

LED MODULES

COMFORT COB GEN. 2
500 LM TO 11,500 LM



COMFORT COB GEN. 2 – RESIDENTIAL, RETAIL AND INDUSTRIAL LIGHTING

Typical Applications

VCA2-122 / VCA2-123 / VCA2-124

- Integration in reflector luminaires
- Residential lighting
- Furniture lighting

VCA2-126 / VCA2-128

- Integration in reflector luminaires
- Retail lighting
- Downlights

VCA2-1211 / VCA2-1213


- Industrial lighting for:
 - Production halls
 - Warehouses

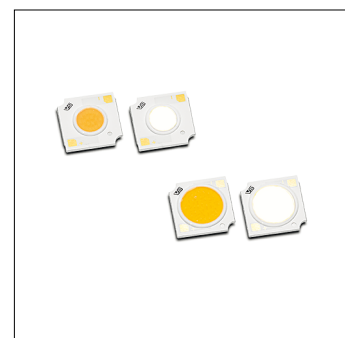
Comfort COB Gen. 2

- **LONG SERVICE LIFETIME: 55,000 HOURS**
- **NARROW COLOUR TOLERANCES:
3 STEP MACADAM (CRI 82/92)**
- **HIGHLY EFFICIENT: UP TO 197 LM/W**
- **SPECIAL COLOURS:
FOOD (MEAT, MEAT VIVID & VBREAD)
FASHION (PEARL WHITE, CLEAR WHITE)
3000 K VIVID (CRI 96)**

Comfort COB Gen. 2 – VCA2-122, VCA2-123 and VCA2-124

Technical Notes

- LED module for integration into luminaires 
- Dimensions: 13.5x13.5 mm
- Light emitting surface (LES): Ø 6 mm or Ø 9 mm
- Use of external LED constant current driver



Electrical Characteristics

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

Type	Typ. voltage DC			Typ. power consumption		
	250 mA V	350 mA * V	500 mA V	250 mA W	350 mA W	500 mA W
VCA2-122-xxx	34.5	35.7	–	8.6	12.5 *	–
VCA2-123-xxx	34.3	35.2	36.6	8.6	12.3 *	18.2

Voltage and power tolerance: $\pm 10\%$ | * Rated values

Type	Typ. voltage DC			Typ. power consumption		
	350 mA V	500 mA * V	700 mA V	350 mA W	500 mA W	700 mA W
VCA2-124-xxx	34.1	35.3	36.7	11.9	17.6 *	25.7

Voltage and power tolerance: $\pm 10\%$ | * Rated values

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	
		$^\circ\text{C min.}$	$^\circ\text{C max.}$	at LES surface $^\circ\text{C max.}$		$^\circ\text{C min.}$	$^\circ\text{C max.}$		
VCA2-122-xxx	250	-40	+110	+180	-40	+40	-40	+105	400
	350		+105						
VCA2-123-xxx	250	-40	+115	+180	-40	+40	-40	+105	600
	350		+110						
	500		+100						
VCA2-124-xxx	350	-40	+100	+180	-40	+40	-40	+105	750
	500		+95						
	700		+85						

Operating Life

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

Lumen maintenance	250 mA	350 mA	250 mA	350 mA	500 mA	350 mA	500 mA	700 mA
	in hours	in hours	in hours	in hours	in hours	in hours	in hours	in hours
	VCA2-122-xxx (at I_f)			VCA2-123-xxx (at I_f)			VCA2-124-xxx (at I_f)	
L90/B10	30,000	30,000	30,000	30,000	30,000	30,000	30,000	24,000
L80/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	31,000
L70/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	35,000

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Comfort COB Gen. 2 – VCA2-122, VCA2-123 and VCA2-124

