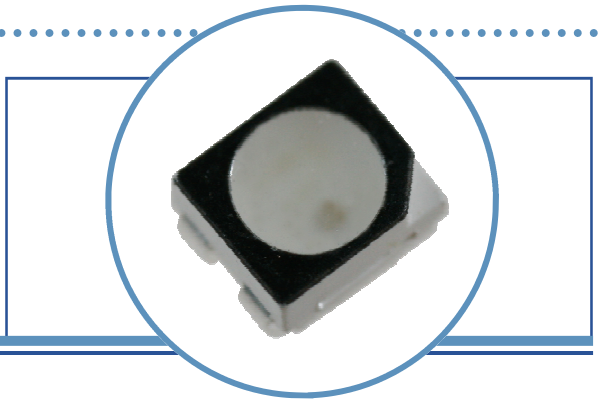
Full Color PLCC4 LED

TT electronics
OPTEK Technology

OVSARGB4R8

- Surface mount device packaged in 8 mm tape on 7” diameter reel
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow solder
- Dimensions: 3.5 x 2.8 x 1.9 mm
- 120° viewing angle

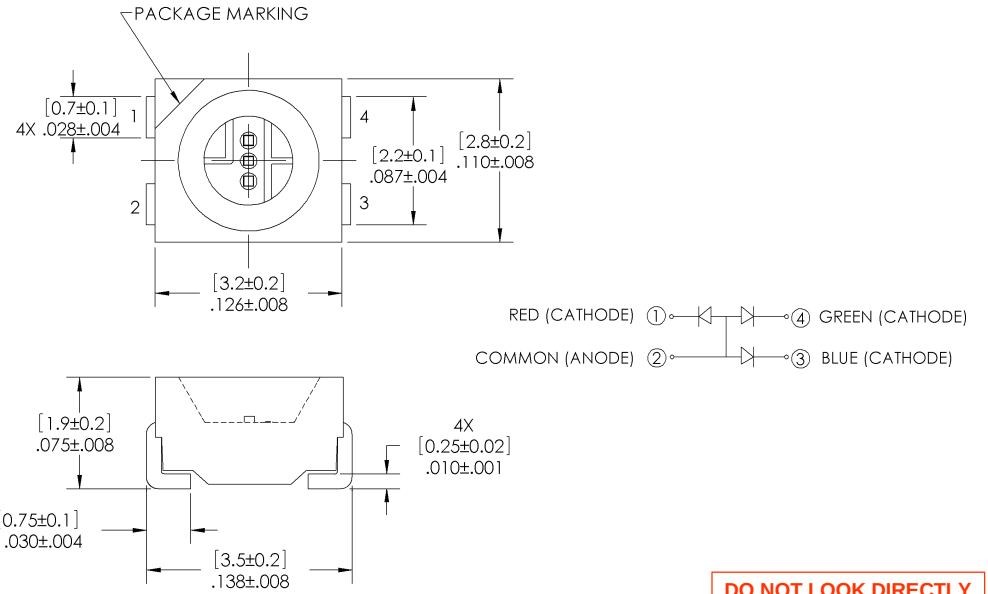


The **OVSARGB4R8** provides full color light output from a single package, 3-die design. This surface mount package is an efficient solution in modular applications that require uniform brightness and color-on-demand. Light output is optimized by an interior reflector and the wide viewing angle adds flexibility for applications ranging from hand-held appliances to automotive interiors.

Applications

- RGB full-color indoor and outdoor displays
- Backlighting
- Coupling into light guides
- Automotive interiors
- Entertainment equipment

Part Number	Chip				Lens Color
	Type	Material	Emitted Color	Intensity Typ. mcd	
OVSARGB4R8	R	AlInGaP	Red	550	Diffused
	G	InGaN	Green	850	
	B	InGaN	Blue	320	



RoHS 5a Moisture

ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

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

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 visibleLED@optekinc.com www.optekinc.com

