

Flat Curved Power LED

Features

- High Luminance
- Low profile
- Low thermal resistance
- Design for high current operation
- RoHS compliance



Piranha



Applications

- Automotive exterior lighting
- Electronic signs and signals
- Special lighting application
- Decoration

Device Selection Guide

Part No.	Emitted Color	Lens Color
TLH-M1WC-ZMEG	Warm White	Water Clear

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Reverse Voltage	VR	5	V
Average Forward Current (Note.1)	IF	50	mA
Peak Forward Current (Note.2)	IFP	80	mA
Power Dissipation	Pd	230	mW
Operating Temperature (Note.1)	Topr	-40 ~ +100	°C
Storage Temperature	Tstg	-40 ~ +100	°C
LED Junction Temperature	TJ	125	°C
Soldering Condition (Note.3)	Tsol	260°C / 5 seconds	

- Notes:**
1. Design of heat dissipation should be considered, the allowable operating current at different operation temperature, please take reference from Fig.4 on page 3.
 2. Duty ratio=1/10, pulse width=0.1ms
 3. 4mm (0.157") away from epoxy.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Total Luminous Flux (Note.2)	Φv	6000	-----	10000	mlm	IF =50mA
Luminous Intensity/Total Flux	Iv/Φv	-----	0.26	-----	mcd/mlm	
Viewing Angle	2θ1/2	-----	120	-----	deg	
Total Included Angle (Note.1)	θ0.9	-----	180	-----	deg	
Chromaticity Coordinates (Note.3)	x	-----	0.41	-----	-----	
	y	-----	0.39	-----	-----	
Forward Voltage (Note.4)	VF	3.0	3.4	3.8	V	
Reverse Current	IR	-----	-----	10	uA	VR=5V
Thermal Resistance θj-a		-----	400	-----	°C/W	IF =50mA
Thermal Resistance θj-L		-----	180	-----	°C/W	

- Notes:**
1. Viewing angle 0.9V is the included angle at which 90% of total luminous flux is captured.
 2. Measurement uncertainty of total flux: ±15%
 3. Measurement uncertainty of the chromatic coordinates: ±0.01
 4. Measurement uncertainty of Forward Voltage: ±0.05V

Typical Electro-Optical Characteristics Curves (Ta=25°C)

