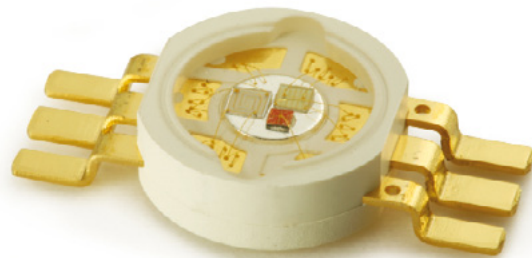


Edixeon[®] RGB Series Datasheet



Features :

- Three chips (colors) in one package
- Independent control of each color
- More energy efficient than incandescent and most halogen lamps
- Low voltage operation
- Instant light
- Long operating life
- IR reflow process compatible

Table of Contents

General Information.....	3
Absolute Maximum Ratings.....	4
Characteristics.....	4
Luminous Flux Characteristic.....	5
Mechanical Dimensions.....	6
Characteristic Curve.....	8
Reflow Profile.....	11
Reliability.....	12
Product Packaging Information.....	13
Revision History.....	14
About Edison Opto.....	14

General Information

Introduction

Edixeon® RGB emitters are one of the highest flux LEDs in the world by Edison Opto. It is designed to satisfy applications of Solid-State lighting. It is designed to have three chips in one package. It has various colors for choice and can be independently controlled. More importantly, it can pass reflow process.

Ordering Code Format

<u>2</u>	<u>E</u>	<u>x 1</u>	<u>0 3</u>	<u>M 1</u>	<u>0 0</u>	<u>0 0 0</u>	<u>x x x</u>
X1	X2	X3	X4	X5	X6	X7	X8

X1		X2		X3		X4		X5	
Type	Component	Series		Wattage		Color			
2	Emitter	E	Edixeon	A1	A1 Series	03	3W	M1	RTB
				R1	R1 Series				

X6		X7		X8	
Internal code	PCB Board	Serial Number			
-	-	000	-	-	-

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
DC Forward Current	I_F	350	mA
Peak Pulsed Current; ($t_p \leq 100\mu s$, Duty cycle=0.25)	I_{pulse}	700	mA
LED Junction Temperature	T_J	120	$^{\circ}C$
Operating Temperature	-	-30 ~ +110	$^{\circ}C$
Storage Temperature	-	-40 ~ +120	$^{\circ}C$
ESD Sensitivity (HBM)	-	2,000	V
Soldering Temperature	-	260	$^{\circ}C$
Manual soldering time at 260 $^{\circ}C$ (Max)	-	5	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. Allowable reflow cycles are 3 times for each LED.
4. t_p : Pulse width time

Characteristics

Parameter	Symbol	Value	Units
Viewing Angle	(Typ.) $2\theta^{1/2}$	115	Degree
Forward voltage	(350mA) (700mA) V_F	R : 2.2 T/B : 3.4 R : 2.6 T/B : 3.8	V
Thermal resistance	-	R : 16 T : 13 B : 11	$^{\circ}C/W$
$\Delta V_F / \Delta T$	$\Delta V_F / \Delta T$	-2	mV/ $^{\circ}C$
CCT / Wavelength	λ_d	620-630 515-535 450-475	nm
JEDEC Moisture Sensitivity	-	Level 2a Floor Life Conditions: $\leq 30^{\circ}C$ / 60% RH Soak Requirements(Standard) Time (hours): 120+1/-0 Conditions: $60^{\circ}C$ / 60% RH	-

Notes:

1. Wavelengths are stated as peak wavelength.
2. Edison maintains a tolerance of ± 1 nm for dominant wavelength, ± 2 nm for peak wavelength and $\pm 5\%$ on CCT measurement.
3. Edison maintains a tolerance of 0.06V on forward voltage measurement.

