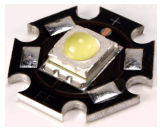
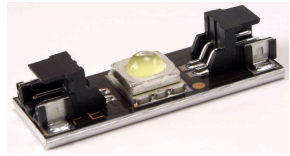
LED Lighting Assemblies

- 1W LED Hex Lamp



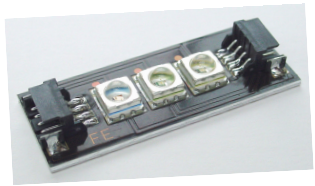
- 1W Triple LED Cluster Lamp

- 1W LED Lamp lighting strip



- 0.5W RGB LED Lamp Lighting Strip

- 1W RGB LED Lamp Lighting Strip



- 1W RGB Double LED Lamp Lighting Strip

- 1W RGB Triple LED Lamp Lighting Strip

The LED Lighting Strips for single or multi-colour illumination use XLamp® LEDs from pioneering American LED manufacturer Cree Lighting® to give industry-leading brightness and efficiency. Applications include AWP glass illumination, compact fluorescent replacement, RGB colour backlights, top box illumination, coin mechanism illumination... The list is endless!

The range is extensive from simple chains of single LEDs mounted on metal circuit boards to complex multi-LED arrays complete with drive electronics.

Forge Europa is able to offer a comprehensive custom design and assembly service from prototypes through to volume production. With a profound understanding of LED electronics design, thermal management and manufacturing techniques the Forge Europa design team is able to offer optimized LED lighting strips with the smallest footprint available. The company also has a wide and comprehensive range of plastic secondary optics.

- XLamp Range

It is the responsibility of the customer to verify the suitability of the product for the application

1W LED Hex Lamp

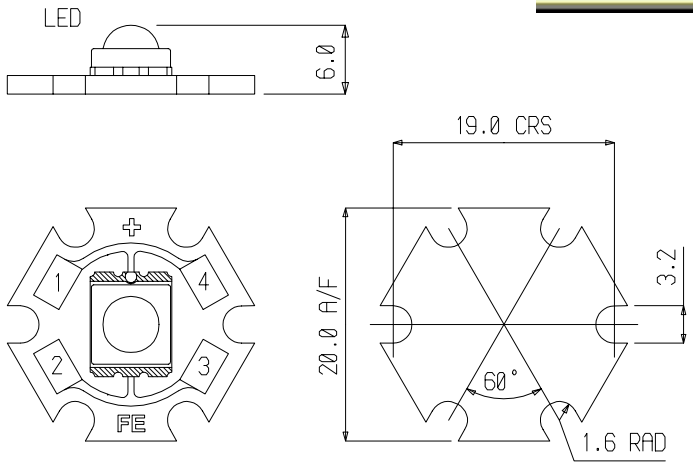
Features

- 1 watt XLamp
- MCPCB mounted package
- Connection via solder pads
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear Lambertian pattern lens
- RoHS compliant - Lead free

Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated

Data Sheet



Electro / Optical Characteristics White Lamp I_F = 350 mA T_a = 25°C

Part Number	Emitting Colour	Die Material	Colour Temperature		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-HL1WWWC	White	InGaN/SiC	4500	8000	4.0	52	100
Units			°K		VDC max	lm	deg

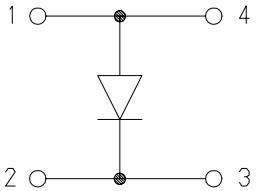
Electro / Optical Characteristics Coloured Lamps I_F = 350 mA T_a = 25°C

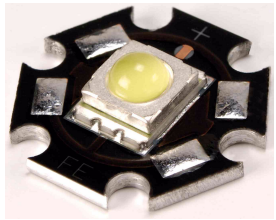
Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-HL1WRWC	Red	AlGaInP	620	635	3.0	40	100
FEL-HL1WRDOWC	Red orange	AlGaInP	610	620	3.0	49	100
FEL-HL1WYWC	Amber	AlGaInP	585	595	3.0	42	100
FEL-HL1WGWC	Green	InGaN/SiC	520	535	4.0	52	100
FEL-HL1WCWC	Cyan	InGaN/SiC	500	510	4.0	45	100
FEL-HL1WBWC	Blue	InGaN/SiC	465	475	4.0	19	100
FEL-HL1WROYWC	Royal blue	InGaN/SiC	455	465	4.0	255 mW	100
Units			nm		VDC max	lm	deg

Maximum Ratings T_a = 25°C

Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	350	mA
Reverse Voltage	I_R = 10 µA	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

Connection Diagram





Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Temperature coefficient of Voltage:
-2.8 to -3.0mV/°C (White, Green, Cyan, Blue & Royal blue)
-3.0 to -3.2mV/°C (Red, Red orange, Amber).

