Lighting Design Manufacturing Service

www.edison-opto.com.tw

PLCC Series

ET-5050RTB-333W Datasheet

Features :

- High Luminous Intensity
- Based on Blue/Green : InGaN, Red : AlGaInP technology
- Wide viewing angle : 120°
- Excellent performance and visibility
- Suitable for all SMT assembly methods
- IR reflow process compatible
- Environmental friendly; RoHS compliance

Typical Applications

- Signal and Symbol Luminaire
- Indoor and Outdoor Displays
- Backlighting (illuminated advertising, general lighting)
- Interior Automotive Lighting

 version : 2

EDISON

Lighting Design Manufacturing Service

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General Information

Introduction

Ultra high luminous efficacy, combined with the flexibility in design due to its slim and miniature size, PLCC LED Series are optimized to be used as lighting for signboard.

Product Nomenclature

The following table describes the available color, package size, and chip quantity.

Table 1. PLCC 5050 series Nomenclature

ET	5050	RTB	-	3	3	3	W
X1	X2	X3		X4	X5	X6	X7

X1 LED Item		X2 Module		X3 Emitting Color		X4 Chip Quantity		X5~X6 Serial No.	
Code	Type	Code	Type	Code	Type	Code	Type	Code	Type
ET	Edison Top LED	3528	3.5x2.8mm	W	Cool White	1	1pcs		
		5050	5.0x5.0mm	H	Neutral White	3	3pcs		
				X	Warm White	A	0.5W		
				R	Red	B	1W		
				A	Amber(615nm)				
				Y	Yellow(590nm)				
				T	True Green				
				B	Blue				
				RTB	RGB 3 chips				

X7 Feature	
Code	Type
W	White surface
B	Black surface
D	Black housing

Environmental Compliance

PLCC 5050 series are compliant to the Restriction of Hazardous Substances Directive or RoHS. The restricted materials including lead, mercury cadmium hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ether (PBDE) are not used in PLCC 5050 series to provide an environmentally friendly product to the customers.

