WINGER® WEBRW02-DS LED 3 mm duo LED, red/warm white, diffused, antiparallel, up to 440 / 720 mcd



Item number	300021102
Type	WEBRW02-DS
Brand	WINGER®
Package	3 mm, 2-lead, diffused, antiparallel
Emitted colour	red typ. 625 nm / warm white typ. 3,200 K
Luminous intensity	max. 440 mcd (red) / max. 720 mcd (warm white)
Viewing angle	30°

The WINGER® WEBRW02-DS is a 3 mm through-hole duo LED with a diffused lens and two leads. The red and warm-white chips are connected antiparallel: the polarity of the supply selects the colour. The red chip (AlInGaP) has a typical dominant wavelength of 625 nm and a luminous intensity of up to 440 mcd; the warm-white chip (InGaN) has a typical colour temperature of 3,200 K and a luminous intensity of up to 720 mcd. The viewing angle is typ. 30°.

With AC drive, both chips can produce mixed light. Pin assignment (from the product-page drawing): pin 1 (long lead) is the anode of the red chip and the cathode of the white chip; pin 2 (short lead, 1.5 mm shorter) is the anode of the white chip and the cathode of the red chip. This is a two-lead part; there is no third pin.

1 Optical and Electrical Characteristics

Red chip (AlInGaP)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage [1]	V_F	1.8	2.1	2.5	V	I_F = 20 mA
Luminous intensity	I_V			440	mcd	I_F = 20 mA
Dominant wavelength [1]	λ_D	615	625	630	nm	I_F = 20 mA

Warm-white chip (InGaN)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage [1]	V_F	3.0	3.2	3.6	V	I_F = 20 mA
Luminous intensity	I_V			720	mcd	I_F = 20 mA
Colour temperature [1]	CCT	2,500	3,200	3,300	K	I_F = 20 mA

Common characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Viewing angle (50 % power angle)	2θ½		30		°	
Recommended forward current	I_F(rec)			20	mA	
Reverse current	I_R			10	µA	V_R = 5 V

[1] Min./max. range according to the previous datasheet version.
Unless otherwise stated, I_F = 20 mA, T_A = 25 °C.
Measurement tolerances: forward voltage ±0.1 V; luminous intensity ±15 %; viewing angle ±15 %; wavelength ±2.0 nm.
It is strongly recommended to limit the die temperature to 60 °C.

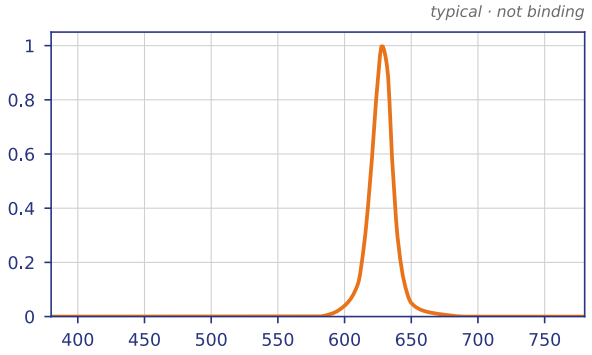
2 Absolute Maximum Ratings

Parameter	Symbol	Rating
Forward current	I_F	2 × 20 mA
Peak forward current (duty cycle 1/10, pulse width 0.1 ms)	I_{FP}	2 × 70 mA
Reverse voltage	V_R	5 V
Power dissipation, red [2]	P_D	70 mW
Power dissipation, white [2]	P_D	100 mW
Operating temperature range	T_{OPR}	−20 … +50 °C
Storage temperature range	T_{STG}	−40 … +80 °C
Lead soldering temperature	T_{SOL}	260 °C for max. 5 s, 3 mm from the epoxy body

