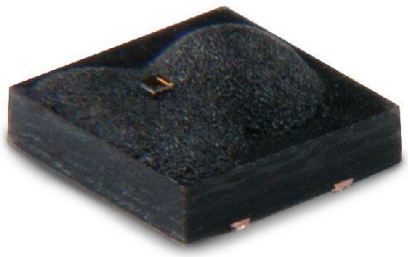
SharpDot™ Point Source LED



Overview

At Excelitas®, we focus on supplying the very best Point Source LEDs for our customers' applications. We provide Point Source LEDs in various red and true green diameters, including dots embedded in a reticle design.

Excelitas's RCLED technology is optimized for energy efficiency so you can extend your battery life beyond typical RCLEDs. The emission pattern from our RCLED is very narrow, minimizing stray light and allowing for a well-defined and uniform dot. The SharpDot Point Source LED can operate at very low currents, ideal for night vision applications. Moreover, our specially designed black encapsulation also helps minimize unwanted reflections.

While all Point Source LED designs need to be robust, durable and energy efficient, we recognize that every red dot application is different, and each customer has unique requirements. Whether your goal is reducing power consumption, reducing stray light, meeting night vision low current operation, special colors, adhering to extreme elements— or all of the above—we specialize in customer specific designs for your most demanding applications.

Excelitas' SharpDot Point Source LEDs are available in a variety of readily available dot sizes. Please talk with our application engineers for any special requirements or sizes you may have.

Key features

- RCLED technology
- High optical efficiency for long battery life.
- Matte black design minimizing reflections.
- Red (650 nm) Point source, standard sizes: 10, 25 & 50µm
- True green (525 nm) Point source, standard sizes: 10, 25 & 50 µm
- ROHS compliant
- Many options available:
  - Additional & custom dot sizes available
  - Custom reticle geometries
  - Assembly on Flex PCB

Ideal for

- Red Dot sights
- Green Dot sights
- Reflex sights

Red Single Dot

Absolute maximum ratings

Parameter	Symbol	Unit	Rating		
Maximum forward current	Max I_F	mA	Ø10 µm	Ø25 µm	Ø50 µm
Minimum forward current	Min I_F	µA	1	2	4
Reverse current	I_R	µA	Reverse operation not allowed		
Reverse voltage (T_A=25°C)	V_R	V	Reverse operation not allowed		
Operating temperature range	T_A	°C	-40 - +60 °C		
Storage temperature	T_S	°C	-40 - +80 °C		