Luminous Flux Characteristic

Luminous Flux Characteristics at $I_f=350\text{mA}$, $T_j=25^\circ\text{C}$

Color	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Order Code
Red	R0	39.4	51.2	2ER103M100000002
True Green	T0	66.5	86.5	
Blue	M0	13.8	17.9	
	N0	17.9	23.3	2ER103M100000001
Red	Q0	30.3	39.4	
True Green	T0	66.5	86.6	
Blue	M0	13.8	17.9	2EA103M100000004 2EA103M100000005
	N0	17.9	23.3	
Red	Q0	30.3	39.4	
True Green	T0	66.5	86.6	
Blue	N0	17.9	23.3	
	P0	23.3	30.3	

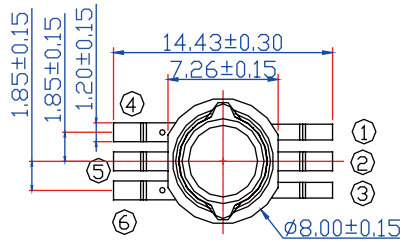
Notes:

1. Flux is measured with an accuracy of $\pm 10\%$.
2. All true green and blue emitters are built with InGaN.
3. All red emitters are built with AlGaInP.

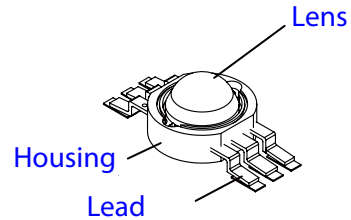
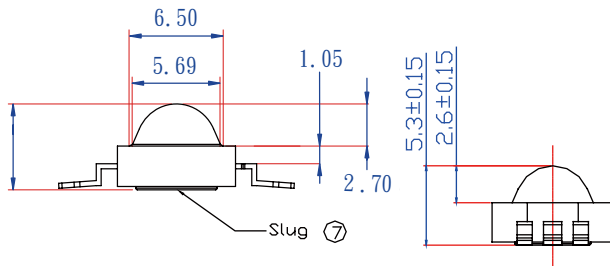
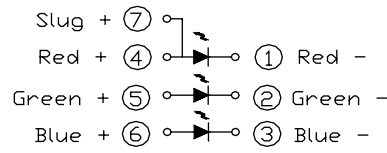
Mechanical Dimensions

Emitter Type Dimension

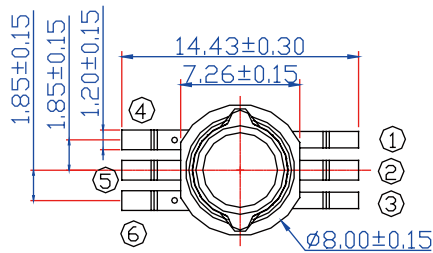
2ER103M100000001



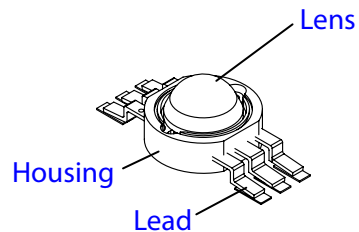
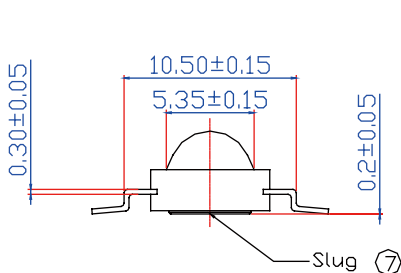
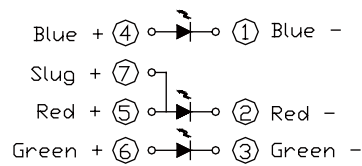
Circuit



