

ROSCHWEGE GmbH

Germany

Datasheet



High Efficiency Violet LED Emitter

RSW-P05-405-2.pdf



Key Features

- High Efficacy Violet (385 – 410nm) UV LED emitter
- Ultra-small foot print – 4.4mm x 4.4mm
- Surface mount ceramic package with integrated glass lens
- Very low Thermal Resistance (4.2°C/W)
- Very high Radiant Flux density
- Electrically neutral thermal path
- JDEC Level 1 for Moisture Sensitivity Level
- Lead (Pb) free and RoHS compliant
- Emitter available on Star MCPCB (optional)

Typical Applications

- Ink and adhesive curing
- Forensics
- Dental Curing and Teeth Whitening
- Counterfeit Identification
- Leakage Detection
- Sterilization and Medical
- DNA Gel

Description

The RSW-05-405-02 Violet LED emitter provides superoadiometric power in the wavelength range specifically required for sterilization, dental curing lights and numerous medical applications. With a 4.4mm x 4.4mm ultra-small footprint, this package provides exceptional optical power density. The radiometric power performance and optimal peak wavelength of this LED are matched to the response curves of dental resins, links and adhesives, resulting in a significantly reduced curing time. The patented design has unparalleled thermal and optical performance. The high quality materials used in the package are chosen to optimize light output, have excellent Violet resistance, and minimize stresses which results in monumental reliability and radiant flux maintenance.



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
DC Forward Current @T _c max 70°C		1000	mA
Peak Pulsed Forward Current @T _c max 70°C	IFP	1000	mA
Reverse Voltage	VR	See Note 1	V
Storage Temperature	Tstg	-40 ~ +150	°C
Soldering Temperature	Tsol	260	°C
ESD Sensitivity[5]	ESD Sensitive Device	Class 0 ANSI/ESDA/JEDEC	JS-001 HBM

1. LEDs are not designed to be reverse biased

Optical Characteristics @ T_c = 25°C

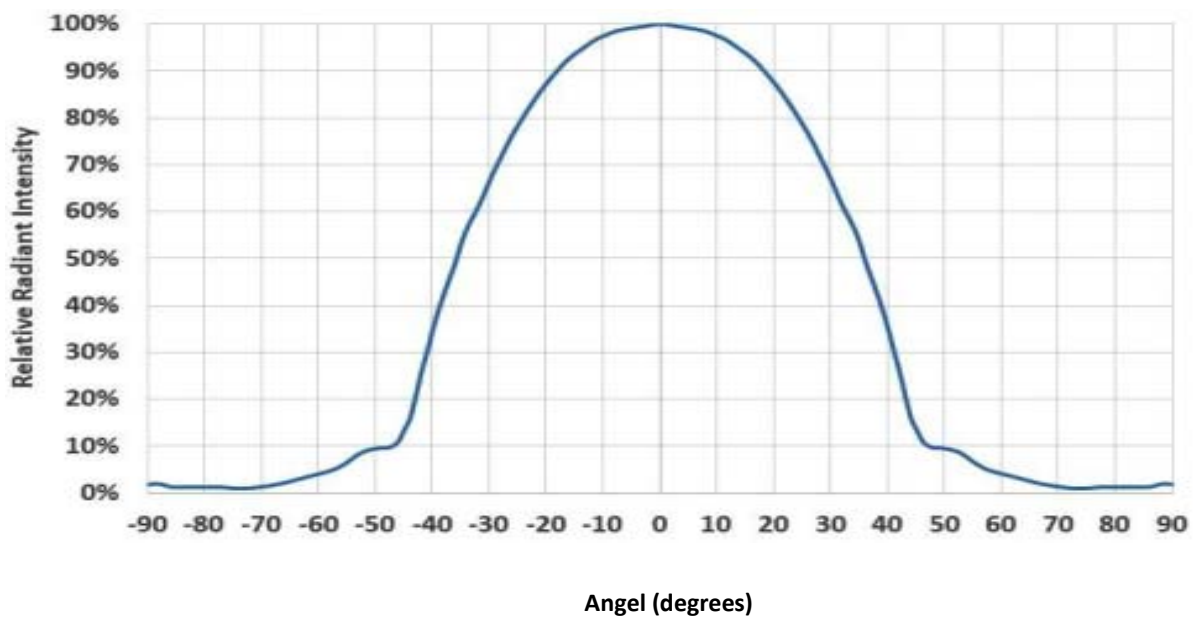
Parameter	Symbol	Min.	Typical	Unit
Radiant Flux IF = 700mA)	Φ	1150	1260	1050 mW
Radiant Flux (@ IF = 1000mA)	Φ	1570	1760	1430 mW
Peak Wavelength	λP	405		410 nm
Viewing Angle	2Θ1/2	68	68	68 Degrees
Total Included Angle	Θ0.9		95	100

