Mini half-watt SMD 3.5mm (120° Viewing Angle)



OVS5MxBCR4 Series

- Compact Package Outline of 3.5 x 3.5 x 1.2 mm
- Robust energy-efficient design with long operating life
- Low thermal resistance
- · Exceptional spatial uniformity
- Compatible to IR reflow soldering
- High Lumens output



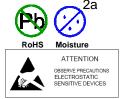
The **mini-half watt** is an energy-efficient packaged LED source that offers high luminance, and a long operating lifespan. This device offers a 120° view ing angle and an ultra-low profile (1.2 mm) making it highly suitable for conventional lighting and specialized applications.

Applications

- Automotive exterior and interior lighting
- Architectural indoor and outdoor lighting
- General lighting
- Display Backlighting
- Electronic signs and signals

Part Number	Viewing Angle	Emitted Color	Typ. Luminous Flux (lm)	Forward Voltage V _F	Power Dissipation @ 150 mA	Lens Color
OVS5MWBCR4		White	30	3.4	0.51 W	
OVS5MWWBCR4	120	Warm White	30	3.6	0.54 W	Clear
OVS5MBBCR4	120	Blue	6	3.4	0.51 W	Cleal
OVS5MGBCR4		Green	22	3.4	0.51 W	

Part Number	Viewing Angle	Emitted Color	Typ. Luminous Intensity (mcd)	Forward Voltage V _F	Power Dissipation @ 150 mA	Lens Color
OVS5MRBCR4		Red	7150	2.2	0.33 W	
OVS5MABCR4	120	Amber	7150	2.2	0.33 W	Clear
OVS5MYBCR4		Yellow	7150	2.2	0.33 W	



DO NOT LOOK DIRECTLY
AT LED WITH UNSHIELDED
EYES OR DAMAGE TO
RETINA MAY OCCUR.

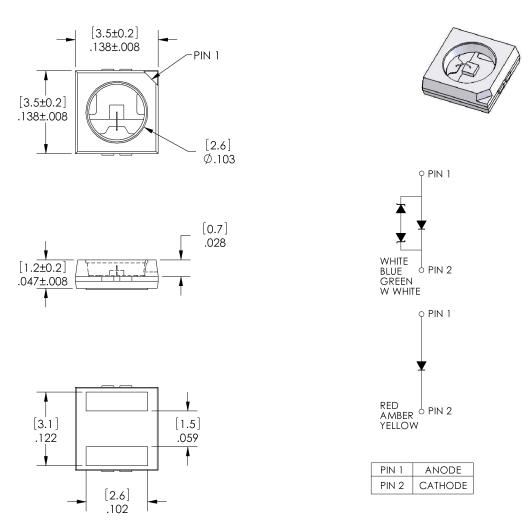


Absolute Maximum Ratings T_A = 25℃

	Red, Amber, Yellow	Green, Blue	White	Warm White
DC Forward Current	200 mA		180 mA	
Peak Pulsed Forward Current ¹	1000 mA	350 mA		
Reverse Voltage	12V @ 10 uA	Not designed for reverse bias		
Junction Temperature ²	125℃			
Power Dissipation		750m	W	
Storage and Operating Temperature	-40°~ +100 °C			
ESD (JEDEC-JESD22-A114F)	Class 2			
MSL (IPC / JEDEC J-STD-020C)	2a / 672 Hrs			

Notes

- 1. Pulse width tp \leq 10 μ s, Duty cycle = 0.1
- 2. Thermal Resistance = 5 C/W



DIMENSIONS ARE IN INCHES [MM].



Optical and Electrical Characteristics - Red, Amber, Yellow (I_F = 140 mA, T_A = 25°C)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	
V_{F}	Forward Voltage	1.9	2.2	2.65	V	
		Red		7150	9000	mcd
Ф	Luminous Intensity	Amber	4500			
		Yellow				
		Red	620	625	630	
λ_{D}	Dominant Wavelength	Amber	610	615	621	nm
		585	590	594		
I _R	Reverse Current @ 12 V		10		μΑ	
2 Θ½	50% Power Angle	-		120		deg

Optical and Electrical Characteristics - Blue, Green ($I_F = 150 \text{ mA}$, $T_A = 25^{\circ}\text{C}$)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	
V_{F}	Forward Voltage	3.0	3.4	3.9	V	
Φ	Luminous Flux	Blue	4.9	6.0	8.2	lm
Ψ	Luminous Flux	Green	18.1	22.0	30.6	1111
,	Descination (Management		460	465	470	nm
λ _D	Dominant Wavelength	Green	520	525	535	nm
2 Θ½	50% Power Angle	50% Power Angle				deg