2ER103M100000002&2EA103M100000005



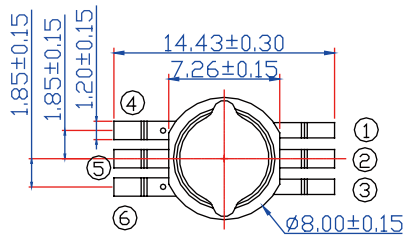
Circuit



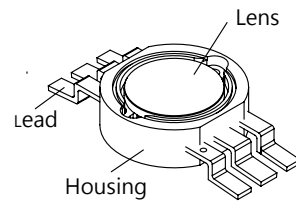
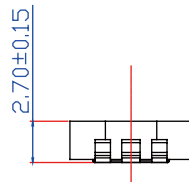
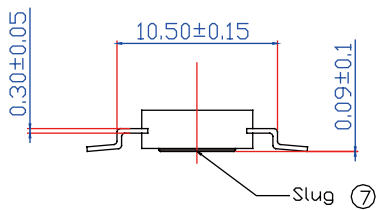
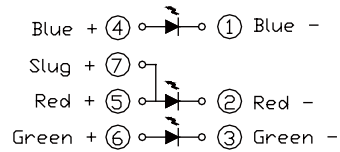
Notes:

1. All dimensions are in mm.
2. Lambertian and side emitting series slug has polarity as anode.
3. It is important that the slug can't contact aluminum surface. It is strongly recommended that there should coat a uniform electrically isolated heat dissipation film on the aluminum surface.

2EA103M100000004



Circuit

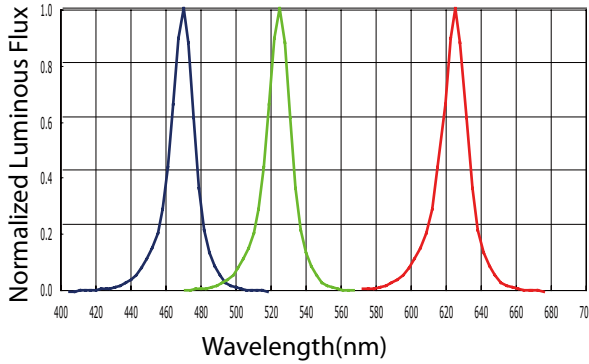


Notes:

1. All dimensions are in mm.
2. Lambertian and side emitting series slug has polarity as anode.
3. It is important that the slug can't contact aluminum surface. It is strongly recommended that there should coat an uniform electrically isolated heat dissipation film on the aluminum surface.

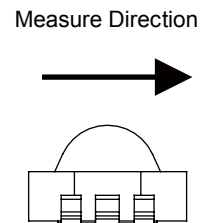
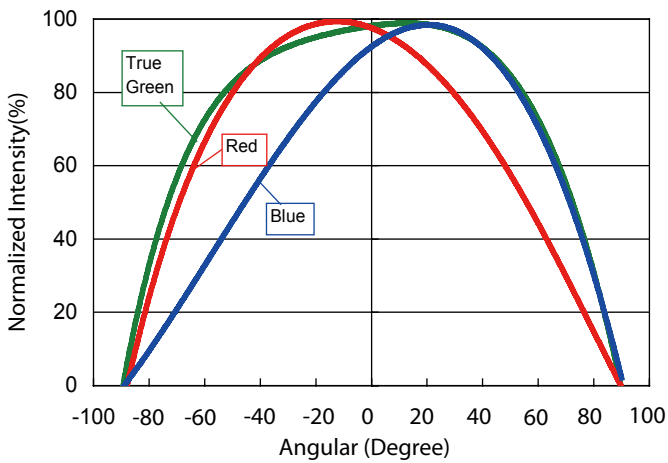
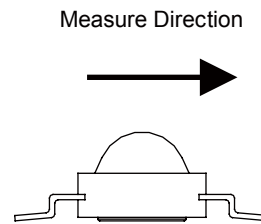
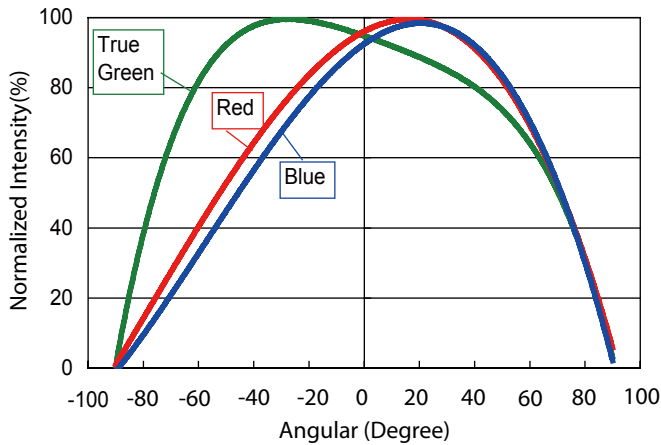
Characteristic Curve

