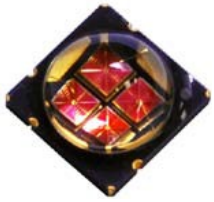
ROSCHWEGE GmbH
Germany

Datasheet

High Efficacy IR LED
850nm / 10W

RSW-P10-850-0



- High Efficacy 850nm 10W Infrared LED
- Ultra-small foot print – 7.0mm x 7.0mm
- Surface mount ceramic package with integrated glass lens
- Very low Thermal Resistance (1.1°C/W)
- Individually addressable die
- Very high Radiant Flux density
- Autoclave compliant (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 Serially Connected MCPCB (optional)

Description

The **RSW-P10-850-0** 850nm Infrared LED emitter provides 10W power in an extremely small package. With a 7.0mm x 7.0mm 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 at T_{jmax}=100°C	I_F	1200	mA
DC Forward Current at T_{jmax}=125°C	I_F	1000	mA
Peak Pulsed Forward Current	I_{FP}	1500	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		> 8,000 V 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 = 700mA)	Φ	1.80	W
Radiant Flux (@ I_F = 1000mA)	Φ	2.30	W
Peak Wavelength	λ_P	850	nm
Viewing Angle	$2\Theta_{1/2}$	95	Degrees
Total Included Angle	$\Theta_{0.9}$	110	Degrees

