

D a t a s h e e t

**High Efficacy Far Red LED Emitter
850nm / 5W**



RSW-P05-850-0

- High Efficacy 850nm 5W Infrared LED
- Ultra-small foot print – 4.4mm x 4.4mm
- Surface mount ceramic package with integrated glass lens
- Very low Thermal Resistance (10.5°C/W)
- Very high Radiant Flux density
- Autoclave complaint (JEDEC JESD22-A102-C)
- JEDEC Level 1 for Moisture Sensitivity Level
- Lead (Pb) free and RoHS compliant
- Reflow solderable (up to 6 cycles)
- Emitter available on MCPCB (optional)

The **RSW-P05-850-0** Infrared LED emitter provides 5W power in an extremely small package. With a 4.4mm x 4.4mm 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 @TJMAX = 100°C	I _F	1200	mA
DC Forward Current @TJMAX = 125°C	I _F	1000	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		6	
ESD Sensitivity		> 8 kV HBM Class 3B JESD22-A114-D	

1) LEDs are not designed to be reverse biased

Optical Characteristics @ T_c = 25°C

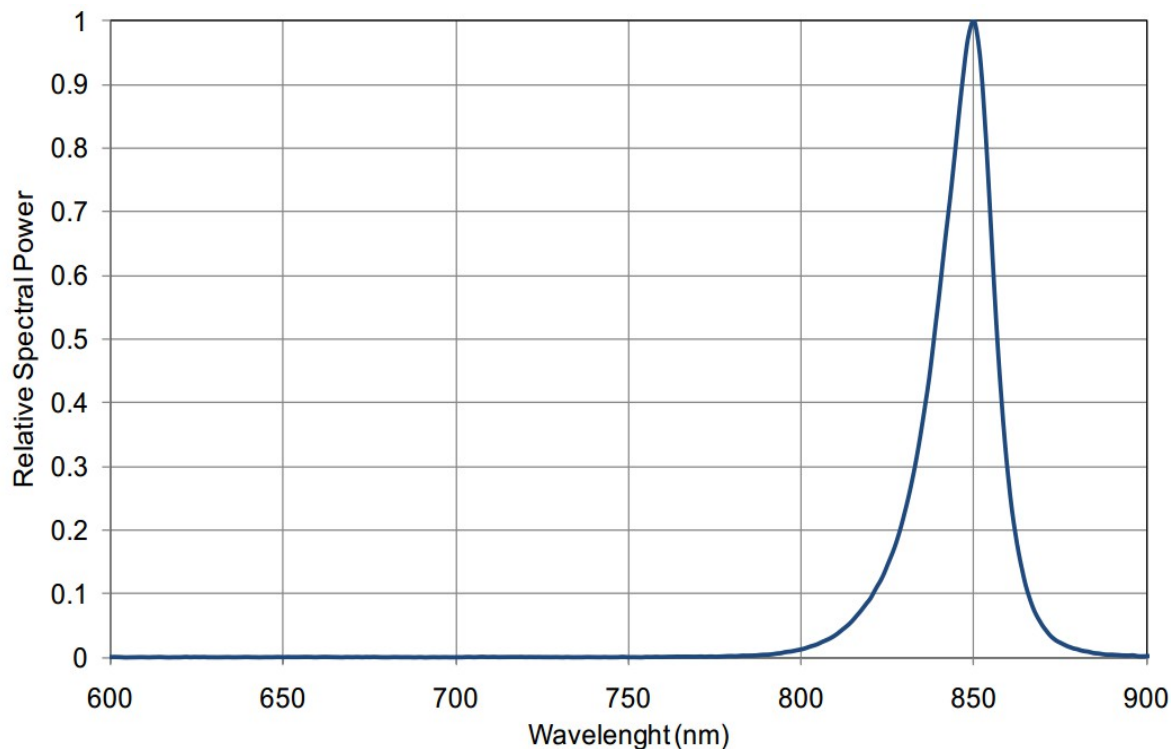
Parameter	Symbol	Typical	Unit
Radiant Flux (@ I _F = 1000mA)	Φ	470	mW
Radiant Flux (@ I _F = 1500mA)	Φ	600	mW
Peak Wavelength	λ _P	850	nm
Viewing Angle	2Θ _{1/2}	90	Degrees
Total Included Angle	Θ _{0,9}	130	Degrees