Fig.1 Relative Intensity vs. Wavelength

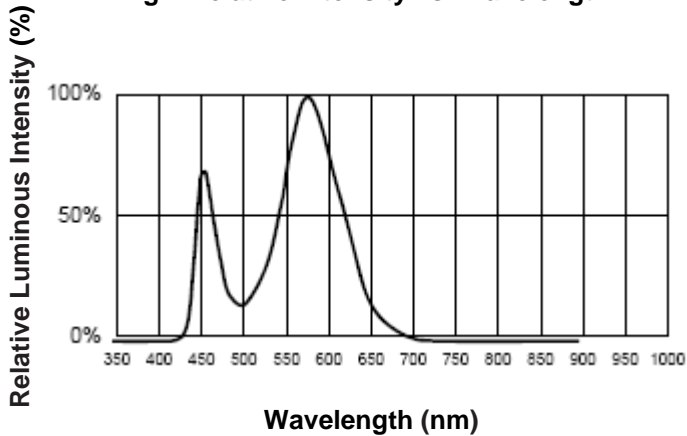


Fig. 2 Forward Current vs. Forward Voltage

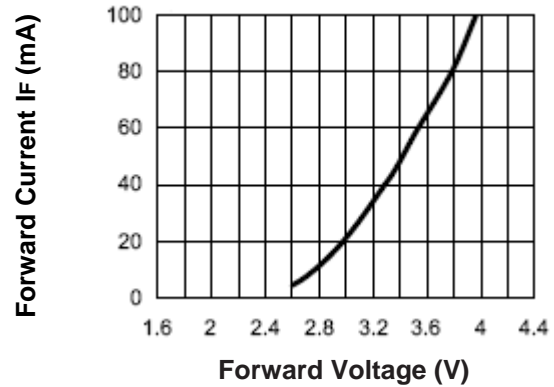


Fig.3 Relative Intensity at 50mA vs. Ambient Temperature

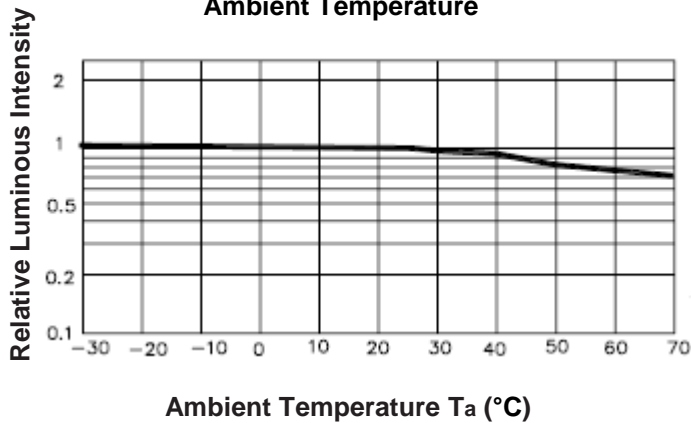


Fig.4 Forward Current vs. Ambient Temperature