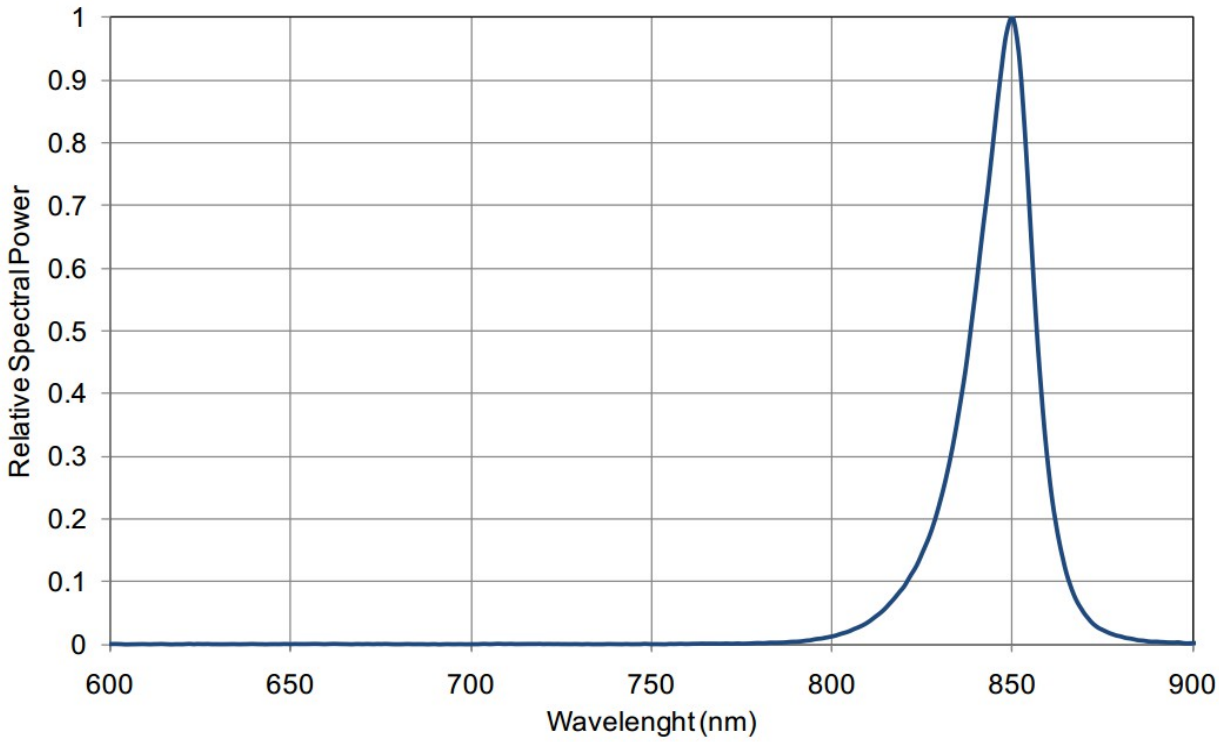
Electrical Characteristics @ T_C = 25°C

Parameter	Symbol	Typical 1 Die	Typical 4 Dies	Unit
Forward Voltage (@ IF= 700mA)	VF		8,6	V
Forward Voltage (@ IF= 1000mA)	VF		9,2	V
Temperature Coefficient of VF	ΔVF/ΔTJ		-8	mV/°C
Thermal Resistance (Junction to Case)	$R\Theta_{J-C}$		1,1	K/W

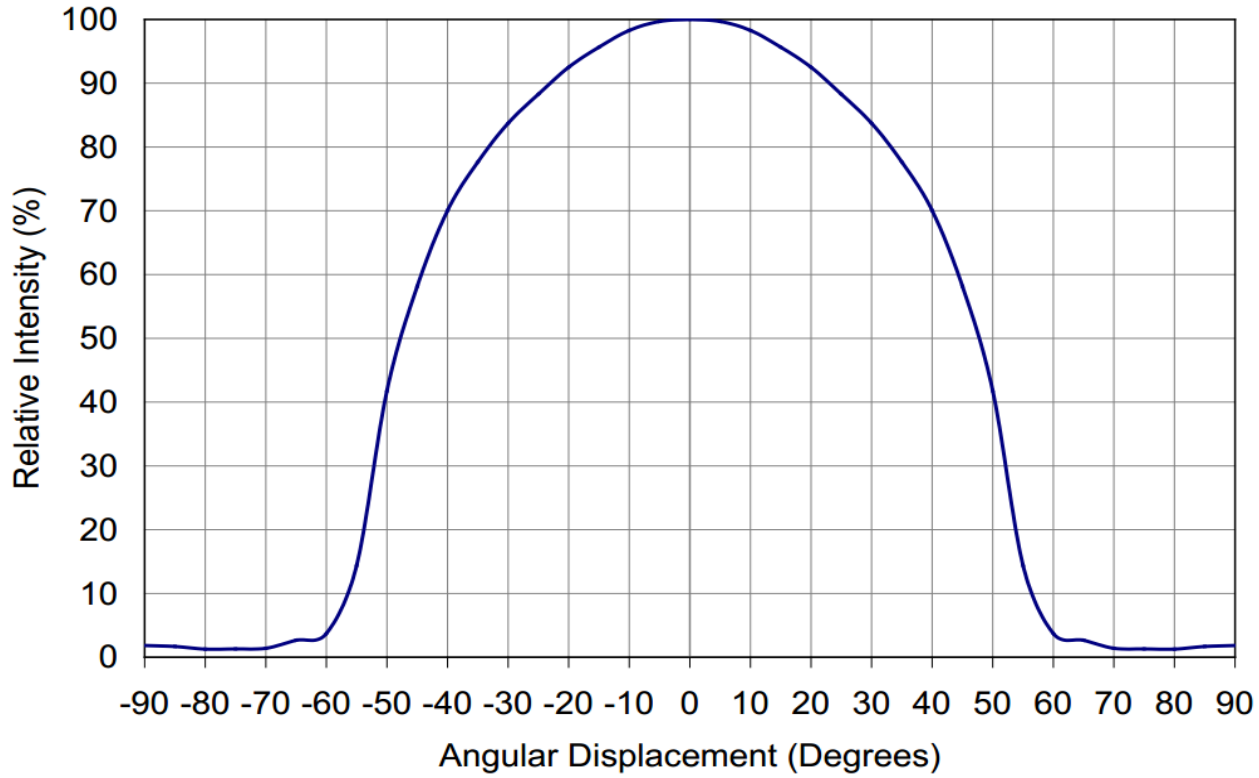
Average Radiant Flux Maintenance Projections

Based on long-term WHTOL testing, the Manufactor projects that the RSW Series will deliver, on average, 70% 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.