Electrical Characteristics @ T_c = 25°C

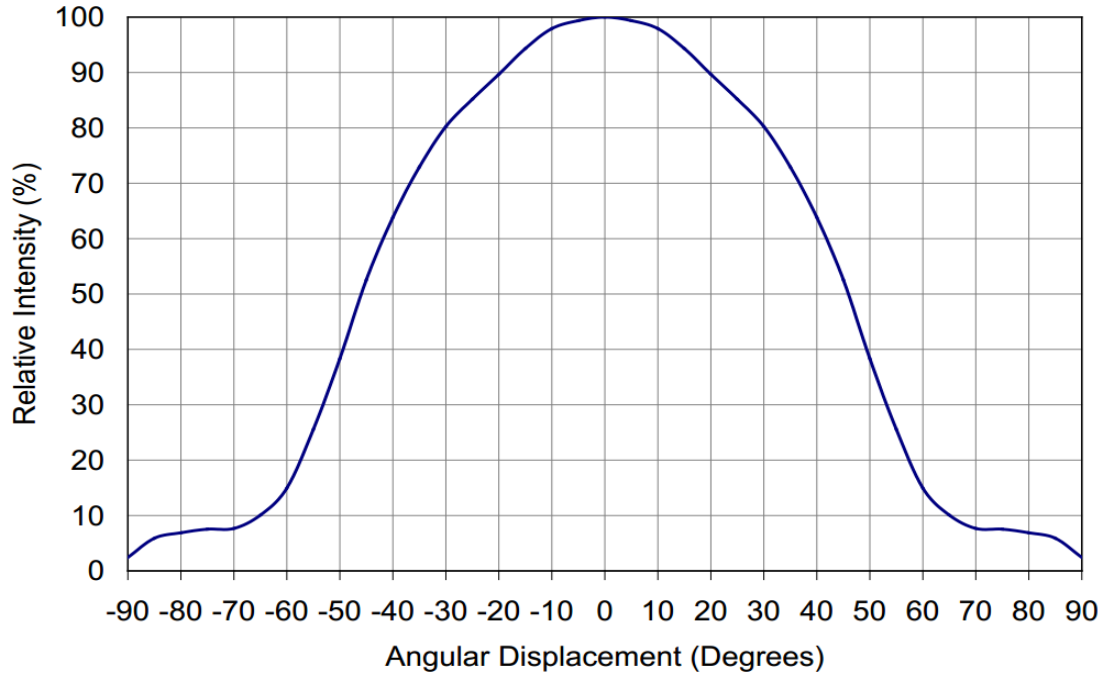
Parameter	Symbol	Typical	Unit
Forward Voltage (@ I _F = 1000mA)	V _F	2,3	V
Forward Voltage (@ I _F = 1500mA)	V _F	2,4	V
Temperature Coefficient of V _F	ΔV _F /ΔT _J	-2	mV/°C
Thermal Resistance (Junction to Case)	RΘ _{J-C}	10,5	K/W

Based on long-term WHTOL testing, the manufacturer projects that the RSW Series will deliver, on average, 70% Radiant Flux Maintenance at 65,000 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

