	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 1 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Felicia DC LED Module Solution for Marine Application


*The Felicia module is designed with an internal driver and can therefore be easily connected to applications for 12-36VDC or with an external wall outlet transformer. The efficiency is the highest available on the market for these types of applications.*

### ***Description***

Optodrive™ Felicia series are designed for high current operation and high flux output applications. Our LED's thermal management performance exceeds other power LED solutions. It incorporates state of the art SMD design and Thermal emission material as well as the most efficient switch technology. The full colour spectrum Optodrive™ LED solution is the first built in driver package ever designed, using high performance power chips gives you a top quality white light.


### ***Light Performance***

The standard light temperature is 2700, 3000 and 4000 Kelvin with Colour Rendering Index with a type value of 93.

	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 2 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Pages for reference:

Short form Characteristics.....	2
Wiring diagrams.....	4
Parameters vs. Article no .....	5
CRI.....	6
Electro Optical data .....	7
<i>Temperature Characteristics</i> .....	7
Binning and Labeling .....	8
Binning structure graphical representation IEC 1976 .....	8
Measurement Control .....	9
Lifetime (Calculated) .....	9
Test and Performance.....	10
<i>EMC (Emission and Immunity)</i> .....	10
Precautions for use.....	11
Design for Environment: .....	11
Precautions for use.....	12
Design for Environment: .....	12

	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 3 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Short form Characteristics

### Mechanical:

Board dimensions: 34.56 mm in diameter  
 Assembly holes: 2 x 3.2 mm  
 Connector: PHR-3 or similar

### Electrical:

Volt: 12 - 36VDC  
 Power: 2W

### Dimming Signal:

PWM high level: 4 – 7V  
 PWM low level: 0 – 0,5V  
 PWM frequency<sup>1</sup>: 100 – 20kHz

Efficiency: >90


Reversed polarity protection: Yes  
 Transient protection: Yes  
 Overvoltage protection:  
 Dimming-signal: Yes

### Environmental operating conditions:

Temperature range: -40°C to 65°C (Absolute maximum temp Tc 65°C)  
 Relative Humidity: 10-75%  
 Ambient air pressure: 500-1060 HPa

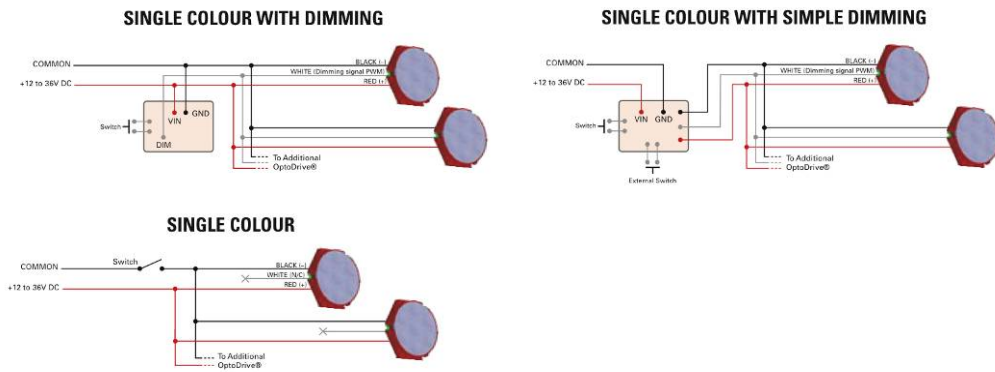
### Notes:


1. Frequencies below 20 kHz will create audible sound in inductor. Dimming at high frequencies above 10 kHz is very non-linear and smooth dimming can only be reached with processor controlled software.

	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 4 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Wiring diagrams

See separate wiring diagram documentation.