Optical and Electrical Characteristics - White, Warm White (I_F = 150 mA, T_A = 25°C)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	
V_{F}	Forward Voltage	White	3.0	3.4	4.1	V
VF	Forward Voltage	Warm White		3.6		
Ф	A Lumbaua Elius		22.5	20.6	20.0	Im
Ψ	Luminous Flux	Warm White	23.5	30.6	39.8	lm
2 Θ½	50% Power Angle		120		deg	



Standard Bins

LEDs are sorted to luminous intensity (I_V) or luminous flux (Φ) and dominant wavelength (nm) bins shown. Each reel consists of a single intensity bin and a single color bin. Orders are filled using all intensity and color bins listed in the following tables. Optek will not accept orders for single intensity bins or single color bins.

Luminous Flux (Φ) @ 150mA (lm)

Blue: OVS5MBBCR4						
IV Code	Min (lm)	Max (Im)				
H2	4.9	5.5				
НЗ	5.5	6.3				
J2	6.3	7.1				
J3	7.1	8.2				
Gree	n: OVS5MGE	BCR4				
IV Code	Min (lm)	Max (Im)				
N2	18.1	20.6				
N3	20.6	23.5				
P2	23.5	26.8				
P3	26.8	30.6				

Dominant Wavelength (nm)

Blue: OVS5MBBCR4						
nm Code	Min (nm)	Max (nm)				
Α	460	465				
В	465	470				
Gree	n: OVS5MGE	BCR4				
nm Code	Min (nm)	Max (nm)				
Α	520	525				
В	525	530				
С	530	535				

Luminous Intensity (I_V) @ 140mA

Amber: OVS5MABCR4					
IV Code	Min (mcd)	Max (mcd)			
Z1	4500	5600			
Z2	5600	7150			
AA	7150	9000			
Red	: OVS5MRB	CR4			
IV Code	Min (mcd)	Max (mcd)			
Z1	4500	5600			
Z2	5600	7150			
AA	7150	9000			
Yellov	w: OVS5MY	BCR4			
IV Code	Min (mcd)	Max (mcd)			
Z1	4500	5600			
Z2	5600	7150			
AA	7150	9000			

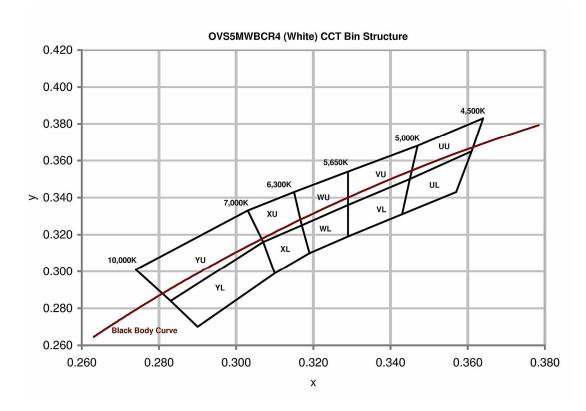
Dominant Wavelength (nm)

Amber: OVS5MABCR4					
Min (nm)	Max (nm)				
610	615				
615	621				
OVS5MRB	CR4				
Min (nm)	Max (nm)				
620	630				
v: OVS5MYI	BCR4				
Min (nm)	Max (nm)				
585	588				
588	591				
591	594				
	Min (nm) 610 615 OVS5MRB Min (nm) 620 W: OVS5MYI Min (nm) 585 588				



Standard Bins (I_F = 150mA)

LEDs are sorted to luminous flux (Φ) and chromaticity coordinates (x, y) bins shown. Each reel consists of a single intensity bin and a single chromaticity bin. Orders are filled using all intensity and chromaticity bins listed in the following table. Optek will not accept orders for single intensity bins or single chromaticity bins.



Chromaticity Coordinates (x, y)