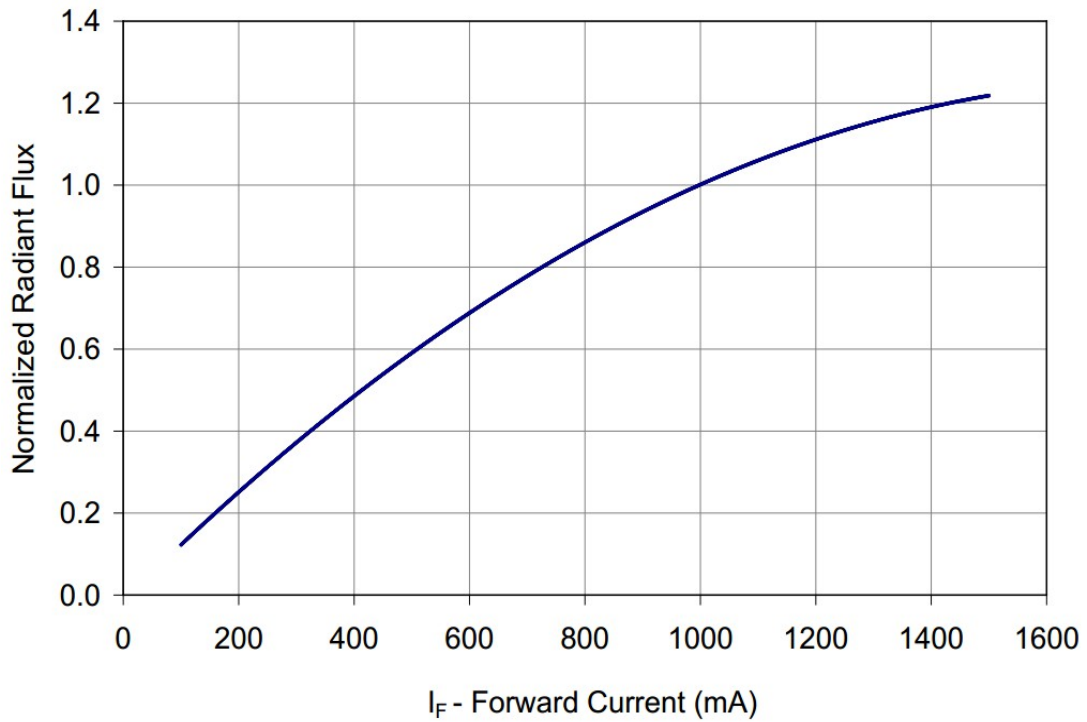
Relative Spectral Power vs. Wavelength @ T_C = 25°C.



