

Data Sheet  
**3528 SMD 60 LED/m**  
Outdoor Strip LED



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**General Informations:****Features:**

- DC12 low-voltage power supply, security and energy efficiency
- High brightness
- Low power consumption
- LED type: 3528 SMD LED
- LED lighting angle: 120°
- LED quantity: 60LEDs/m
- Operation temperature: -20°C to 40°C
- Life time: 50,000hours
- Water-proof rating: IP44

**Benefits:**

- Dimmable by using dimmer controller
- Pure color, full-reflected monochromatic light: red, yellow, blue, green, white, etc.
- Low voltage driving for grid pollution-free, suitable for 12V.
- Environment friendly, does not produce any harmful substances.
- Solid-state light source, green and safe, pollution-free.
- Patented design, use of copper material, high flexibility, scalability and strong.
- Frequency close to the frequency of the human eye,
- No visible flicker, low power, natural light color.
- Focus light, the brightness is higher than the conventional light source.

**Application :**

- Business premises lighting
- Exhibition lighting
- Home Lighting
- Office lighting
- Courtyard lamp, Landscape lamp, Decoration lamp for outdoor lighting

## Electrical and Flux Characteristics

Table 1: Flux Characteristics

Code	Number of LEDs (M)	Case	Color	Wavelength	Lm (M)	Angle
3520	60	SMD 3528	Red	620-630 nm	45lm/m	120°
3521	60	SMD 3528	Yellow	585-595 nm	25lm/m	120°
3522	60	SMD 3528	Blue	455-470 nm	30lm/m	120°
3523	60	SMD 3528	Green	510-525 nm	150lm/m	120°
3524	60	SMD 3528	Cold White	6000-6500K	185lm/m	120°
3525	60	SMD 3528	Warm White	3000-3500K	170lm/m	120°

Notes for Table 1:

1. Parts are tested in pulsed conditions,  $T_j = 25^{\circ}\text{C}$ . Pulse width is 10 ms at rated test current.
2. İlker Elektronik maintains a  $\pm 10\%$  tolerance on flux measurements.
3. Typical R9 value for 80CRI can be change with 90CRI.
4. Center beam candle power is a calculated value based on Lambertian radiation pattern at nominal test current.

Table 2: Electrical Characteristics

Code	Color	Forward Current (mA/M)	Input Voltage (V)	Power (W/m)	Lm (M)
3520	Red	400mA	12 VDC	4,8W	45lm/m
3521	Yellow	400mA	12 VDC	4,8W	25lm/m
3522	Blue	400mA	12 VDC	4,8W	30lm/m
3523	Green	400mA	12 VDC	4,8W	150lm/m
3524	Cold White	400mA	12 VDC	4,8W	185lm/m
3525	Warm White	400mA	12 VDC	4,8W	170lm/m

Notes for Table 2:

1. Parts are tested in pulsed conditions,  $T_j = 25^{\circ}\text{C}$ . Pulse width is 10 ms at rated test current.
2. İlker Elektronik maintains a  $\pm 10\%$  tolerance on Current values.
3. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
4. Voltages must be 12VDC.

Absolute Maximum Ratings ( $T_A = 25^\circ \text{C}$  unless otherwise noted)

Table 3: Maximum Ratings

Parameter	Maximum Performance
Storage Temperature Range	-25 ~ +50° C
Operating Temperature Range	-20 ~ +40° C
Mounting Surface Temperature	60° C
Input Voltage (DC)	12 V
LED Junction Temperature <sup>1</sup>	125° C
Electrostatic Discharge Classification (JEDEC-JESD22-A114F)	Class 1C
Reverse Voltage <sup>[2,3]</sup>	-5V
UL Recognition	UL recognized

Notes for Table 3:

1. Proper current de-rating must be observed to maintain junction temperature below the maximum.
2. SMD LEDs are not designed to be driven in reverse bias.
3. At maximum reverse current of 10μA/LED.