Spectrum

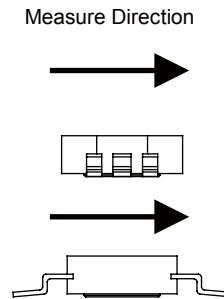
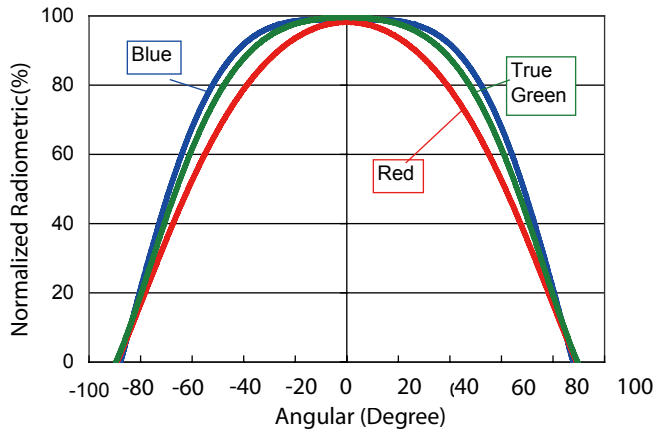


Color Spectrum for White series at $T_j=25\text{ }^\circ\text{C}$

Radiation Diagram

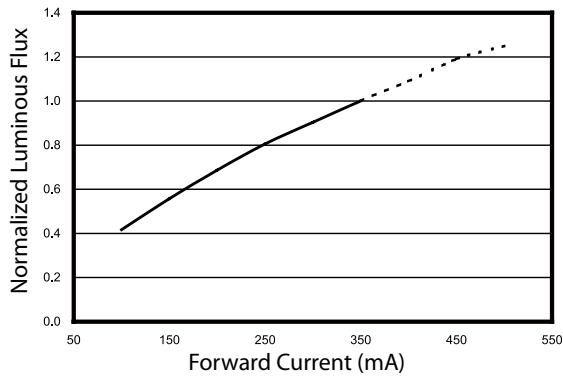


Lambertain angle at $T_j=25\text{ }^\circ\text{C}$ for Edixeon® RGB series



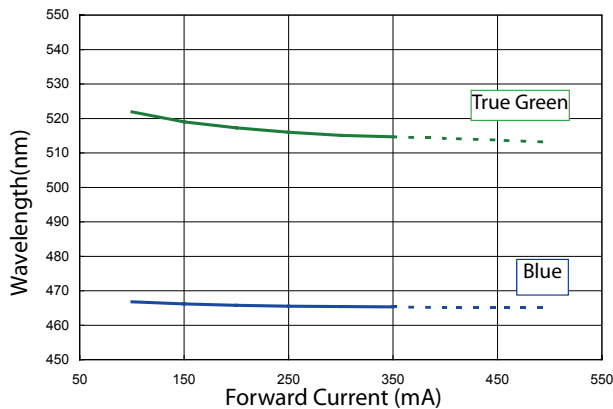
Lambertain angle at $T_j=25^\circ\text{C}$ for Edixeon® RGB series (2EA103M100000004)

