

Safe Pre-wired Multi-Color LED STEM Learning Kit

Suitable for: UK Key Stage 1 (Year 1–2 / Ages 5–7)

1. Product Overview

This specially designed KS1 LED STEM kit is manufactured strictly for early-year primary school Science and circuit learning. All LED units are pre-soldered and built-in resistor design, supporting voltage input DC 4.5V. The kit requires no soldering, No resistor calculation and no extra electronic components, providing a fully safe and error-free plug-and-play experience for young pupils.

The kit adopts high-quality LED lamps, delivering stable low-temperature luminescence, low power consumption and long service life. All light sources are diffused soft light to protect children's eyes during observation activities.

2. Safety Compliance & KS1 Curriculum Suitability

- Zero soldering operation — fully compliant with KS1 safety prohibition of hot work
- Built-in resistance design — eliminates wrong circuit connection risks
- Low working voltage (DC4.5V AA battery power) — safe for child operation
- Uses large AA batteries instead of small button cells — reduces choking hazard
- Simple switch control and modular connection — perfectly matches Year 1–2 basic electricity learning objectives

3. Kit Contents

- 1 × Safety low-voltage battery box with manual ON/OFF switch
- 1 × Set of multi-color steady non-flashing pre-wired LEDs (assorted colors)
- 1 × Set of multi-color automatic flashing pre-wired LEDs (assorted colors)
- All LED modules are ready-to-use with pre-fixed wiring structure

4. Material & Technical Features

- Light source material: LED chips + built-in IC and LED + built-in resistor
- Working voltage: DC 4.5V voltage compatibility
- Operation type: fully pre-wired, plug-and-play
- No external resistors required
- No soldering required
- Light type: diffused soft lighting, anti-glare
- Structure: child-safe modular plug design, firm connection, not easy to loose

5. KS1 Student Practical Operation Procedure (Lesson Workflow)

The experiment process is simple, safe and suitable for guided student independent operation:

- Students insert standard 3 x AA batteries into the dedicated battery box correctly.
- Students practice and understand the function of the ON/OFF switch to control circuit power on and power off.
- Students connect different colors of steady non-flashing LED modules into the circuit interface one by one.
- Students observe and record different color lighting effects produced by different LED units.
- Students replace the steady LEDs with flashing LED modules of different colors and repeat the connection steps.
- Students visually compare and identify the difference between constant steady light mode and automatic flashing light mode.

6. Educational Learning Objectives (KS1 Match)

- Recognize basic circuit components and simple power control principles
- Understand the basic function of an electrical switch
- Observe different color light output characteristics
- Distinguish between continuous lighting and flashing lighting behaviors
- Develop hands-on practical skills and basic scientific observation ability
- Build safe and correct circuit operation awareness for early STEM education

7. Conclusion

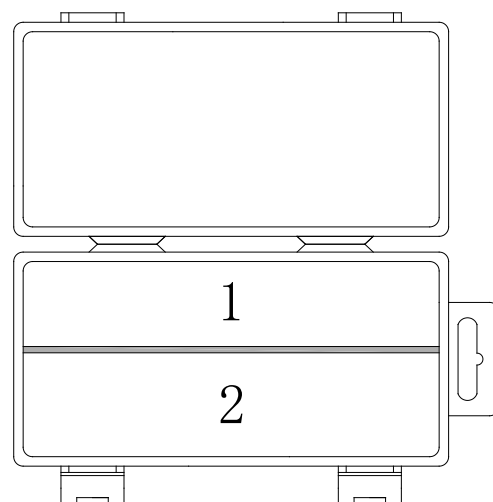
This LED STEM kit is fully compliant with UK Key Stage 1 safety rules and curriculum requirements. With completely solder-free, resistor-free and low-voltage safe design, it provides a perfect hands-on science resource for primary school Year 1 and Year 2 electricity and light learning activities.