### Application Notes:

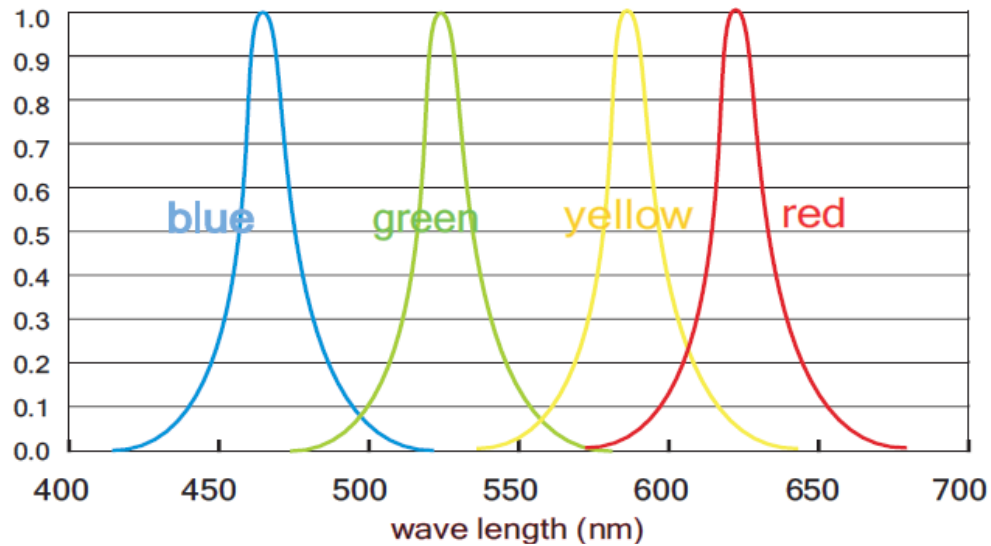
- Please ensure that when connecting to supply, the correct polarity printed on strip is observed.
- Use of a regulated 12V DC supply is recommended.
- To prevent voltage drop, a power feed at each end is recommended for chains longer than 5 strips in length. For very long lengths it is recommended to connect a power feed after every 5m strips.
- Cut only at designated cut-points, which are positioned every quarter-strip.

### Precautions:

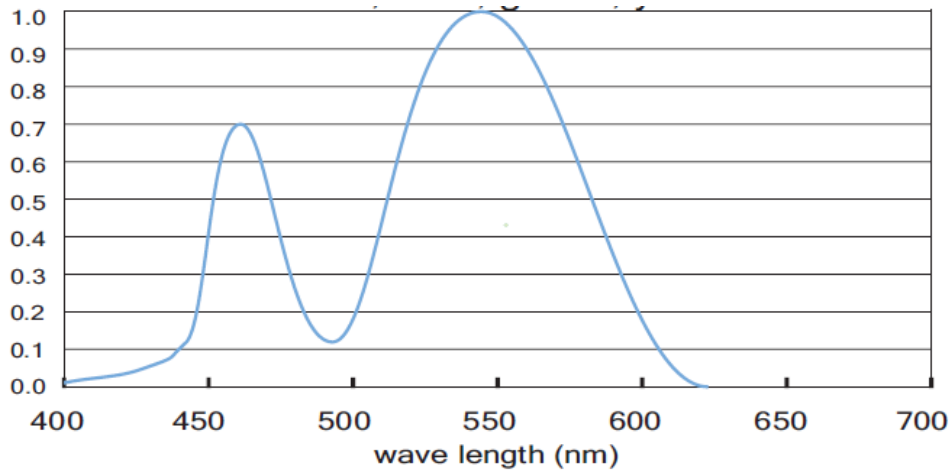
- Current should be derated in order to keep junction temperature below maximum by reducing power dissipation.
- Current spikes should be avoided especially during power up. It is good practice to initially connect PCB to unactivated supply, then gradually ramp up voltage to desired value.
- Proper management of the thermal path should be observed. Adequate heatsinking of strip should be provided in order to maintain junction temperature below maximum. Proper thermal conduction layers should be introduced at all interfaces to prevent insulating air gaps in the thermal path.
- As with all semiconductor devices, it is good practice to avoid electrostatic discharge (ESD).