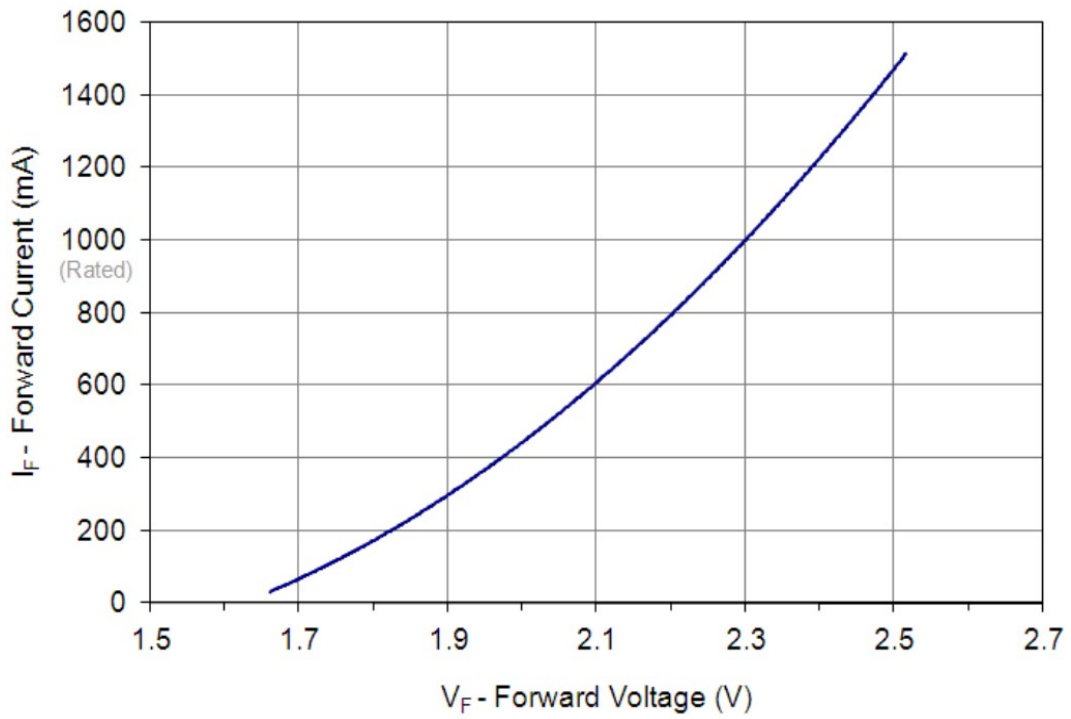
Typical Radiation Pattern



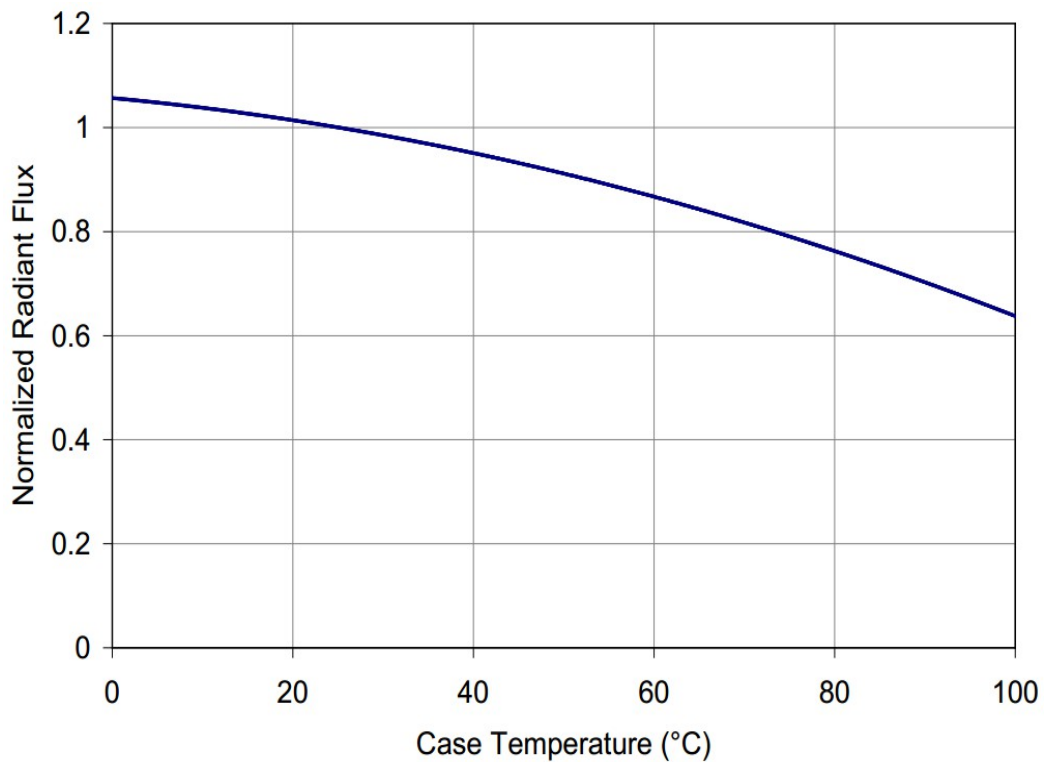
Typical Normalized Radiant Flux vs. Forward Current @ TC = 25°C.



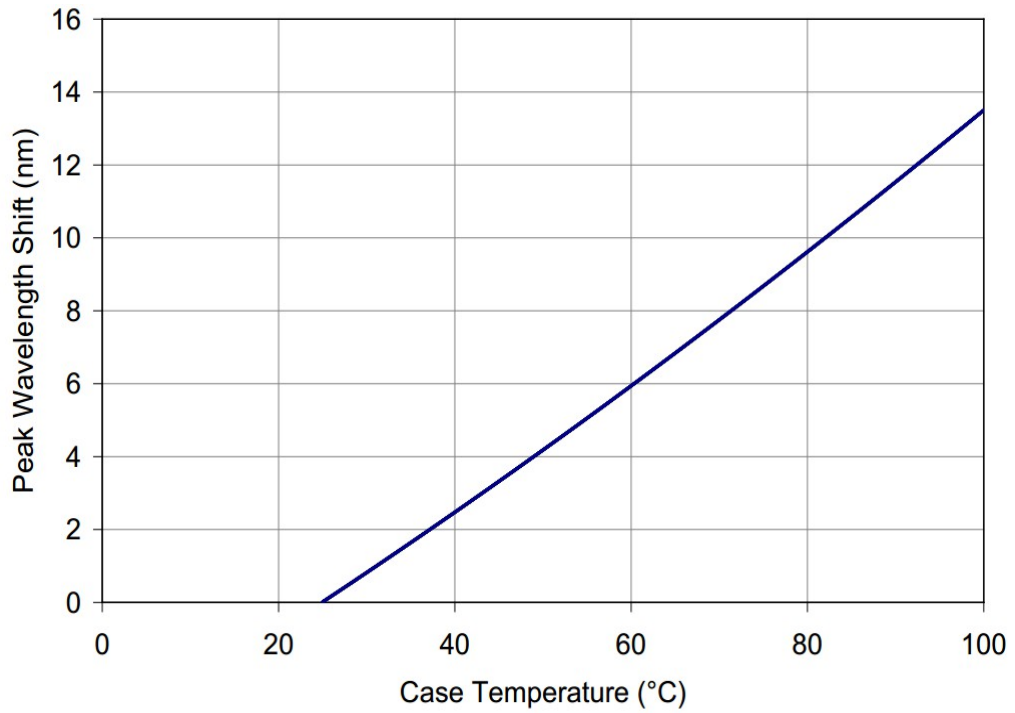
Typical Forward Current vs. Forward Voltage @ TC = 25°C.



