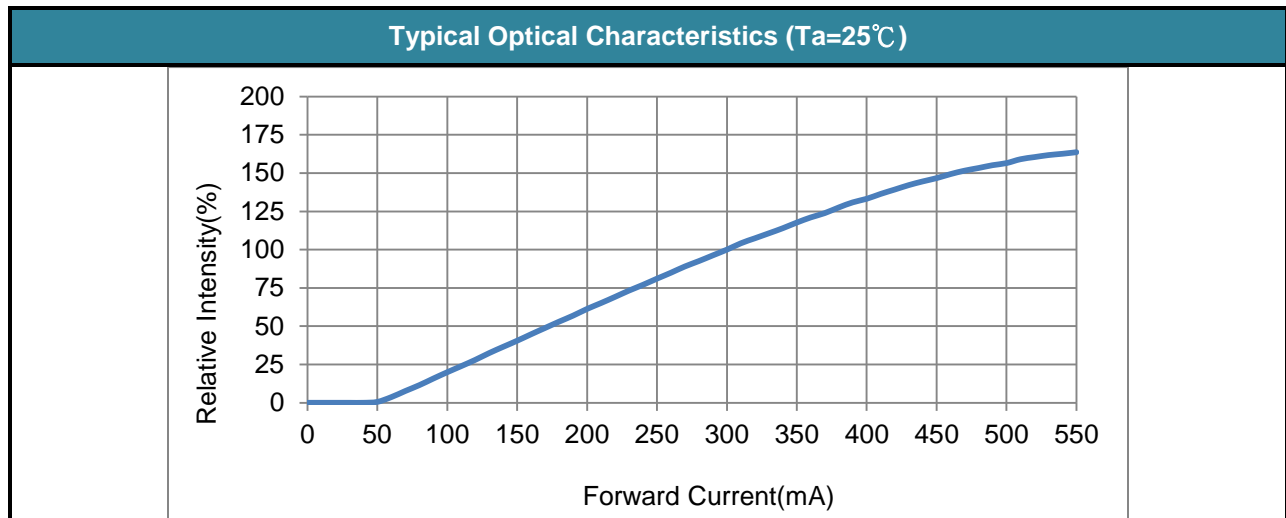
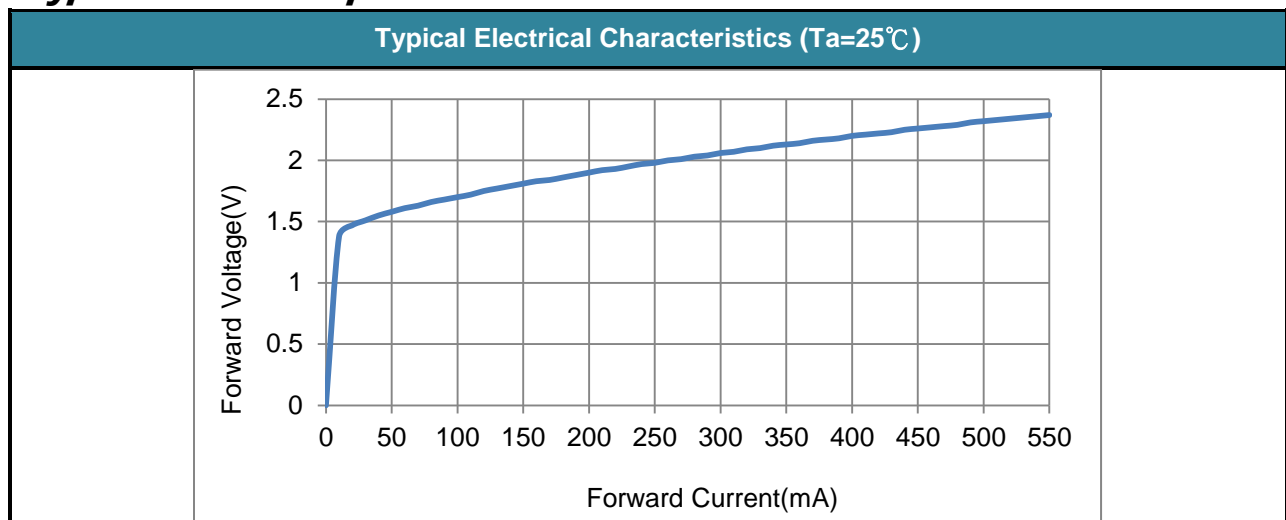
Thermal Characteristics