Absolute Maximum Ratings

T_A = 25° C unless otherwise noted

PARAMETER	RATING			UNIT
	R	G	B	
Storage Temperature	-40 ~ +100			℃
Operating Temperature	-40 ~ +100			℃
Reverse Voltage	5			V
Continuous Forward Current (1 chip on)	50	25	25	mA
Peak Forward Current (10% Duty Cycle, PW ≤ 100 µsec, 1 chip on)	200	100	100	mA
Power Dissipation	130	100	100	mW
Junction Temperature	110	110	110	℃
Junction/ambient (1 chip on)	450	400	450	℃/W
Junction/ambient (3 chips on)	650	580	680	℃/W
Junction/solder point (1 chip on)	300	280	300	℃/W
Junction/solder point (3 chips on)	450	430	480	℃/W
Electrostatic Discharge Classification (JEDEC-JESD22-A114F)				Class 1C
Moisture Sensitivity Level (IPC/JEDEC J-STD-020C)				5a / 24 Hrs

Electrical Characteristics

T_A = 25° C unless otherwise noted

SYMBOL	PARAMETER		VALUES			UNIT	CONDITIONS
			R	G	B		
I_V	Luminous Intensity	Min	355	560	180	mcd	I_F = 20 mA
		Typ	550	850	320		
V_F	Forward Voltage	Typ	2.0	3.2	3.2	V	I_F = 20 mA
		Max	2.6	4.0	4.0		
I_R	Reverse Current (max)		10	10	10	µA	V_R = 5 V
λ_D	Dominant Wavelength		619-624	520–540	460–480	nm	I_F = 20 mA
λ_P	Wavelength at Peak Emission		630	527	470	nm	I_F = 20 mA
2 Θ½	50% Power Angle		120	120	120	deg	I_F = 20 mA
Δλ	Spectral Radiation Bandwidth		24	38	28	nm	I_F = 20 mA

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Standard Bins

LEDs are sorted to luminous intensity (I_V) 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 Intensity (I_V) @ 20mA

RED		
Code	Min (mcd)	Max (mcd)
H	355	450
J	450	560
K	560	710

GREEN		
Code	Min (mcd)	Max (mcd)
K	560	710
M	710	900
N	900	1120

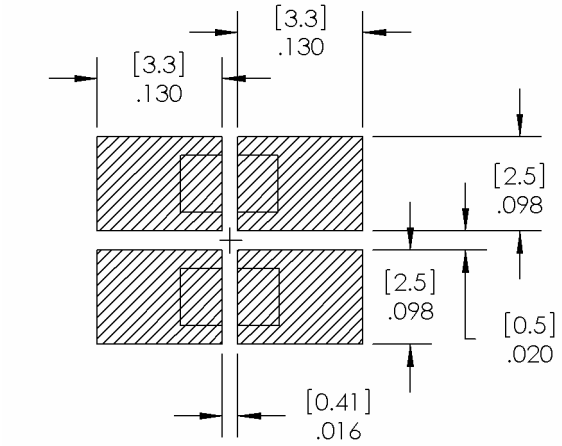
BLUE		
Code	Min (mcd)	Max (mcd)
E	180	224
F	224	280
G	280	355

Dominant Wavelength (nm)