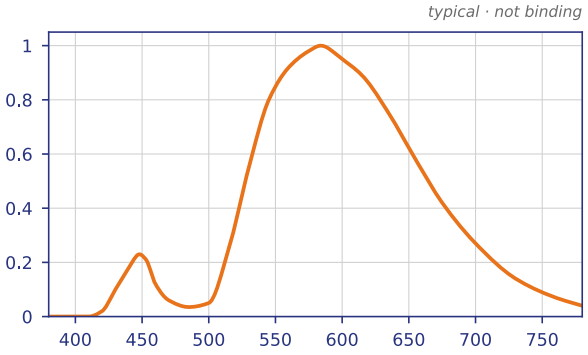
[2] The shop lists the pair 0.1 W / 0.08 W in the same order as the colours (red/warm white). That assignment would give 100 mW to the red chip and 80 mW to the white chip, which contradicts the previous datasheet (70 mW red / 100 mW white) and the estimate $V_{F,max} \cdot I_{F,max}$. Values according to the previous datasheet version. The 100 mW rating of the white chip is above the estimate typ./max. 3.6 V × 20 mA = 72 mW.
Absolute maximum ratings at T_A = 25 °C. Currents are per chip; “2 ×” denotes the two chips (driven according to polarity).

3 Characteristic Curves

Typical spectrum (red)



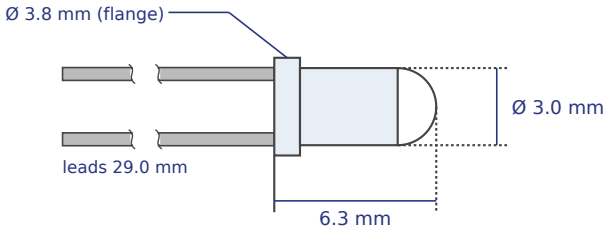
Typical spectrum (warm white)

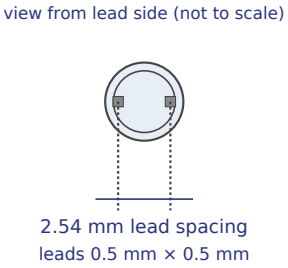


Typical curves taken over from the previous datasheet version (JET screenshot, single sample, read graphically, approximate values) – not binding; the table values apply. Spectra normalised to their maxima (red approx. 630 nm; warm white phosphor approx. 584 nm, blue peak approx. 450 nm). The chromaticity coordinates and CCT shown in the screenshot sidebar are a single-sample reading and are not transferred into the tables or a CIE diagram.

4 Mechanical Data

Parameter	Value
Package	3 mm round, through-hole, diffused lens, 2 leads, antiparallel
Body diameter	Ø 3.0 mm
Flange diameter	Ø 3.8 mm
Flange thickness	1.0 mm
Height from flange front face to lens tip	5.3 mm
Overall body height (flange back to tip)	6.3 mm
Lead spacing / lead cross-section	2.54 mm / 0.5 mm × 0.5 mm
Lead length	29.0 mm (pin 1); pin 2 is 1.5 mm shorter
Polarity	antiparallel: pin 1 (long lead) = red anode / white cathode; pin 2 (short lead) = white anode / red cathode. Forward polarity on pin 1 lights red; forward polarity on pin 2 lights white.





Side view (schematic, not to scale). Two-lead antiparallel pinout: the long lead (pin 1) is the anode of the red chip and the cathode of the white chip; the short lead (pin 2, 1.5 mm shorter) is the anode of the white chip and the cathode of the red chip. The product-page drawing shows no flange flat.

Dimensions in mm, taken from the product-page drawing (shop). The mechanical drawing in the previous datasheet version matches this 2-pin antiparallel figure. A heading in that datasheet nevertheless described the part as common-anode; that wording contradicts the drawing in the same document and is not adopted.