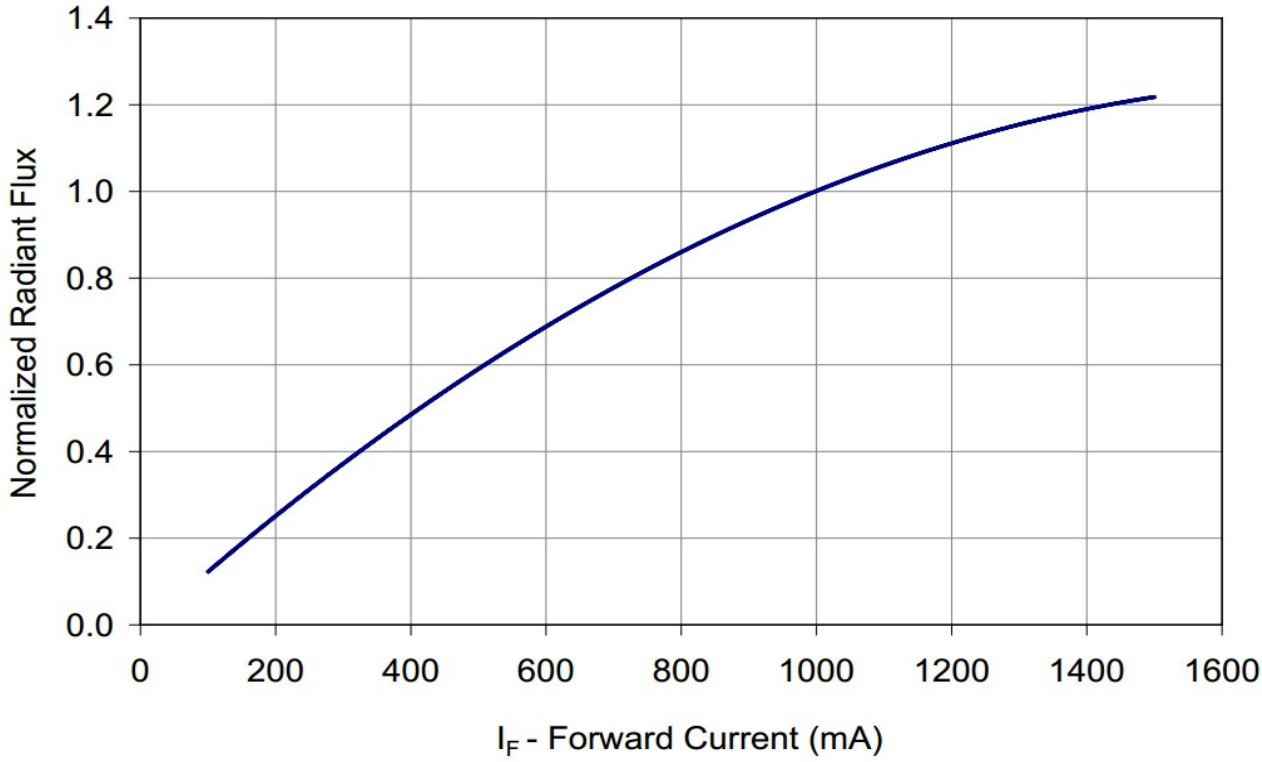
Relative Spectral Power vs. Wavelength @ TC = 25°C.