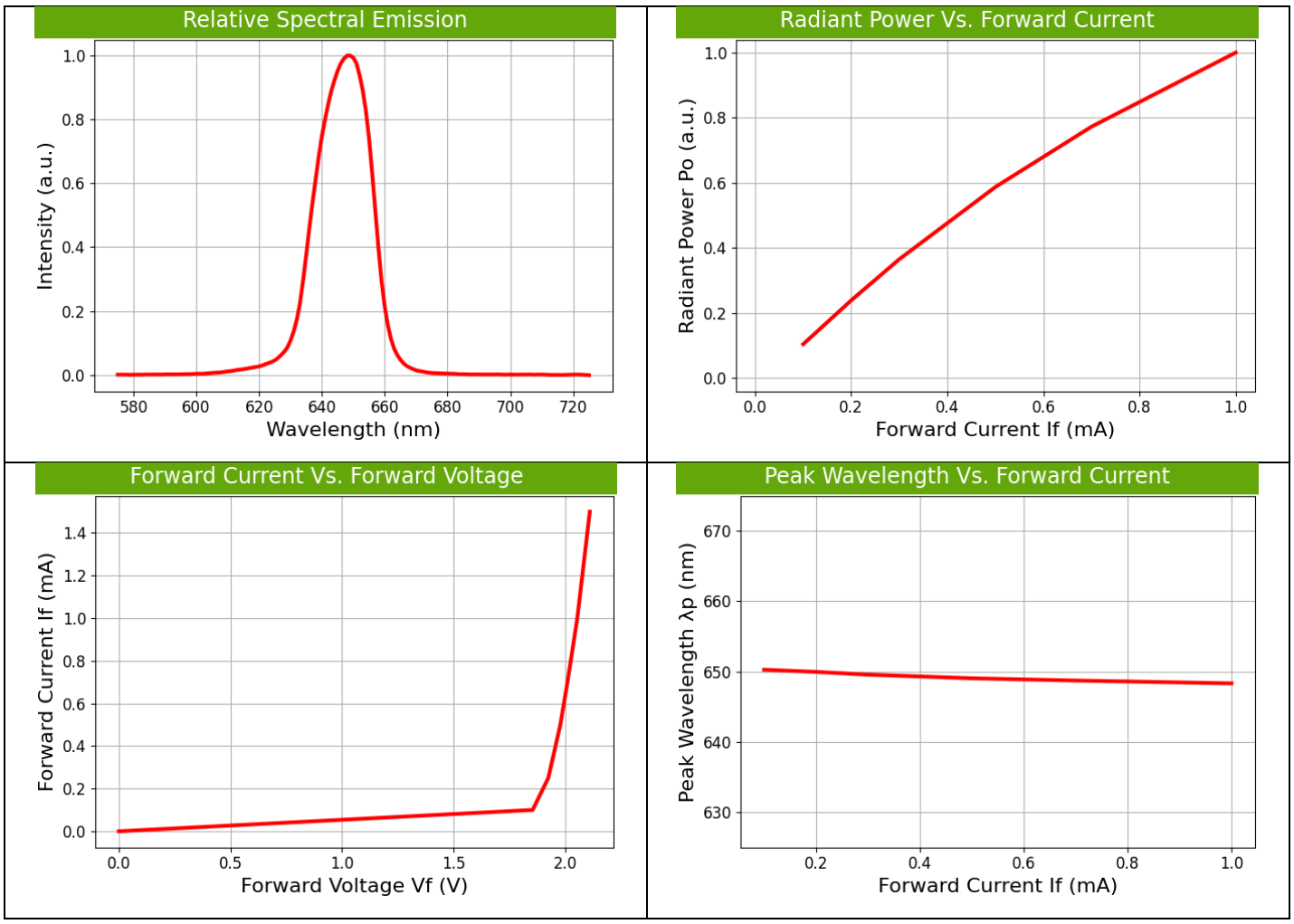
Electro-optical characteristics (T_A=25°C)*

Parameter	Symbol	Unit	Condition	Min	Rating			Max
					Ø10 µm	Ø25 µm	Ø50 µm	
Radiant flux	Po	µW	I=0.5 mA	-	15	45	65	
			I=1.0 mA		25	75	130	
Peak wavelength	λp	nm	I=0.5 mA	640	650			665
Forward voltage	V_f	V	I=0.5 mA	-	2			

*Example specifications, other colors and sizes are available on demand

Typical characteristic curves

Example curves for 25 µm dot diameter.



True Green Single Dot

Absolute maximum ratings

Parameter	Symbol	Unit	Rating
Maximum Forward current	Max I_F	mA	5
Minimum forward current	Min I_F	µA	0.01
Reverse current	I_R	µA	Reverse operation not allowed
Reverse voltage (T_A=25°C)	V_R	V	Reverse operation not allowed
Operating temperature range	T_A	°C	-40 - +60 °C
Storage temperature	T_S	°C	-40 - +80 °C