Luminous Flux & Forward Current

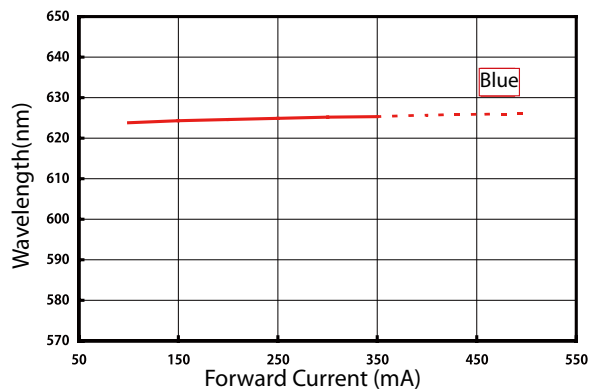


Forward current & relative luminous at $T_j=25^\circ\text{C}$ for Edixeon® RGB series

Wavelength & Forward Current

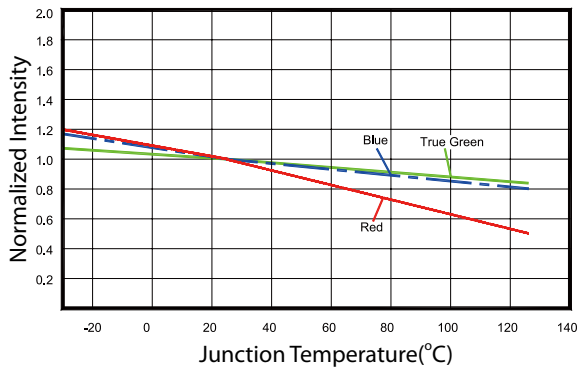


Wavelength & forward current for True Green and Blue color Edixeon® RGB series

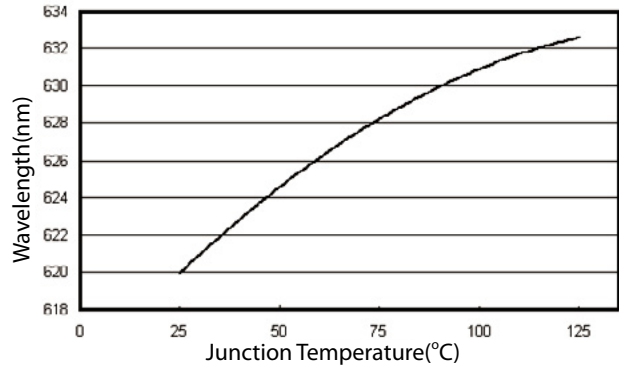


Wavelength & forward current for Red color Edixeon® RGB series

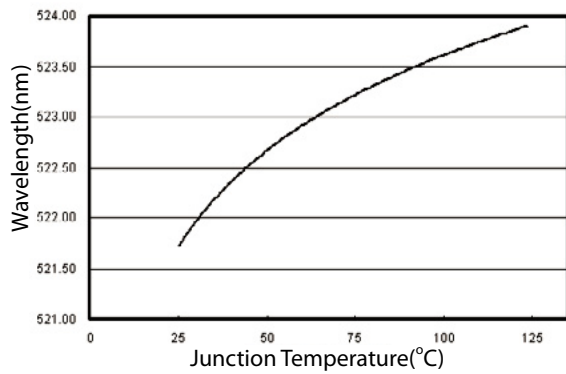
Relative Intensity & Junction Temperature



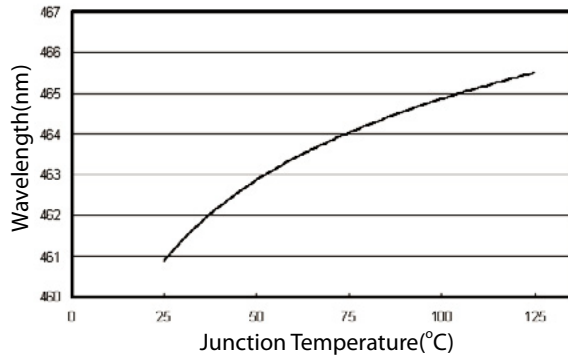
Junction temperature & power rate for Edixeon® RGB series