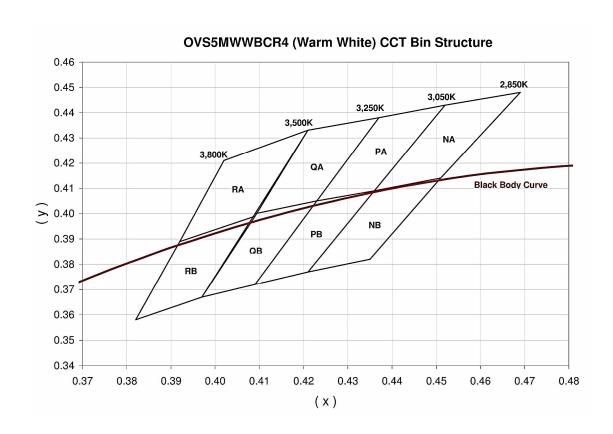
Rank	YU				Υ	L		
Сх	0.274	0.283	0.307	0.303	0.283	0.290	0.310	0.307
Су	0.301	0.284	0.316	0.333	0.284	0.270	0.299	0.316
Rank		Х	U			Х	L	
Сх	0.303	0.307	0.317	0.315	0.307	0.310	0.319	0.317
Су	0.333	0.316	0.325	0.343	0.316	0.299	0.310	0.325
Rank		W	U		WL			
Сх	0.315	0.317	0.329	0.329	0.317	0.319	0.329	0.329
Су	0.343	0.325	0.336	0.354	0.325	0.310	0.319	0.336
Rank		V	U		VL			
Сх	0.329	0.329	0.345	0.347	0.329	0.329	0.343	0.345
Су	0.354	0.336	0.350	0.368	0.336	0.319	0.331	0.350
Rank	UU				U	L		
Сх	0.347	0.345	0.361	0.364	0.345	0.343	0.357	0.361
Су	0.368	0.350	0.365	0.383	0.350	0.331	0.343	0.365

Φ	Luminous Flux (lm)				
Bin	Min	Max			
P2	23.5	26.8			
P3	26.8	30.6			
Q2	30.6	34.8			
Q3	34.8	39.8			



Standard Bins (I_F = 150mA)

LEDs are sorted to luminous flux (Φ) and chromaticity coordinates (x, y) bins shown. Each reel consists of a single intensity bin and a single chromaticity bin. Orders are filled using all intensity and chromaticity bins listed in the following table. Optek will not accept orders for single intensity bins or single chromaticity bins.



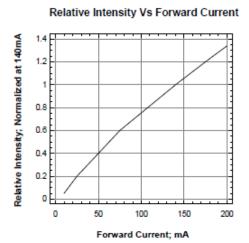
Chromaticity Coordinates (x, y)

Rank	RA				RB			
Сх	0.402	0.392	0.409	0.421	0.392	0.382	0.397	0.409
Су	0.421	0.389	0.399	0.433	0.389	0.358	0.367	0.399
Rank	QA				QB			
Сх	0.421	0.409	0.423	0.437	0.409	0.397	0.409	0.423
Су	0.433	0.400	0.405	0.438	0.400	0.367	0.372	0.405
	PA				РВ			
Rank		Р	A			P	В	
Rank Cx	0.437	P 0.423	A 0.436	0.452	0.423	0.409	0.421	0.436
	0.437 0.438			0.452	0.423 0.405			0.436 0.409
Сх		0.423 0.405	0.436			0.409	0.421	
Cx Cy		0.423 0.405	0.436 0.409			0.409	0.421	

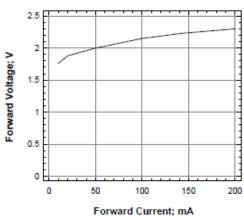
Ф	Luminous Flux (Im)				
Bin	Min	Max			
P2	23.5	26.8			
P3	26.8	30.6			
Q2	30.6	34.8			
Q3	34.8	39.8			



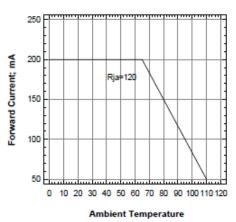
OVS5MABCR4 (Amber), OVS5MRBCR4 (Red) and OVS5MYBCR4 (Yellow)



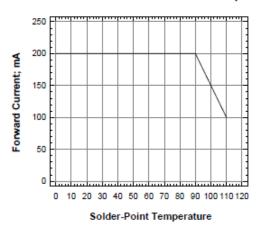
Forward Voltage Vs Forward Current



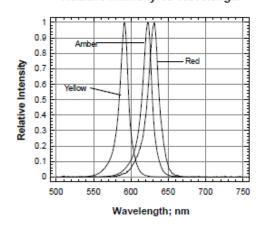
Maximum Current Vs Ambient Temperature



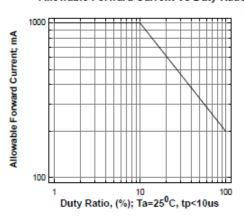
Maximum Current vs Solder-Point Temperature



Relative Intensity Vs Wavelength



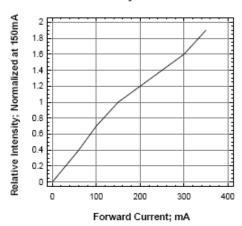
Allowable Forward Current Vs Duty Ratio



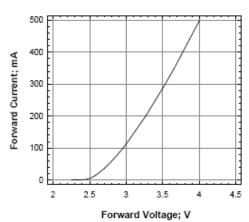


OVS5MBBCR4 (Blue), OVS5MGBCR4 (Green), OVS5MWBCR4 (White) and OVS5MWWBCR4 (Warm White)

