

COB C1A white

Octa Light Aluminum Base
Chip on Board Series

TECHNICAL DATASHEET

Octa Light C1A COB Series are the new breakthrough technology for high density, high uniformity and long life high power Chip On Board modules.

All Octa Light COB LEDs provide high thermal conductivity and biggest substrate stability.

Octa Light COB LEDs are provided with standard ANSI binning, assuring close-up color choice according to application request.

Main features

- High thermal conductance (>200 W/mK) pure aluminum base.
- Supplied in series connection – 27 V DC nominal @ test current 350mA
- Supplied Bare, with Easy Solder stack-up or standard holders assuring no need of connection wire soldering
- More light delivered at both low and high operating temperatures
- Specified CCT & CRI combinations
- ANSI compliant Quarter binning
- Exceed Energy Star® lumen maintenance requirements
- Low voltage operation and instant lighting
- Reflow process compatibility
- Optimized optical performance for higher light output in comparison to market competitors



General Coding instructions for Octa
Light C1A LED series
Product Binning and Labelling

OCTL – C1A – WW M1 – A 8A C – S 70
 X1 X2 X3 X6 X4 X5 X7 X8 X9

X1 Comp. name	X2 Series name	X3 Color type	X4 Optical type	X5 Chromaticity coordinates BIN ¹	X6 Minimum Flux BIN (Lm)	X7 Testing current (mA)	X8 Vf range at nominal current	X9 CRI range	
OCTL	C1A	CW - Cool White	A - 120 deg Lambertian	1 (A, B, C, D, E, F, O) ²	L1 - 1200	C - 350	S - 23.81 - 28.0	60 -> 60	
		NW - Neutral White	B - Batwing	2 (A, B, C, D, E, F, O)	M1 - 1300				70 -> 70
		WW - Warm White	C - 100 deg Lambertian	3 (A, B, C, D, E, F, O)	N1 - 1400				80 -> 80
		BL - Blue	E - Side Emitting	4 (A, B, C, D, E, F, O)	O1 - 1500				90 -> 90
		RD - Red	F - 110 deg Focused	5 (A, B, C, D, E, F, O)	P1 - 1600				95 -> 95
		YE - Yellow	L - 140 deg Lambertian	6 (A, B, C, D, E, F, O)	Q1 - 1700				
		GN - Green		7 (A, B, C, D, E, F, O)					
		CL - Color		8 (A, B, C, D, E, F, O)					
				BL (Blue)					
				RB (Royal Blue)					
				VL (Violet)					
				RD (Red)					
				RO (Red- Orange)					
				PK (Pink)					
				OR (Orange)					
				AM (Amber)					
				GN (Green)					
		CL (Color, for RGB)							

Notes:

1. Information about chromaticity coordinates bin can be found in Binning information file.
2. Chromaticity coordinates bin 10 includes all of the bins 1A, 1B, 1C, 1D, 1E, 1F. This applies for all bins.
3. * stands for future product



PRODUCT SELECTION

Table 2.1 Product Selection for Octa Light C1A Series LEDs- **High lm/W range**

Example nomenclatures for C1A LEDs series with highest lm/W combinations

	Nominal CCT	Part Number	Minimum CRI	Typical CRI	Minimal Luminous Flux (lm) @ 350mA	Typical Luminous Flux (lm) @ 350mA	Forward voltage range
Warm White	2700K	OCTL-C1A-WWMI-A80C-S70	70	75	1200	1300	23.81 - 28.0 V
	3000 K	OCTL-C1A-WWMI-A70C-S70	70	75	1200	1300	23.81 - 28.0 V
	3500 K	OCTL-C1A-WWMI-A60C-S70	70	75	1200	1300	23.81 - 28.0 V
Neutral White	4000K	OCTL-C1A-NWQ1-A50C-S70	70	75	1400	1500	23.81 - 28.0 V
	4500K	OCTL-C1A-NWQ1-A40C-S70	70	75	1400	1500	23.81 - 28.0 V
Cool White	5000K	OCTL-C1A-CWQ1-A30C-S70	70	75	1600	1700	23.81 - 28.0 V
	5700K	OCTL-C1A-CWQ1-A20C-S70	70	75	1600	1700	23.81 - 28.0 V
	6500K	OCTL-C1A-CWQ1-A10C-S70	70	75	1600	1700	23.81 - 28.0 V