Optical Characteristics

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

Type	Ref. No.	Colour	Correlated colour temperature* K	Typ. luminous flux** and efficiency at						Typ. beam angle °	Typ. CRI R_a	Photometric code
				250 mA		350 mA		500 mA				
				lm	lm/W	lm	lm/W	lm	lm/W			
VCA2-122 – CRI 80												
VCA2-122-827	571299	warm white	2700	1147	133	1511	121	–	–	120	82	827/369
VCA2-122-830	571303	warm white	3000	1206	140	1590	127	–	–	120	82	830/369
VCA2-122-830B	571304	warm white	3000 (below BBL)	1182	137	1558	125	–	–	120	82	830/369
VCA2-122-831PW	571310	pearl white	3100	1206	140	1590	127	–	–	120	82	831/369
VCA2-122-832CW	571311	clear white	3200	1211	141	1593	128	–	–	120	82	832/369
VCA2-122-835	571312	neutral white	3500	1218	141	1606	129	–	–	120	82	835/369
VCA2-122-840	571324	neutral white	4000	1242	144	1637	131	–	–	120	82	840/369
VCA2-122-857	571326	cool white	5700	1255	146	1653	132	–	–	120	82	857/369
VCA2-122 – CRI 90												
VCA2-122-927	571328	warm white	2700	940	109	1239	99	–	–	120	92	927/369
VCA2-122-930	571329	warm white	3000 (below BBL)	1001	116	1320	106	–	–	120	92	930/369
VCA2-122-931PW	571333	pearl white	3100	982	114	1293	104	–	–	120	92	931/369
VCA2-122-932CW	571334	clear white	3200	987	115	1299	104	–	–	120	92	932/369
VCA2-122-935	571335	neutral white	3500 (below BBL)	1011	117	1333	107	–	–	120	92	935/369
VCA2-122-940	571338	neutral white	4000 (below BBL)	1031	120	1359	109	–	–	120	92	940/369
VCA2-123 – CRI 80												
VCA2-123-827	571339	warm white	2700	1350	157	1809	147	2447	134	120	82	827/369
VCA2-123-830	571341	warm white	3000	1420	165	1904	155	2575	141	120	82	830/369
VCA2-123-840	571343	neutral white	4000	1462	170	1961	159	2652	146	120	82	840/369
VCA2-123-857	571344	cool white	5700	1477	172	1980	161	2678	147	120	82	857/369
VCA2-123 – CRI 90												
VCA2-123-927	571346	warm white	2700	1107	129	1483	121	2006	110	120	92	927/369
VCA2-123-930	571348	warm white	3000 (below BBL)	1178	137	1580	128	2138	117	120	92	930/369
VCA2-123-935	571349	neutral white	3500 (below BBL)	1190	138	1595	130	2157	118	120	92	935/369
VCA2-123-940	571351	neutral white	4000 (below BBL)	1214	141	1627	132	2201	121	120	92	940/369

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$ | Min. CRI R_a : > 80 at 8xx, > 90 at 9xx


Type	Ref. No.	Colour	Correlated colour temperature* K	Typ. luminous flux** and efficiency at						Typ. beam angle °	Typ. CRI R_a	Photometric code
				350 mA		500 mA		700 mA				
				lm	lm/W	lm	lm/W	lm	lm/W			
VCA2-124 – CRI 80												
VCA2-124-827	572176	warm white	2700	1770	149	2399	136	3113	121	120	82	827/369
VCA2-124-830	572177	warm white	3000	1862	156	2524	143	3275	127	120	82	830/369
VCA2-124-830B	572178	warm white	3000 (below BBL)	1826	153	2474	140	3211	125	120	82	830/369
VCA2-124-840	572179	neutral white	4000	1918	161	2599	147	3373	131	120	82	840/369
VCA2-124 – CRI 90												
VCA2-124-927	572180	warm white	2700	1452	122	1967	112	2553	99	120	92	927/369
VCA2-124-930	572181	warm white	3000 (below BBL)	1546	130	2095	119	2719	106	120	92	930/369
VCA2-124-935	572182	neutral white	3500 (below BBL)	1561	131	2116	120	2746	107	120	92	935/369
VCA2-124-940	572183	neutral white	4000 (below BBL)	1592	134	2157	122	2800	109	120	92	940/369

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$ | Min. CRI R_a : > 80 at 8xx, > 90 at 9xx

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Comfort COB Gen. 2 – VCA2-126 and VCA2-128