Viewing Angle is the off axis angle from emitter centerline where the radiant power is ½ of the peak value
 Total Included Angle is the total angle that includes 90% of the total radiant flux.

Electrical Characteristics @ T_c = 25°C

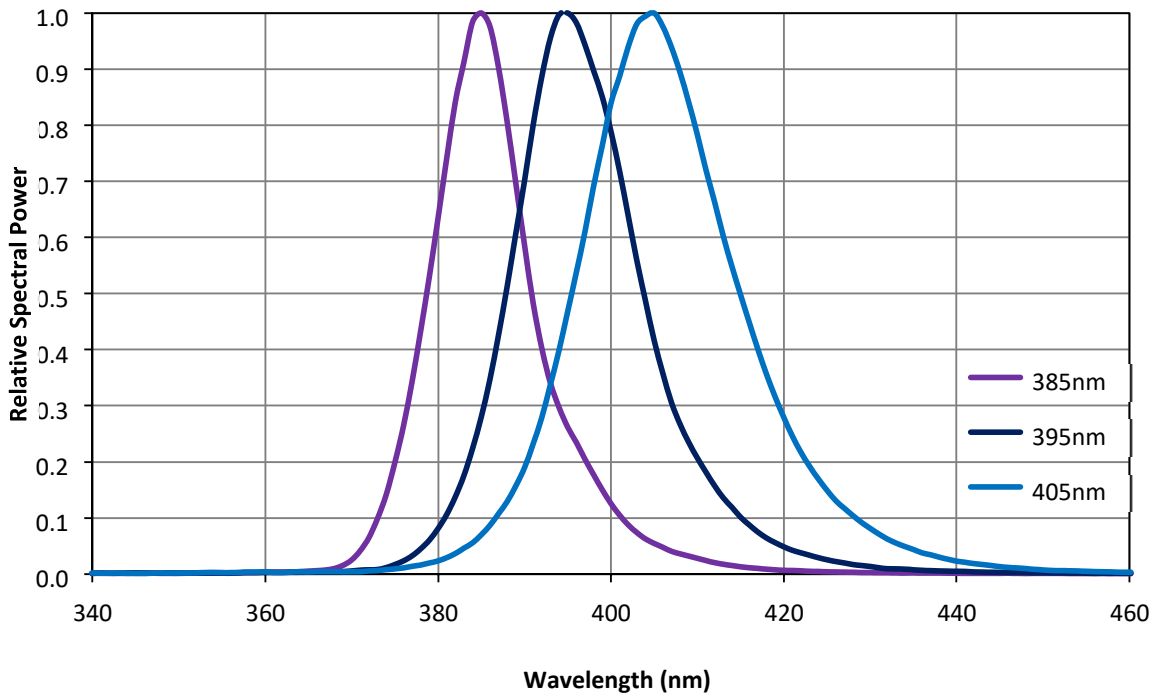
Parameter	Symbol	Typical	Unit
Forward Voltage (@ I _F = 700mA)	V _F	3,4	V
Forward Voltage (@ I _F = 1000mA)	V _F	3,5	V
Temperature Coefficient of V _F	ΔV _F /ΔT _J	-1,6	mV/°C
Thermal Resistance (Junction to Case)	R _{ΘJ-C}	4,2	°C /W