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1W Triple LED Cluster Lamp

Features

- Three 1 watt XLamps
- MCPCB mounted package
- Connection via solder pads
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear Lambertian pattern lens
- RoHS compliant - Lead free

Electro / Optical Characteristics White Lamp I_F = 350 mA T_a = 25°C

Part Number	Emitting Colour	Die Material	Colour Temperature		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LC1WWTWC	White	InGaN/SiC	4500	8000	12.0	52	100
Units			°K		VDC max	lm / LED	deg

Electro / Optical Characteristics Coloured Lamps I_F = 350 mA T_a = 25°C

Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LC1WRTWC	Red	AlGaInP	620	635	9.0	40	100
FEL-LC1WRDOTWC	Red orange	AlGaInP	610	620	9.0	49	100
FEL-LC1WYTWC	Amber	AlGaInP	585	595	9.0	42	100
FEL-LC1WGTWC	Green	InGaN/SiC	520	535	12.0	52	100
FEL-LC1WCTWC	Cyan	InGaN/SiC	500	510	12.0	45	100
FEL-LC1WBTWC	Blue	InGaN/SiC	465	475	12.0	19	100
FEL-LC1WROYTWC	Royal blue	InGaN/SiC	455	465	12.0	255 mW	100
Units			nm		VDC max	lm / LED	deg

Maximum Ratings T_a = 25°C

Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	350	mA
Reverse Voltage	I_R = 10 µA	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

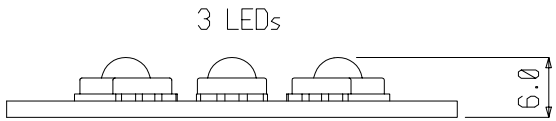
Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

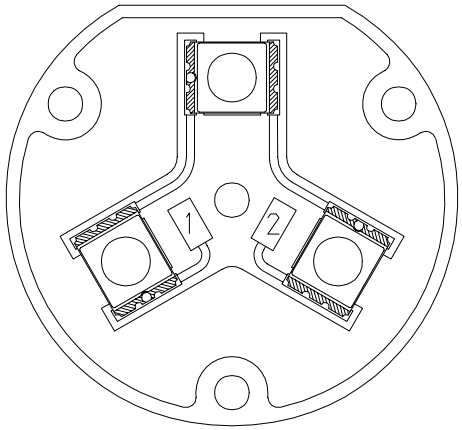
Temperature coefficient of Voltage:
-2.8 to -3.0mV/°C (White, Green, Cyan, Blue & Royal blue)
-3.0 to -3.2mV/°C (Red, Red orange, Amber).

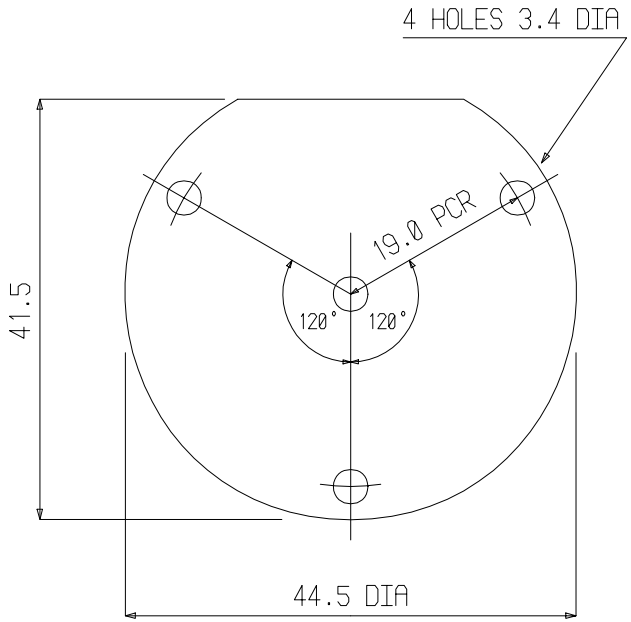
Data Sheet

Package Outline

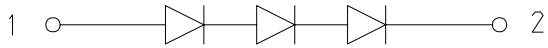
Dimensions in mm
Tol ± 0.25 mm unless stated