Technical Notes

- LED module for integration into luminaires 
- Dimensions: 19x19 mm
- Light emitting surface (LES): Ø 14 mm
- Use of external LED constant current driver



Electrical Characteristics

at $t_p = 65\text{ °C}$

Type	Typ. voltage DC				Typ. power consumption			
	350 mA V	500 mA * V	700 mA * V	1050 mA V	350 mA W	500 mA W	700 mA W	1050 mA W
VCA2-126-xxx	32.9	33.7	34.6	–	11.5	16.8 *	24.2	–
VCA2-128-xxx	32.4	33.0	33.8	35.0	11.3	16.5	23.6 *	36.8

Voltage and power tolerance: $\pm 10\%$ | * Rated values

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
		$^{\circ}\text{C min.}$	$^{\circ}\text{C max.}$	at LES surface $^{\circ}\text{C max.}$	$^{\circ}\text{C min.}$	$^{\circ}\text{C max.}$	$^{\circ}\text{C min.}$	$^{\circ}\text{C max.}$	
VCA2-126-xxx	350	-40	+120	+180	-40	+40	-40	+105	1000
	500		+115						
	700		+105						
VCA2-128-xxx	< 500	-40	+115	+180	-40	+40	-40	+105	1400
	700		+110						
	1050		+95						

Operating Life

at $t_p = 65\text{ °C}$

Lumen maintenance	350 mA in hours	500 mA in hours	700 mA in hours	350 mA in hours	500 mA in hours	700 mA in hours	1050 mA in hours
	VCA2-126-xxx (at I_f)			VCA2-128-xxx (at I_f)			
L90/B10	30,000	30,000	30,000	30,000	30,000	30,000	30,000
L80/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000
L70/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000

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Comfort COB Gen. 2 – VCA2-126 and VCA2-128