Table 2.2 Product Selection for Octa Light C1A Series LEDs- **High CRI range**

Example nomenclatures for C1A LEDs series with high lm/W and High CRI combinations

	Nominal CCT	Part Number	Minimum CRI	Typical CRI	Minimal Luminous Flux (lm) @ 350mA	Typical Luminous Flux (lm) @ 350mA	Forward voltage range
Warm White	2700K	OCTL-C1A-WWLI-A80C-S80	80	85	1100	1200	23.81 - 28.0 V
	3000 K	OCTL-C1A-WWLI-A70C-S80	80	85	1100	1200	23.81 - 28.0 V
	3500 K	OCTL-C1A-WWLI-A60C-S80	80	85	1100	1200	23.81 - 28.0 V
Neutral White	4000K	OCTL-C1A-NWNI-A50C-S80	80	85	1300	1400	23.81 - 28.0 V
	4500K	OCTL-C1A-NWNI-A40C-S80	80	85	1300	1400	23.81 - 28.0 V
Cool White	5000K	OCTL-C1A-CWP1-A30C-S80	80	85	1500	1600	23.81 - 28.0 V
	5700K	OCTL-C1A-CWP1-A20C-S80	80	85	1500	1600	23.81 - 28.0 V
	6500K	OCTL-C1A-CWP1-A10C-S80	80	85	1500	1600	23.81 - 28.0 V

1. Octa Light PLC maintains a tolerance of $\pm 5\%$ on forward voltage measurements.
2. All binnings are at 25C color temperature



ELECTRICAL CHARACTERISTICS

Table 3. Forward voltage characteristics for series connection, test current $I_f = 350$ mA and thermal pad temperature 25°C

Color	Part Name	Forward Voltage V_f (V)			$\Delta V_f/\Delta T_j$ (mV/ $^\circ\text{C}$)	$R_{th\ j-c}$ ($^\circ\text{C}/\text{W}$)
		Min.	Typical	Max.		
Cool white	OCTL-C1A - WWX-A80C- X70	25.2	27.0	28.8	16	1.2
	OCTL-C1A - WWX-A70C- X70	25.2	27.0	28.8	16	1.2
	OCTL- C1A -WWX-A60C- X70	25.2	27.0	28.8	16	1.2
Neutral white	OCTL- C1A - NWX-A50C- X70	25.2	27.0	28.8	16	1.2
	OCTL- C1A - NWX-A40C- X70	25.2	27.0	28.8	16	1.2
Warm white	OCTL- C1A - CWX-A30C- X70	25.2	27.0	28.8	16	1.2
	OCTL- C1A - CWX-A20C- X70	25.2	27.0	28.8	16	1.2
	OCTL- C1A - CWX-A10C- X70	25.2	27.0	28.8	16	1.2

Notes:

1. Octa Light PLC maintains a tolerance of $\pm 5\%$ on forward voltage measurements.
2. Based on order codes, Octa Light PLC can deliver a specific V_f binning range as follows:
 - a. V_f Range 23.81-28 – V_f bin S, see column X8 in coding guidelines
 - b. V_f Range 28.01-32.4 – V_f bin F, see column X8 in coding guidelines

ABSOLUTE MAXIMUM RATINGS

Table 4. Absolute maximum ratings for thermal pad temperature 25°C , Series connection test current 350mA

Parameter	Symbol	Max rate
Maximum DC forward current (continuous)	I_{fmax}	600 mA
Maximum Pulse current (10 mS pulse width, 10% duty cycle)	I_{fpeak}	800 mA
Absolute Max forward voltage @ 600 mA	$V_{fmax\ 600mA}$	29.5 V
Maximal Led junction temperature	T_{jmax}	150 C
ESD sensitivity	V	Class 2 *
Operating Case temperature @ 2100 mA	T_{cmax}	-60 + 140
Soldering temperature	$T_{soldermax}$	260 C **
Storage temperature	T_{store}	-40C to +120 C
Allowable Reflow cycles	/	3 times
Reverse voltage at maximal reverse current 10 μA	V_r	15 V