Connection Diagram



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1W LED Lamp Lighting Strip

Features

- 1 watt XLamp
- MCPCB mounted package
- Units can be interconnected using flying lead and connectors
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear Lambertian pattern lens
- RoHS compliant - Lead free

Electro / Optical Characteristics White Lamp I_F = 350 mA T_a = 25°C

Part Number	Emitting Colour	Die Material	Colour Temperature		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LS1WWWC	White	InGaN/SiC	4500	8000	4.0	52	100
Units			°K		VDC max	lm	deg

Electro / Optical Characteristics Coloured Lamps I_F = 350 mA T_a = 25°C

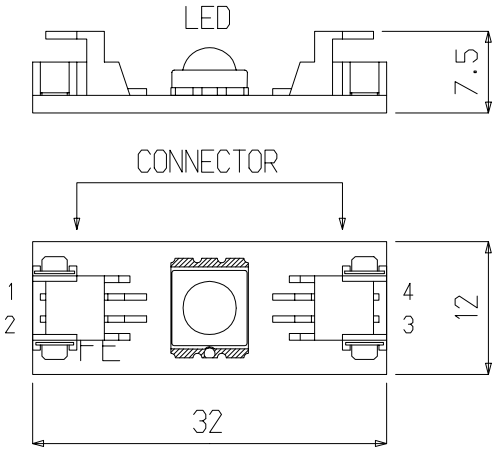
Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LS1WRWC	Red	AlGaInP	620	635	3.0	40	100
FEL-LS1WRDOWC	Red orange	AlGaInP	610	620	3.0	49	100
FEL-LS1WYWC	Amber	AlGaInP	585	595	3.0	42	100
FEL-LS1WGWC	Green	InGaN/SiC	520	535	4.0	52	100
FEL-LS1WCWC	Cyan	InGaN/SiC	500	510	4.0	45	100
FEL-LS1WBWC	Blue	InGaN/SiC	465	475	4.0	19	100
FEL-LS1WROYWC	Royal blue	InGaN/SiC	455	465	4.0	255 mW	100
Units			nm		VDC max	lm	deg

Maximum Ratings T_a = 25°C

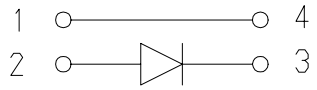
Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	350	mA
Reverse Voltage	I_R = 10 µA	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

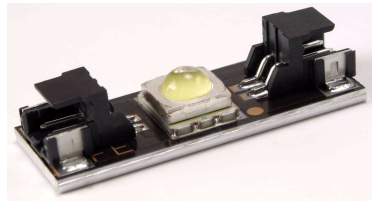
Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated



Connection Diagram





Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Temperature coefficient of Voltage:
-2.8 to -3.0mV/°C (White, Green, Cyan, Blue & Royal blue)
-3.0 to -3.2mV/°C (Red, Red orange, Amber).

Female connector (not supplied) Tyco/AMP part 173977-2 suitable for 26-28 AWG (0.85 - 1.05mm OD) wire.

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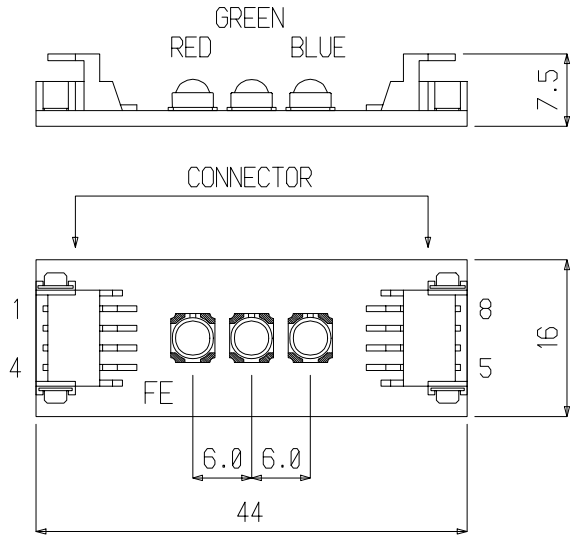
0.5W RGB LED Lamp Lighting Strip