Typical Radiation Pattern



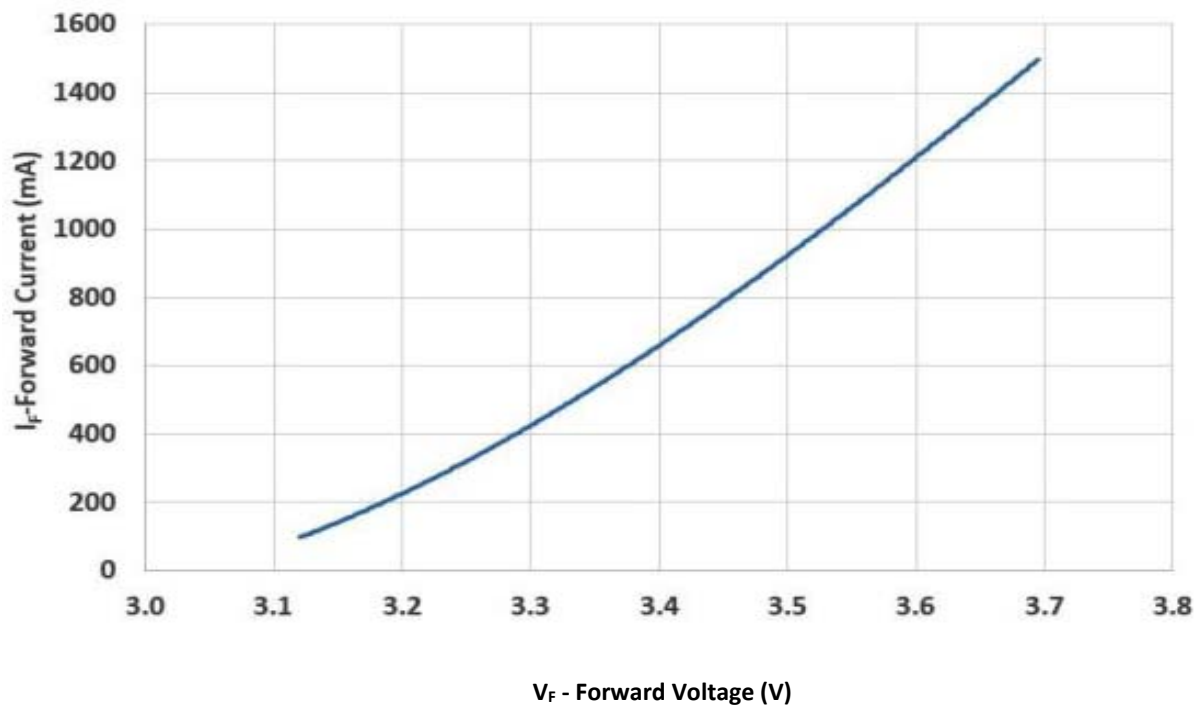
Typical representative spatial radiation pattern

