

D a t a s h e e t

**High Efficacy Far Red LED Emitter
735nm / 5W**



RSW-P05-735-0

- High Efficacy 5W Far Red LED
- Ultra-small foot print – 4.4mm x 4.4mm x 3.2mm
- Surface mount ceramic package with integrated glass lens
- Very low Thermal Resistance (5.5°C/W)
- Very high Radiant Flux density
- New industry standard for Radiant Flux Maintenance (>90% at 100,000 Hours)
- Autoclave complaint (JEDEC JESD22-A102-C)
- JEDEC Level 1 for Moisture Sensitivity Level
- Lead (Pb) free and RoHS compliant
- Reflow solderable (up to 3 cycles)
- Emitter available on MCPCB (optional)

The **RSW-P05-735-0** Deep Red LED emitter provides 5W power in an extremely small package. The LED emitter provides superior radiometric power in the wavelength range specifically required for plants' chlorophyll a absorption. With a 4.4mm x 4.4mm x 3.2mm ultra-small footprint, this package provides exceptional radiant flux density. The patent-pending design has unparalleled thermal and optical performance. The high quality materials used in the package are chosen to optimize light output and minimize stresses which results in monumental reliability and lumen maintenance. The robust product design thrives in outdoor applications with high ambient temperatures and high humidity.

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
DC Forward Current	I_F	1500	mA
Peak Pulsed Forward Current	I_{FP}	2000	mA
Reverse Voltage	V_R	See Note 1	V
Storage Temperature	T_{stg}	-40 ~ +125	°C
Junction Temperature	T_J	125	°C
Soldering Temperature	T_{sol}	260	°C
Allowable Reflow Cycles		3	
ESD Sensitivity		> 8 kV HBM Class 3B JESD22-A114-D	

1) LEDs are not designed to be reverse biased

Optical Characteristics @ $T_c = 25^\circ\text{C}$

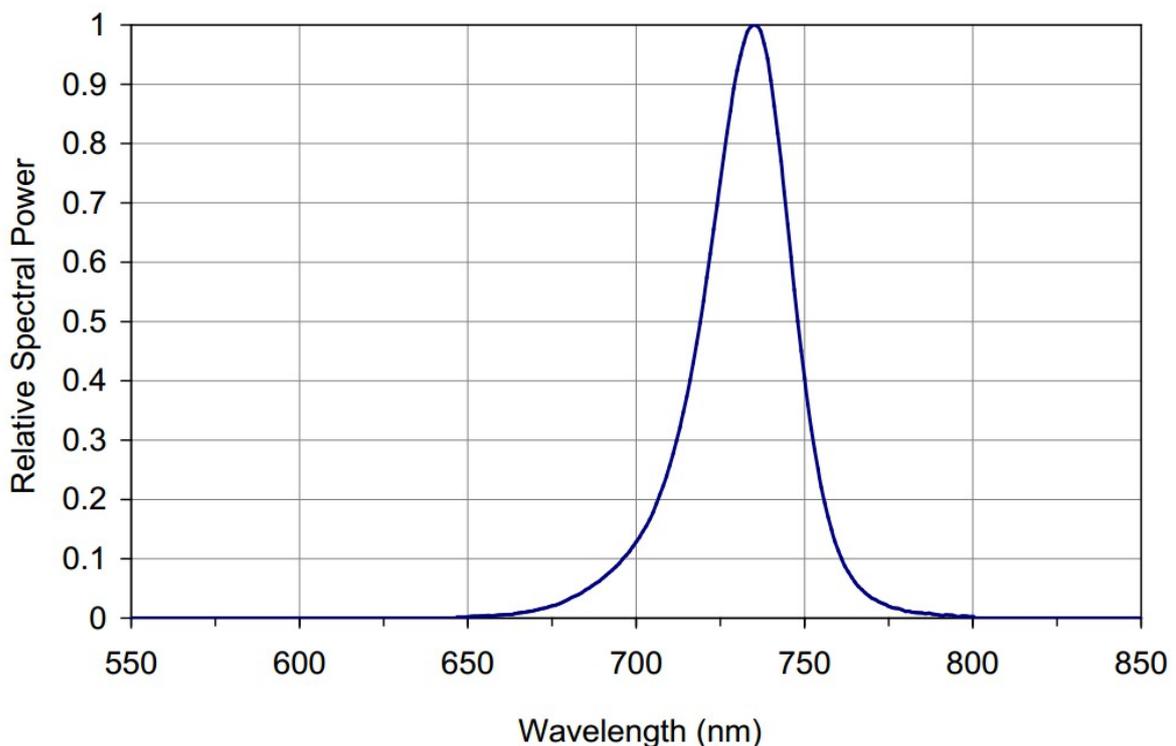
Parameter	Symbol	Typical	Unit
Radiant Flux (@ $I_F = 1000\text{mA}$)	Φ	310	mW
Radiant Flux (@ $I_F = 1500\text{mA}$)	Φ	405	mW
Peak Wavelength	λ_P	735	nm
Viewing Angle	$2\Theta_{1/2}$	90	Degrees
Total Included Angle	$\Theta_{0.9}$	130	Degrees