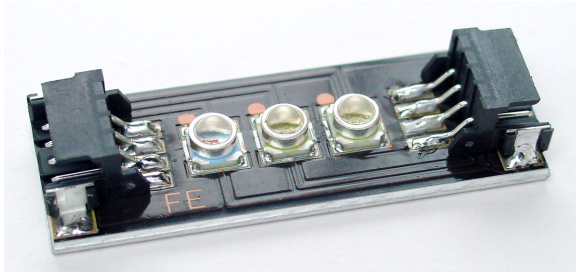
Features

- Red Green Blue 0.5 watt XLamps
- MCPCB mounted package
- Units can be interconnected using flying lead and connectors
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear Lambertian pattern lens
- RoHS compliant - Lead free

Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated





Electro / Optical Characteristics I_F = 125 mA per LED T_a = 25°C

Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LS05WRGBWC	Red	AlGaInP	620	635	3.0	12	100
	Green	InGaN/SiC	520	535	4.0	18	100
	Blue	InGaN/SiC	465	475	4.0	4.5	100
Units			nm		VDC max	lm	deg

Maximum Ratings T_a = 25°C

Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	125	mA
Reverse Voltage	I_R = 10 µA	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

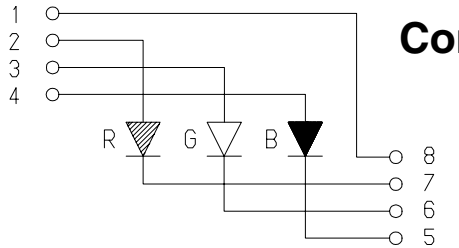
Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Temperature coefficient of Voltage: -2.8 to -3.0mV/°C (Blue & Green) 3.0 to -3.2mV/°C (Red).

Female connector (not supplied) Tyco/AMP part 173977-4 suitable for 26-28 AWG (0.85 - 1.05mm OD) wire.

Data Sheet

Connection Diagram



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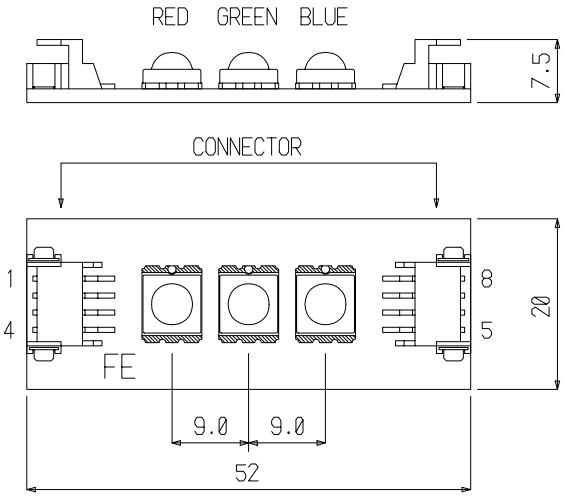
1W RGB LED Lamp Lighting Strip

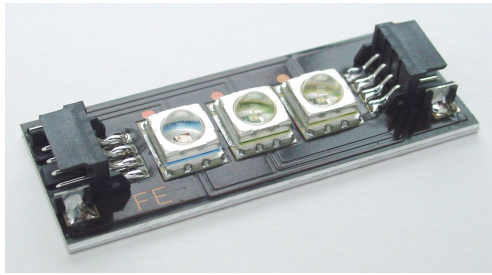
Features

- Red Green Blue 1 watt XLamps
- MCPCB mounted package
- Units can be interconnected using flying lead and connectors
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear Lambertian pattern lens
- RoHS compliant - Lead free

Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated





Electro / Optical Characteristics I_F = 350 mA per LED T_a = 25°C

Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Forward Voltage V_F	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-LS1WRGBWC	Red	AlGaInP	620	635	3.0	40	100
	Green	InGaN/SiC	520	535	4.0	52	100
	Blue	InGaN/SiC	465	475	4.0	19	100
Units			nm		VDC max	lm	deg

Maximum Ratings T_a = 25°C

Characteristic	Condition	Symbol	Rating	Units
DC Forward Current		I_F	350	mA
Reverse Voltage	I_R = 10 µA	V_R	5	V
LED Junction Temperature			125	°C
Operating Temperature		T_{opr}	- 20 to + 80	°C
Storage Temperature		T_{stg}	- 20 to + 100	°C

Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

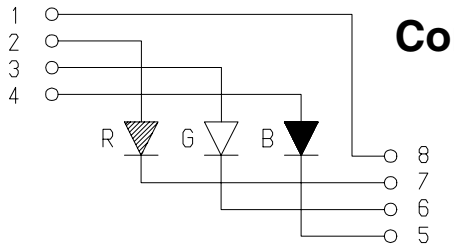
Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Temperature coefficient of Voltage: -2.8 to -3.0mV/°C (Blue & Green) 3.0 to -3.2mV/°C (Red).

