

LED MODULES

LUGA SHOP TW
1700 LM TO 4000 LM



LUGA SHOP TW – TUNEABLE WHITE LED MODULES

TW1914 / TW2817 / TW2820

The Tuneable White LED modules LUGA Shop TW with colour temperature dynamic enable seamlessly dynamic light control from 2700 K to 6500 K.

Typical Applications

Built-in luminaires/general illumination

- Residential lighting
- Furniture lighting
- Retail lighting
- Downlights

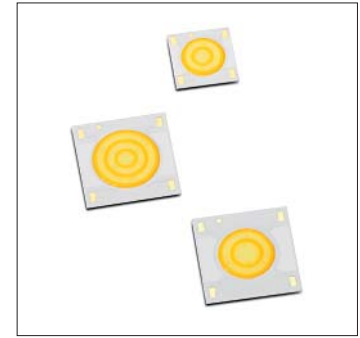
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- **LONG SERVICE LIFETIME**
- **NARROW COLOUR TOLERANCES:
4 STEP MacAdam**
- **TUNEABLE WHITE: FROM 2700 K TO 6500 K**
- **SPECIAL COLOURS ON REQUEST:
FOOD, PEARL WHITE AND CLEAR WHITE**
- **CONSTANT LUMEN PACKAGES:
1700 LM, 3000 LM, 4000 LM**

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Technical Notes

- LED module for integration into luminaires
- Dimensions / Light emitting surface (LES):
 - TW1914: 19x19 mm / Ø 14 mm
 - TW2817: 28x28 mm / Ø 17 mm
 - TW2820: 28x28 mm / Ø 20 mm
- Beam angle: 120°
- Use of external LED constant current driver



Electrical Characteristics

at $t_p = 65^\circ\text{C}$

Type	Typ. voltage DC					Typ. power consumption				
	350 mA	500 mA	700 mA	900 mA	1050 mA	350 mA	500 mA	700 mA	900 mA	1050 mA
	V	V	V	V	V	W	W	W	W	W
TW1914 – 1700 lm										
TW1914B4B3*H (CH 1)	35.1	36.3	—	—	—	12.3	18.2	—	—	—
TW1914B4B3*H (CH 2)	36.1	—	—	—	—	12.6	—	—	—	—
TW2817 – 3000 lm										
TW2817B5B5*H (CH 1)	34.4	35.5	36.8	—	—	12.1	17.7	25.7	—	—
TW2817B5B5*H (CH 2)	34.5	35.6	36.9	—	—	12.1	17.8	25.9	—	—
TW2820 – 4000 lm										
TW2820B8B6*H (CH 1)	—	34.2	35.1	36.0	36.6	—	17.1	24.6	32.4	38.5
TW2820B8B6*H (CH 2)	—	35.0	36.1	37.2	—	—	17.5	25.3	33.5	—

Voltage and power tolerance: $\pm 10\%$

Maximum Ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the modules.

Type	Operating current mA	Operation temperature range at t_c point		Ambient temperature range		Storage temperature range		Max. allowed repetitive peak current (mA)	Max. allowed output voltage of drivers (V)
		$^\circ\text{C min.}$	$^\circ\text{C max.}$	$^\circ\text{C min.}$	$^\circ\text{C max.}$	$^\circ\text{C min.}$	$^\circ\text{C max.}$		
TW1914 – 1700 lm									
TW1914B4B3*H (CH 1)	350	-40	+105	-40	+40	-40	+100	800	60
	425								
	500								
TW1914B4B3*H (CH 2)	200	-40	+110	-40	+40	-40	+100	800	60
	250								
	300								
	350								
TW2817 – 3000 lm									
TW2817B5B5*H (CH 1)	350	-40	+115	-40	+40	-40	+100	1000	60
	500								
	700								
TW2817B5B5*H (CH 2)	350	-40	+105	-40	+40	-40	+100	1000	60
	500								
	700								
TW2820 – 4000 lm									
TW2820B8B6*H (CH 1)	350	-40	+125	-40	+40	-40	+100	1600	60
	500								
	700								
	900								
	1050								
TW2820B8B6*H (CH 2)	350	-40	+115	-40	+40	-40	+100	1200	60
	500								
	700								
	900								