Electrical Characteristics @ $T_c = 25^\circ\text{C}$

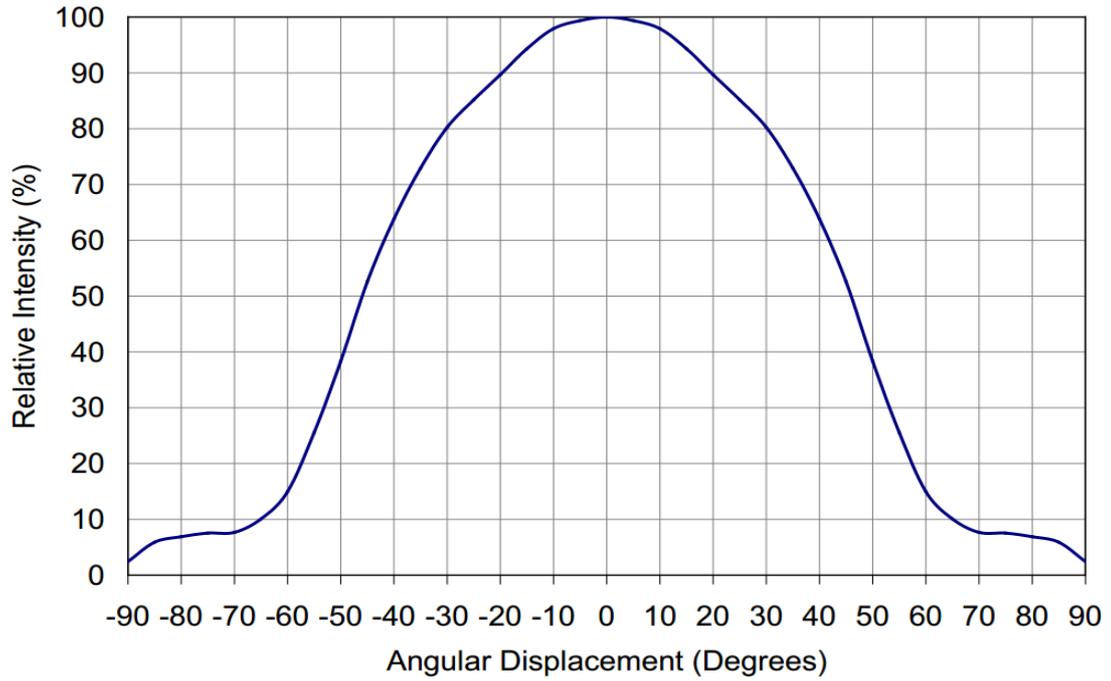
Parameter	Symbol	Typical	Unit
Forward Voltage (@ $I_F = 1000\text{mA}$)	V_F	2,4	V
Forward Voltage (@ $I_F = 1500\text{mA}$)	V_F	2,6	V
Temperature Coefficient of V_F	$\Delta V_F / \Delta T_J$	-2	mV/°C
Thermal Resistance (Junction to Case)	$R\Theta_{J-C}$	5,5	K/W

Based on long-term WHTOL testing, the manufacturer projects that the RSW Series will deliver, on average, 90% Radiant Flux Maintenance at 100,000 hours of operation at a forward current of 1000 mA. This projection is based on constant current operation with junction temperature maintained at or below 110°C