Optical Characteristics

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


Type	Ref. No.	Colour	Correlated colour temperature* K	Typ. luminous flux** and efficiency at								Typ. beam angle °	Typ. CRI R_a	Photometric code
				350 mA		500 mA		700 mA		1050 mA				
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W			
VCA2-126 – CRI 80														
VCA2-126-827	571359	warm white	2700	1990	173	2732	163	3631	150	–	–	120	82	827/369
VCA2-126-830	571361	warm white	3000	2094	182	2875	171	3822	158	–	–	120	82	830/369
VCA2-126-830B	571364	warm white	3000 (below BBL)	2052	179	2817	168	3745	155	–	–	120	82	830/369
VCA2-126-831PW	571373	pearl white	3100	2094	182	2875	171	3822	158	–	–	120	82	831/369
VCA2-126-832CW	571374	clear white	3200	2099	183	2881	171	3830	158	–	–	120	82	832/369
VCA2-126-835	571380	neutral white	3500	2116	184	2904	173	3860	159	–	–	120	82	835/369
VCA2-126-840	571381	neutral white	4000	2157	188	2960	176	3935	162	–	–	120	82	840/369
VCA2-126-850	571386	cool white	5000	2199	192	3018	180	4012	166	–	–	120	82	850/369
VCA2-126-857	571387	cool white	5700	2178	190	2989	178	3974	164	–	–	120	82	857/369
VCA2-126 – CRI 90														
VCA2-126-927	571388	warm white	2700	1632	142	2240	133	2977	123	–	–	120	92	927/369
VCA2-126-930	571389	warm white	3000 (below BBL)	1738	151	2386	142	3171	131	–	–	120	92	930/369
VCA2-126-931PW	571390	pearl white	3100	1704	148	2338	139	3108	128	–	–	120	92	931/369
VCA2-126-932CW	571391	clear white	3200	1712	149	2349	140	3123	129	–	–	120	92	932/369
VCA2-126-935	571392	neutral white	3500 (below BBL)	1756	153	2410	143	3203	132	–	–	120	92	935/369
VCA2-126-940	571393	neutral white	4000 (below BBL)	1790	156	2457	146	3266	135	–	–	120	92	940/369
VCA2-128 – CRI 80														
VCA2-128-827	571394	warm white	2700	2018	178	2803	170	3783	160	5273	143	120	82	827/369
VCA2-128-830	571395	warm white	3000	2124	188	2951	179	3981	169	5549	151	120	82	830/369
VCA2-128-830B	571396	warm white	3000 (below BBL)	2081	184	2891	175	3901	165	5437	148	120	82	830/369
VCA2-128-831PW	571397	pearl white	3100	2124	188	2951	179	3981	169	5549	151	120	82	831/369
VCA2-128-832CW	571398	clear white	3200	2128	188	2956	179	3989	169	5560	151	120	82	832/369
VCA2-128-835	571399	neutral white	3500	2145	189	2980	181	4021	170	5604	152	120	82	835/369
VCA2-128-840	571400	neutral white	4000	2187	193	3038	184	4099	174	5713	155	120	82	840/369
VCA2-128-850	571401	cool white	5000	2230	197	3097	188	4179	177	5826	159	120	82	850/369
VCA2-128-857	571402	cool white	5700	2208	195	3067	186	4139	175	5770	157	120	82	857/369
VCA2-128 – CRI 90														
VCA2-128-927	571403	warm white	2700	1654	146	2298	139	3101	131	4323	118	120	92	927/369
VCA2-128-930	571404	warm white	3000 (below BBL)	1762	156	2448	149	3304	140	4605	125	120	92	930/369
VCA2-128-930Vi	571405	warm white vivid	3000 (vivid)	1527	135	2141	130	2896	123	4103	112	120	96	930/369
VCA2-128-931PW	571406	pearl white	3100	1727	153	2400	146	3238	137	4513	123	120	92	931/369
VCA2-128-932CW	571407	clear white	3200	1735	153	2411	146	3253	138	4534	123	120	92	932/369
VCA2-128-935	571408	neutral white	3500 (below BBL)	1780	157	2472	150	3337	141	4650	127	120	92	935/369
VCA2-128-940	571409	neutral white	4000 (below BBL)	1814	160	2521	153	3402	144	4742	129	120	92	940/369
VCA2-128-950	571410	cool white	5000	1903	168	2644	160	3567	151	4972	135	120	92	950/369
VCA2-128 – FOOD														
VCA2-128-MP	571411	Meat "Pink"	2000 "pink effect"	1253	111	1741	106	2349	99	3275	89	120	82	820/369
VCA2-128-MVi	571412	Meat "Vivid"	3100 "meat vivid"	1306	115	1826	111	2476	105	3510	96	120	88	831/369
VCA2-128-VBread	571413	VBread	2500 "VBread"	1674	148	2340	142	3169	134	4491	122	120	88	825/369

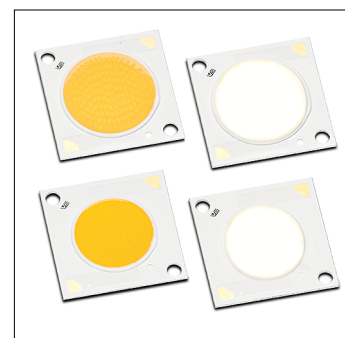
* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$ | Min. CRI R_a : > 80 at 8xx, > 90 at 9xx, > 94 at 930Vi

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Comfort COB Gen. 2 – VCA2-1211 and VCA2-1213

Technical Notes

- LED module for integration into luminaires 
- Dimensions: 28x28 mm
- Light emitting surface (LES): Ø 17 mm, Ø 20 mm
- Use of external LED constant current driver



Electrical Characteristics

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

Type	Typ. voltage DC					Typ. power consumption				
	700 mA V	1050 mA * V	1400 mA V	1700 mA V	2100 mA V	700 mA W	1050 mA W	1400 mA W	1700 mA W	2100 mA W
VCA2-1211-xxx	33.2	34.2	35.1	35.9	–	23.2	35.9 *	49.1	61	–
VCA2-1213-xxx	33	33.9	34.8	35.4	36.3	23.1	35.6 *	48.6	60.2	76.3