Electro-optical characteristics (T_A=25°C)*

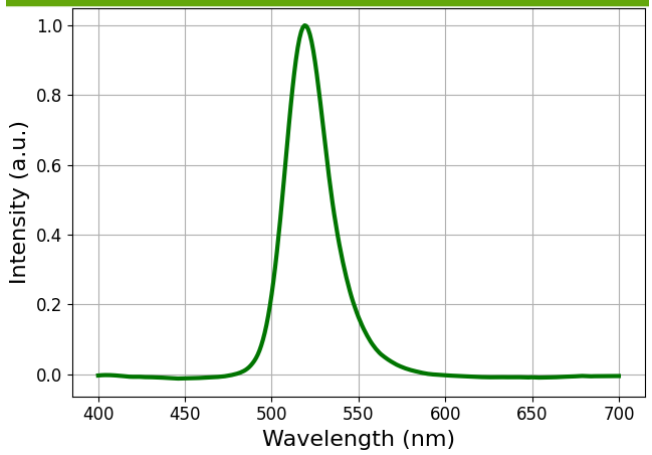
Parameter	Symbol	Unit	condition	Min	Typical			Max
					Ø10 µm	Ø25 µm	Ø50 µm	
Radiant flux	Po	µW	I=0.5 mA	-	0.6	2	5	-
			I=1.0 mA		1	4	11	
Peak wavelength	λp	nm	I=0.5 mA	520	525			530
Forward voltage	V_f	V	I=0.5 mA		2.6			3.3

*Example specifications, other colors and sizes are available on demand

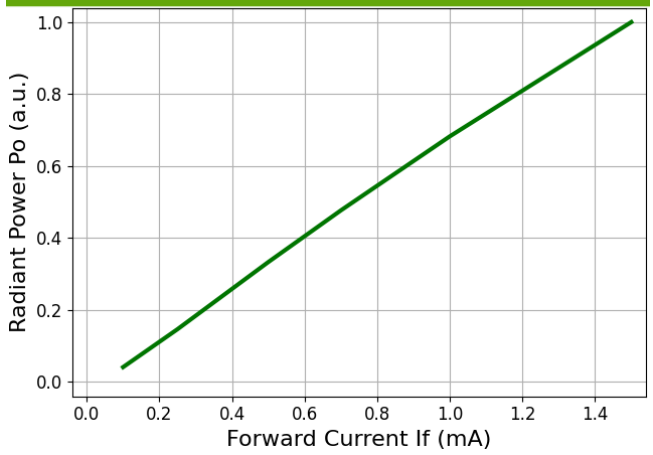
Typical characteristic curves

Example curves for 10 µm dot diameter.