Wavelength characteristic for Edixeon® RGB Red chip



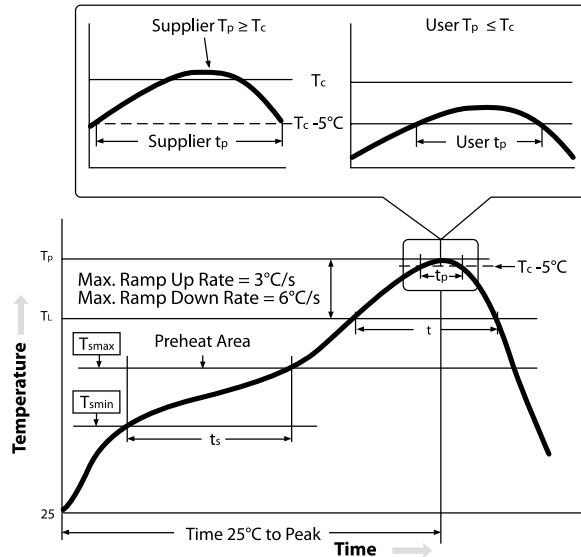
Wavelength characteristic for Edixeon® RGB True Green chip



Wavelength characteristic for Edixeon® RGB Blue chip

Reflow Profile

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



Classification Reflow Profiles

Profile Feature	Low-Temp, Pb-Free Assembl
Preheat/Soak	
Temperature Min (T _{smin})	150° C
Temperature Max (T _{smax})	200° C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up rate (TL to T _p)	3° C/ seconds max.
Liquidous temperature (TL)	217° C
Time (t _L) maintained above TL	60-150 seconds
Peak package body temperature (T _p) ⁽¹⁾	255° C~260° C
Classification temperature (T _c)	260° C
Time (t _p) within 5° C of the specified classification temperature (T _c) ⁽²⁾	30 seconds
Average ramp-down rate (T _p to T _{smax})	6° C/second max.
Time 25° C to peak temperature	6minutes max

Notes:

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

Reliability

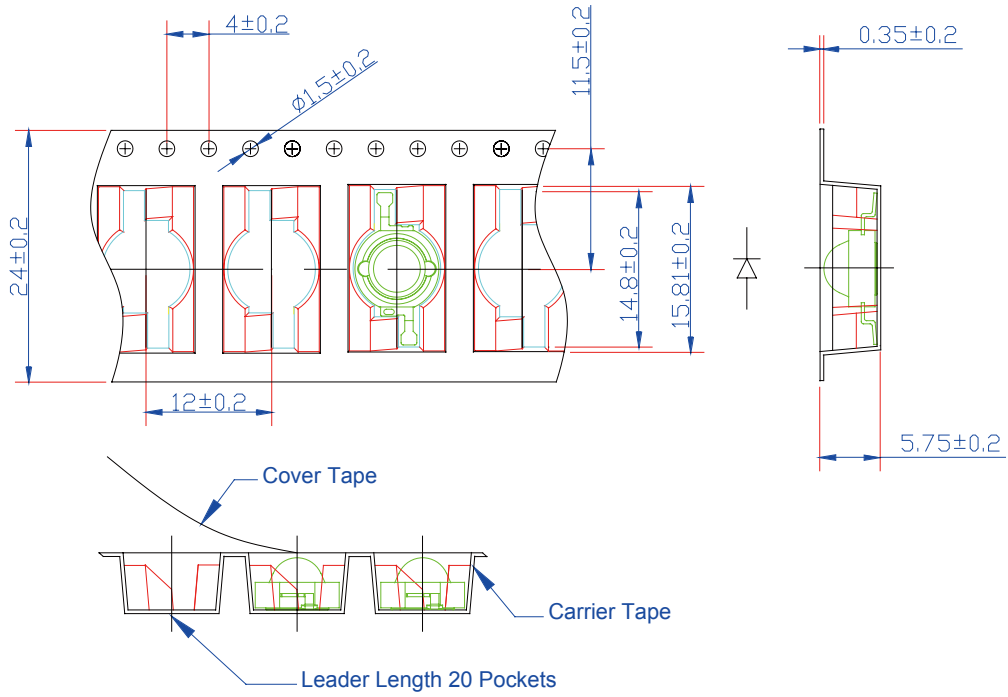
NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins \leq 10 sec	100 Cycle
3	Resistance to Soldering Heat	T _{SOL} =260°C, 30 sec	3 times
4	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
5	High-Temperature Storage	T _A =100°C	1,000 hrs
6	Humidity Heat Storage	T _A =85°C RH=85%	1,000 hrs
7	Low-Temperature Storage	T _A =-40°C	1,000 hrs
8	Operation Life test	25°C	1,000 hrs
9	High Temperature Operation Life test	85°C	1,000 hrs
10	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
11	ON/OFF Test	30 sec ON, 30 sec OFF	10W times