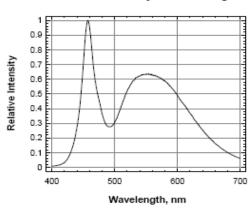
Relative Intensity Vs Forward Current



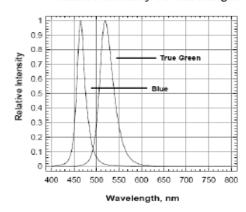
Forward Current vs Forward Voltage



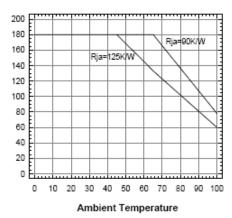
White & Warm White Relative Intensity Vs Wavelength

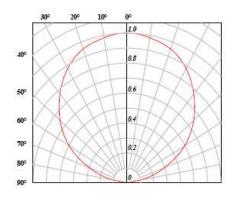


Blue & Green Relative Intensity Vs Wavelength



Forward Current Vs Ambient Temperature



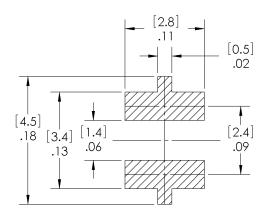


Beam Angle: All Colors

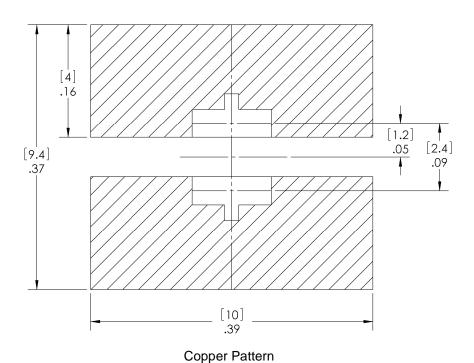


Solder Pad Design

Note: Metal core circuit board (MCPCB) is highly recommended for high density applications. FR-4 board is recommended for other applications

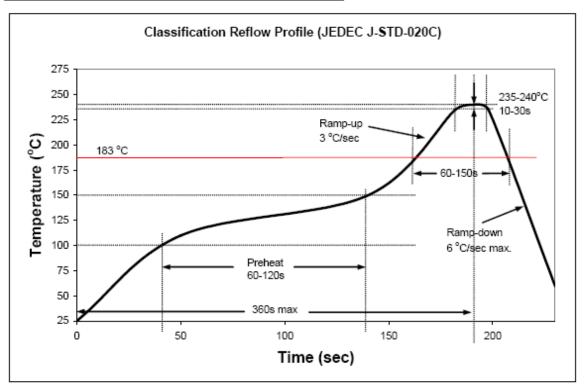


Solder Paste Pattern

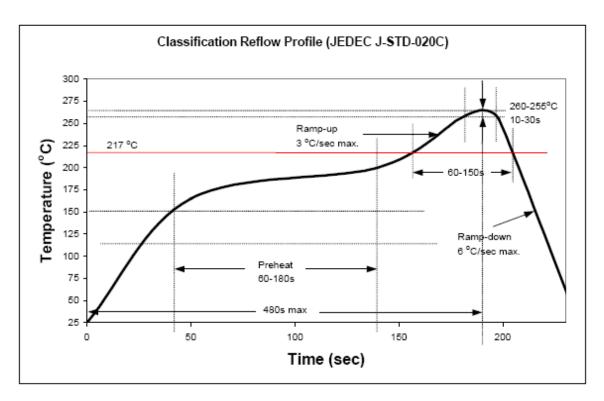




Recommended Sn-Pb IR-Reflow Soldering Profile.

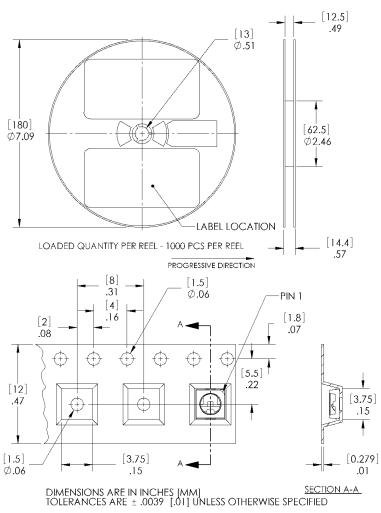


Recommended Pb Free IR-Reflow Soldering Profile.





Reel Dimensions: 7-inch reel



Carrier Tape Dimensions: Loaded quantity 1000 pieces per reel