Voltage and power tolerance: $\pm 10\%$ | * Rated values

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
		$^\circ\text{C min.}$	$^\circ\text{C max.}$	at LES surface $^\circ\text{C max.}$	$^\circ\text{C min.}$	$^\circ\text{C max.}$	$^\circ\text{C min.}$	$^\circ\text{C max.}$	
VCA2-1211-xxx	700	-40	+120	+180	-40	+40	-40	+105	2000
	1050		+110						
	1400		+100						
	1700		+90						
VCA2-1213-xxx	700	-40	+115	+180	-40	+40	-40	+105	2500
	1050		+110						
	1400		+100						
	1700		+90						
	2100		+85						

Operating Life

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

Lumen maintenance	700 mA in hours	1050 mA in hours	1400 mA in hours	1700 mA in hours	700 mA in hours	1050 mA in hours	1400 mA in hours	1700 mA in hours	2100 mA in hours
	VCA2-1211-xxx (at I_f)				VCA2-1213-xxx (at I_f)				
L90/B10	26,000	26,000	26,000	22,000	26,000	26,000	26,000	22,000	22,000
L80/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000
L70/B10	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000	> 55,000

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Comfort COB Gen. 2 – VCA2-1211 and VCA2-1213

Optical Characteristics

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

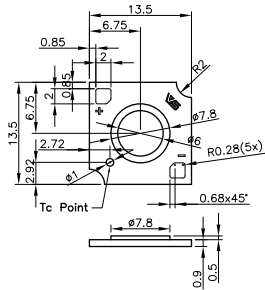
Type	Ref. No.	Colour	Correlated colour temperature* K	Typ. luminous flux** and efficiency at										Typ. beam angle (°)	Typ. CRI R_a	Photo-metric code
				700 mA		1050 mA		1400 mA		1700 mA		2100 mA				
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W			
VCA2-1211 – CRI 80																
VCA2-1211-827	571414	warm white	2700	3946	170	5705	159	7252	148	8358	137	–	–	120	82	827/369
VCA2-1211-830	571415	warm white	3000	4153	179	6004	167	7632	155	8797	144	–	–	120	82	830/369
VCA2-1211-830B	571416	warm white	3000 (below BBL)	4070	175	5884	164	7478	152	8620	141	–	–	120	82	830/369
VCA2-1211-831PW	571417	pearl white	3100	4153	179	6004	167	7632	155	8797	144	–	–	120	82	831/369
VCA2-1211-835	571418	neutral white	3500	4195	181	6064	169	7708	157	8885	146	–	–	120	82	835/369
VCA2-1211-840	571419	neutral white	4000	4276	184	6182	172	7859	160	9058	148	–	–	120	82	840/369
VCA2-1211-850	571420	cool white	5000	4360	188	6303	176	8011	163	9235	151	–	–	120	82	850/369
VCA2-1211-857	571421	cool white	5700	4319	186	6243	174	7935	161	9146	150	–	–	120	82	857/369
VCA2-1211 – CRI 90																
VCA2-1211-927	571422	warm white	2700	3235	139	4677	130	5945	121	6852	112	–	–	120	92	927/369