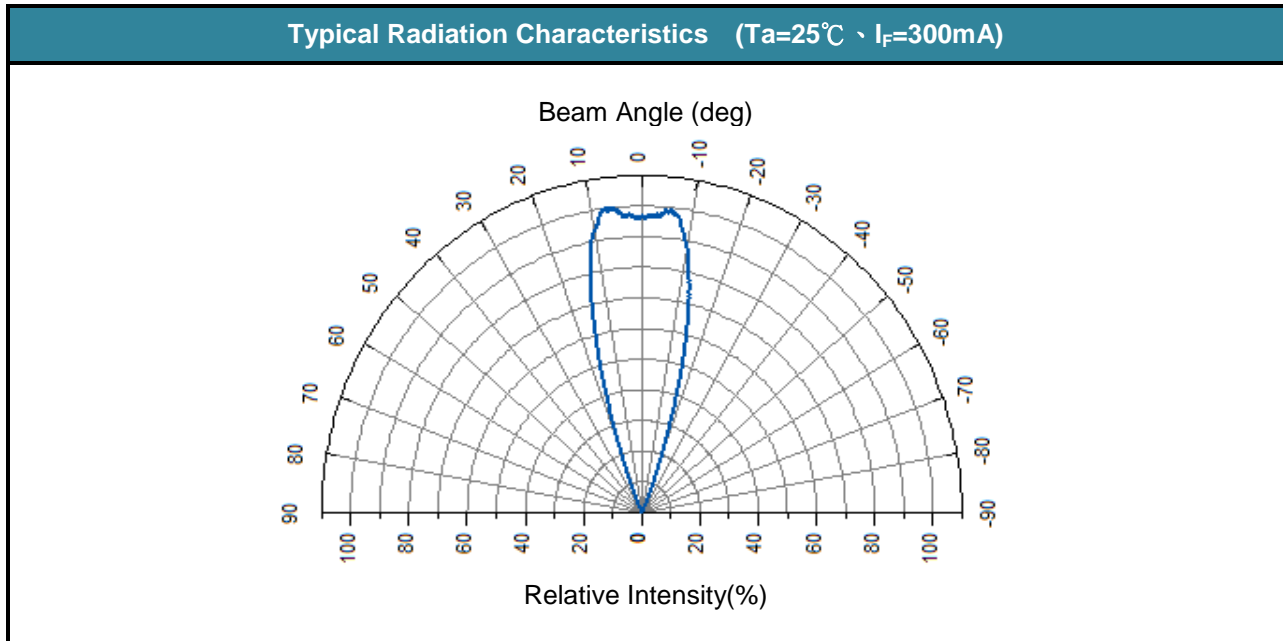
Parameter	Symbol	Condition	Min	Typ	Max	Unit
P_O Temperature Coefficient	P_O	$T_a = 0\sim 70^\circ\text{C}$ $I_F = 300\text{mA}$		-1.0		%/ $^\circ\text{C}$
V_F Temperature Coefficient	V_F	$T_a = 0\sim 70^\circ\text{C}$ $I_F = 300\text{mA}$		-2.5		mV/ $^\circ\text{C}$
λ_P Temperature Coefficient	λ_P	$T_a = 0\sim 70^\circ\text{C}$ $I_F = 300\text{mA}$		0.06		nm/ $^\circ\text{C}$