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Operating Life

at $t_p = 65^\circ\text{C}$

Channel 1 / WW	Lumen maintenance	TW1914B4B3*H – Operating life in hours								
		L90/B10			L80/B10			L70/B10		
Channel 1 / WW	500 mA	46,000	44,000	41,000	60,000	58,000	56,000	68,000	67,000	64,000
	350 mA	56,000	52,000	44,000	68,000	65,000	58,000	77,000	74,000	66,000
	175 mA	65,000	63,000	46,000	76,000	74,000	60,000	85,000	83,000	68,000
	0 mA		69,000	48,000		79,000	62,000		88,000	70,000
Operating current		0 mA	175 mA	350 mA	0 mA	175 mA	350 mA	0 mA	175 mA	350 mA
Channel 2 / CW										

Channel 1 / WW	Lumen maintenance	TW2817B5B5*H – Operating life in hours											
		L90/B10				L80/B10				L70/B10			
Channel 1 / WW	700 mA	42,000	38,000	35,000	31,000	57,000	53,000	51,000	47,000	65,000	62,000	59,000	56,000
	500 mA	53,000	48,000	42,000	33,000	66,000	62,000	57,000	49,000	74,000	70,000	65,000	57,000
	350 mA	60,000	53,000	46,000	35,000	72,000	66,000	60,000	51,000	80,000	75,000	68,000	59,000
	0 mA		56,000	50,000	39,000		68,000	63,000	54,000		77,000	72,000	63,000
Operating current		0 mA	350 mA	500 mA	700 mA	0 mA	350 mA	500 mA	700 mA	0 mA	350 mA	500 mA	700 mA
Channel 2 / CW													

Channel 1 / WW	Lumen maintenance	TW2820B8B6*H – Operating life in hours											
		L90/B10				L80/B10				L70/B10			
Channel 1 / WW	1050 mA	22,000	10,000			40,000	29,000			48,000	38,000		
	900 mA	31,000	21,000	14,000		47,000	39,000	33,000		56,000	47,000	41,000	
	700 mA	42,000	32,000	20,000		57,000	48,000	38,000		65,000	57,000	46,000	
	500 mA	52,000	37,000	25,000	11,000	65,000	52,000	42,000	30,000	74,000	61,000	51,000	39,000
	0 mA		51,000	40,000	25,000		64,000	55,000	42,000		73,000	63,000	51,000
Operating current		0 mA	500 mA	700 mA	900 mA	0 mA	350 mA	500 mA	700 mA	0 mA	350 mA	500 mA	700 mA
Channel 2 / CW													

Optical Characteristics

at $t_p = 65^\circ\text{C}$

Type	Ref. No.	Colour	Correlated colour temperature* K	Typ. luminous flux** and efficiency at										Typ. CRI R_a	Photo-metric code
				350 mA		500 mA		700 mA		900 mA		1050 mA			
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W		
TW1914 – 1700 lm															
TW1914B4B3AH (CH 1)	564849	warm white	2450	1220	99	1600	88	–	–	–	–	–	–	80	824/349
TW1914B4B3AH (CH 2)		cool white	7000	1400	112	–	–	–	–	–	–	–	–	85	870/349
TW2817 – 3000 lm															
TW2817B5B5AH (CH 1)	564850	warm white	2450	1385	115	1855	105	2375	92	–	–	–	–	80	824/349
TW2817B5B5AH (CH 2)		cool white	7000	1614	134	2154	121	2755	107	–	–	–	–	85	870/349
TW2820 – 4000 lm															
TW2820B8B6AH (CH 1)	564851	warm white	2450	–	–	1955	114	2590	105	3145	97	3510	91	80	824/349
TW2820B8B6AH (CH 2)		cool white	7000	–	–	2265	130	2960	117	3550	106	–	–	85	870/349

* Colour tolerance: 4 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 15\%$ | Min. CRI R_a : > 75 (CH1: WW) / > 85 (CH2: CW)

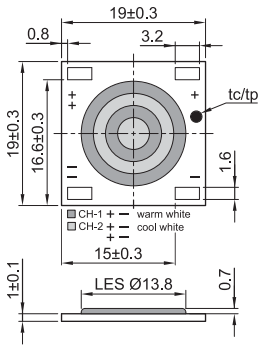
Minimum order quantity: 175 pcs. (TW1914, TW2817); 100 pcs. (TW2820)