■ Kit Part List

Section	Contents	Pcs	P/N	Spec
1	8mm Pre-wired Multi-voltage LED, Red	1	OSR58164A-VV-WH100	Page 3
	8mm Pre-wired Multi-voltage LED, Yellow	1	OSY58164A-VV-WH100	
	8mm Pre-wired Multi-voltage LED, Blue	1	OSB58164A-VV-WH100	
	8mm Pre-wired Multi-voltage LED, Pure Green	1	OSG58164A-VV-WH100	
	8mm Pre-wired Multi-voltage LED, Warm White	1	OSM58162A-VV-WH100	
	8mm Pre-wired Multi-voltage LED, Cool White	1	OSW58162A-VV-WH100	
	8mm Pre-wired Flashing LED, Red	1	OSR5JS8164A-WH100	Page 4
	8mm Pre-wired Flashing LED, Yellow	1	OSY5JS8164A-WH100	
	8mm Pre-wired Flashing LED, Blue	1	OSB5SS8164A-WH100	
	8mm Pre-wired Flashing LED, Pure Green	1	OSG5TS8164A-WH100	
	8mm Pre-wired Flashing LED, Warm White	1	OSM5DS8164A-WH100	
	8mm Pre-wired Flashing LED, Cool White	1	OSW5DS8162A-WH100	
	8mm Pre-wired Color Changing LED, RGB	1	OST1DA8162A-WH100	Page 5
2	Battery box No. 5, 3 batteries, 4.5V	1	OECB534V	Page 6

■ Product Picture

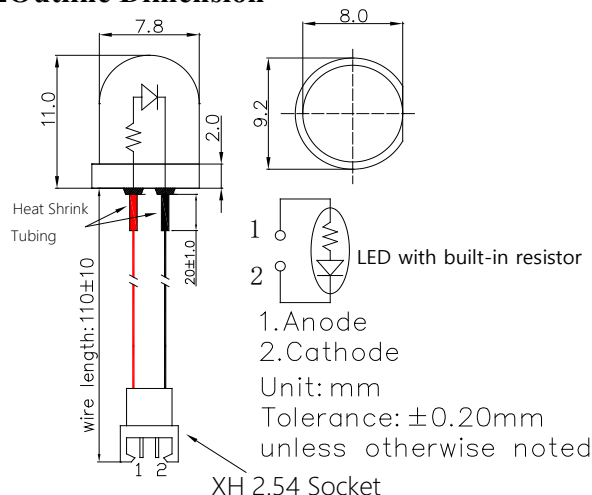
14pcs/Box (Dimensions: 200*135*45mm)



■Description

This LED builds with internal resistor to operate with wide operation voltage of DC3-15V.

■Outline Dimension



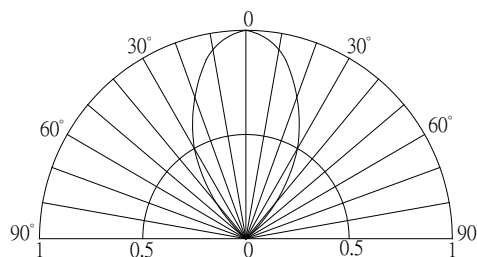
■Features

- Wide Input Voltage
- Cost Saving and Space Saving
- Color Diffused type
- Single Color

■Applications

- Toys/Game/Audio
- TTL/Cmos Compatible
- Arduino/Pi Pico/Steam Kit
- Other Electronics Products

■Directivity

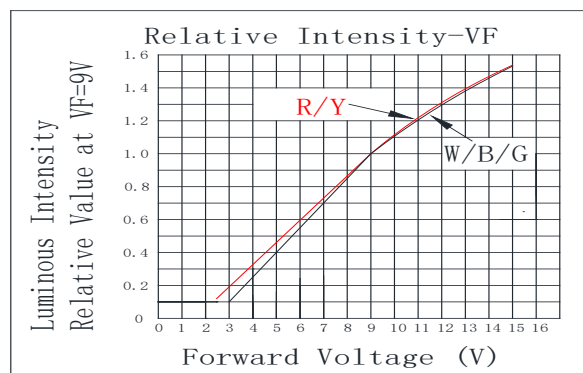


■Absolute Maximum Rating

(Ta=25°C)

Item	Symbol	Value	Unit
DC Forward Voltage	V _F	15	V
Reverse Voltage	V _R	12	V
Power Dissipation	P _D	190	mW
Operating Temperature	T _{opr}	-30 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +100	°C
Lead Soldering Temperature	T _{sol}	260°C/5sec	-

■Optical Characteristic Curves



■Electrical -Optical Characteristics

(Ta=25°C)