* ESD sensitivity CLASS II, human body model, ANSI/ESDA/JEDEC JS-001-2012

** JEDEC Q20D

THERMAL AND OPTICAL CHARACTERISTICS

Table 5. Absolute maximum ratings for thermal pad temperature 25°C

Parameter	Symbol	Typical
Thermal resistance, junction to solder point	C/W	1.2
Viewing Angle Lambertian Distribution (FWHM)	Degrees	120
Color Shift Versus angle Δx and Δy at 80 degree viewing angle, CIE 1931 Optical distribution type A	$\Delta x, \Delta y$	0.04, 0.04

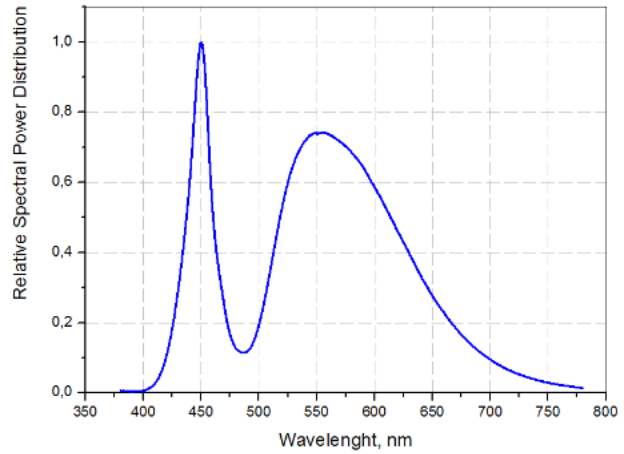


JEDEC MOISTURE SENSITIVITY

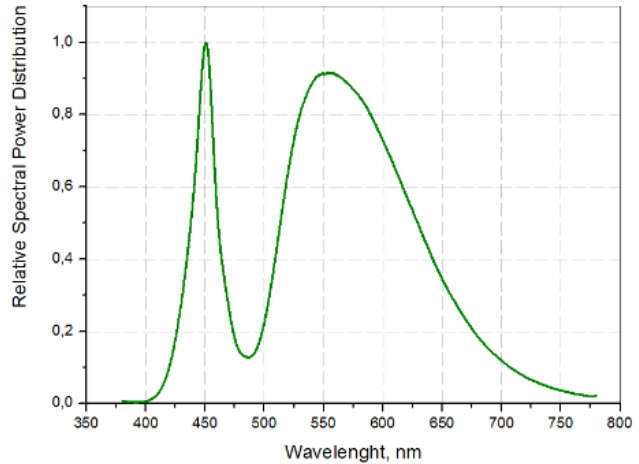
LEVEL	Floor Life		Soak Requirements	
	Time	Condition	Time	Condition
3	168 hours	30, 60% RH	192 Hrs +5 -0 Hrs	30 C 62% RH

Relative Spectral Distribution (mW Versus Wavelength)

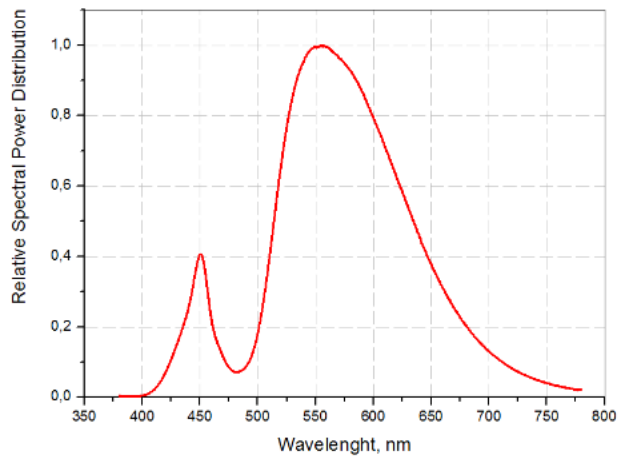
Relative Cool White Spectral power distribution