Typical Relative Spectral Power Distribution



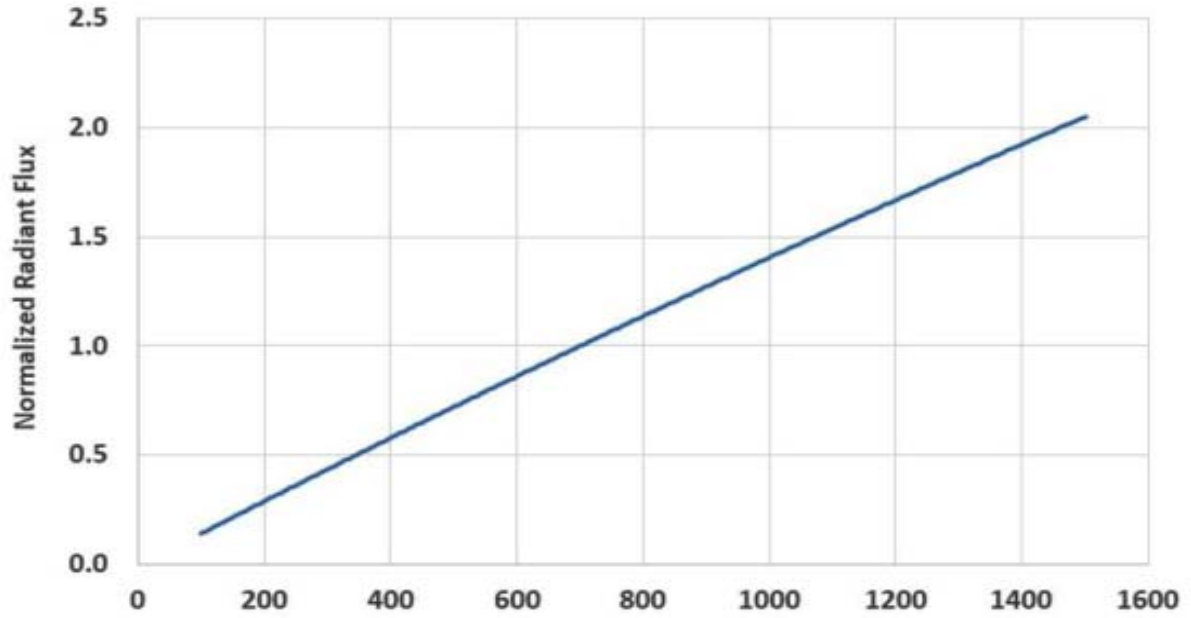
Relative spectral power vs. wavelength @ $I_F = 350\text{mA}$ and $T_C = 25^\circ\text{C}$.

Typical Forward Current Characteristics



Typical forward current vs. forward voltage @ $T_C = 25^\circ\text{C}$.

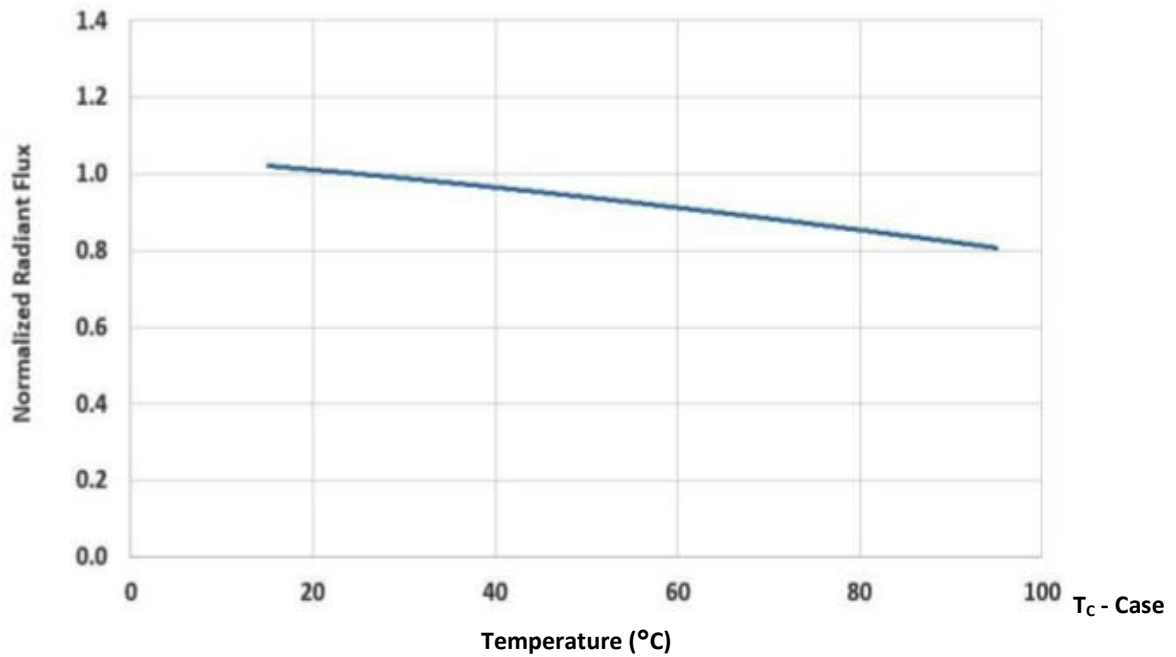
Typical Normalized Radiant Flux over Current



I_F - Forward Current (mA)

Typical normalized radiant flux vs. forward current @ $T_C = 25^\circ\text{C}$.