5 Ordering Information and Packaging

Parameter	Value
Item number	300021102
Type	WEBRW02-DS
Packaging	loose in bag
Packaging unit	1,000 pcs per bag

6 Handling and Application Notes

- Always operate the LED with a current-limiting series resistor or a constant-current source – never connect it directly to a voltage source. Series resistor: $R = (U_{supply} - V_F) / I_F$.
- When connecting LEDs in parallel, use a separate series resistor for each LED or string.
- Do not exceed the absolute maximum ratings, not even briefly; avoid reverse voltage.
- Bend the leads only before soldering and at room temperature, never directly at the body (typ. at least 3 mm [4] from the body). Hold the lead firmly between body and bending point; never use the body as a fulcrum.
- Do not apply mechanical stress to the leads or the lens while the LED is hot (during and directly after soldering). Let it cool down to room temperature first.
- Clean with isopropyl alcohol only if necessary; do not use aggressive solvents. Ultrasonic cleaning only after prior qualification.
- Do not look directly into the LED at short distance for a longer period (glare).
- Protect the LED against current surges and overvoltage; limit the die temperature to 60 °C (strongly recommended).

[4] Typical value for this LED type; not individually measured / subject to confirmation.

7 ESD Protection

Parameter	Value
ESD withstand voltage (HBM)	AlInGaP (red): 2,000 V [4]; InGaN (warm white): 1,000 V [4]

- LEDs are electrostatic-sensitive devices (ESD). Electrostatic discharge or voltage surges can damage the LED immediately or reduce its service life without visible signs.
- Handle and process only in an ESD protected area (EPA) in accordance with IEC 61340-5-1: grounded work surfaces, equipment and soldering irons, wrist straps or ESD gloves, ESD-safe packaging and transport containers.
- Keep the LEDs in their ESD-safe packaging until processing.

[4] Typical value for this LED type; not individually measured / subject to confirmation.

8 Soldering Instructions

Parameter	Value
Wave soldering	max. 260 °C, max. 5 s, 3 mm from the epoxy body
Preheating (wave soldering)	max. 100 °C, max. 60 s [4]
Hand soldering	max. 350 °C, max. 3 s, at least 3 mm from the body, once only [4]

- Recommended methods: wave soldering or hand soldering. Through-hole LEDs are not intended for reflow soldering unless explicitly stated.
- Solder only once if possible and keep the specified minimum distance between soldering point and body. Never dip the body into the solder.
- Hand soldering: use a temperature-controlled, grounded soldering iron; do not touch the body with the tip.
- Shorten the leads preferably after soldering and without transferring stress to the body.

[4] Typical value for this LED type; not individually measured / subject to confirmation.

9 Storage

Parameter	Value
Storage temperature	−40 … +80 °C
Recommended storage conditions	≤ 30 °C, ≤ 60 % RH, in original packaging [4]
Shelf life	12 months from delivery in unopened original packaging [4]

- Store in the original packaging in a dry, clean environment free of corrosive gases. Avoid condensation and rapid temperature changes.
- High humidity or sulphur-containing atmospheres can discolour the lead surface and impair solderability; process the LEDs promptly.
- Store cool and dry; protect from direct sunlight and heat; keep away from ignition sources.

[4] Typical value for this LED type; not individually measured / subject to confirmation.

10 Environmental Compliance

Parameter	Value
RoHS (EU) 2011/65/EU incl. (EU) 2015/863	compliant (Directive 2011/65/EU) [3]
REACH (EC) 1907/2006	no SVHC of the candidate list above 0.1 % (w/w) known [4]

Declarations of conformity are available on request.
Dispose of as electronic waste in accordance with local regulations.

[3] RoHS compliance according to the previous datasheet version.
[4] Typical value for this LED type; not individually measured / subject to confirmation.

11 Warranty and Application Limits

- Perform an acceptance inspection on arrival of the goods; return defective items stating the defect and quantity.
- Integration of the LEDs into the application and verification of service life and other qualities in practical use shall be carried out by the user.
- Do not use the LEDs in applications requiring higher reliability and safety where failure or malfunction could endanger life or health. The seller assumes no liability for claims or damages resulting from use contrary to the intended purpose or without written consent.
- The seller assumes no responsibility for damage or defects caused by operation at currents exceeding the absolute maximum ratings; these are not covered by warranty.

Values marked [4] are typical values for this LED type and have not been individually measured for this item; they are subject to confirmation. Please contact us for binding values: info@led1.de · +49 340 8508260.

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