

Application Note 1-1

# Z-POWER LED series Binning and Labeling

## P7



**Features**

- Super high flux output and high luminance
- Designed for high current operation
- Low thermal resistance
- SMT solderability
- Lead free product
- RoHS compliant

**Applications**

- Mobile phone flash
- Automotive interior / Exterior lighting
- Automotive signal lighting
- Automotive forward lighting
- Torch
- Architectural lighting
- Projector light source
- Traffic signals
- Task lighting
- Decorative / Pathway lighting
- Remote / Solar powered lighting
- Household appliances

Z-Power series is designed for high current operation and high flux output applications. Z-Power LED's thermal management perform exceeds other power LED solutions. It incorporates state of the art SMD design and Thermal emission material.

Z Power LED is ideal light sources for general illumination applications, custom designed solutions, automotive large LCD backlights

This application note provides binning and labeling information of Z-Power LED series.

It includes the Z-Power LED bins for luminous flux, wavelength (or x,y coordinates), correlated color temperature (CCT) for white and forward voltage.

## Full Code of Z-Power LED Series

Full code form :  $X_1 X_2 X_3 X_4 X_5 X_6 - X_7 X_8 - X_9 X_{10} X_{11} X_{12} X_{13}$

### 1. Part Number

- $X_1$  : Color
- $X_2$  : Z-Power LED series number
- $X_3$  : LENS type
- $X_4$  : Chip quantity (or Power Dissipation)
- $X_5$  : Package outline size
- $X_6$  : Type of PCB





### 2. Internal Number


- $X_7$
- $X_8$

### 3. Code Labeling

- $X_9$  : Luminous flux (or Radiant flux for royal blue)
- $X_{10} X_{11} X_{12}$  : Dominant wavelength (or x,y coordinates rank code)
- $X_{13}$  : Forward voltage

### 4. Sticker Diagram on Reel & Aluminum Vinyl Bag

PART NO. :  $X_1 X_2 X_3 X_4 X_5 X_6 - X_7 X_8$   
  
 QUANTITY : ###  
  
 LOT NUMBER : #####  
  
 BIN CODE :  $X_9 X_{10} X_{11} X_{12} X_{13}$   




For more information about binning and labeling, refer to the Application Note -1

**Part Number**

Part numbers specify color, Z-Power series, Lens type, P<sub>d</sub>, size, PCB and Grade of characteristic code type of Z-Power LED.

• Example: X<sub>1</sub> X<sub>2</sub> X<sub>3</sub> X<sub>4</sub> X<sub>5</sub> X<sub>6</sub> - X<sub>7</sub> X<sub>8</sub> 1)

X <sub>1</sub>	Color
W	Pure White
N	Warm White
S	Natural White
D	Royal Blue
B	Blue
C	Cyan
G	Green
A	Amber
R	Red
F	Full Color (7-color)

X <sub>2</sub>	Z-Power Series
1	P1
3	P3
4	P4
7	P7
9	P9

X <sub>3</sub>	LENS Type
0	P1 Flat Type
1	PI Inner Lens Type 2)
2	P3,P4,P9 Dome Type 3)
3	P3 Side Type 4)

Note:

- 1) X<sub>7</sub>, X<sub>8</sub> is a internal code number
- 2) View angle : white 70°, other colors 60°
- 3) Hemispherical dome type
- 4) View angle : -80° ~ 80°

<b>X<sub>4</sub></b>	<b>Chip Quantity (or Power Dissipation)</b>
1	1 chip (1W)
2	2 chip (2.5W)
3	Full Color (7-color)
4	4 chip (5W)

<b>X<sub>5</sub></b>	<b>Package Outline Size</b>
12	D 12 mm
9	9 X 9 mm
8	D 8 mm
5	D 5 mm

<b>X<sub>6</sub></b>	<b>Metal PCB Type</b>
0	Emitter Only
1	Rectangular
2	Star

**Code Labeling**

**1. Luminous Flux Bins**

- Luminous flux bin structure for pure white, warm white, blue, cyan, green, amber and red Z-Power.

Bin Code		Luminous Flux [lm]
J		6 ~ 8.5
K		8.5 ~ 11.0
L		11.0 ~ 14.5
M		14.5 ~ 19.0
O		19.0 ~ 24.5
P		24.5 ~ 32.0
Q		32.0 ~ 41.5
R		41.5 ~ 54.0
S	S1	54.0 ~ 60.0
	S2	60.0 ~ 70.0
T	T1	70.0 ~ 80.0
	T2	80.0 ~ 91.0
U	U1	91.0 ~ 100.0
	U2	100.0 ~ 118.5
V		118.5 ~ 154.0
W		154.0 ~ 200.0
X		200.0 ~ 260.0
Y		260.0 ~ 340.0
Z		340.0~440.0
A		440.0~570.0
B		570.0~740.0
C		740.0~960.0

The list explains the photometric luminous flux bins for Z-Power LED. Z-Power LED are tested and binned by photometric luminous flux. Not all bins are available in all colors.