	<b>Felicia ID 6LED</b>	Document no: n/a	Revision: 1.1	Page: Page 5 of 12
	Object: Datasheet Felicia ID.2.12-36.6.yzz-130	Author: SL	Date: 2014-05-13	

### Parameters vs. Article no

2700K

Article	Power	Voltage	Lm	CRI	CCT	Viewing angle
Felicia ID.2.12-36.6.927-130	<b>2W</b>	12-36VDC	<b>160</b>	<b>90Ra</b>	<b>2700K</b>	<b>130</b>

3000K

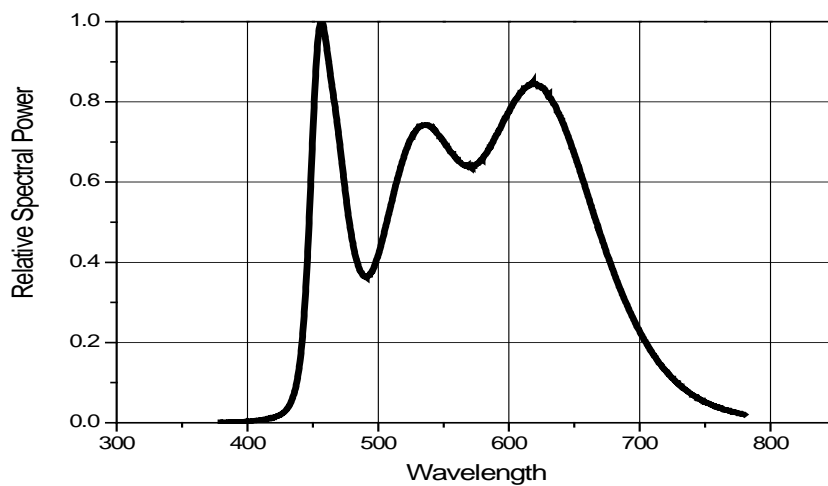
Article	Power	Voltage	Lm	CRI	CCT	Viewing angle
Felicia ID.2.12-36.6.930-130	<b>2W</b>	12-36VDC	<b>160</b>	<b>90Ra</b>	<b>3000K</b>	<b>130</b>

4000K

Article	Power	Voltage	Lm	CRI	CCT	Viewing angle
Felicia ID.2.12-36.6.940-130	<b>2W</b>	12-36VDC	<b>160</b>	<b>90Ra</b>	<b>3000K</b>	<b>130</b>