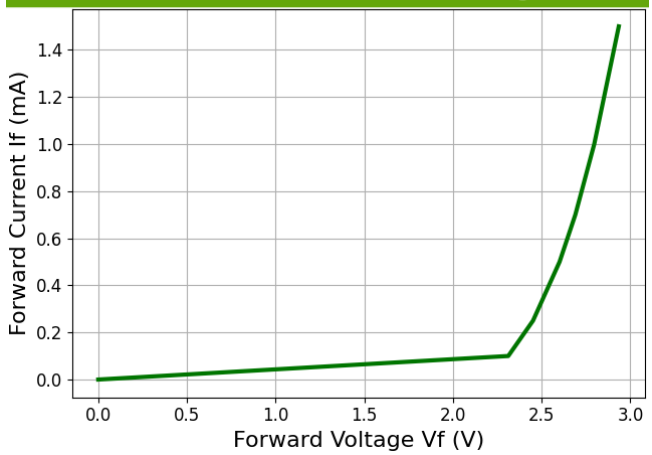
Relative Spectral Emission



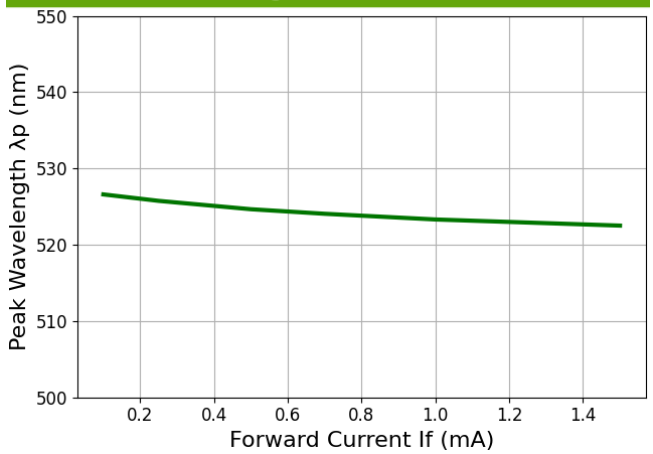
Radiant Power Vs. Forward Current



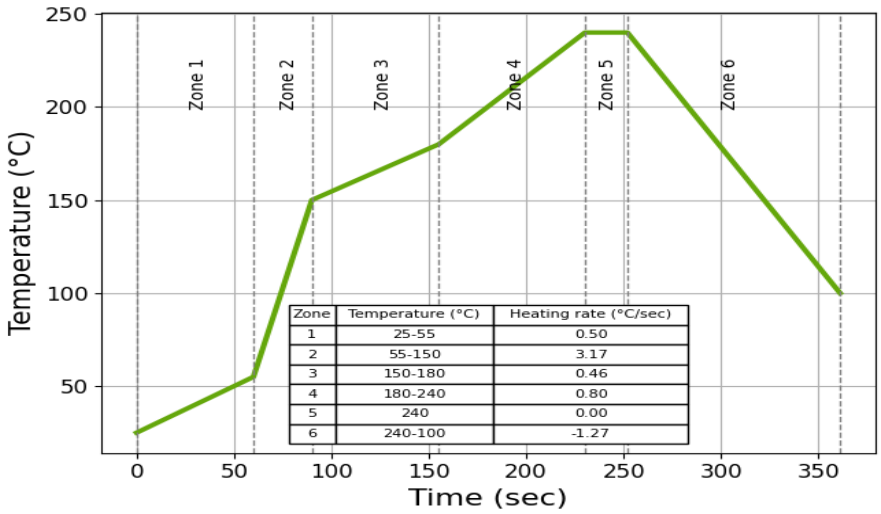
Forward Current Vs. Forward Voltage



Peak Wavelength Vs. Forward Current



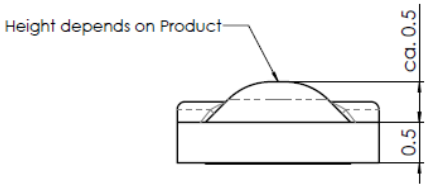
Reflow profile

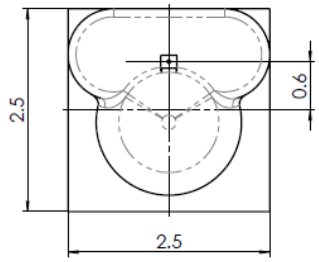


Zone	Temperature (°C)	Heating rate (°C/sec)
1	25-55	0.50
2	55-150	3.17
3	150-180	0.46
4	180-240	0.80
5	240	0.00
6	240-100	-1.27