LED Package Dimension and Polarity

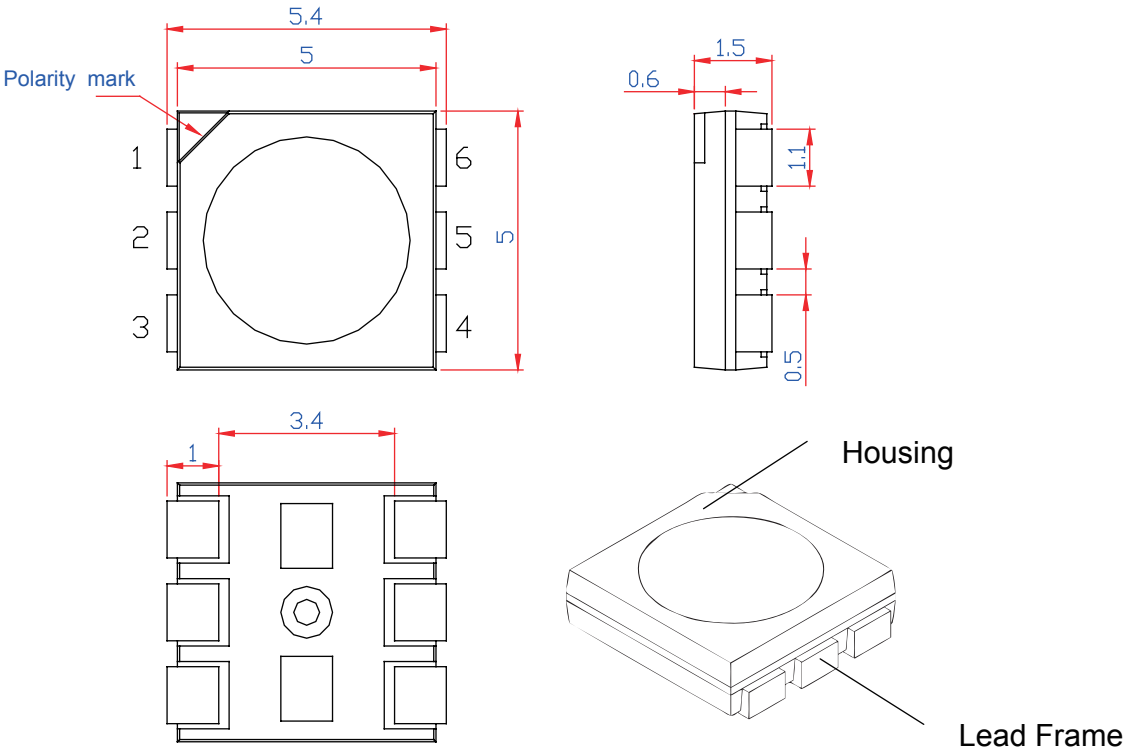

Figure 1. PLCC 5050 series Dimension

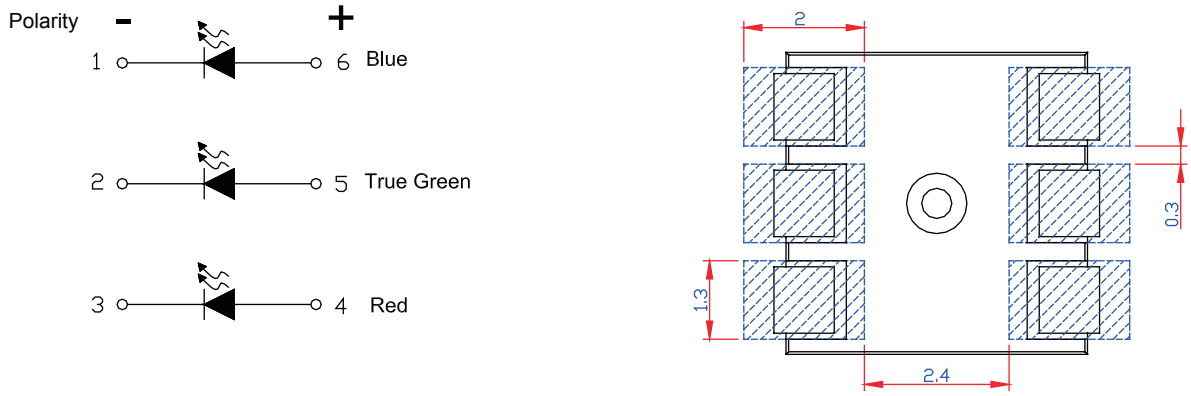

Figure 2. PLCC 5050 series circuit diagram and recommended soldering pad

Notes:
1. All dimensions are measured in mm.
2. Tolerance : ± 0.2 mm

Absolute Maximum Ratings

The following table describe absolute maximum ratings of PLCC 5050 series.

Table 2. Absolute maximum ratings for PLCC 5050 series

Parameter	Rating (R)	Rating (T) / (B)	Unit	Symbol
Forward Current	35	30	mA	I_F
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	80	100	mA	
Reverse Current (per die)	10	10	uA	I_R
Reverse Voltage	5	5	V	V_R
Power Dissipation	100	110	mW	
LED Junction Temperature	115		°C	T_J
Operating Temperature	-30 ~ +85		°C	
Storage Temperature	-40 ~ +100		°C	
Soldering Temperature	225 ~ 230		°C	
Manual Soldering at 350°C(Max.)	3		Sec	

Notes:
1. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
2. LEDs are not designed to be driven in reverse bias.
3. tp: Pulse width time

Luminous Intensity Characteristic

The following table describes luminous intensity of PLCC 5050 series.

Table 3. Luminous intensity characteristics at I_F=20mA/chip and T_a=25°C for PLCC 5050 series

Part Name	Color	Luminous intensity(mcd)		Luminous Flux Typ.(lm)
		Min.	Typ.	
ET-5050RTB-333W	Red	400	500	1.5
	True Green	1000	1,100`	3.4
	Blue	250	300	0.9

Note:
Luminous intensity is measured with an accuracy of ± 10%

Characteristic

Optical Characteristics

The following table describes forward voltage of PLCC 5050 series.