VCA2-1211-930	571423	warm white	3000 (below BBL)	3446	148	4983	139	6333	129	7301	120	–	–	120	92	930/369
VCA2-1211-931PW	571424	pearl white	3100	3378	146	4884	136	6208	126	7155	117	–	–	120	92	931/369
VCA2-1211-935	571426	neutral white	3500 (below BBL)	3480	150	5032	140	6397	130	7372	121	–	–	120	92	935/369
VCA2-1211-940	571427	neutral white	4000 (below BBL)	3549	153	5131	143	6522	133	7517	123	–	–	120	92	940/369
VCA2-1213 – CRI 80																
VCA2-1213-827	571428	warm white	2700	4054	176	5848	164	7519	155	8827	147	10449	137	120	82	827/369
VCA2-1213-830	571429	warm white	3000	4266	185	6155	173	7913	163	9291	154	10998	144	120	82	830/369
VCA2-1213-830B	571430	warm white	3000 (below BBL)	4181	181	6032	170	7755	160	9105	151	10777	141	120	82	830/369
VCA2-1213-831PW	571431	pearl white	3100	4266	185	6155	173	7913	163	9291	154	10998	144	120	82	831/369
VCA2-1213-832CW	571432	clear white	3200	4275	185	6167	173	7929	163	9310	155	11020	144	120	82	832/369
VCA2-1213-835	571433	neutral white	3500	4310	187	6217	175	7993	164	9384	156	11108	146	120	82	835/369
VCA2-1213-840	571434	neutral white	4000	4394	191	6338	178	8148	168	9567	159	11324	148	120	82	840/369
VCA2-1213-850	571435	cool white	5000	4480	194	6462	182	8308	171	9754	162	11546	151	120	82	850/369
VCA2-1213-857	571436	cool white	5700	4437	192	6400	180	8228	169	9660	160	11435	150	120	82	857/369
VCA2-1213 – CRI 90																
VCA2-1213-927	571437	warm white	2700	3324	144	4795	135	6164	127	7237	120	8567	112	120	92	927/369
VCA2-1213-930	571438	warm white	3000 (below BBL)	3541	154	5108	144	6567	135	7710	128	9127	120	120	92	930/369
VCA2-1213-931PW	571439	pearl white	3100	3470	150	5006	141	6437	132	7557	126	8945	117	120	92	931/369
VCA2-1213-932CW	571440	clear white	3200	3486	151	5029	141	6465	133	7591	126	8985	118	120	92	932/369
VCA2-1213-935	571441	neutral white	3500 (below BBL)	3576	155	5159	145	6632	136	7787	129	9217	121	120	92	935/369
VCA2-1213-940	571442	neutral white	4000 (below BBL)	3647	158	5260	148	6762	139	7940	132	9399	123	120	92	940/369
VCA2-1213-950	571443	cool white	5000	3823	166	5515	155	7090	146	8325	138	9854	129	120	92	950/369
VCA2-1213 – FOOD																
VCA2-1213-MP	571444	Meat "Pink"	2000 "pink effect"	2468	107	3561	100	4578	94	5374	89	6362	83	120	82	820/369
VCA2-1213-MVi	571445	Meat "Vivid"	3100 "meat vivid"	2626	114	3806	107	4903	101	5709	95	6771	89	120	88	831/369
VCA2-1213-VBread	571446	VBread	2500 "VBread"	3339	145	4842	136	6237	128	7366	122	8776	115	120	88	825/369