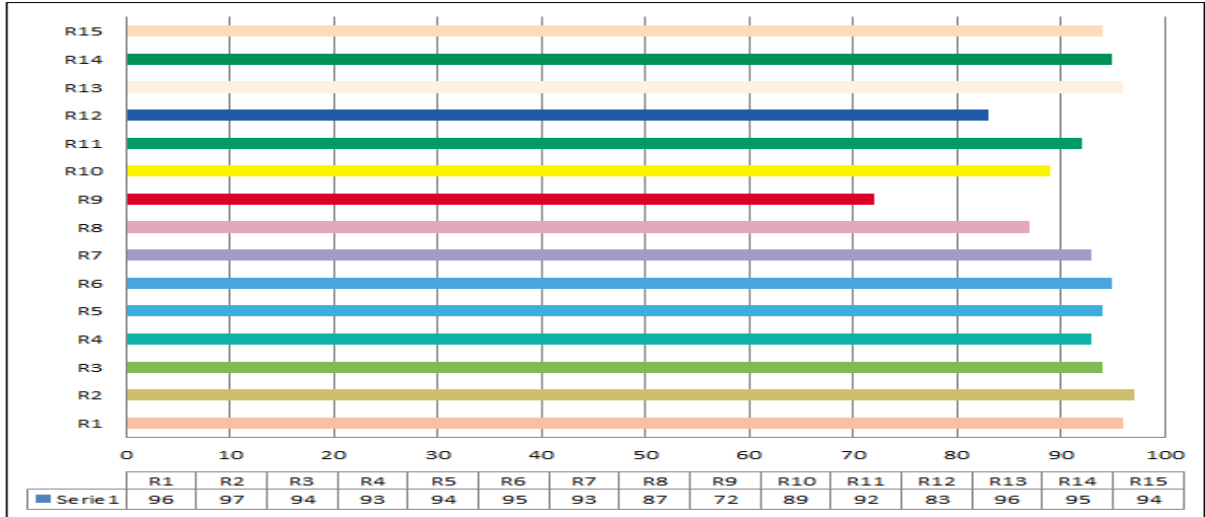
### Colour Spectrum


Neutral White



**CRI**

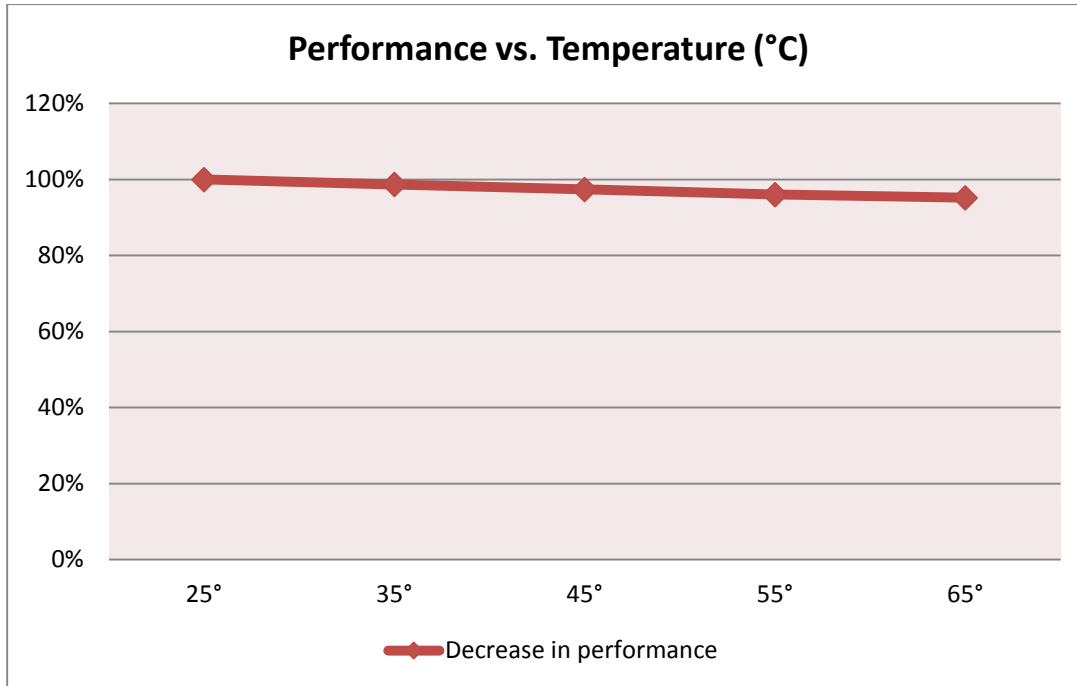
2700K 93Ra



	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 7 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Electro Optical data

### *Temperature Characteristics*



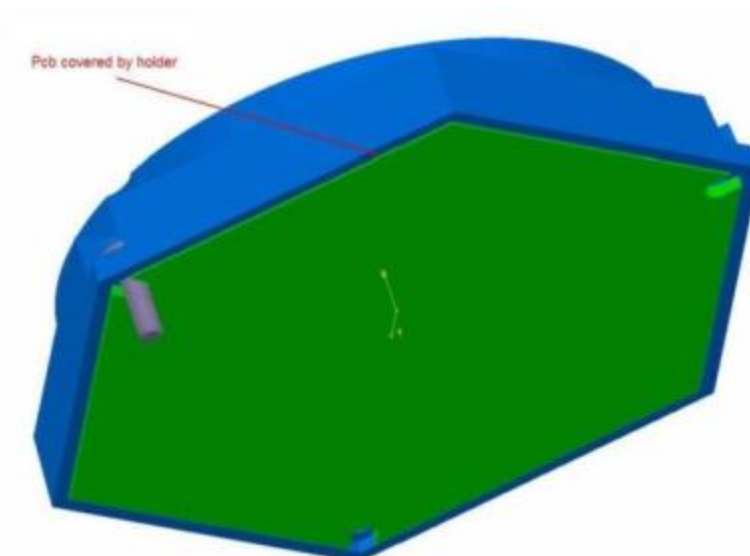
Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.


### ***Thermal information***

the thermal area (green) has to be properly connected to an even and fine surface of a heat sink. Without this arrangement the unit will be overheated and will not be able to survive.

### ***Maximum Temperature***

Secure the temperature in your application not to exceed 65°C. Read more in the section on how to measure temperatures.