Relative Neutral White Spectral power distribution

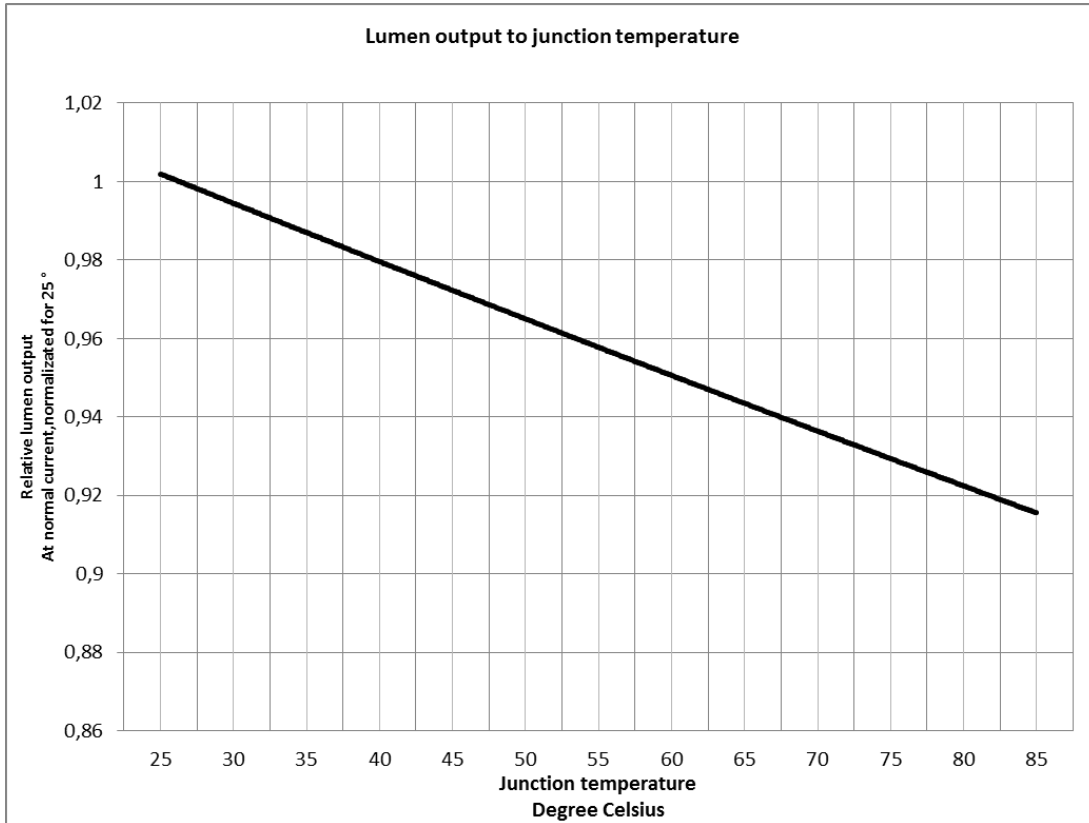


Relative Warm White Spectral power distribution

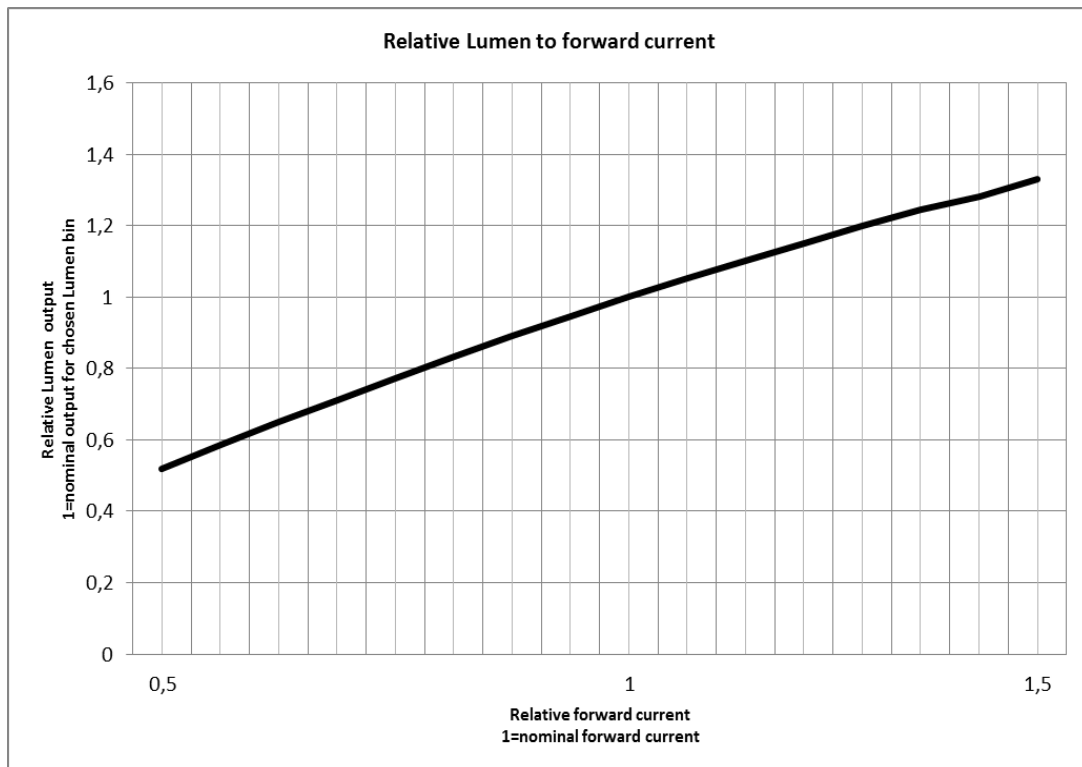