Failure Criteria

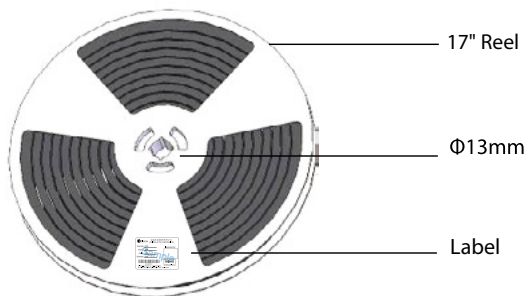
Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

Product Packaging Information

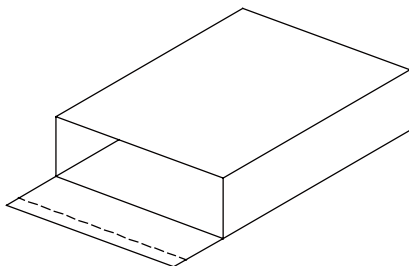
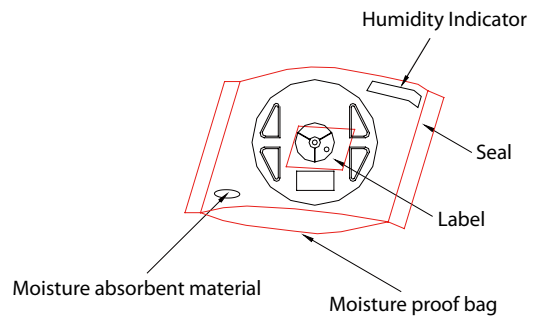
Tape and Reel Dimension



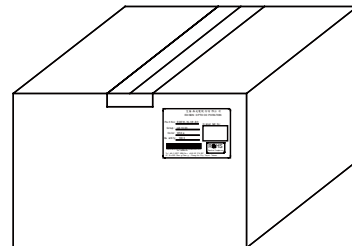
Edixeon Emitter



1000pcs LEDs inside



2 bags in 1 box



5 boxes in 1 carton

Note : 445*410*415 (Tolerance : $\pm 5\text{mm}$)

Revision History

Versions	Description	Release Date
1	Establish order code information	2012/12/05
2	Update the Luminous Flux Characteristic	2013/01/30
3	Add Reflow & Reliability	2014/05/26

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

Copyright©2014 Edison Opto. All rights reserved. No part of publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photo copy, recording or any other information storage and retrieval system, without prior permission in writing from the publisher. The information in this publication are subject to change without notice.

www.edison-opto.com

For general assistance please contact:
service@edison-opto.com.tw

For technical assistance please contact:
LED.Detective@edison-opto.com.tw