Tolerance : ±10% of Luminous flux value

## 2. Color Bins

Z-Power are tested and binned for dominant wavelength (blue, green, red) or x,y coordinates (pure white, warm white)

### 2-1. Pure White CIE

Pure white product tested and binned by x,y coordinates and CCT

- Pure white bin structure

Bin	CHR_X	CHR_Y	CCT(K)	Bin	CHR_X	CHR_Y	CCT(K)	
SYP	0.293	0.305	9000	SWP	0.329	0.331	6050	
	0.283	0.284			0.317	0.320		
	0.290	0.270			0.318	0.310		
	0.300	0.285			0.329	0.320		
0.304	0.327	7500	SVM		0.329	0.325		5350
0.293	0.305			0.348	0.385			
0.300	0.285			0.329	0.369			
0.310	0.300			0.329	0.362			
0.308	0.311			0.329	0.357			
0.305	0.322	0.347		0.372				
SXN	0.315	0.344	6700	SVN	0.347	0.372	5350	
	0.304	0.327			0.329	0.357		
	0.305	0.322			0.329	0.345		
	0.316	0.333			0.346	0.359		
SX0	0.316	0.333	6700	SV0	0.346	0.359	5350	
	0.305	0.322			0.329	0.345		
	0.308	0.311			0.329	0.331		
	0.317	0.32			0.329	0.325		
SXP	0.317	0.320	6700		0.344	0.344		4800
	0.308	0.311			0.345	0.351		
	0.310	0.300		0.367	0.400			
	0.318	0.310		0.348	0.385			
SWN	0.329	0.362	6050	0.347	0.372	4800		
	0.315	0.344		0.364	0.383			
	0.316	0.333		SUN	0.364		0.383	
	0.329	0.345			0.347		0.372	
	0.329	0.357			0.346		0.359	
0.329	0.345	0.345	0.351					
SW0	0.316	0.333	6050	0.362	0.372	4800		
	0.317	0.320						
	0.329	0.331						