Light output characteristics over temperature

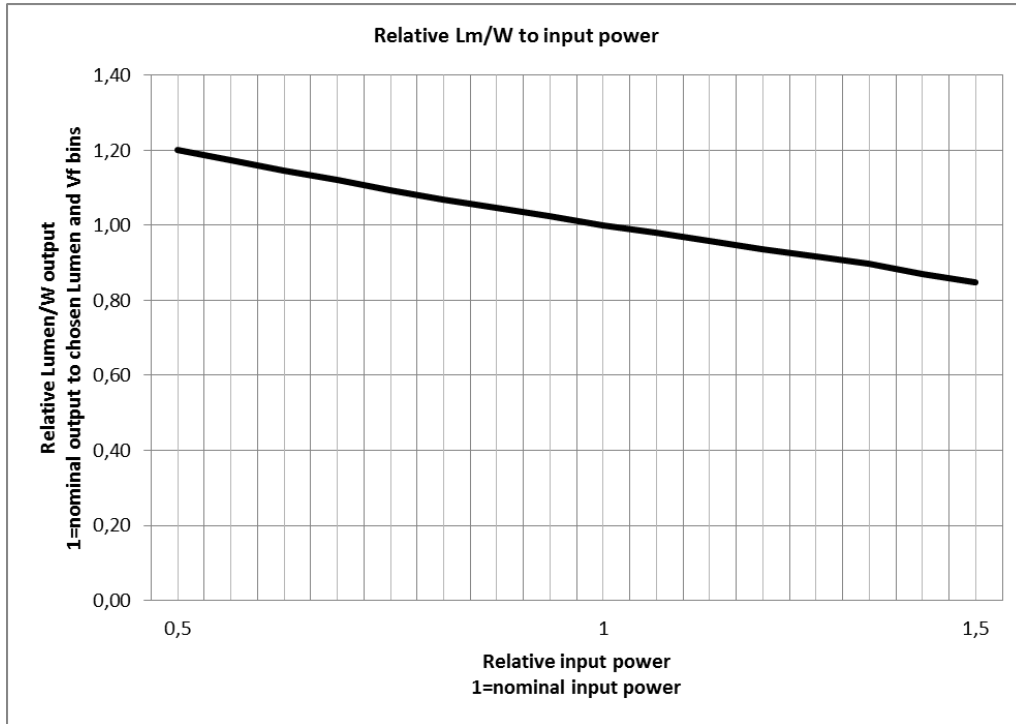


Relative Luminous Flux from forward current at junction temperature 25 °C

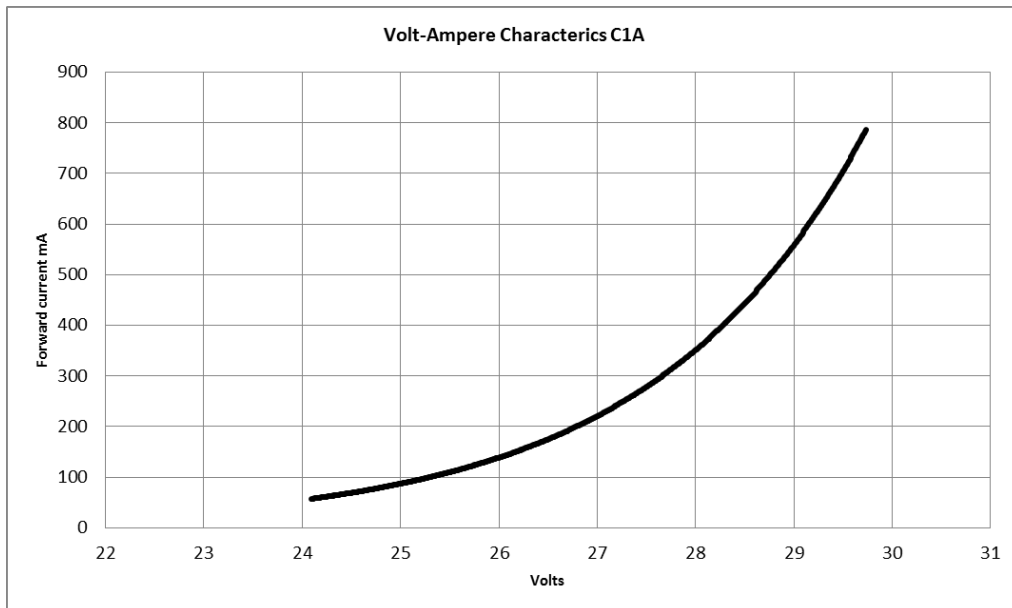