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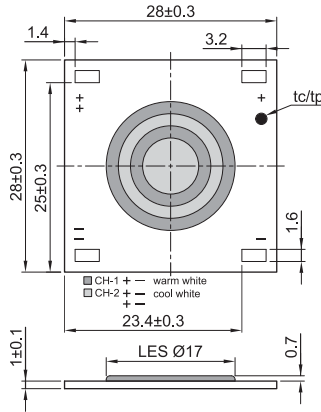
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Mechanical Dimensions

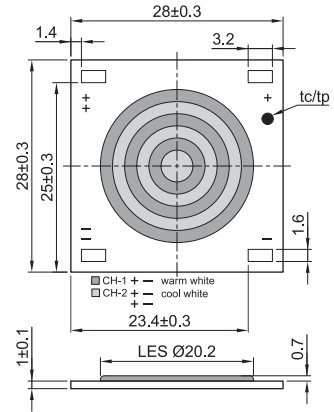
TW1914



TW2817



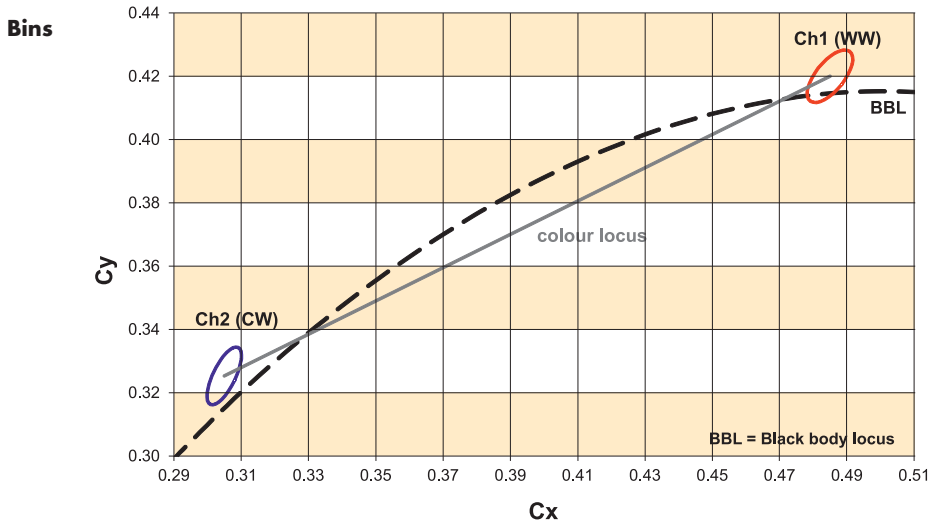
TW2820



The clearance and creepage distances are designed for working voltages up to:

Type	Basic insulation	Reinforced insulation
TW1914	235 V DC	60 V DC
TW2817, TW2820	330 V DC	175 V DC

Thickness of PCB is included in calculation.



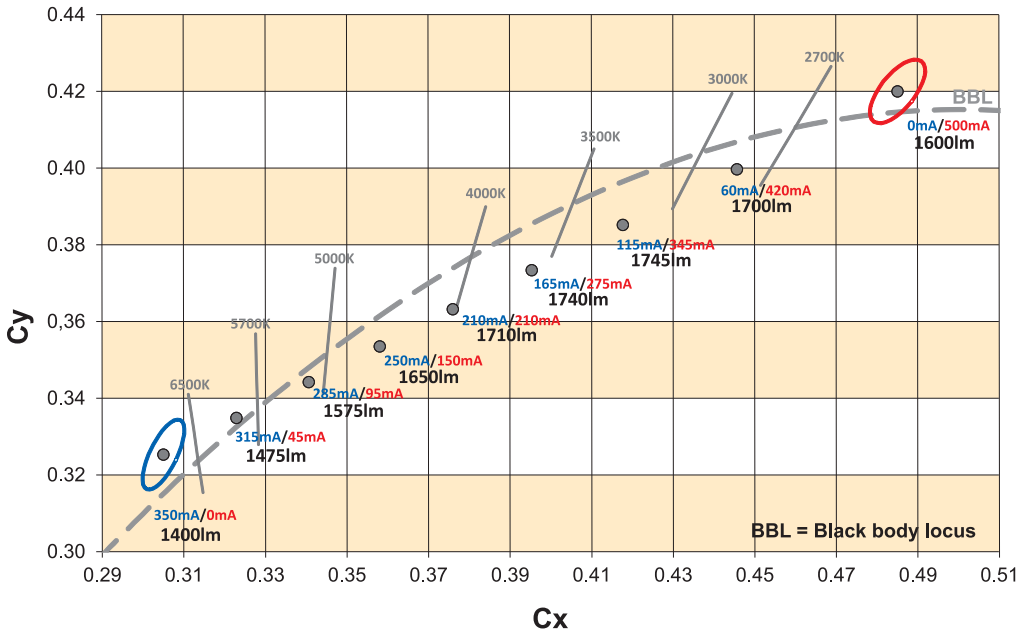
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Tuneable White Characteristics