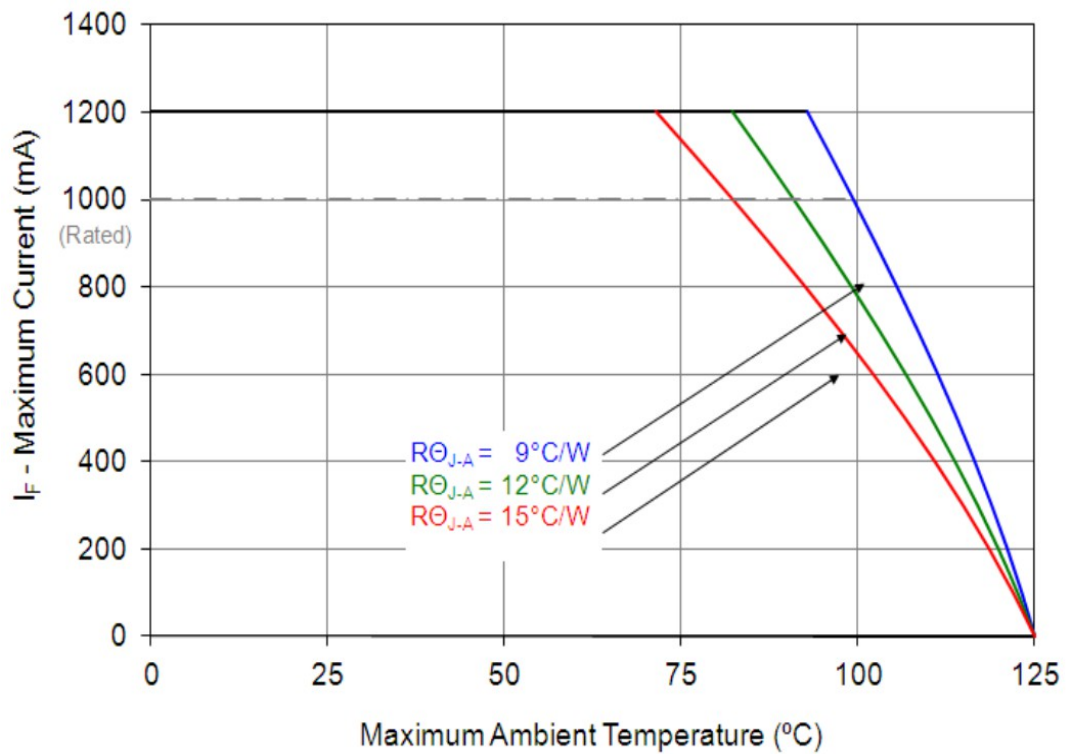
Typical Normalized Radiant Flux vs. Case Temperature.



Typical Peak Wavelength Shift over Temperature



Current Derating



1. R_{θJ-C} [Junction to Case Thermal Resistance] for the RSW-P05-8505-0 is typically 10,5 K/W.
2. R_{θJ-A} [Junction to Ambient Thermal Resistance] = R_{θJ-C} + R_{θC-A} [Case to Ambient Thermal Resistance].

Notes:

ROSCHWEGE GmbH
Technical LED-Solutions

Germany

Technical modifications and errors reserved

