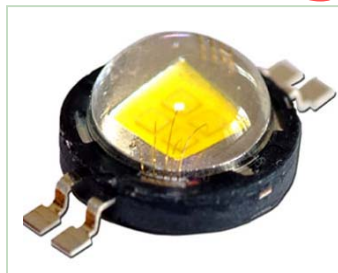


Application Note 1-1

# 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

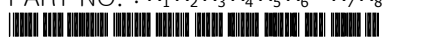



**2. Internal Number**


- $X_7$
- $X_8$

**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> <sup>1)</sup>

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 <sup>2)</sup>
2	P3,P4,P7,P9 Dome Type <sup>3)</sup>
3	P3 Side Type <sup>4)</sup>

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>
C	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		570.0~700.0
C		700.0~800.0
D		800.0~900.0
E		900.0~1100.0

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	
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		
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	
	0.305	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	SUM		0.344	0.344
	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		SUN	0.347	0.372
	0.315	0.344		0.364		0.383	
	0.316	0.333		0.364		0.383	
	0.329	0.345		0.347		0.372	
SW0	0.329	0.357	6050	SUN		0.346	0.359
	0.329	0.345			0.345	0.351	
	0.316	0.333			0.362	0.372	
	0.317	0.320					
	0.329	0.331					

Tolerance

Dominant wavelength : ± 0.5 nm

Peak wavelength : ± 2.0 nm

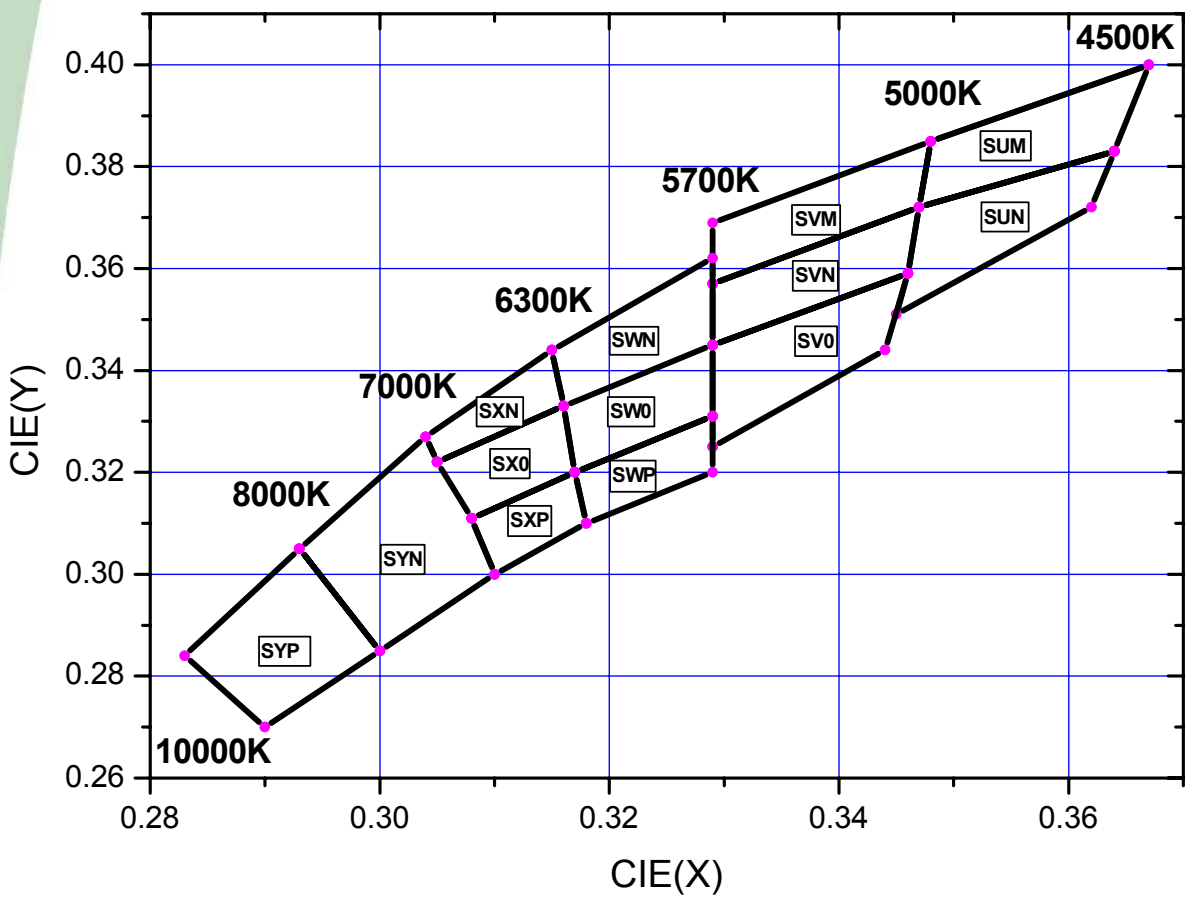
Rev. 01

April 2008

www.ZLED.com

Document No. : SSC-QP-7-07-24 (Rev.00)

- 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: W724C0 – 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,1C)**

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~BSXNL
		SWN		BSWNH~BSWNL
		SX0		BSXOH~BSXOL
		SW0		BSWOH~BSWOL
	C	SXN		CSXNH~CSXNL
		SWN		CSWNH~CSWNL
		SX0		CSXOH~CSXOL
		SW0		CSWOH~CSWOL
Part No. – 10C	B	SX0		BSXOH~BSXOL
		SW0		BSWOH~BSWOL
		SXP		BSXPH~BSXPL