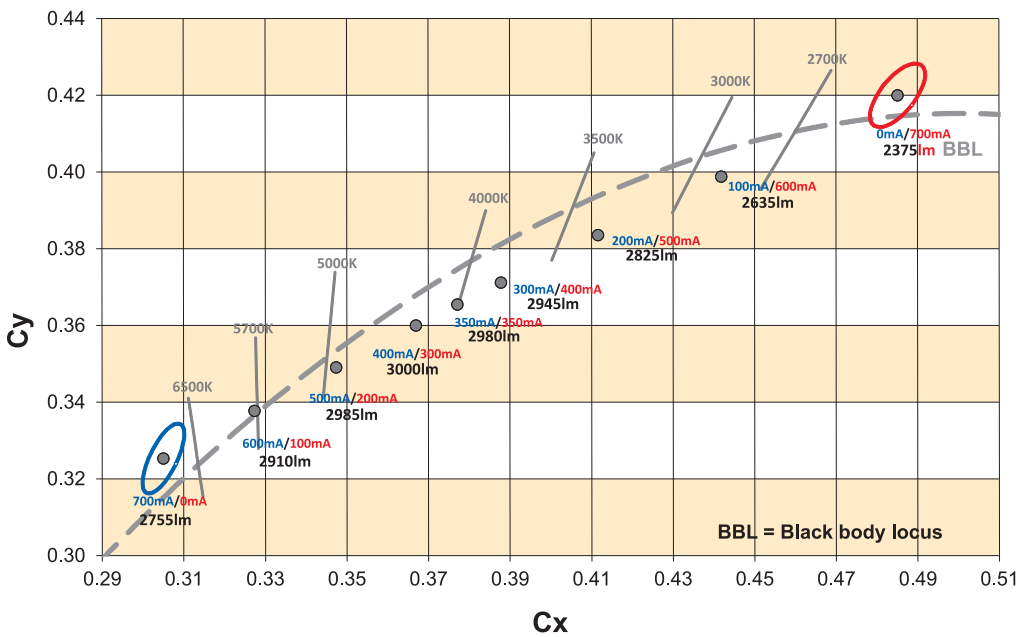
at $t_p = 65^\circ\text{C}$

TW1914



Colour tolerance: 4 MacAdams | Production tolerance of luminous flux and efficiency: $\pm 1.5\%$ | Min. CRI R_a : > 80 at 2700–6500 K