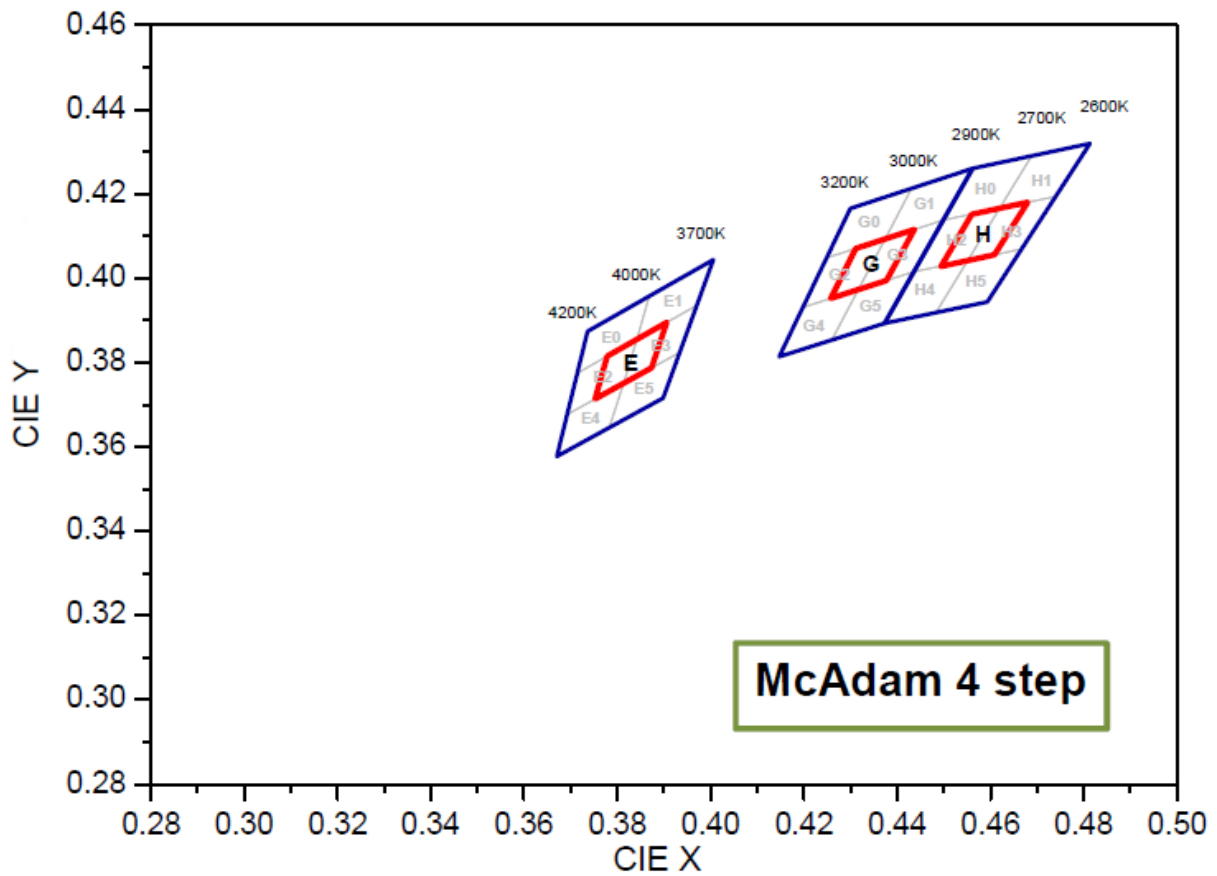


	<b>Felicia ID 6LED</b>	Document no: n/a	Revision: 1.1	Page: Page 8 of 12
	Object: Datasheet Felicia ID.2.12-36.6.yzz-130	Author: SL	Date: 2014-05-13	

## Binning and Labeling


### Binning structure graphical representation IEC 1976

*Note the availability and representation on the IEC 1976 graph shown below.*



*\* Note that the Blue boxes represent Energy Star Rank*



	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 9 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Measurement Control

The recommended maximum value is 65°C on Tc or measuring point. If this value is exceeded we cannot guarantee the function and the lifetime of the product. The purpose of the measurement is to control the Junction (Tj) temperature of the LED and also in order to control the performance on the complete setup. By measuring the junction temperature (Tj) the average lifetime of the product is known.