Relative Lumen/W output from input power consumption at junction temperature 25 °C



Volt-Ampere characteristics at Junction temperature 25 °C



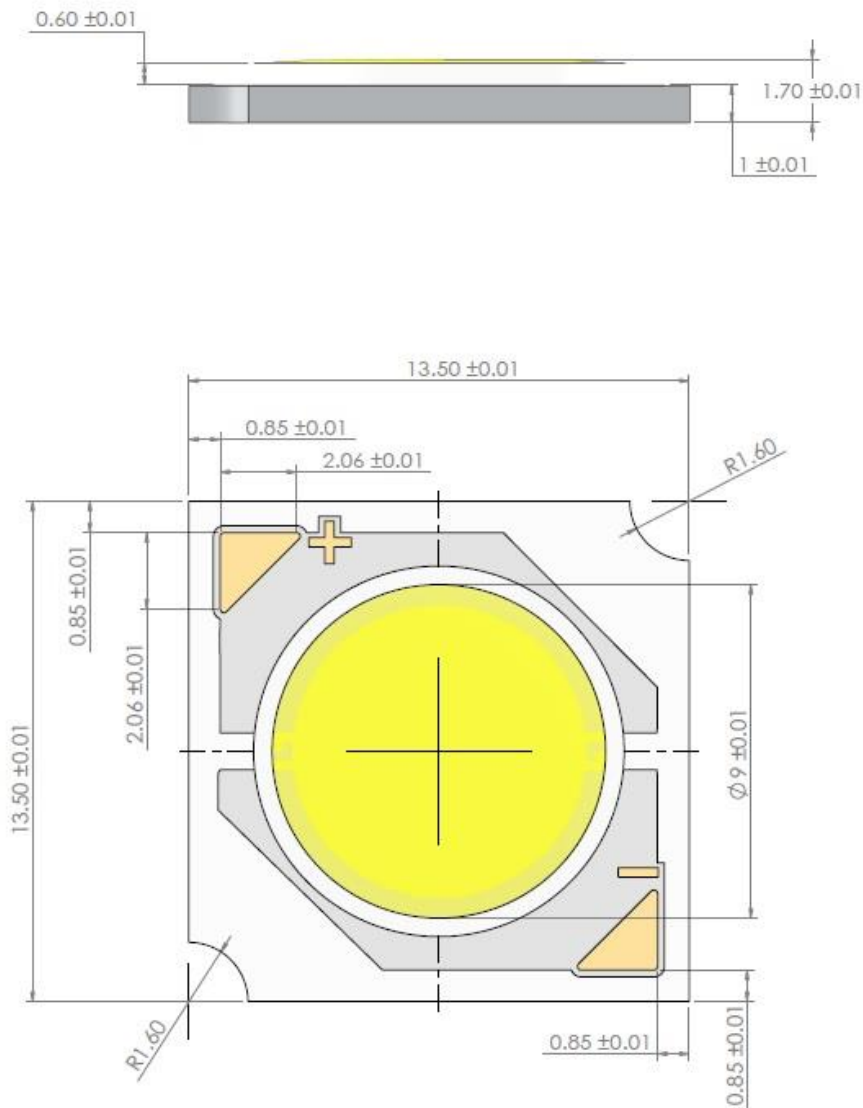
Notes:

1. Octa Light PLC maintains a tolerance of $\pm 5\%$ on forward voltage measurements.
2. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
3. Light Emitting Diodes are not designed to be driven in reverse bias.
4. Allowable reflow cycles are 3 times for each LED.



LED PACKAGE DIMENSIONS AND POLARITY

Bare LED Dimensional characteristics



Notes:

1. All dimensions are in mm
2. Drawings are not to scale



LABELING INFORMATION

LED PART NUMBER

ROHS DIRECTIVE COMPLIANCE

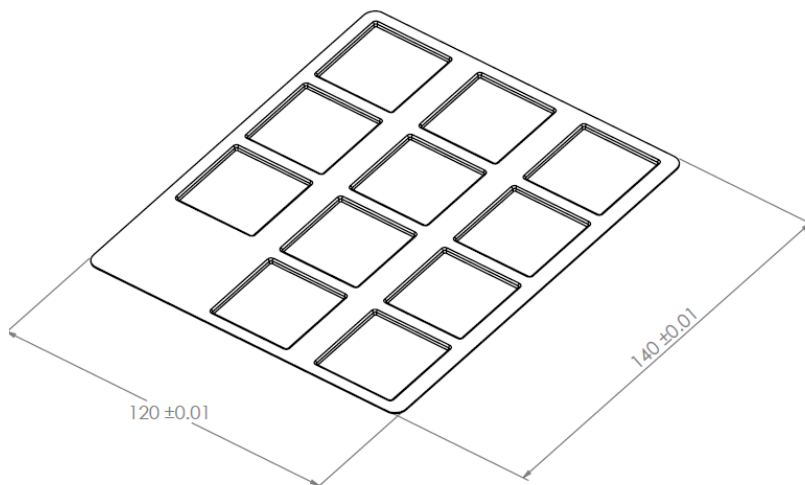
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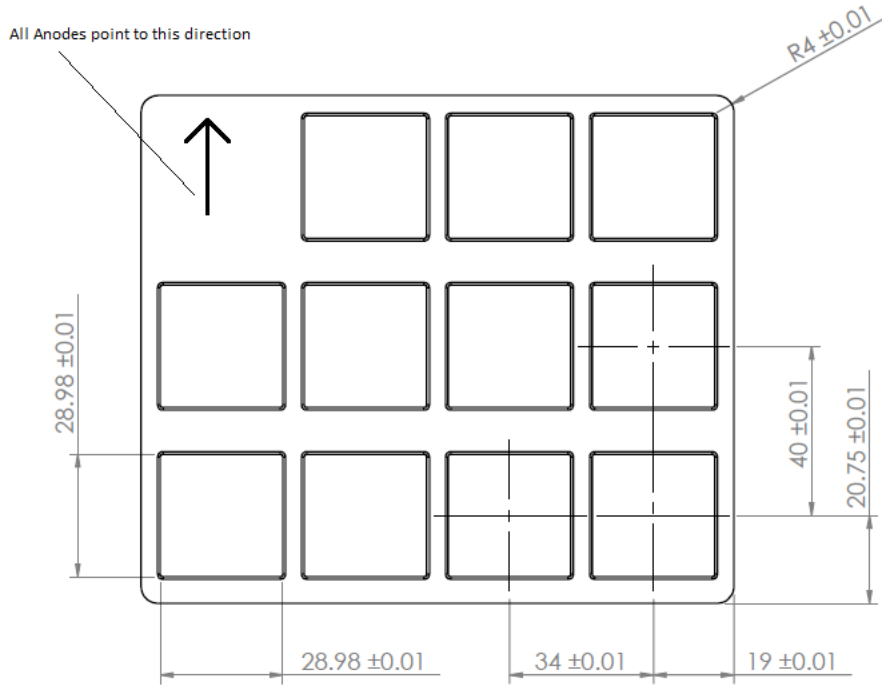