Table 4 . Optical characteristics at I_F=20mA/chip and Ta=25°C for PLCC 5050

Part Name	Color	V_F(V)		View Angle (Degree)
		Min.	Max.	
ET-5050RTB-333W	Red	1.8	2.8	120
	True Green	2.8	3.7	120
	Blue	2.8	3.7	120

Note:
Forward Voltage is measured with an accuracy of ± 0.1V

Electrical Characteristics

Table 5. Electrical characteristics characteristics at T_J=25°C for PLCC 5050 series

Part Name	Color	λd(nm)		
		Min.	Typ.	Max.
ET-5050RTB-333W	Red	620	625	630
	True Green	520	525	535
	Blue	465	470	475

Note:
Wavelength is measured with an accuracy of ± 1nm

Characteristic Curves

Spectrum

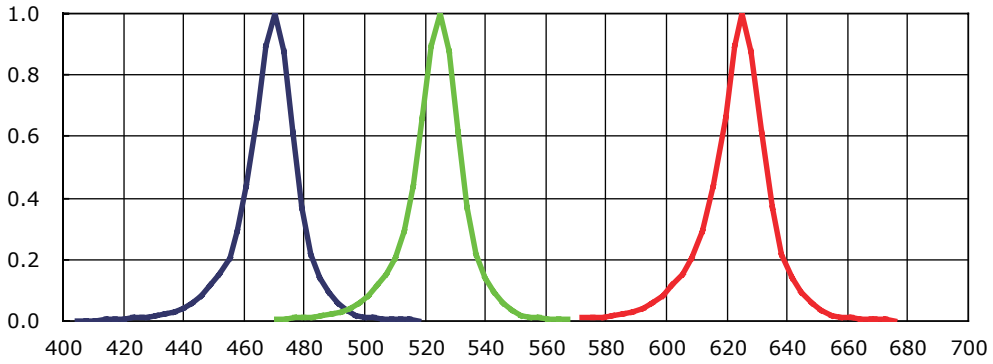

Figure 3. Wavelength & relative intensity for PLCC 5050 series

Radiation Diagram