Tolerance

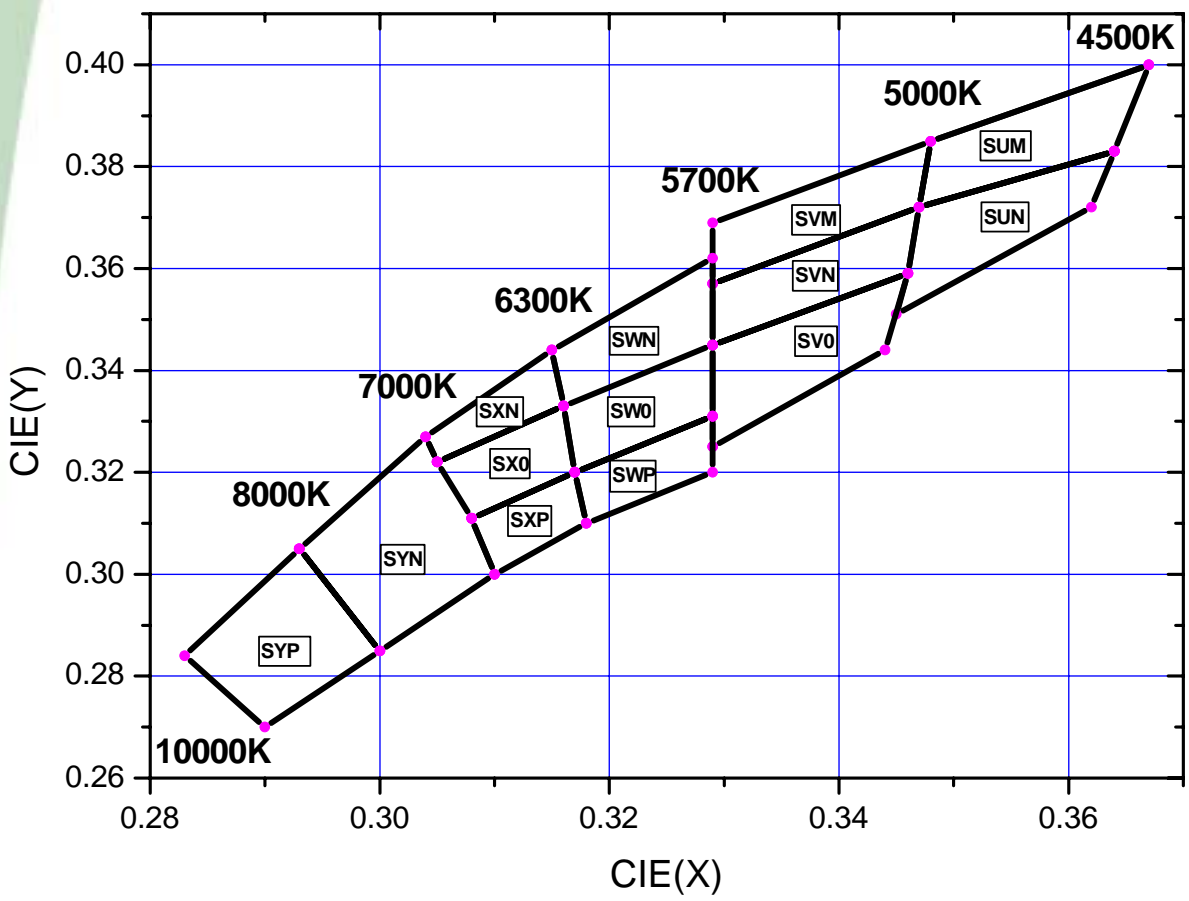
Dominant wavelength : ± 0.5 nm

Peak wavelength : ± 2.0 nm

Rev. 00

March 2008

- Pure white binning structure graphical representation





### 3. Forward Voltage Bins

Bin Code	Forward Voltage [V]
D	2.00 ~ 2.25
E	2.25 ~ 2.50
F	2.50 ~ 2.75
G	2.75 ~ 3.00
H	3.00 ~ 3.25
I	3.25 ~ 3.50
J	3.50 ~ 3.75
K	3.75 ~ 4.00
L	4.00 ~ 4.25
M	4.25 ~ 4.50

Tolerance :  $\pm 0.06V$

**10W Order Code (P7)**

**Z Power LED has an order code, use it as follows to purchase.**

- Example: W42180 – 10A
  - W724C0 : Part Number
  - 10A : Order code

You can select PCB type, Lens type and Z-Power LED series number as part number.

**1. Pure White (1A,1B, 1C, 1D)**

Standard Order Codes for pure white				
Order Code	LF	CC	V <sub>F</sub>	Bin Codes
Part No. – 10A	B	SXN	H I J K L	BSXNH – BSXNK
		SWN		BSWNH – BSWNK
		SX0		BSXOH – BSXOK
		SW0		BSWOH – BSWOK
Part No. – 10B	C	SXN		CSXNH – CSXNK
		SWN		CSWNH – CSWNK
		SX0		CSXOH – CSXOK
		SW0		CSWOH – CSWOK
Part No. – 10C	B	SX0		BSXOH – BSXOK
		SW0		BSWOH – BSWOK
		SXP		BSXPH – BSXPK
		SWP		BSWPH – BSWPK
Part No. – 10D	C	SX0	CSXOH – CSXOK	
		SW0	CSWOH – CSWOK	
		SXP	CSXPH – CSXPK	
		SWP	CSWPH – CSWPK	

\* : Not yet available

**10W Order Code (P7)**

**1. Pure White (10E,10F,10G,10H, 10I, 10J)**

Standard Order Codes for pure white				
Order Code	LF	CC	V <sub>F</sub>	Bin Codes
Part No. – 10E	B	SYP	H I J K L	BSYPH~BSYPK
		SYN		BSYNH~BSYNK
Part No. – 10F	C	SYP		CSYPH~CSYPK
		SYN		CSYNH~CSYNK
Part No. – 10G	B	SVM		BSVMH~BSVMK
		SVN		BSVNH~BSVNK
		SVO		BSVOH~BSVOK
Part No. – 10H	C	SVM		CSVMH~CSVMK
		SVN		CSVNH~CSVNK
		SVO		CSVOH~CSVOK
Part No. – 10I	B	SUM		BSUMH~BSUMK
		SUN		BSUNH~BSUNK
Part No. – 10J	C	SUM	CSUMH~CSUMK	
		SUN	CSUNH~CSUNK	

\* : Not yet available



**AMERICA**

•Los Angeles  
Seoul Semiconductor, Inc. 18411 Crenshaw Blvd.  
#212 Torrance, CA 90504  
Tel : +1-310-324-7151  
Fax : +1-678-550-8374  
E-mail : karl@acriche.com

•Detroit  
3290 W.Big Beaver Rd. Suite #120 Troy MI.48084  
Tel : +1-248-649-5381  
Fax : +1-248-649-5541  
E-mail charlie@acriche.com