		SWP		BSWPH~BSWPL
	C	SX0	CSXOH~CSXOL	
		SW0	CSWOH~CSWOL	
		SXP	CSXPH~CSXPL	
		SWP	CSWPH~CSWPL	

\* : Not yet available

**10W Order Code (P7)**

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

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~BSYPL
		SYN		BSYNH~BSYNL
	C	SYP		CSYPH~CSYPL
		SYN		CSYNH~CSYNL
Part No. - 10G	B	SVM		BSVMH~BSVML
		SVN		BSVNH~BSVNL
		SVO		BSVOH~BSVOL
	C	SVM		CSVMH~CSVML
		SVN		CSVNH~CSVNL
		SVO		CSVOH~CSVOL
Part No. - 10I	B	SUM		BSUMH~BSUML
		SUN		BSUNH~BSUNL
	C	SUM	CSUMH~CSUML	
		SUN	CSUNH~CSUNL	

\* : Not yet available

**10W Order Code (P7)**

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

- Example: W724C0 – 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 (1B, 1D)**

Standard Order Codes for pure white				
Order Code	LF	CC	V <sub>F</sub>	Bin Codes
Part No. – 10B	* D	SXN	H I J K L	DSXNH~DSXNL
		SWN		DSWNH~DSWNL
		SX0		DSXOH~DSXOL
		SW0		DSWOH~DSWOL
	* E	SXN		ESXNH~ESXNL
		SWN		ESWNH~ESWNL
		SX0		ESXOH~ESXOL
		SW0		ESWOH~ESWOL
Part No. – 10D	* D	SX0		DSXOH~DSXOL
		SW0		DSWOH~DSWOL
		SXP		DSXPH~DSXPL
		SWP		DSWPH~DSWPL
	* E	SX0	ESXOH~ESXOL	
		SW0	ESWOH~ESWOL	
		SXP	ESXPH~ESXPL	
		SWP	ESWPH~ESWPL	

\* : Not yet available

**10W Order Code (P7)**

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

Standard Order Codes for pure white				
Order Code	LF	CC	V <sub>F</sub>	Bin Codes
Part No. - 10F	* D	SYP	H I J K L	DSYPH~DSYPL
		SYN		DSYNH~DSYNL
	* E	SYP		ESYPH~ESYPL
		SYN		ESYNH~ESYNL
Part No. - 10H	* D	SVM		DSVMH~DSVML
		SVN		DSVNH~DSVNL
		SVO		DSVOH~DSVOL
	* E	SVM		ESVMH~ESVML
		SVN		ESVNH~ESVNL
		SVO		ESVOH~ESVOL
Part No. - 10J	* D	SUM		DSUMH~DSUML
		SUN		DSUNH~DSUNL
	* E	SUM	ESUMH~ESUML	
		SUN	ESUNH~ESUNL	

\* : Not yet available