TW2817

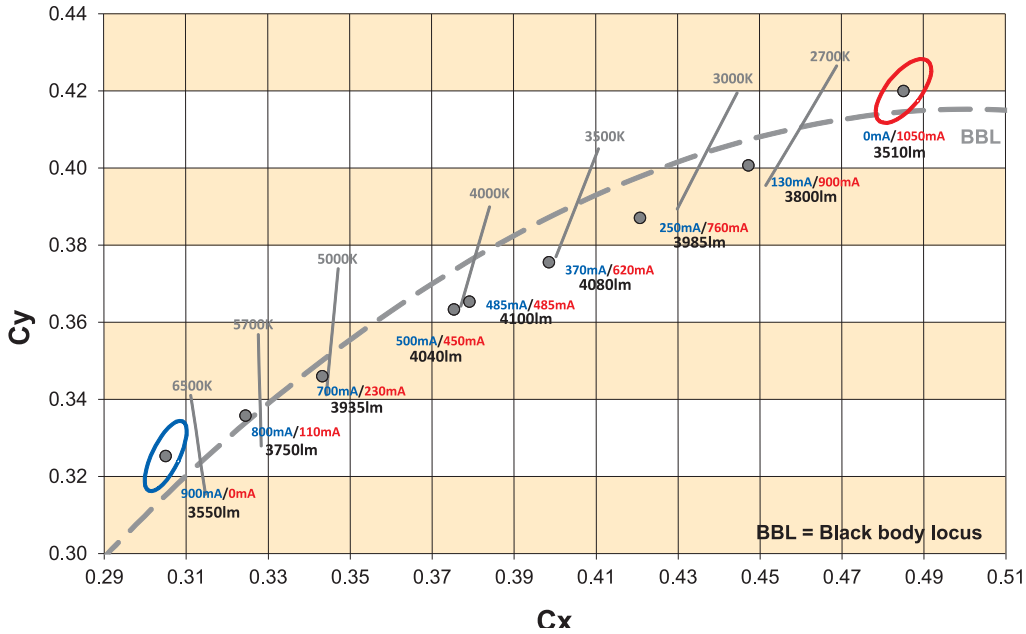


Colour tolerance: 4 MacAdams | Production tolerance of luminous flux and efficiency: $\pm 1.5\%$ | Min. CRI R_a : > 80 at 2700–6500 K

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TW2820



Colour tolerance: 4 MacAdams | Production tolerance of luminous flux and efficiency: ± 15% | Min. CRI R_a: > 80 at 2700–6500 K

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Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED assembly modules, fire and/or other hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules. See VS's application notes on ESD protection.
- LED assembly modules must not be subjected to any undue mechanical stress, e. g.:
 - do not treat as bulk cargo
 - avoid shear and compressive forces during handling and installation
 - do not damage circuit paths
 - do not touch the yellow phosphorus layer
- The module must be fixed onto a thermally conductive surface.
- Safe operation only possible by the use of external constant current sources (I_{max} , see table "Electrical Characteristics").
- Operation only with power supply units that feature the following protection:
 - Short-circuit protection
 - Overload protection
 - Overheating protection
 - SELV (Safety Extra Low Voltage); $U_{max} \leq 60$ V
 - I_{max} (see table "Maximum Ratings") must not be exceeded.
- When operating devices will be selected care has been taken to ensure that the maximum values (see table "Maximum Ratings") will not be exceeded.
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- Measurement tolerances:
 - luminous flux: ± 7 %
 - voltage: ± 3 %
 - CRI: ± 1 %
- Maximum allowed number of switching cycles: 15,000
- A parallel connection of the modules is not allowed.
- To ensure problem-free operation, the specified maximum temperature at the t_c point (see "Operating Life") must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.

- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED assembly modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. LED assembly modules are not specially protected against foreign bodies or dust. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering.
- Operating LED modules in the presence of certain chemical substances or in chemically enriched (aggressive) environments can impair module functionality or even cause total module failure. Detailed information can be found in our "Chemical Incompatibility" PDF on our website www.vossloh-schwabe.com
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: risk group 2 Assessment in acc. with IEC/TR 62778:
Given a clearance of more than d_{min} , within which the lighting intensity limit of E_{thr} is attained, the classification goes down to Risk Group 1.
TW1914: $E_{thr} = 700$ lx
TW2817: $E_{thr} = 845$ lx
TW2820: $E_{thr} = 695$ lx

Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com).
We will be happy to send you these conditions upon request.

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Reflectors:

- ACL-Lichttechnik GmbH
www.reflektor.com
- Jordan Luxar GmbH & Co. KG
www.jordan-luxar.de
- JORDAN REFLEKTOREN GmbH & Co. KG
www.jordan-reflektoren.de
- LEDIL
www.ledil.com

Heat sinks with active cooling:

- AVC
www.avc-europa.de
- Nuventix, Inc.
www.nuventix.com
- Sunon
www.sunon.com
- MechaTronix
www.led-heatsink.com
- Colliance, Inc.
www.cooliance.eu

Heat sinks with passive cooling:

- AVC
www.avc-europa.de
- Fischer Elektronik GmbH & Co. KG
www.fischerelektronik.de
- Frigo Dynamics
www.frigodynamics.com
- MechaTronix
www.led-heatsink.com

LED Constant Current Drivers

Please visit our homepage for details for suitable

LED constant current drivers: www.vossloh-schwabe.com