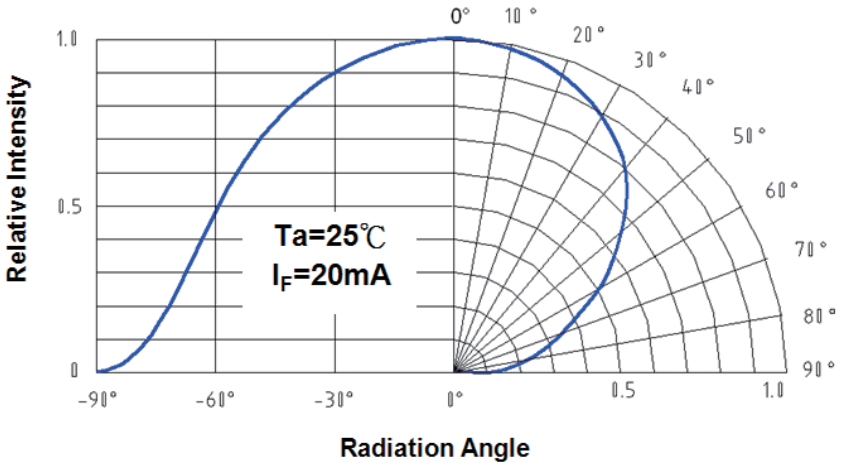

Figure 4. Beam pattern diagram for PLCC 5050 series

CIE Chromaticity Diagram of R.G.B

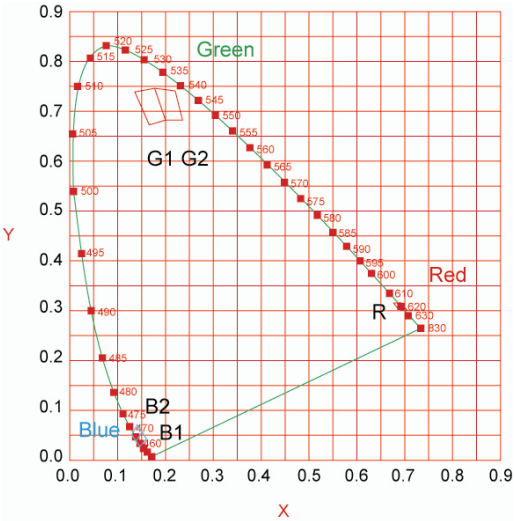

Figure 5. PLCC 5050 CIE Chromaticity Diagram of R.G.B

Allowable Forward Current&Ambient temperature

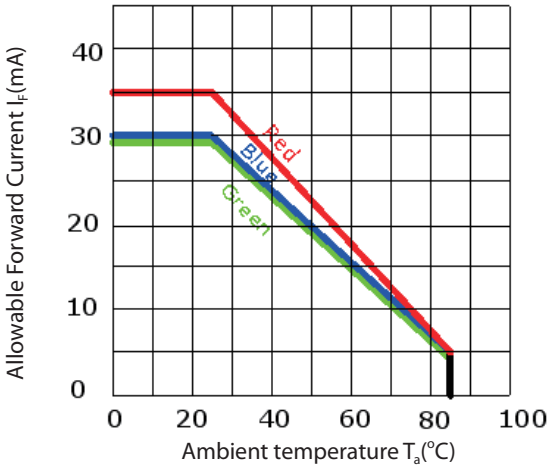

Figure 6. Ambient temperature & forward current for PLCC 5050 series

Relative Intensity & Forward Current

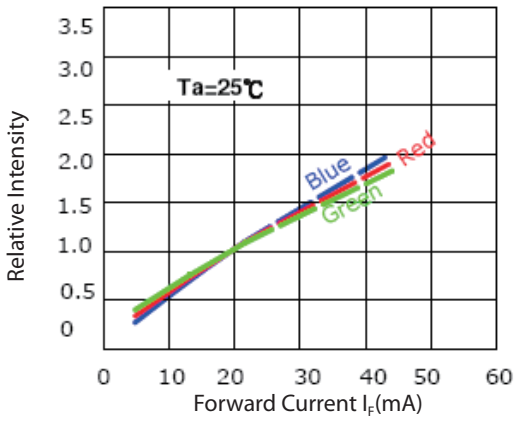

Figure 7. Forward current & relative intensity for PLCC 5050 series

Forward Current & Forward Voltage

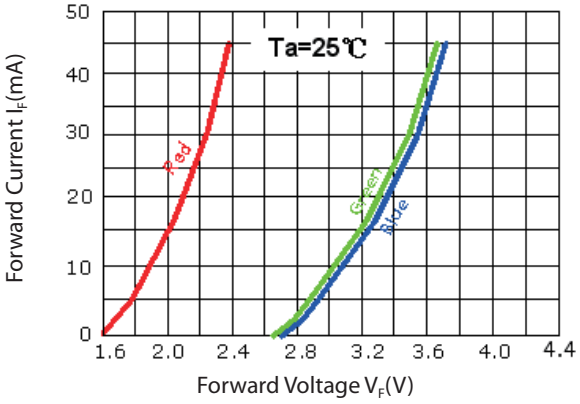

Figure 8. Forward voltage & forward current for PLCC 5050 series

Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.