Absolute Maximum Ratings

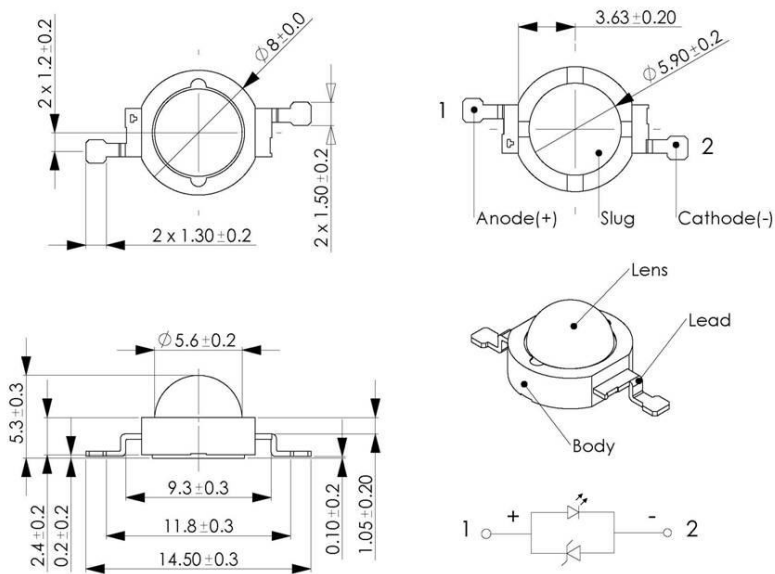
Parameter	Symbol	Condition	Rating	Unit
Storage Temperature	T_{stg}		-40 ~ 100	°C
Operating Temperature	T_{op}		0 ~ 70	°C
Junction Temperature	T_J		120	°C
Forward Current	I_F	$T_a = 25^\circ\text{C}$	300	mA
Power Dissipation	P_D	$T_a = 25^\circ\text{C}$, $I_F = 300\text{mA}$	0.75	W
Surge Current	I_{FSM}	$T_a = 25^\circ\text{C}$, $t_p < 100\mu\text{s}$, $D = 0$	1000	mA

Typical Electro / Optical Characteristics Curves





Outline Dimension

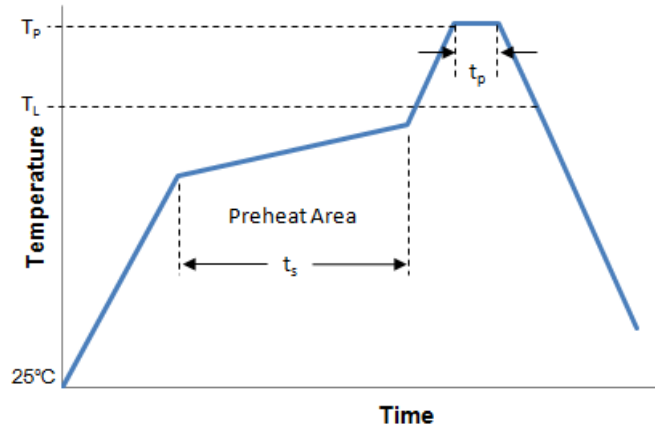


Code	Function
1	Anode
2	Cathode
Slug	Cathode

Notes:

1. The anode side of the device is denoted by a hole in the lead frame.
2. Electrical insulation between the case and the board is required. The slug of the device is no electrically neutral.
3. Drawings are not to scale.
4. All dimensions are all in millimeter.
5. All dimensions without tolerance are for reference only.

Reflow Soldering Condition



Profile Feature	Symbol	Lead Free Assembly	Unit
Ramp-Up Rate		3(Max)	°C/s
Preheat Temperature		150~200	°C
Preheat Time	t_s	60~120	s
Liquid Temperature	T_L	217	°C
Time Above Liquid Temperature		30~60	s
Peak Temperature	T_P	235	°C
Peak Time	t_p	10(Max)	s
Ramp-Down Rate		6(Max)	°C/s

Notes:

1. Careful about sudden rise in temperature as it may worsen the slump of solder paste.
2. Do not stress the silicon molding lens while it is exposed to high temperature.
3. Careful about slow cooling process as it may lead to the location of the transfer of parts and connection strength decreased.
4. Number of reflow process shall be one time.

Storage

1. Do not open the moisture proof bag before the devices are ready to use.
2. Before the package is opened, devices should be stored at temperatures less than 30°C and humidity less than 50%.
3. After the package is opened, devices should be stored at temperatures less than 30°C and humidity less than 30%.
4. Devices should be used within 168 hours after the package is opened.
5. Before using devices, baking treatment should be implemented based on the following conditions:
pre-curing at 60±5°C for 24 hours.

Warning

The VCSEL is a class III_b laser in the safety standard IEC/EN 60825 and should be treated as a potential eye hazard, products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC62471.