## Color Wavelength Diagram:

LED Color Spectrum for Red, Green, Blue, Yellow:

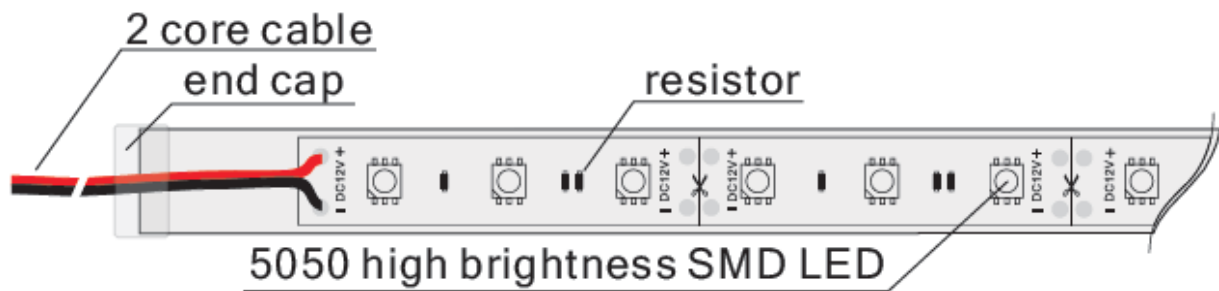


LED Color Spectrum for White (80 CRI) :

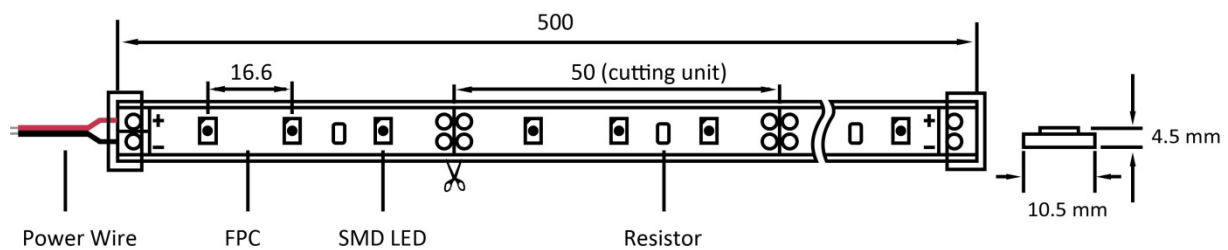


DO NOT LOOK DIRECTLY  
AT LED WITH UNSHIELDED  
EYES OR DAMAGE TO  
RETINA MAY OCCUR.

### Mechanical Dimensions:



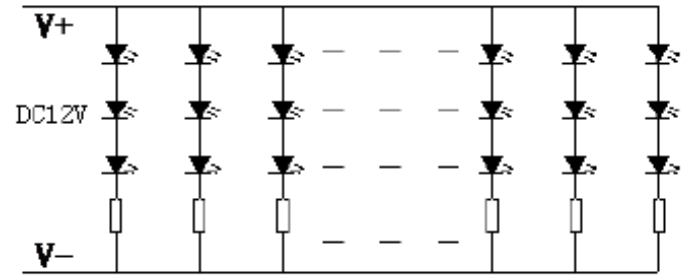
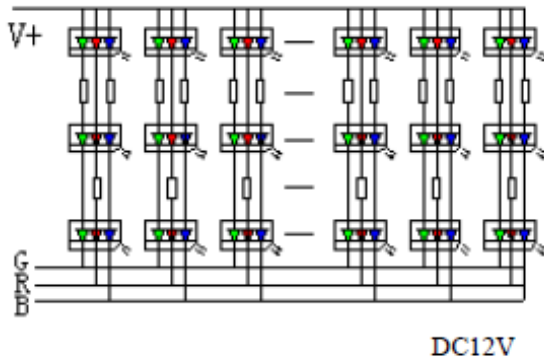
### Technical Drawing:



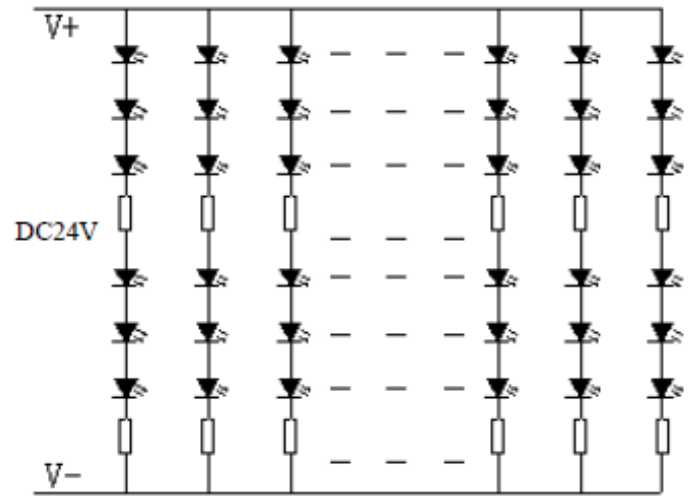
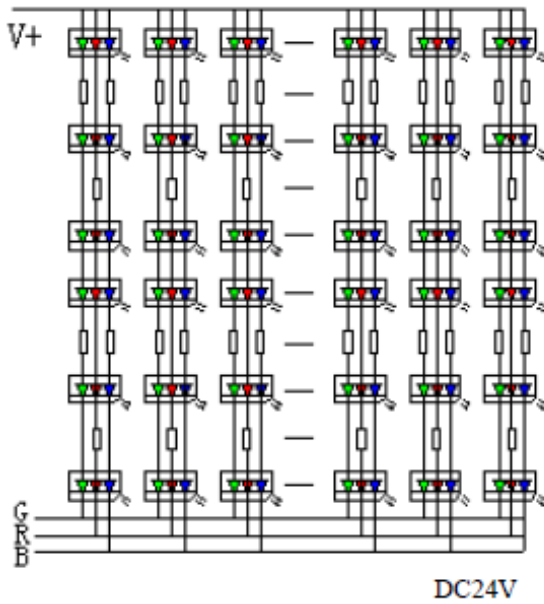
## Electrical Connection:

### Circuit Diagram:

#### DC 12V :

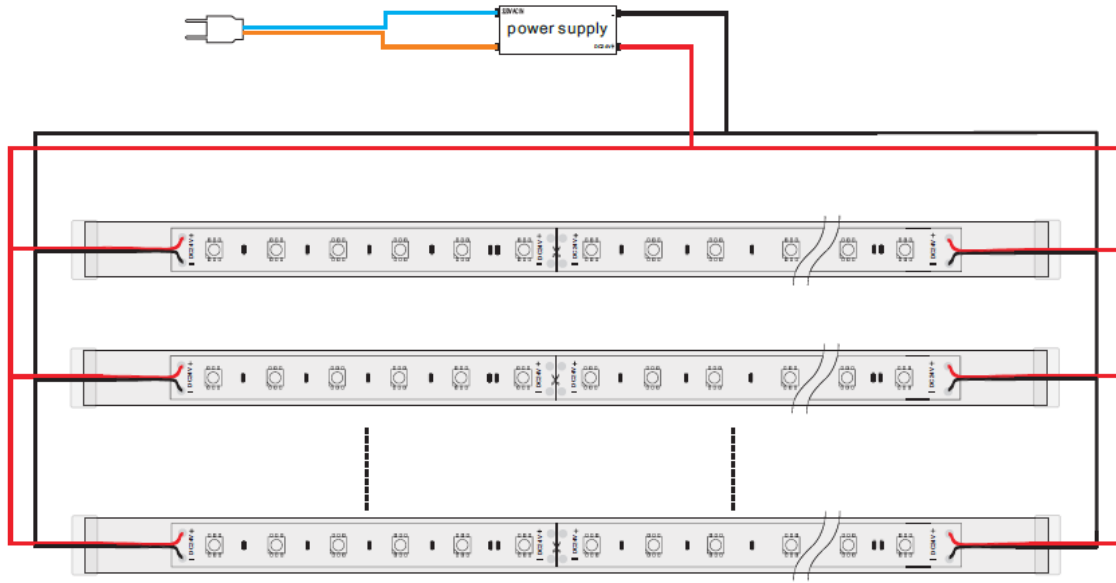


#### DC 24V :

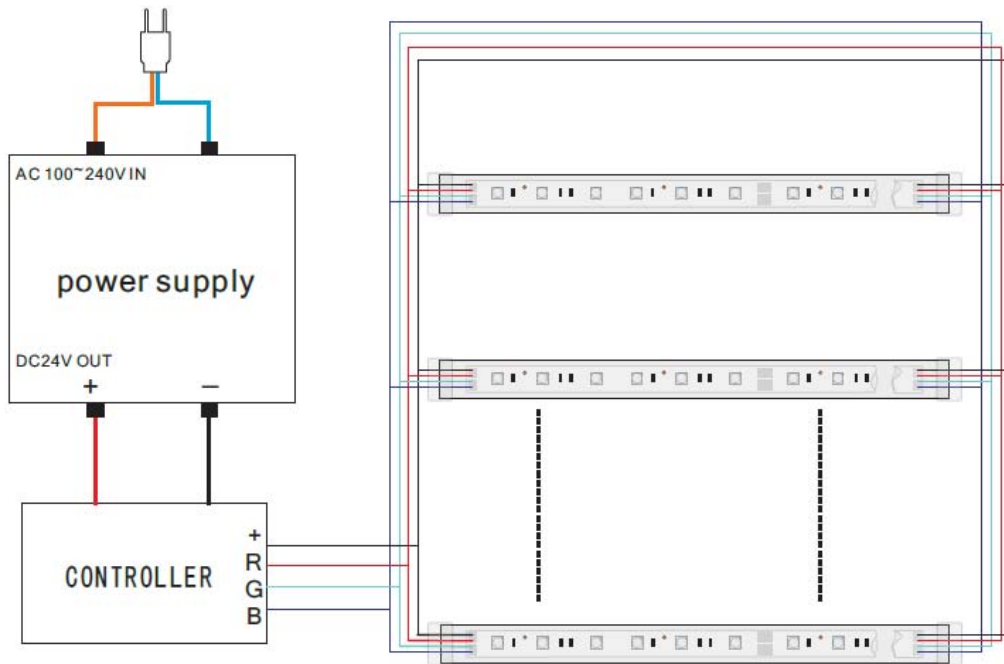




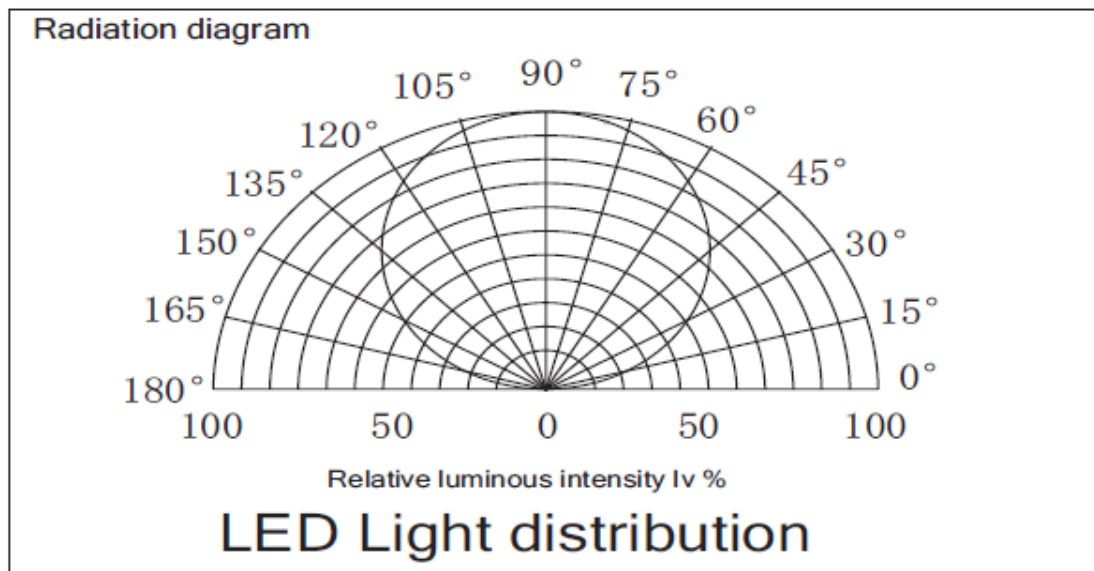
### Connection Diagram for Single Color Strip LEDs:



### Connection Diagram for Single Color Strip LEDs:



## Optical Characteristics:



## Packing:



Operation temperature: -20 ~40 °C

Storage temperature: -25 ~ 50 °C

Packing: 5meters led strip as one roll, one roll put into one bag, 15bags packed into one carton