Typical Normalized Radiant Flux over Temperature



Typical normalized radiant flux vs. case temperature.

Typical Peak Wavelength Shift over Current

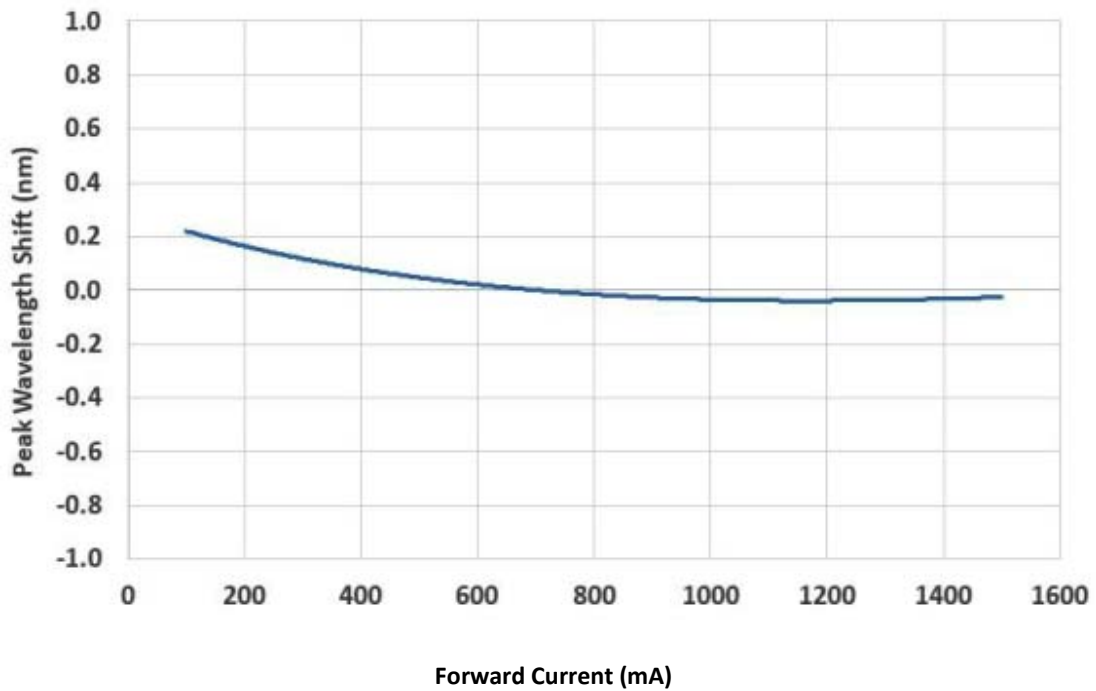
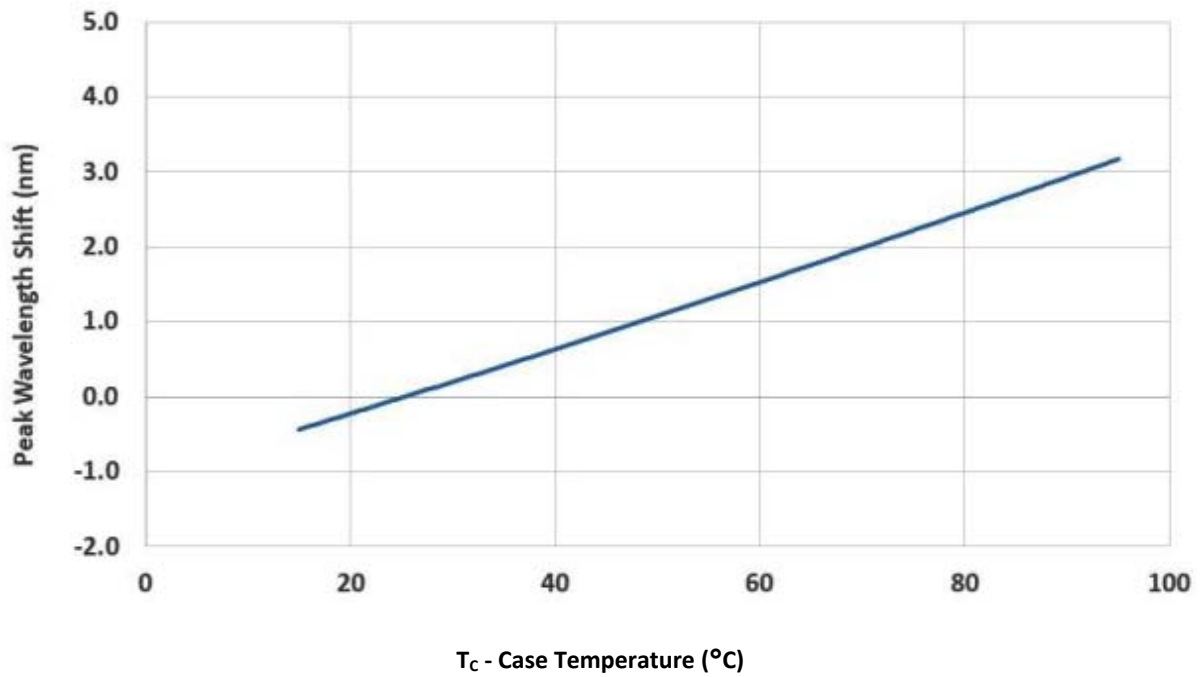