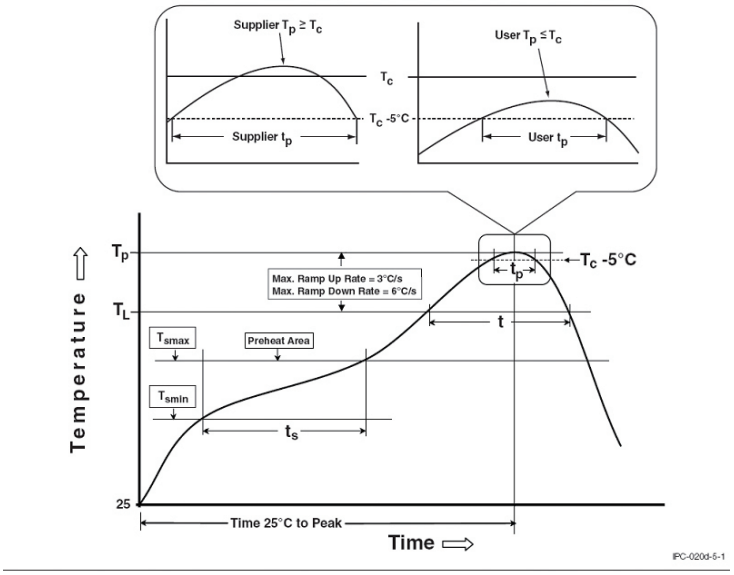

Figure 9. Reflow Profiles

Table 6. Table of Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (Tsmin) Temperature max (Tsmax) Time (Tsmin to Tsmax) (ts)	150 °C 200 °C 90-120 seconds
Average ramp-up rate (Tsmax to Tp)	3 °C/second max.
Liquidous temperature (TL) Time at liquidous (tL)	200 °C 60-150 seconds
Peak package body temperature (Tp)*	225 °C ~230 °C *
Classification temperature (Tc)	230 °C
Time (tp)** within 5 °C of the specified classification temperature (Tc)	30** seconds
Average ramp-down rate (Tp to Tsmax)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:
* Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.
** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.