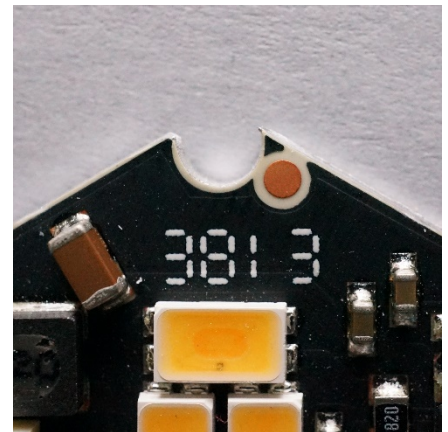
*The thermal connection is measured in temperature vs. Power.*

### *Measurement points*

When the measurement takes place you verify that the temperature on the marked measurement points are satisfying. Pending on the result you know what lifetime to expect from the module.

Measurement points

- TC




This step will be implemented after the heat sink has been connected properly!

### Lifetime (Calculated)

The lifetime is calculated at the maximum temperature recommended at the Tc (measuring point). It is important not to exceed this recommendation; you find more information under the chapter “measurement control”.

Unit	Tc Maximum	30 % degradation
Felicia 2W	65° C	>50 000 Hours

	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 10 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

## Test and Performance


### *EMC (Emission and Immunity)*

The product has been tested and meets the demands perfectly according to the following standards:

Emission: SS-EN55015:2007

Immunity: SS-EN 61547:1996 + A1:2001, EN61000-4-2, -4, -6

<b><i>Test Performed</i></b>	<b><i>Environmental</i></b>	<b><i>Standard</i></b>
<b>Emission</b>	Conducted disturbance	SS-EN 55015:2007
<b>Emission</b>	Radiated disturbance	SS-EN 55015:2007
<b>Immunity SS-EN61547, A1:2001</b>	Electrostatic discharge ESD	EN 61000-4-2:1995
<b>Immunity SS-EN61547, A1:2001</b>	Fast Transients	EN 61000-4-4:1995
<b>Immunity SS-EN61547, A1:2001</b>	Induced radio frequency field	EN 61000-4-6:1995

	<b>Felicia ID 6LED</b>	<b>Document no:</b> n/a	<b>Revision:</b> 1.1	<b>Page:</b> Page 11 of 12
	<b>Object:</b> Datasheet Felicia ID.2.12-36.6.yzz-130	<b>Author:</b> SL	<b>Date:</b> 2014-05-13	

### Precautions for use

- This device should not be used in any type of fluids such as water, oil, organic solvent etc.
- When cleaning is required, use only water together with mild soap on the outside of the lens. Cleaning inside of the LED module is strictly prohibited.
- The appearance and specifications of the product may be modified for improvement without notice.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- Opening of the LED module is prohibited due to risk of EMC, dust, grease and other exposures that will damage it.
- The LED Module should always be mounted to a proper heat sink before it's connected with its proper leads. This is due to electrical hazard.

### *ROHS Compliant*

All our LED modules meet the Restrictions of Hazardous Substances (RoHS)!

There has been a growing consensus that Lead Free Systems should increase for the safety of our environment. It is a very serious problem that lead and other harmful materials are being used in commercial and industrial products, causing more and more environmental problems. This has led to regulations such as RoHS (Restriction of the use of certain Hazardous Substances) from the EU and the Japan Ministry of Trade and Industry (MITI). All LED module makers providing products to these countries should comply with these restrictions. In order to meet the RoHS regulation, Optoga is strictly implementing a ban on lead and other hazardous materials in its products. This is in compliance with our responsibilities as good corporate citizens.

### **Design for Environment:**

According to the EU-directive 2002/95/EC (RoHS) the following substances must not be used in this product

- Lead (Pb) alloys
- Mercury (Hg)
- Cadmium (Cd)
- Chromium ( 6+ ) Compounds

# Would you like to know more about the benefits of OptoDrive LED?

At [www.optodrive.se](http://www.optodrive.se) you can read more about OptoDrive. You can also easily notify us of your interest here ([www.optodrive.se/order.pab](http://www.optodrive.se/order.pab)). Of course you can also call +46 (0) 589 490 950.

## **Optoga AB**

The company started business in November 2004. The company's staff has more than 30 years of shared experience in electronic components. Optoga develops and supplies LEDs, LED drivers, LED modules and software solutions to the lighting industry, automotive manufacturers and electronics companies.

By developing products with integrated LEDs and drive electronics, Optoga has taken the initiative to replace fluorescent, incandescent and halogen lamps with LED-based light sources.

The logo for Optoga, featuring the word "OPTOGA" in a bold, white, sans-serif font. The letter 'O' is stylized with a thick stroke and a small gap at the top.