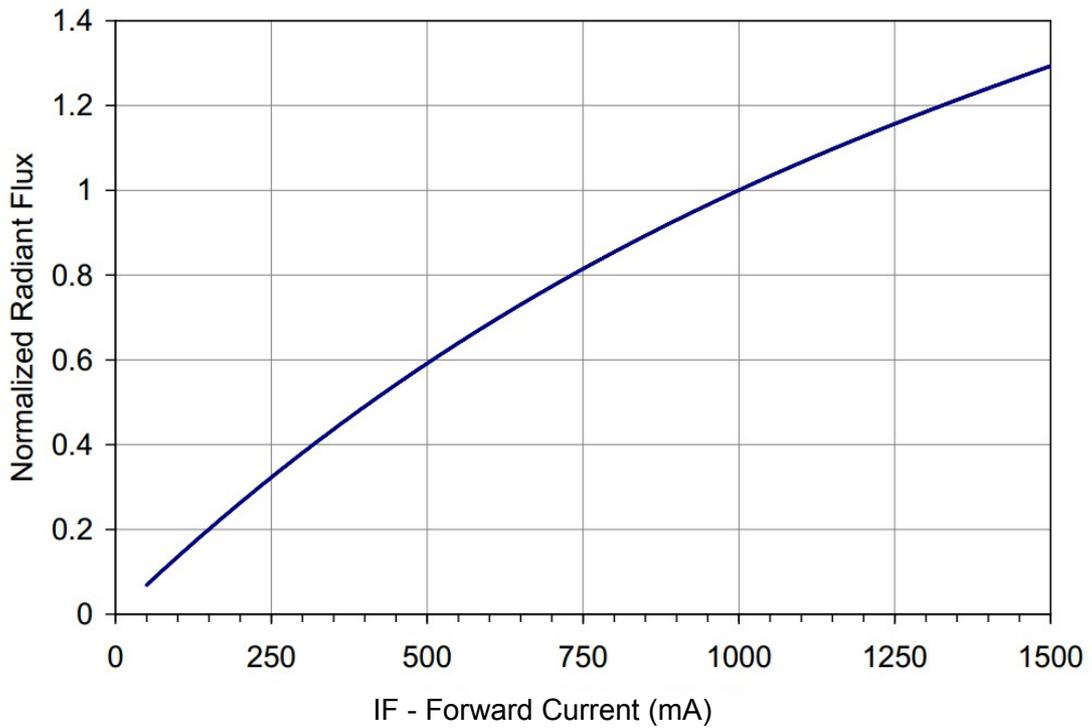
Relative Spectral Power vs. Wavelength @ $T_C = 25^\circ\text{C}$.