•New Jersey  
Tel : +1-617-869-6779  
Fax : +1-201-585-1711  
E-mail : pcj77@acriche.com

•Atlanta  
Tel : +1-201-956-3609  
Fax : +1-201-632-4807  
E-mail : jason@acriche.com

**EUROPE**

•-GERMAN GmbH  
Trakehnerstr. 7 60487 Frankfurt Germany  
Tel : +49-69-7167501-0  
Fax : +49-69-7167501-20  
E-mail : dykim@acriche.com

•Nuernberg  
Am Rathaus 14 90522 Oberasbach Germany  
Tel : +49-911-99958-60  
Fax : +49-911-99958-65  
E-mail : info@seoul-semicon.de

•UK  
Leckbarrow Cottage, Greenodd, Ulverston,  
Cumbria LA12 8HT, United Kingdom  
Tel : +44-1229-861-104  
E-mail : richard@acriche.com

▪Denmark  
Laederstraede 7, 2nd FL. 1201 Copenhagen K  
Denmark  
Tel : +45-3512-5081  
E-mail : bchyun@acriche.com

▪Netherlands  
Zus Braunstraat 28 3056 AB Rotterdam, The  
Netherlands  
Tel. : +31-10-251-8668  
E-mail : wim@seoulsemicon.nl

•Italy  
Via Bergamo, 39 23807 Merate(LC), Italy  
Tel. : +39-039-599-503  
Fax. : +39-039-598-4930  
E-mail : italia@seoulsemicon.it

▪France  
ZI de la Fontaine de Jouvence 3, rue Levacher  
Cintrat 91460 MARCOUSSIS FRANCE  
Tel : +33-1-6980-9229  
Fax : +33-1-6980-9229  
E-mail : italia@seoulsemicon.it

▪Spain  
C/Mar Cantabrico 139 288860 Paracuellos del  
jarama Madrid-Spain  
Tel : +34-91-268-7694  
Fax : +34-91-268-7694  
E-mail italia@seoulsemicon.it

▪Poland  
Botewa Christo 4D/152 str. Warsaw 03-127,  
Poland  
Tel : +48-22-498-75-10  
Fax : +48-22-435-51-44  
E-mail : jhnam@acriche.com

▪Dusseldorf  
Oberlorickerstrasse 312  
40547 Dusseldorf  
Tel : +49-211-507-385-2  
E-mail : andrew@acriche.com

**JAPAN**

•Tokyo  
1-11-15, Shinjuku, Shinjuku-ku, Gyoemmae  
Sunrise BLD.3F, Tokyo, 160-0022, Japan  
Tel: +81-3-5360-7620~1  
Fax : +81-3-5360-7622  
E-mail : smyi@acriche.com

•Nagoya  
#203 Brown House 5-11, 1Cho-me, Chiyoda,  
Naka-ku, Nagoya-city, 460-0012, Japan  
Tel : +81-52-251-1861  
Fax : +81-52-784-5888  
E-mail : b2yttark@acriche.com

**CHINA**

•Shanghai  
A 208 Shanghai Commercial Center NO.2633,  
West YanAn Road Shanghai,China  
Tel : +86-21-3223-0032  
Fax : +86-21-6208-5754  
E-mail : Johnsun82@acriche.com

•Shenzhen  
Rm. 813-815, No.A building, Galaxy Century  
Building, No.3069, Cai Tian Rd., Fu Tian District, SZ  
China  
Tel : +86-755-8204-2307  
Fax : +86-755-8204 7531  
E-mail : kevin@acriche.com

**TAIWAN**

Taiwan  
IIF, No. 868-6. Zhongzherg Rd, zhonghe city,  
Taipei 235, Taiwan  
Tel : +886-28226-7678  
Fax : +886-28226-6211  
E-mail : peter@acriche.com

**SINGAPORE**

Singapore  
54 Serangoon North Avenue 4 #06-01 (Suit 62),  
CyberHub North Singapore 555854  
Tel : +65-6853-9593  
Fax : +65-6853-9591  
E-mail : sansanaw@acriche.com

**INDIA**

NewDelhi  
Apeejay Techno Park BII-41, Mohan Co-op.Indl.  
Estate, Mathura Road, New Delhi-110044, India  
Tel : +91-99-7199-1788  
Fax : +91-11-2989-3764  
E-mail : jlee@acriche.com

**HEAD OFFICE**

Seoul Semiconductor Co., Ltd. 148-29,  
Gasam-dong, Geumcheon-gu, Seoul, Korea  
Tel : +82-31-364-3790  
Fax : +82-2-6915-7776  
E-mail : sscsale@acriche.com