8mm Multi-Voltage LED						
LED P/N	OSR58164A-VV-WH100	OSY58164A-VV-W100	OSB58164A-VV-W100	OSG58164A-VV-W100	OSM58162A-VV-W100	OSW58162A-VV-W100
Light Color	Red	Yellow	Blue	Pure Green	Warm White	Cool White
Lens Color	Red Diffused	Yellow Diffused	Blue Diffused	Green Diffused	White Diffused	White Diffused
Wavelength*1/Color Temperature*2	620-630nm	585-595nm	465-475nm	520-530nm	2700-3300K	8500-18000K
Luminous Intensity(typ.) *3	150mcd	150mcd	100mcd	400mcd	400mcd	400mcd
Forward Voltage(typ.)	9V	9V	9V	9V	9V	9V
Forward Current(typ.)	8mA	8mA	7.5mA	7.5mA	7.5mA	7.5mA
Viewing Angle(typ.)	60°	60°	60°	60°	60°	60°

*1 Tolerance of measurements of dominant wavelength is ±1nm

*2 Tolerance of measurements of color temperature is ±10%

*3 Tolerance of measurements of luminous intensity is ±15%

■Features

- High Luminous Intensity
- 8mm Round Standard Directivity
- Flashing Type
- UV Resistance
- Color Diffused / White Diffused (W, M only)

■Applications

- General Purpose Indicators
- Decorations
- Toys & Games
- General Use

■Warning

- Do not install in reverse

■Absolute Maximum Rating

(Ta=25°C)

Item	Symbol	Value	Unit
		W/M/B/TG /R/Y/YG	
Power Supply	Voltage	5	V
Duty Cycle	Duty	1/2	-
Operating Temperature	Topr	-30 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Lead Soldering Temperature	Tsol	260°C/5sec	-

*Pulse width Max 0.1ms, Duty ratio max 1/10

■Electrical -Optical Characteristics

(Ta=25°C)

Part Number	Color			V _F (V)*			I _v (mcd)*			λD(nm)*/CCT(K)*			Fled (Hz)*	2θ1/2(deg)
				Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Typ.	Typ
				I _F =20mA			I _F =20mA							
OSW5DS8162A-WH100	Cool White	W		3.0	3.5	5.0	750	1120	-	CCT:8500-18000K			1.8	60
OSM5DS8162A-WH100	Warm White	M		3.0	3.5	5.0	750	1120	-	CCT:2700-3300K				
OSB5SS8164A-WH100	Blue	B		3.0	3.5	5.0	220	330	-	465	470	475		
OSG5TS8164A-WH100	Pure Green	G		3.0	3.5	5.0	750	1120	-	520	525	530		
OSY5JS8164A-WH100	Yellow	Y		3.0	3.5	5.0	150	220	-	585	590	595		
OSR5JS8164A-WH100	Red	R		3.0	3.5	5.0	150	220	-	620	625	630		

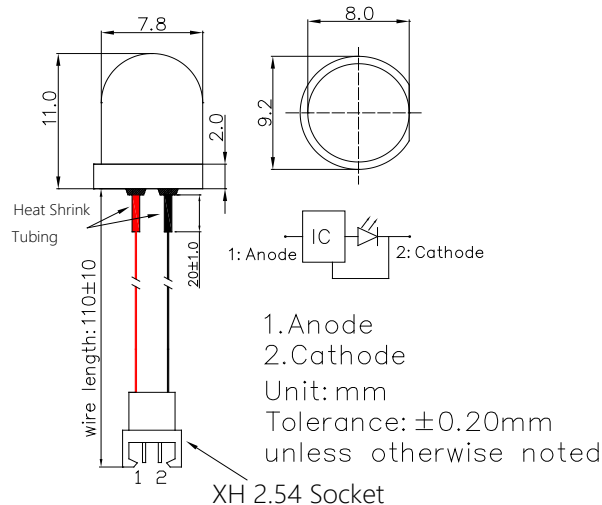
*1 Tolerance of measurements of dominant wavelength is ±1nm