Female connector (not supplied) Tyco/AMP part 173977-4 suitable for 26-28 AWG (0.85 - 1.05mm OD) wire.

Data Sheet

Connection Diagram



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1W Double LED Lighting Strip

Features

- Two 1 watt XLamps per strip
- MCPCB mounted package
- On-board 350 mA fixed current circuitry
- Supply 13.2 VDC
- Unit connected via 2 pin connector
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear lens
- RoHS compliant - Lead free

Data Sheet

Electro / Optical Characteristics White Lamp T_a = 25°C

Part Number	Emitting Colour	Die Material	Colour Temperature		Supply Voltage	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-BG1WWDWC	White	InGaN/SiC	4500	8000	13.2 ±5%	52	100
Units			°K		VDC	lm / LED	deg

Electro / Optical Characteristics Coloured Lamps T_a = 25°C

Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Supply Voltage	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-BG1WRDWC	Red	AlGaInP	620	635	13.2 ±5%	40	100
FEL-BG1WRDODWC	Red orange	AlGaInP	610	620	13.2 ±5%	49	100
FEL-BG1WYDWC	Amber	AlGaInP	585	595	13.2 ±5%	42	100
FEL-BG1WGDWC	Green	InGaN/SiC	520	535	13.2 ±5%	52	100
FEL-BG1WCDWC	Cyan	InGaN/SiC	500	510	13.2 ±5%	45	100
FEL-BG1WBDWC	Blue	InGaN/SiC	465	475	13.2 ±5%	19	100
FEL-BG1WROYDWC	Royal blue	InGaN/SiC	455	465	13.2 ±5%	255 mW	100
Units			nm		VDC	lm / LED	deg

Maximum Ratings T_a = 25°C

Characteristic	Symbol	Rating	Units
LED Junction Temperature		125	°C
Operating Temperature	T_{opr}	- 20 to + 80	°C
Storage Temperature	T_{stg}	- 20 to + 100	°C

Notes:

Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

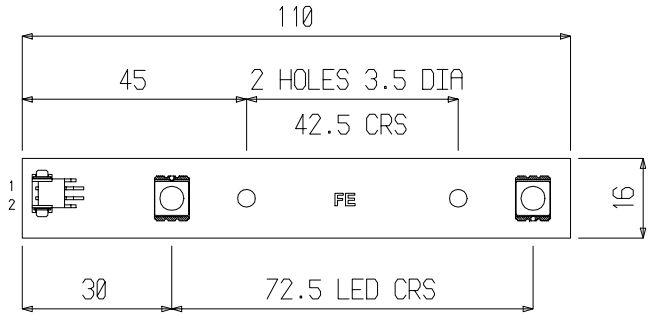
Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Female connector (not supplied) Tyco/AMP part 173977-2 suitable for 26-28 AWG (0.85 - 1.05mm OD) wire.

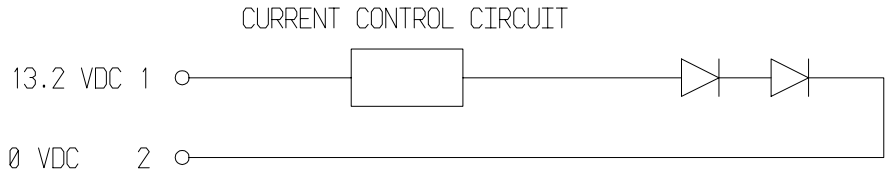
1W Double LED Lighting Strip

Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated



Connection Diagram



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1W Triple LED Lighting Strip

Features

- Three 1 watt XLamps per strip
- MCPCB mounted package
- On-board 350 mA fixed current circuitry
- Supply 13.2 VDC
- Unit connected via 2 pin connector
- Class II ESD Rating (HBM per Mil-Std-883D)
- Water clear lens
- RoHS compliant - Lead free

Data Sheet

Electro / Optical Characteristics White Lamp T_a = 25°C

Part Number	Emitting Colour	Die Material	Colour Temperature		Supply Voltage	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-BG1WWTWC	White	InGaN/SiC	4500	8000	13.2 ±5%	52	100
Units			°K		VDC	lm / LED	deg