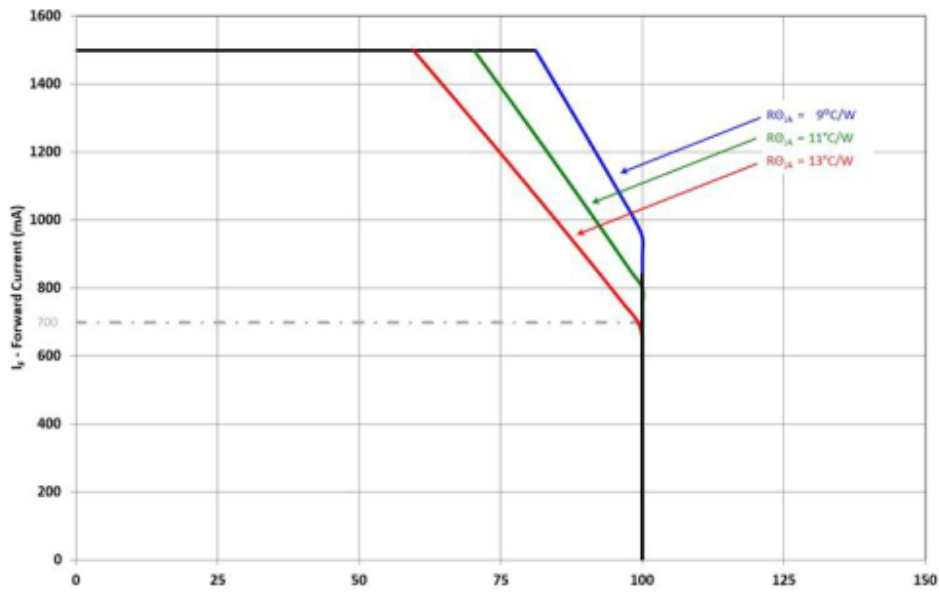
Figure 9: Typical peak wavelength shift vs. forward current @ $T_c = 25^\circ\text{C}$

Typical Peak Wavelength Shift over Temperature



Typical peak wavelength shift vs. case temperature.

Current De-rating



T_A - Ambient Temperature (°C)

Maximum forward current vs. ambient temperature

RO_{J-C} [Junction to Case Thermal Resistance] for the RSW-P05-405-2 is typically 4.2°C/W.

RO_{J-A} [Junction to Ambient Thermal Resistance] = RO_{J-C} + RO_{C-A} [Case to Ambient Thermal Resistance]

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Technical LED-Solutions

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