INTERNAL COMPANY INFORMATION

QUANTITY

PACKING TRAY SPECIFICATION

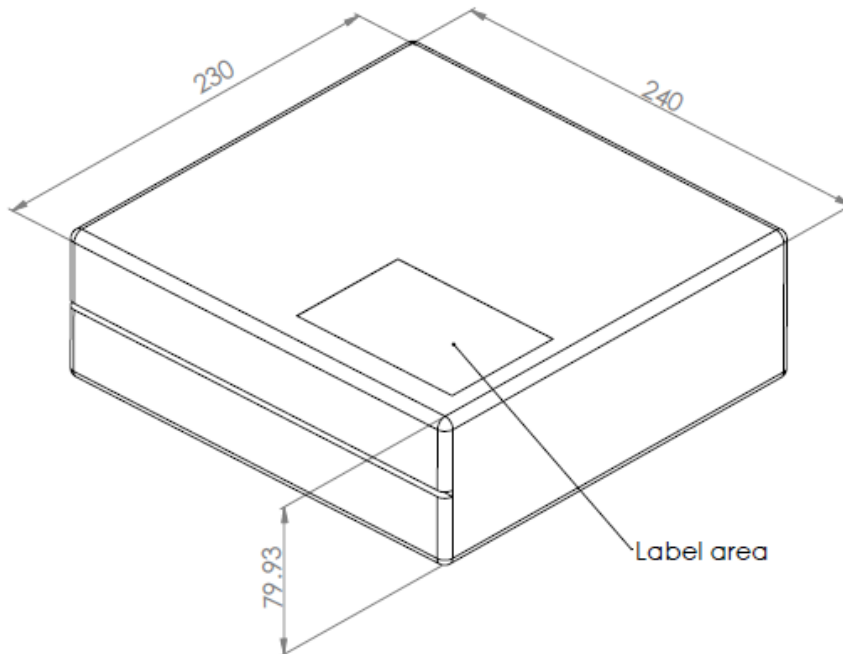




Packaging notes:

- All dimensions are in mm
- All units with same orientation within Tray.
- 11 pieces in one tray
- Tray are delivered in vacuum packed, ESD protected Bags with humidity catch pack and humidity sensor
- Only Bare LEDs and LEDs with Easy solder option are provided in trays. Holders for LEDs are provided in a separate package

PACKAGING SPECIFICATION



Packaging notes:

- All dimensions are in mm
- LEDs are delivered in Carton Boxes, each containing up to 5 Trays within one carton BOX.
- Label information contains the information regarding the LEDs inside each box, as well as Tray number inside



COMPANY INFORMATION

Octa Light Bulgaria was established in 2010 as a research and manufacturing center for Light Emitting Diodes (LED) and is entirely based in the EU. Octa Light Bulgaria own LED portfolio includes powerful high-brightness light emitting diodes, last generation of low-power & mid-power LEDs, wide range of COBs and innovative AC LED modules. The company manufactures LEDs in in all three base colors - red, green, blue and white, as well as exotic colors as pink, cyan, yellow, purple and other on basis of client requirements. We constantly upgrade our LEDs range to bring highest performance and quality of light sources for today's wide range of lighting applications.

The company is also OEM and ODM supplier of LED packages.

Today Octa Light Bulgaria is fully vertically integrated manufacturer of LED packages, LED modules, LED lamps and LED luminaires.

Octa Light Bulgaria offers also complete lighting solutions accomplishing a variety of lighting projects with own range of LED luminaires. Further to its core lighting business the company offers Electronic Manufacturing Services (EMS).

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