Electro / Optical Characteristics Coloured Lamps T_a = 25°C

Part Number	Emitting Colour	Die Material	Wavelength Dom. λ_d		Supply Voltage	Luminous Flux typical	Viewing ∠ 2θ½
			min	max			
FEL-BG1WRTWC	Red	AlGaInP	620	635	13.2 ±5%	40	100
FEL-BG1WRDOTWC	Red orange	AlGaInP	610	620	13.2 ±5%	49	100
FEL-BG1WYTWC	Amber	AlGaInP	585	595	13.2 ±5%	42	100
FEL-BG1WGTWC	Green	InGaN/SiC	520	535	13.2 ±5%	52	100
FEL-BG1WCTWC	Cyan	InGaN/SiC	500	510	13.2 ±5%	45	100
FEL-BG1WBTWC	Blue	InGaN/SiC	465	475	13.2 ±5%	19	100
FEL-BG1WROYTWC	Royal blue	InGaN/SiC	455	465	13.2 ±5%	255 mW	100
Units			nm		VDC	lm / LED	deg

Maximum Ratings T_a = 25°C

Characteristic	Symbol	Rating	Units
LED Junction Temperature		125	°C
Operating Temperature	T_{opr}	- 20 to + 80	°C
Storage Temperature	T_{stg}	- 20 to + 100	°C

Notes:

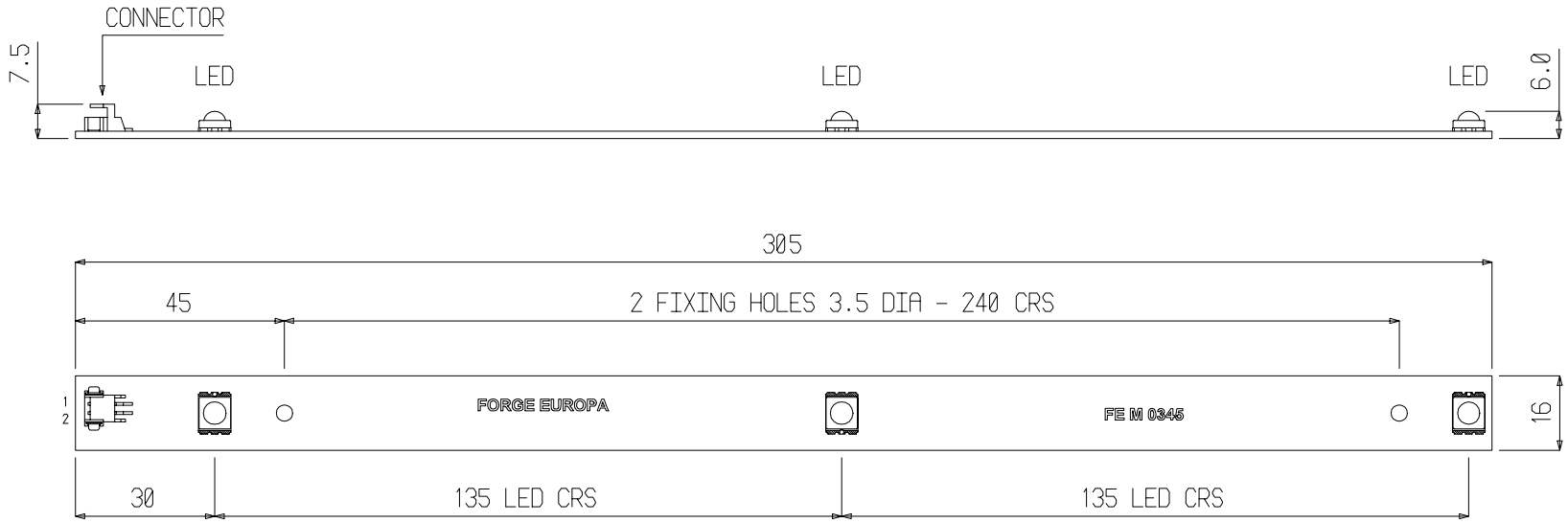
Industry standard procedures regarding static must be observed when handling product with InGaN/SiC die.

Consideration must be given to thermal design such that the maximum LED junction temperature is not exceeded.

Female connector (not supplied) Tyco/AMP part 173977-2 suitable for 26-28 AWG (0.85 - 1.05mm OD) wire.

Package Outline

Dimensions in mm
Tol ± 0.25 mm unless stated



Connection Diagram