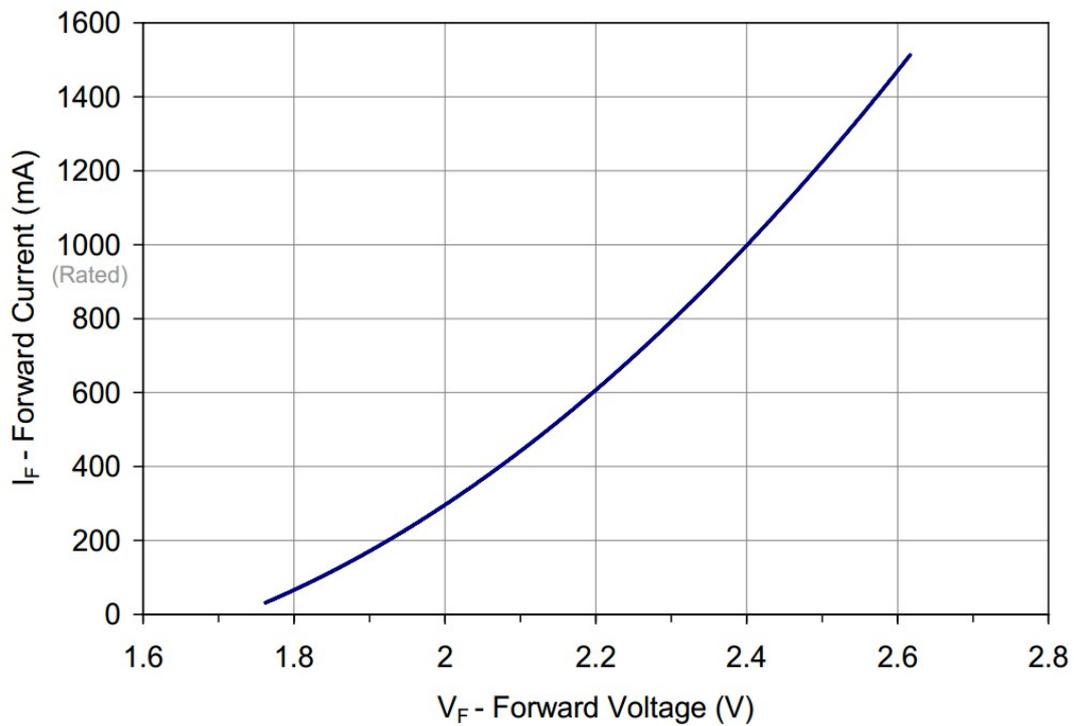
Typical Radiation Pattern



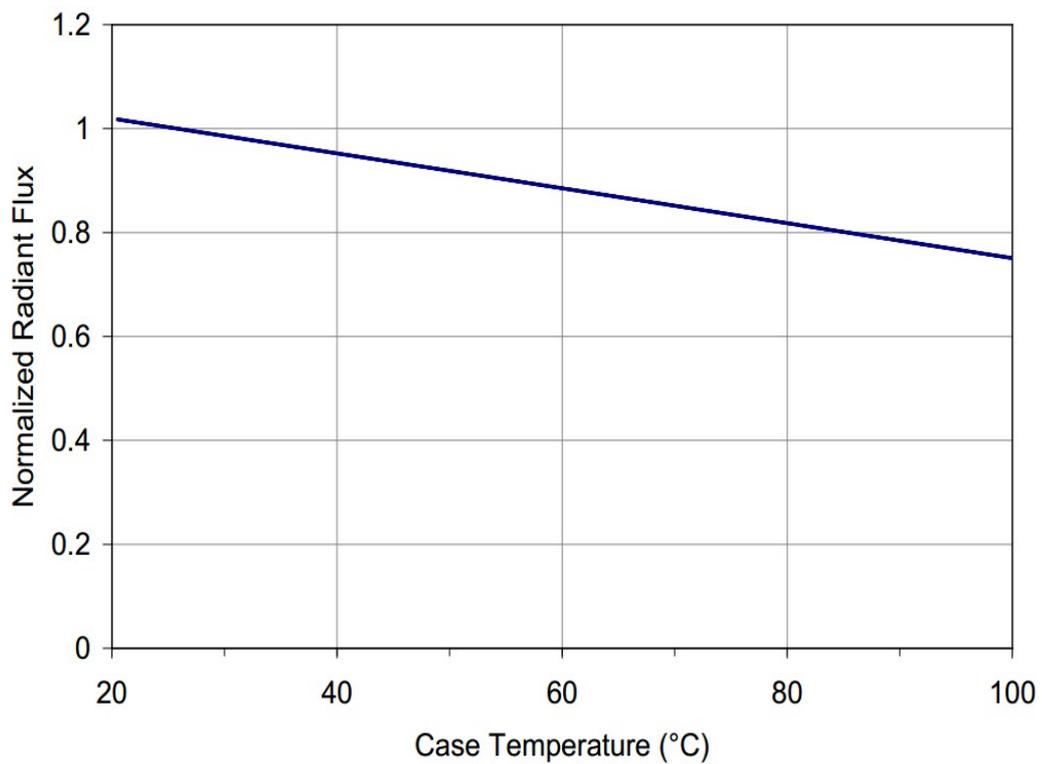
Typical Normalized Radiant Flux vs. Forward Current @ TC = 25°C.



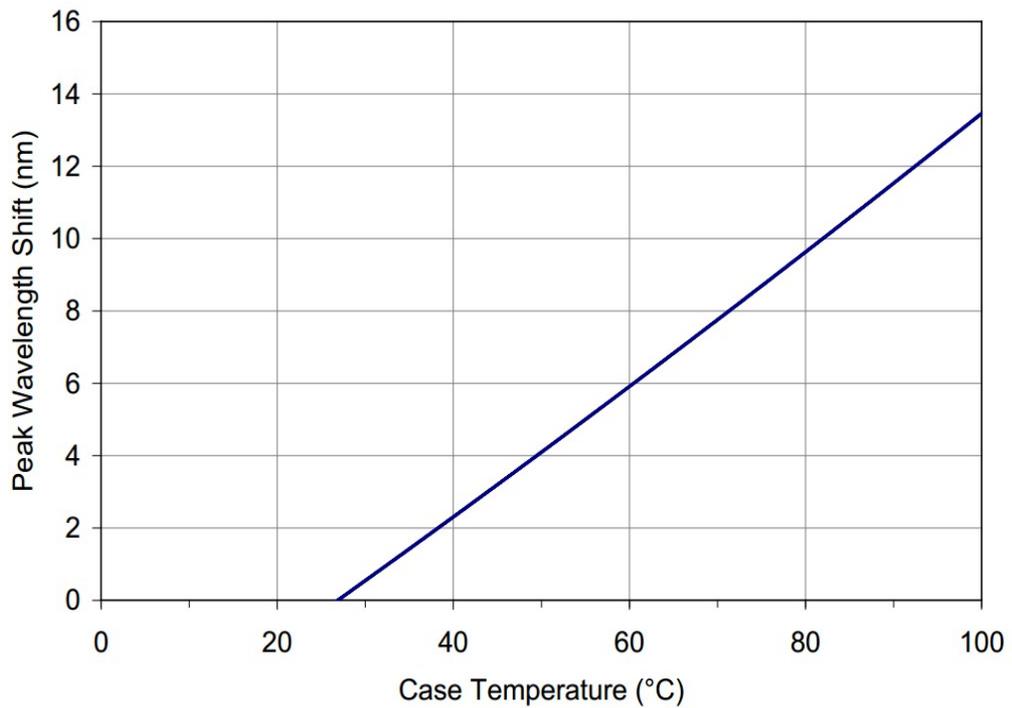
Typical Forward Current vs. Forward Voltage @ TC = 25°C.