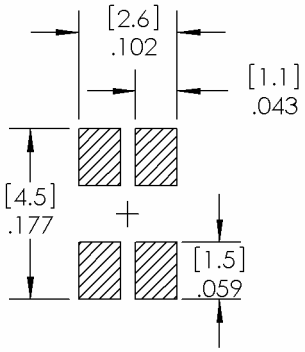
RED		
Code	Min (nm)	Max (nm)
RB	619	624

GREEN		
Code	Min (nm)	Max (nm)
G7	520	525
G8	525	530
G9	530	535
Ga	535	540

BLUE		
Code	Min (nm)	Max (nm)
B3	460	465
B4	465	470
B5	470	475

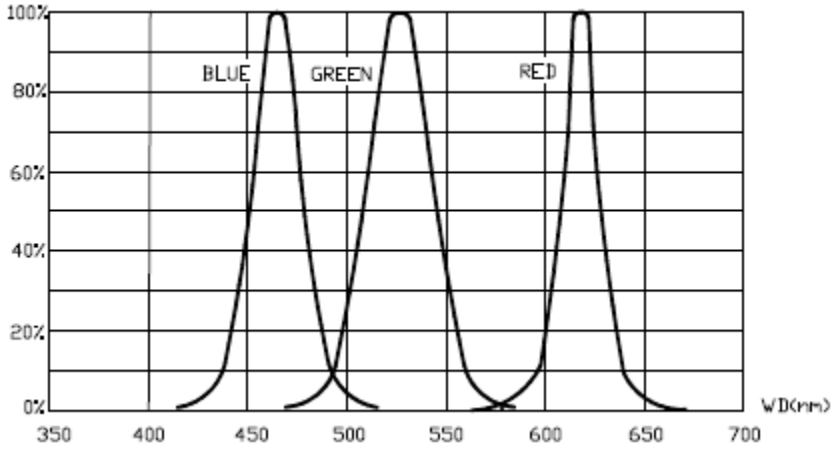


RECOMMENDED COPPER PATTERN

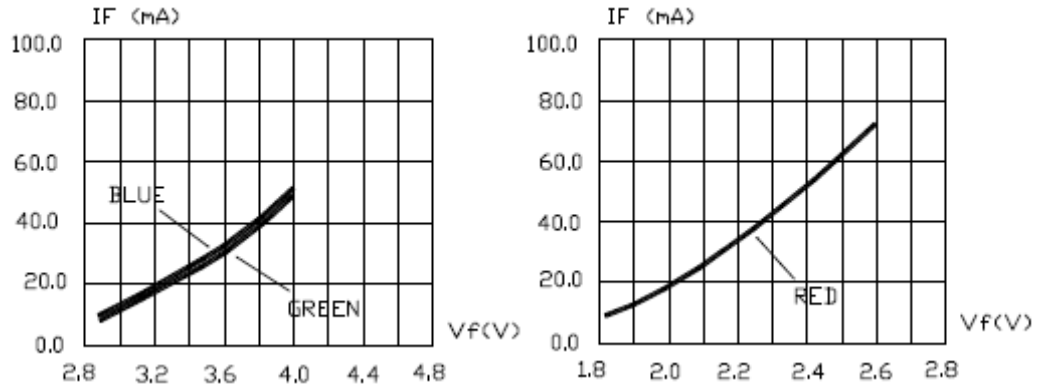


RECOMMENDED SOLDER PASTE PATTERN

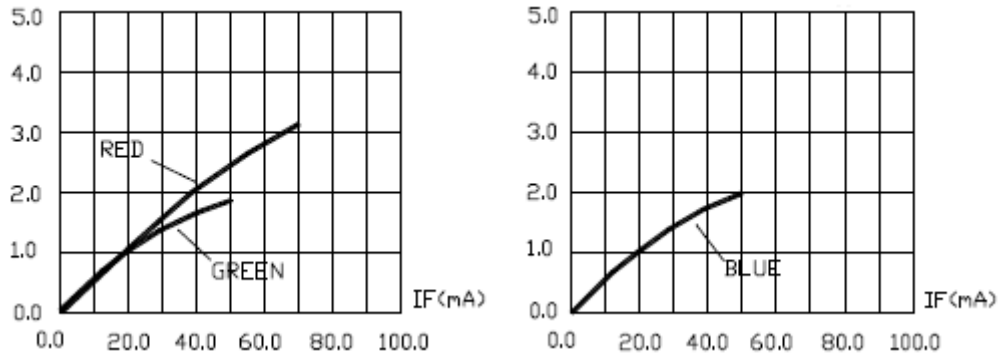
Typical Electro-Optical Characteristics Curves