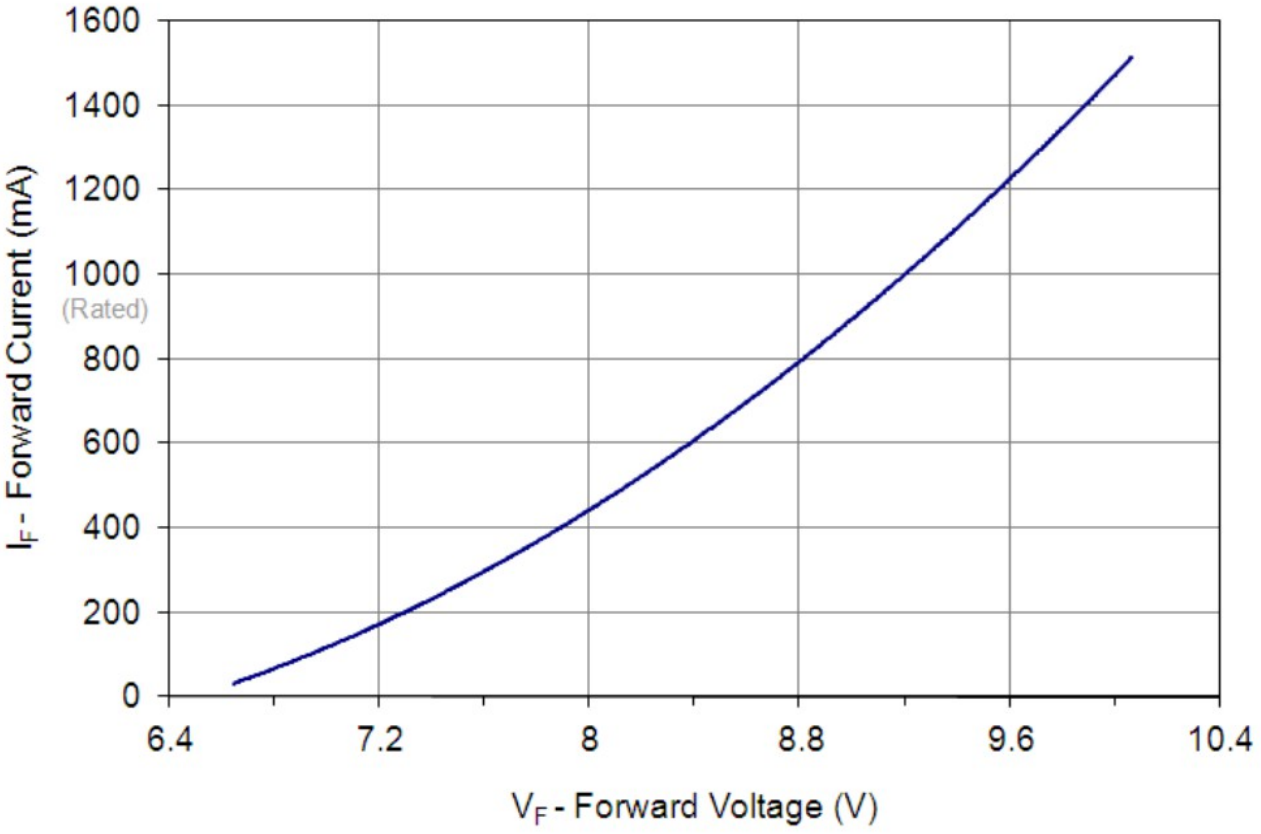
Typical Radiation Pattern



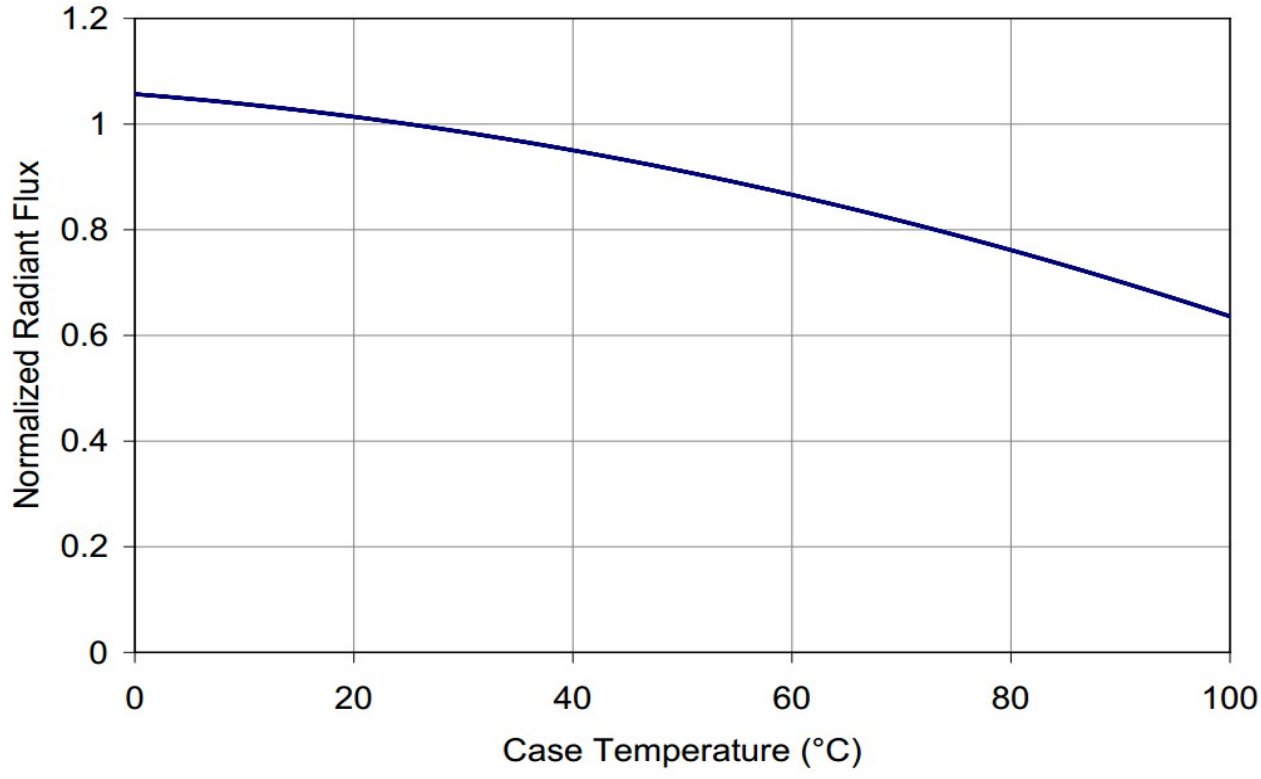
Typical Normalized Radiant Flux



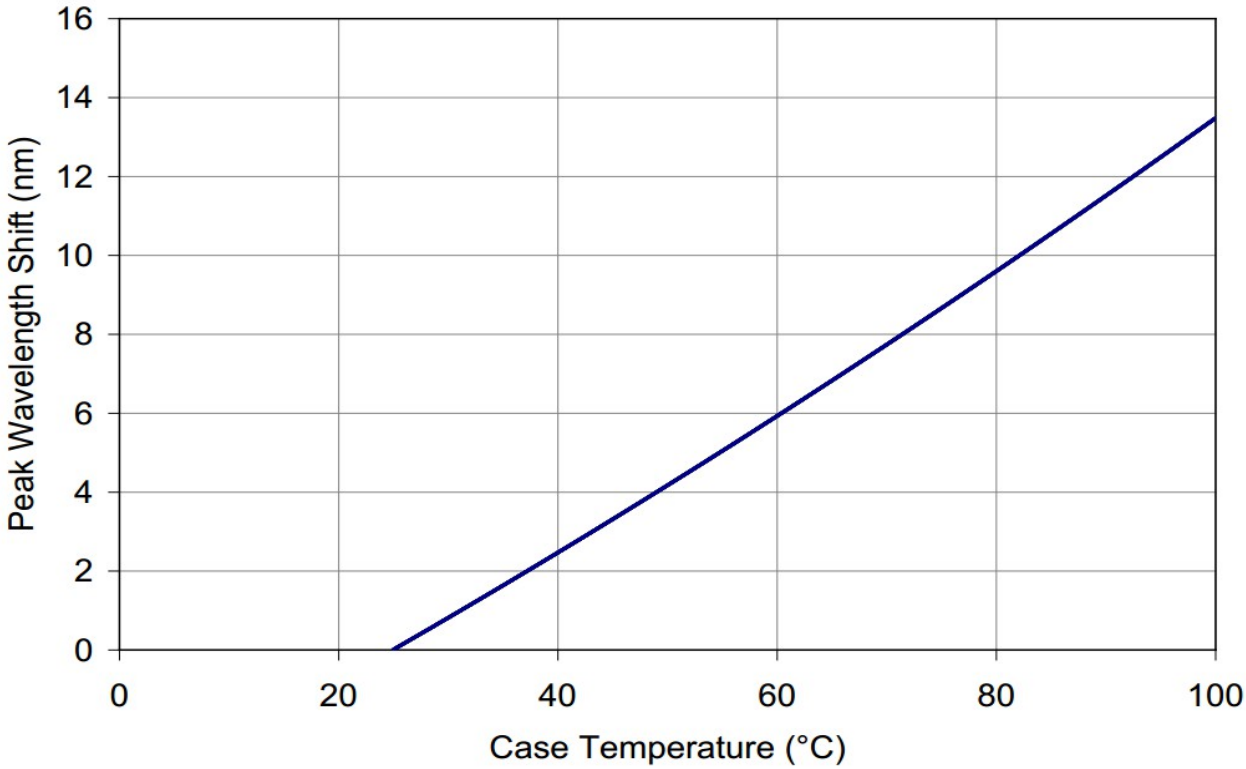
Typical Forward Current Characteristics