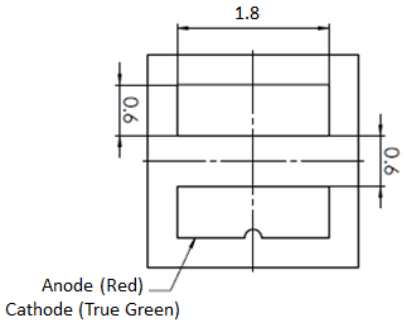
Mechanical outline – Single Dot

Unit: mm

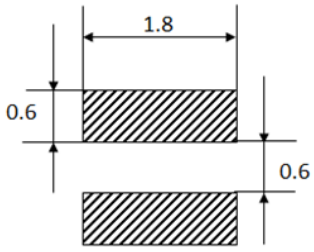




View on Top side

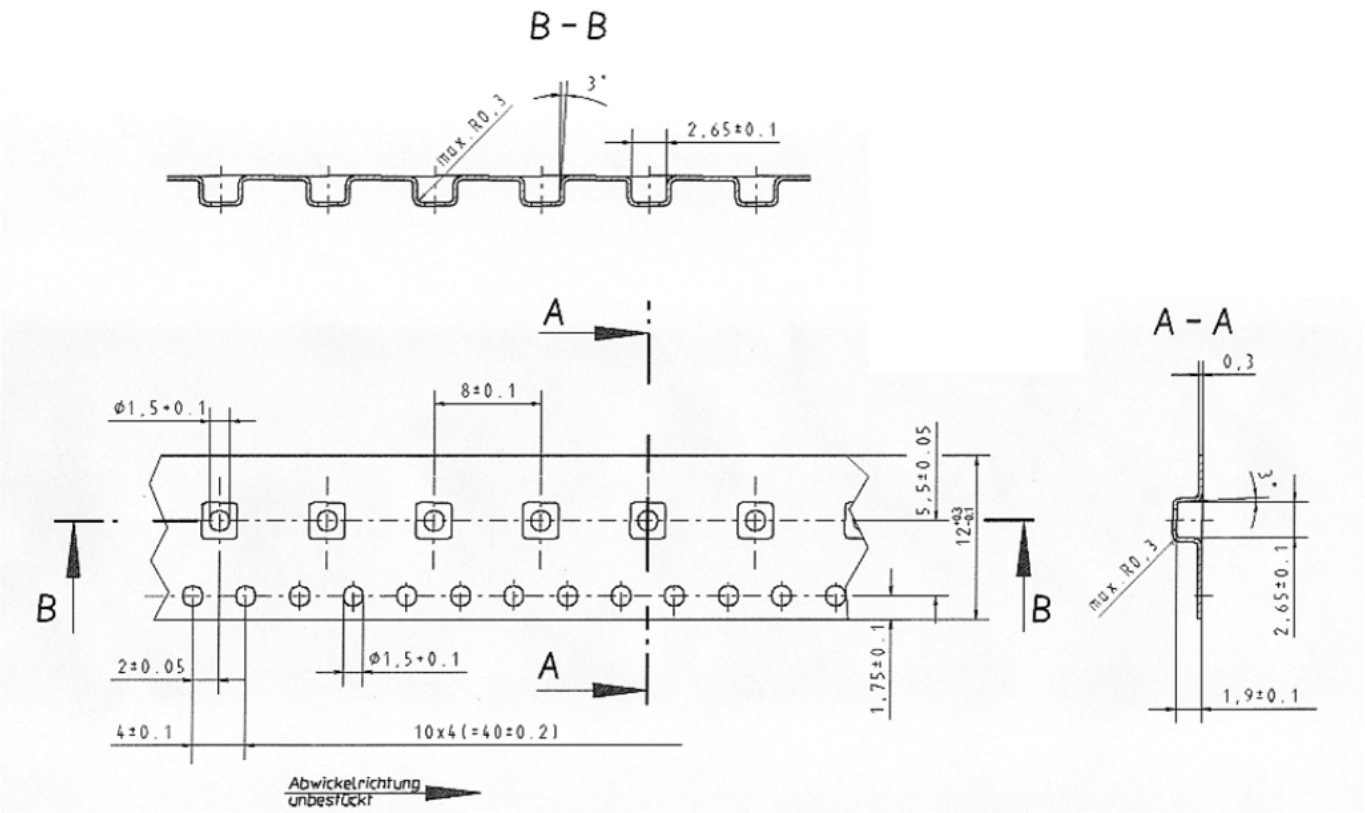


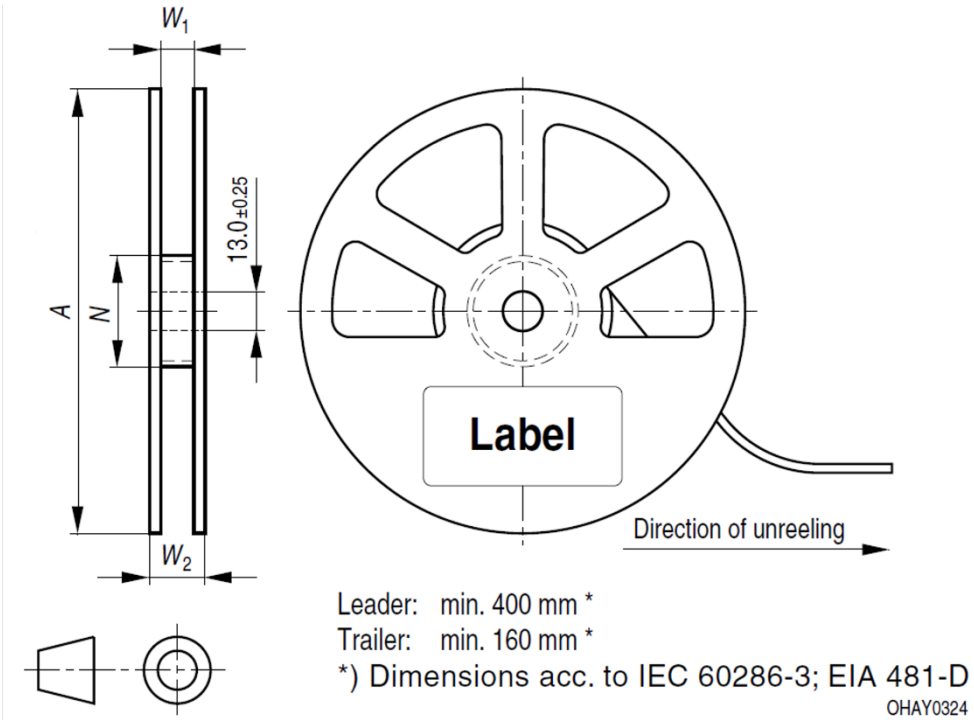
Bottom side (view through topside)



PCB Solder pad recommendation

Packaging


B - B
3°
max R0.3
2,65±0.1
A
A - A
8±0.1
ø1,5+0.1
5,5±0.05
12+0.3 -0.1
B
B
2±0.05
ø1,5+0.1
A
1,75±0.1
4±0.1
10x4(=40±0.2)
Abwickelrichtung
unbestückt
0,3
3°
max R0.3
2,65±0.1
1,9±0.1


W1
13.0±0.25
A
N
W2
Label
Direction of unreeling
Leader: min. 400 mm *
Trailer: min. 160 mm *
*) Dimensions acc. to IEC 60286-3; EIA 481-D
OHAY0324

Part Numbers

Color/Wavelength	Point Source Size	Part Number
Green 525 nm	10 µm	4303-355-000-34
Green 525 nm	25 µm	4303-355-000-30
Green 525 nm	50 µm	4303-355-000-33
Red 650 nm	10 µm	4303-355-000-25
Red 650 nm	25 µm	4303-355-000-35
Red 650 nm	50 µm	4303-355-000-28

About Excelitas

Excelitas is a leading provider of advanced, life-enriching technologies that make a difference, serving global market leaders in the life sciences, advanced industrial, next-generation semiconductor and avionics end markets. Headquartered in Pittsburgh, PA, USA, Excelitas is an essential partner in the design, development and manufacture of advanced technologies, offering leading-edge innovation in sensing, detection, imaging, optics and specialty illumination for customers worldwide.

Excelitas is at the forefront of addressing many of the relevant megatrends impacting the world today, including precision medicine, industrial automation, artificial intelligence, and connected devices (IoT).

For a complete listing of our global offices, visit www.excelitas.com/locations