Relative Intensity vs Dominant Wavelength



Forward Current vs Forward Voltage



Relative Luminous Intensity vs Forward Current

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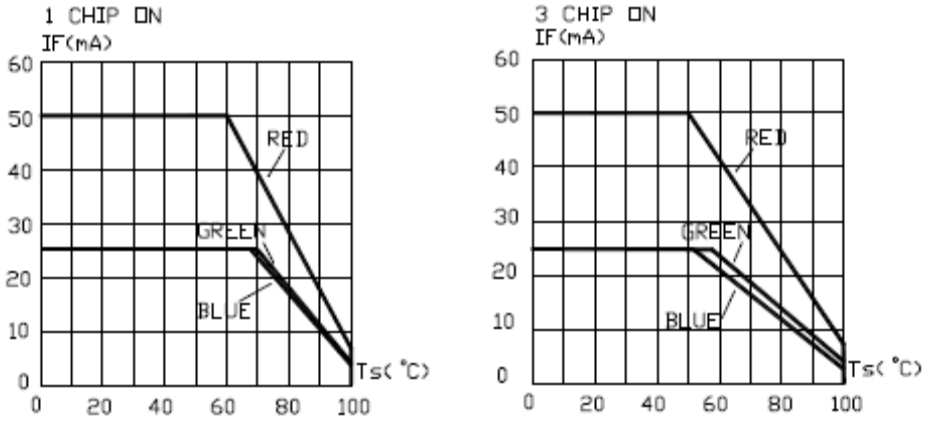
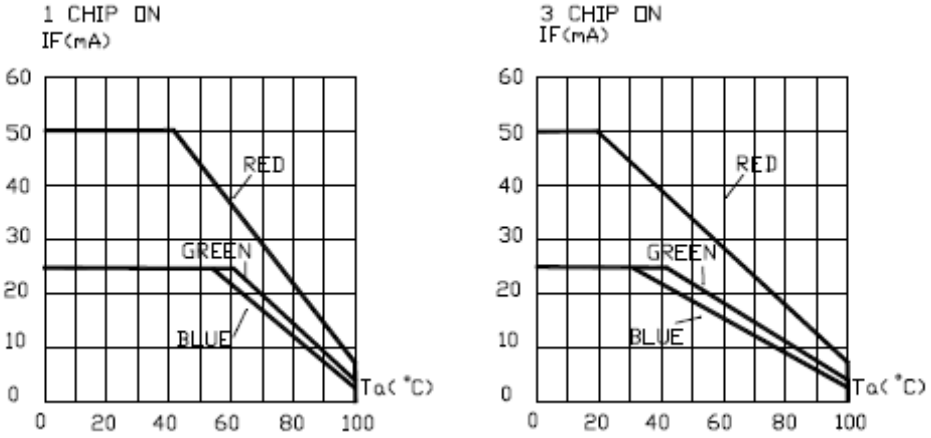
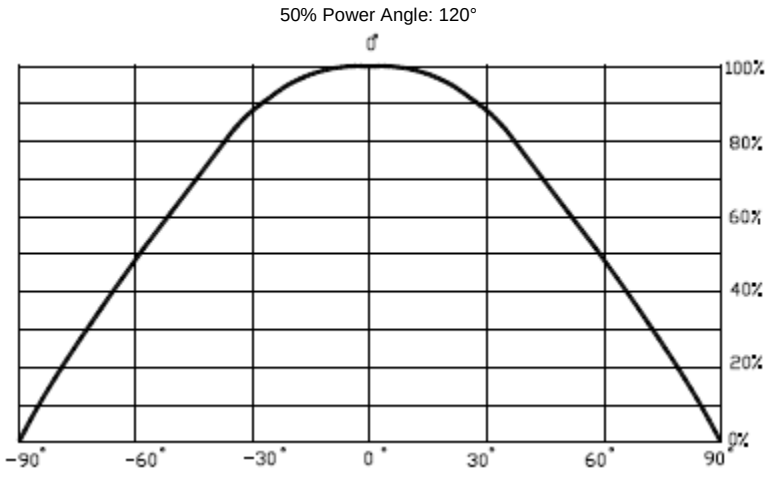
Typical Electro-Optical Characteristics Curves