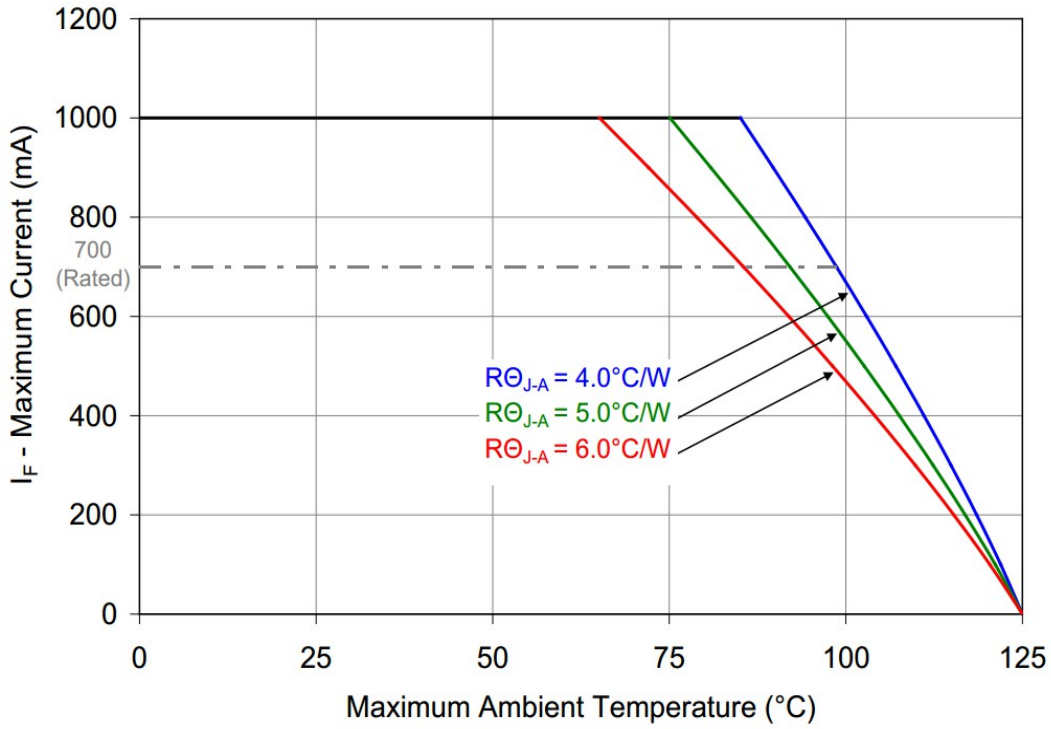
Typical Normalized Radiant Flux over Temperature



Typical Peak Wavelength Shift over Temperature



Current Derating



1. **Maximum current assumes that all four LED dice are operating concurrently at the same current.**
2. **RΘJ-C [Junction to Case Thermal Resistance] for the RSW-P10-850-0 is typically 1.1°C/W.**
3. **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