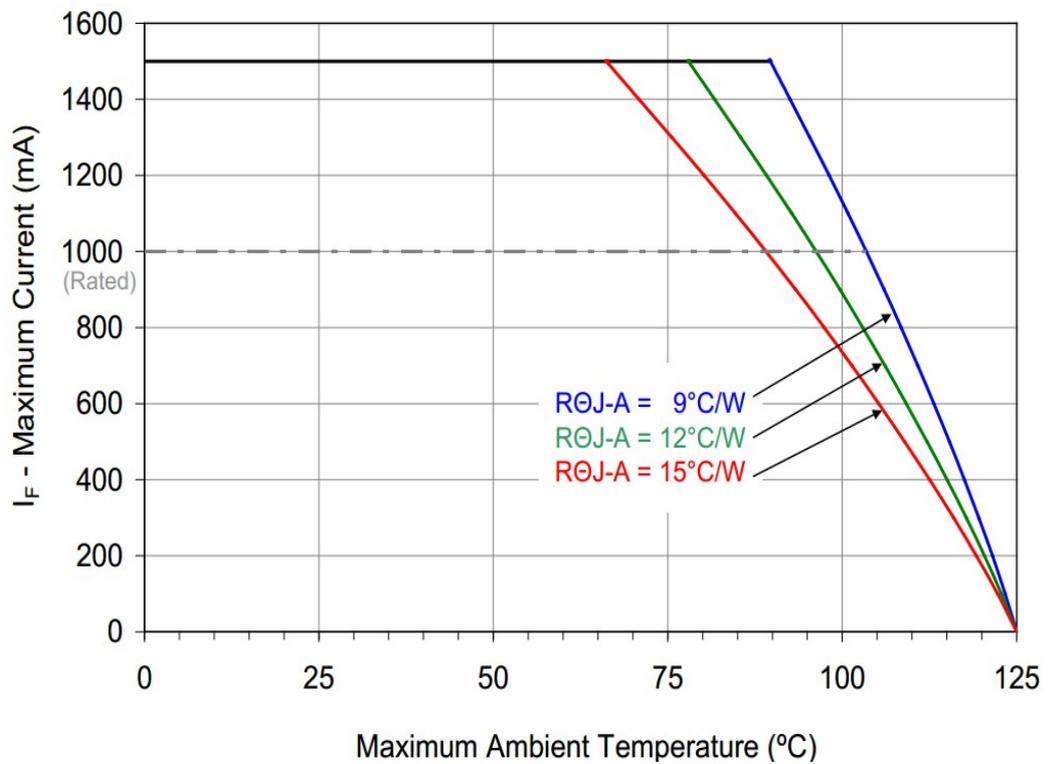
Typical Normalized Radiant Flux vs. Case Temperature.



Typical Peak Wavelength Shift over Temperature



Current Derating



1. RΘJ-C [Junction to Case Thermal Resistance] for the RSW-P05-735-0 is typically 5,5 K/W.
2. RΘJ-A [Junction to Ambient Thermal Resistance] = RΘJ-C + RΘC-A [Case to Ambient Thermal Resistance].

Notes:

ROSCHWEGE GmbH
Technical LED-Solutions

Germany

Technical modifications and errors reserved