Maximum Forward DC Current vs Solder Point Temperature



Maximum Forward DC Current vs Ambient Temperature



Far Field Pattern

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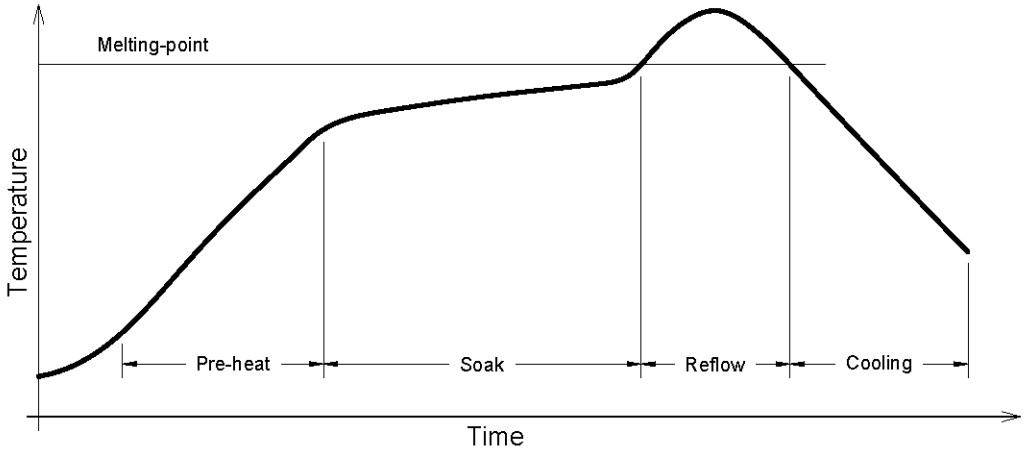
Reflow Solder Profile

Manual soldering by soldering iron:

- The use of a soldering iron of less than 25 W is recommended. The temperature of the iron must be kept at below 315℃ with soldering time within 2 seconds
- The epoxy resin of the SMD LED should not contact the tip of the soldering iron.
- No mechanical stress should be exerted on the resin portion of the SMD LED during soldering.
- Handling of the SMD LED should be done when the package has been cooled down to below 40℃ or less. This is to prevent LED failures due to thermal-mechanical stress during handling.
- The temperature (top surface of the SMD LED) profile is as below:



Solder = Lead-Free
Average ramp-up rate = 4℃ / sec. max
Preheat temperature: 150 - 200℃
Preheat time: 120 sec. max.
Ramp-down rate = 6℃ / sec. max.
Peak temperature = 250℃ max.
Time within 5℃ of actual peak temperature = 10 sec .
Duration above 217℃ is 60 sec. max

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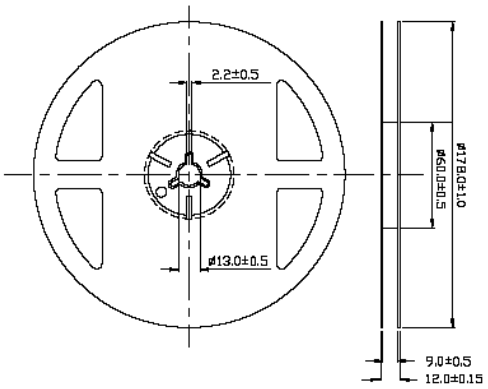
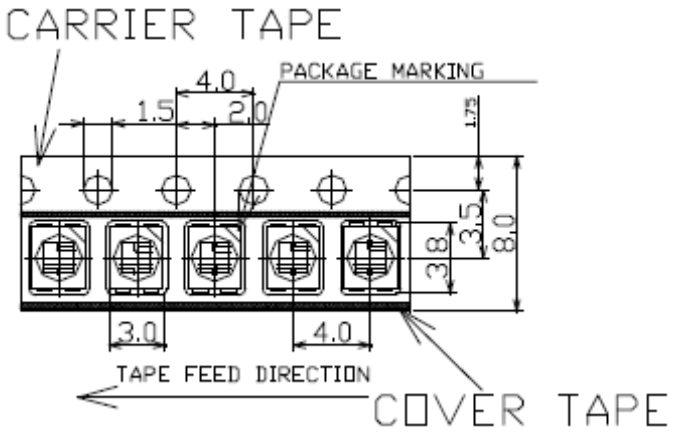
Reel Dimensions: 7-inch reel



Carrier Tape Dimensions: Loaded quantity 500 pieces per reel



Moisture Resistant Packaging