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$ | Min. CRI R_a : > 80 at 8xx, > 90 at 9xx

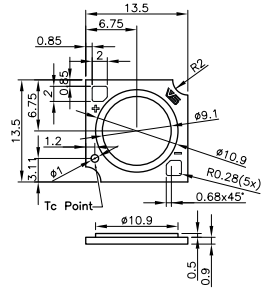
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Comfort COB Gen. 2

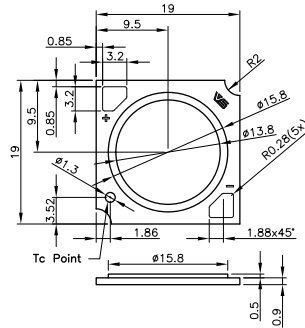
VCA2-122



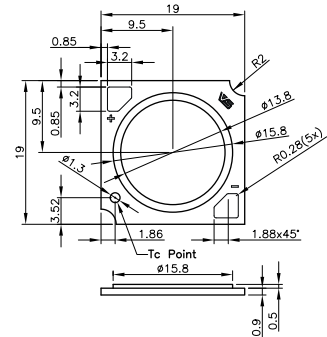
VCA2-123 / 124



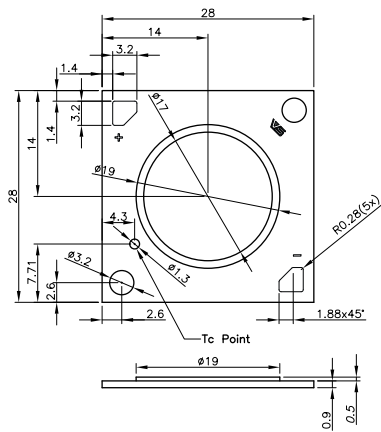
VCA2-126



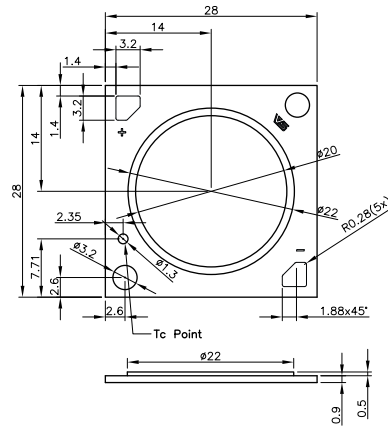
VCA2-128



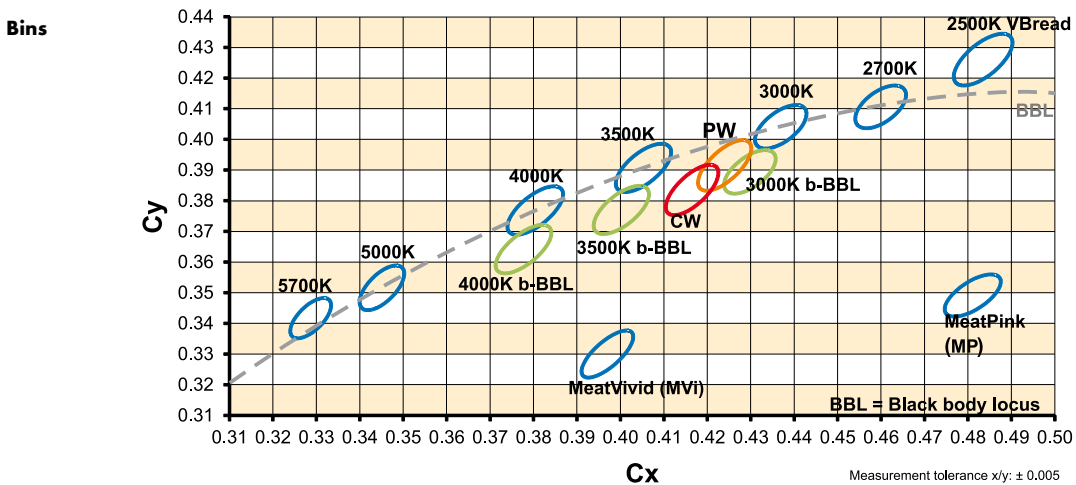
VCA2-1211



VCA2-1213



The clearance and creepage distances are designed for operation with SELV drivers.
Alternatively for fixing with LED holders the Comfort COB Gen. 2s can be fixed with screws.
Then the wires must be soldered to the solder pads.



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Comfort COB Gen. 2

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); $U_{max.} \leq 60\text{ V}$
 - $I_{max.}$ (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: $\pm 7\%$
 - voltage: $\pm 3\%$
 - CRI: $\pm 1\%$
- 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. Such conditions may occur e.g. in industry and street environments. 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
Rating in accordance with IEC / TR 62778



For Risk Group 2:

The luminaire should be positioned so that prolonged staring into the luminaire at a distance closer than 1.95m is not expected.

The following LED modules are in risk group 1:

Up to 4000 K

LED module type	Max. allowed luminous flux per module (lm)	For higher luminous flux: E threshold to RG1 (lx)
VCA2-122	1128	1464
VCA2-123	1692	1464
VCA2-124	2256	1464
VCA2-126	3384	1464
VCA2-128	4512	1464
VCA2-1211	6204	1464
VCA2-1213	7332	1464

Above 4000 K

LED module type	Max. allowed luminous flux per module (lm)	For higher luminous flux: E threshold to RG1 (lx)
VCA2-122	749	960
VCA2-123	1123	960
VCA2-124	1497	960
VCA2-126	2246	960
VCA2-128	2995	960
VCA2-1211	4118	960
VCA2-1213	4866	960

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.

Applied Standards

- EN 62031
LED modules for general lighting – Safety specifications



- EN 62471
Photobiological safety of lamps and lamp systems

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Accessories

Reflectors:

- ACL-Lichttechnik GmbH
www.reflektor.com
- ALMECO Group
www.almecogroup.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

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