Product Packaging Information

Taping Reel

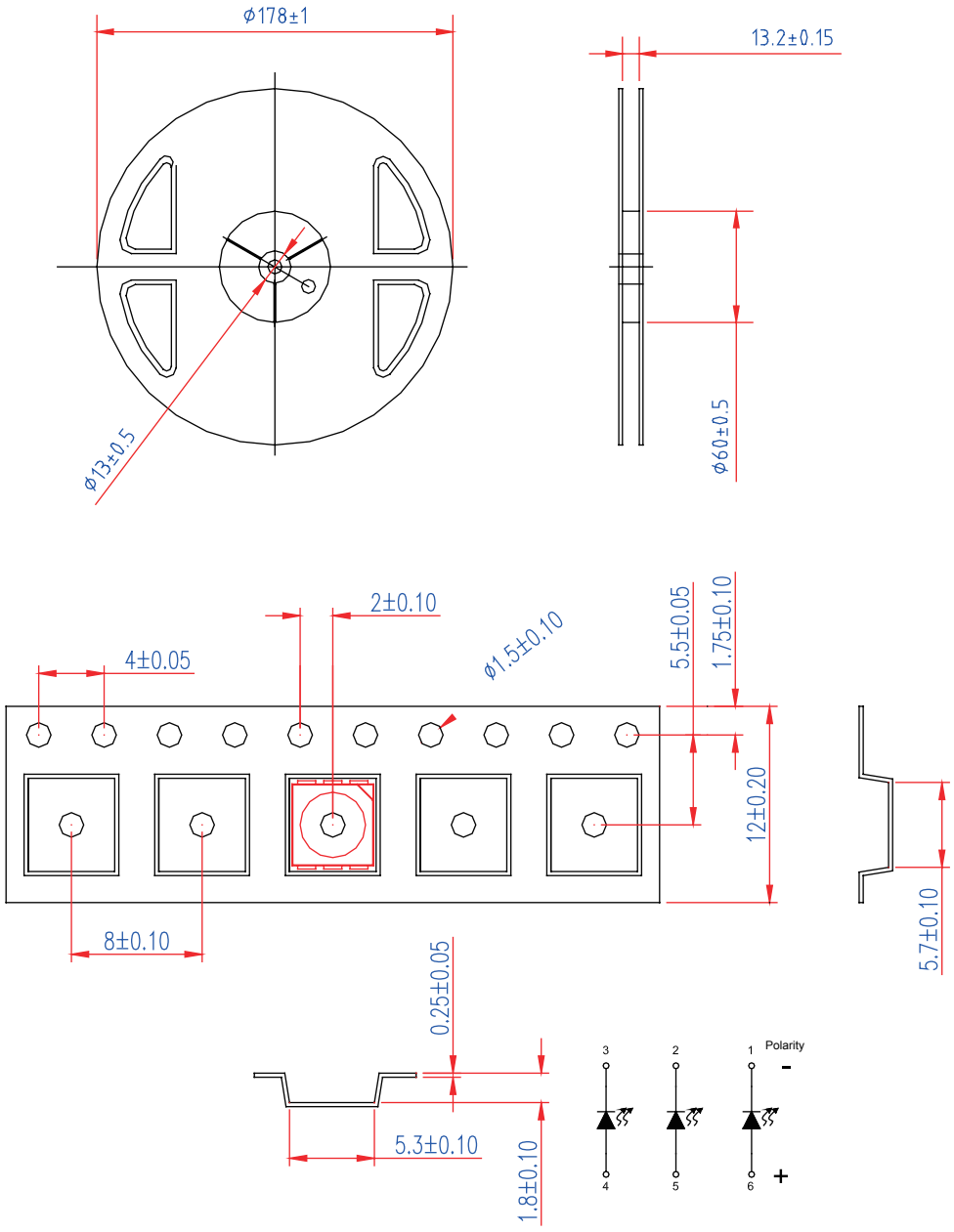

Figure 10. Taping reel dimensions

Packaging

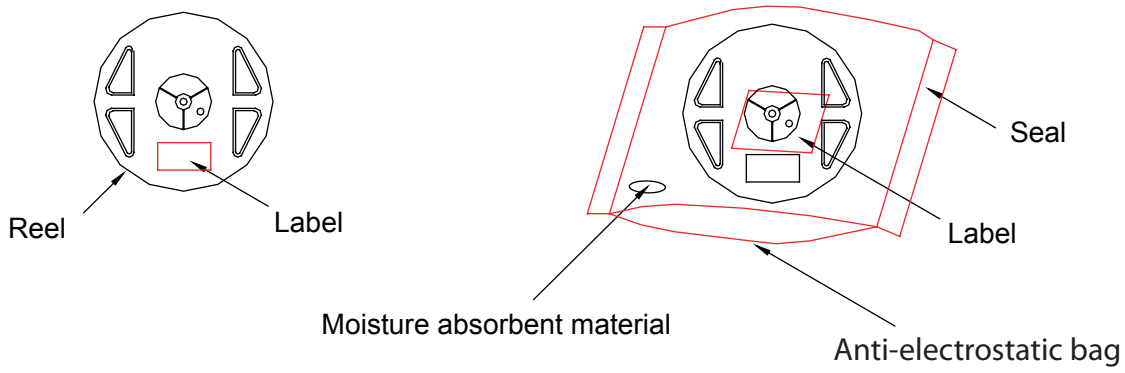

Figure 11. Packaging diagram

Package Label

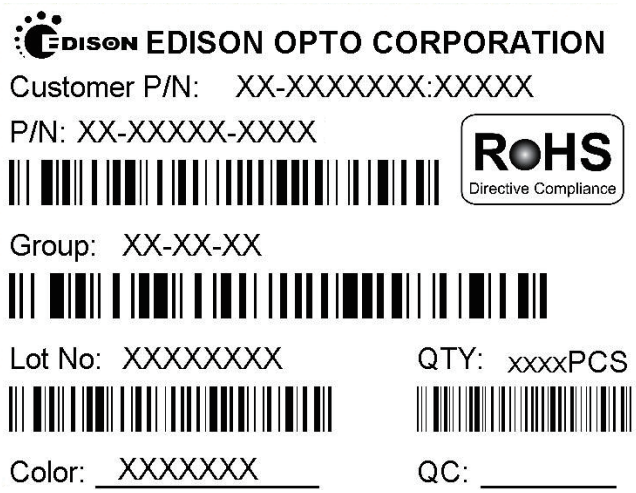

Figure 10. Package label

Table 7. Package dimensions and quantity

Item	Quantity	Total	Dimensions(mm)
Reel	1,000pcs	1,000pcs	Diameter=178
Box	5 reels	5,000pcs	240*235*67
Carton	10 boxes	50,000pcs	500*260*355

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Revision History

Table 8. Revision history of PLCC 5050 series datashhet

Versions	DESCRIPTION	RELEASE DATE
1	1.Establish a datasheet	2011/10/06
2	1. Add information on P.9	2012/01/10

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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