*2 Tolerance of measurements of color temperature is ±10%

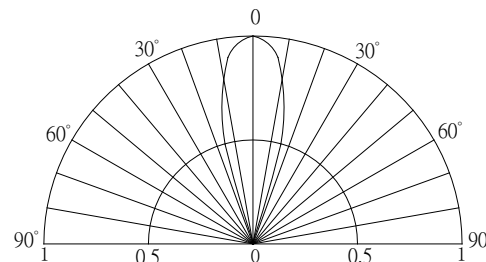
*3 Tolerance of measurements of luminous intensity is ±15%

*4 Tolerance of measurements of frequency is ±20%

■Outline Dimension



■Directivity



■Features

- High Luminous Intensity
- 10mm Round Standard Directivity
- Color Changing Type
- White Diffused Type

■Applications

- General Purpose Indicators
- Decorations
- Toys & Games
- General Use

■Absolute Maximum Rating

(Ta=25°C)

Item	Symbol	Value	Unit
Power Supply	Voltage	5	V
Operating Temperature	Topr	-30 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Lead Soldering Temperature	Tsol	260°C/5sec	-

■Electrical -Optical Characteristics

(Ta=25°C)

Item	Symbol	Condi	Min.	Typ.	Max.	Unit
DC Forward Voltage*1	V _{dd}	I _F =20mA	3.8	4.5	5.0	V
Oscillator Frequency*2	F _{led}	I _F =20mA	-	33	-	S
Domi. Wavelength*3	λ _D (Red)	I _F =20mA	620	625	630	nm
	λ _D (Blue)	I _F =20mA	465	470	475	nm
	λ _D	I _F =20mA	520	525	530	nm
Luminous Intensity*4	I _v (Red)	I _F =20mA	150	220	-	mcd
	I _v (Blue)	I _F =20mA	220	330	-	mcd
	I _v (Green)	I _F =20mA	750	1120	-	mcd
50% Power Angle	2θ _{1/2}	I _F =20mA	-	60	-	deg

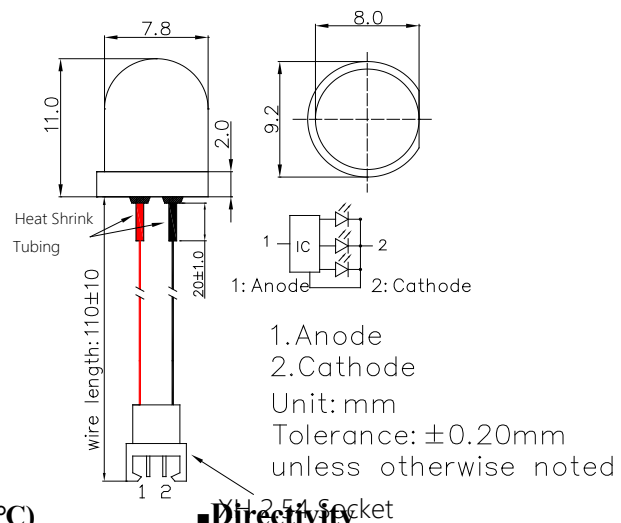
*1 Tolerance of measurements of forward voltage is ±0.1V

*2 Tolerance of measurements of frequency is ±20%

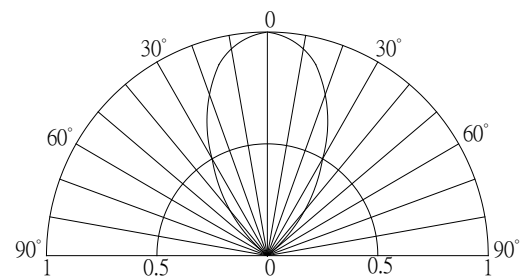
*3 Tolerance of measurements of dominant wavelength is ±1nm

*4 Tolerance of measurements of luminous intensity is ±15%

■Outline Dimension



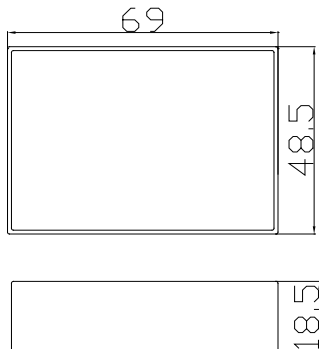
■Directivity



Case Color:

Black

■Product Information & Outline Dimension:

P/N	Item	Product Picture	Outline Dimension
OECB534V	Battery box No. 5, 3 batteries, 4.5V		 Unit: mm Tolerance: ±1mm

LED & Application Technologies