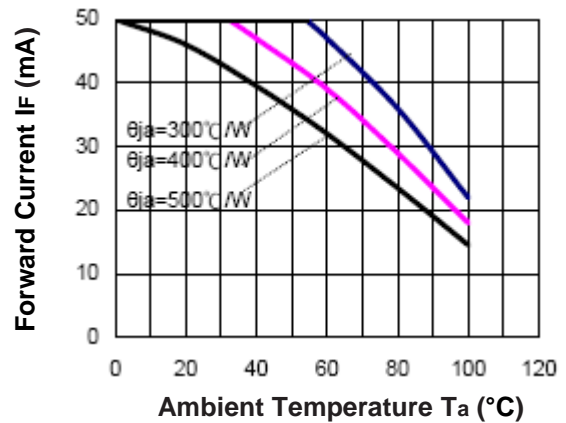


Fig.5 Relative Intensity vs. Forward Current

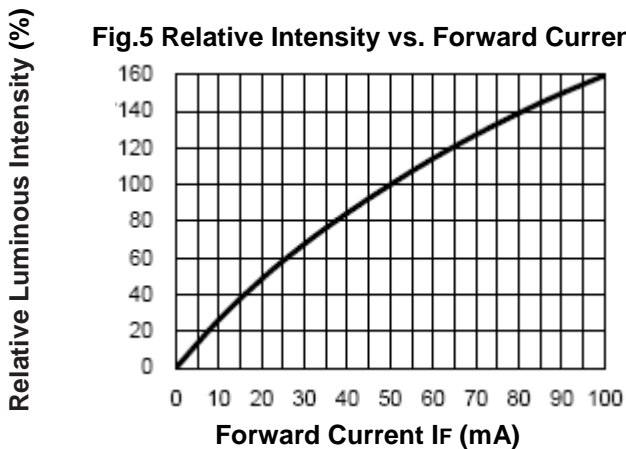
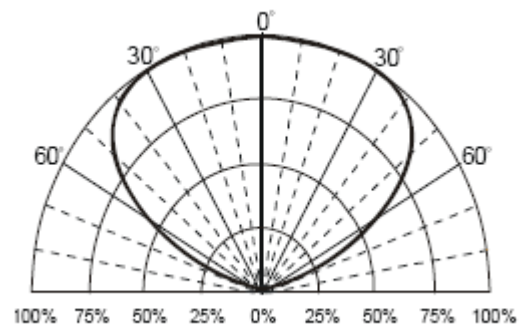
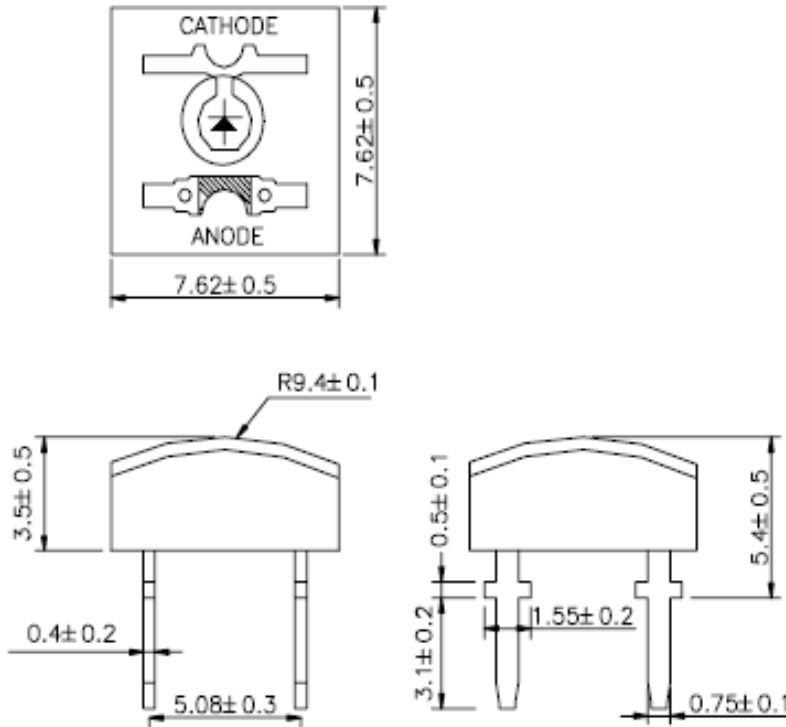


Fig.6 Radiation Diagram



Package Dimensions (In mm)



Note:

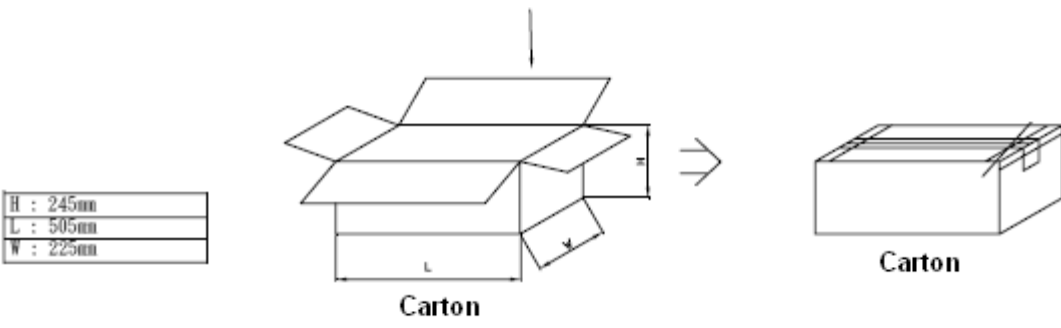
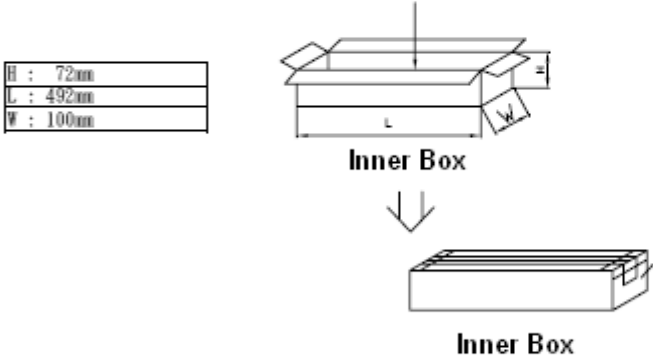
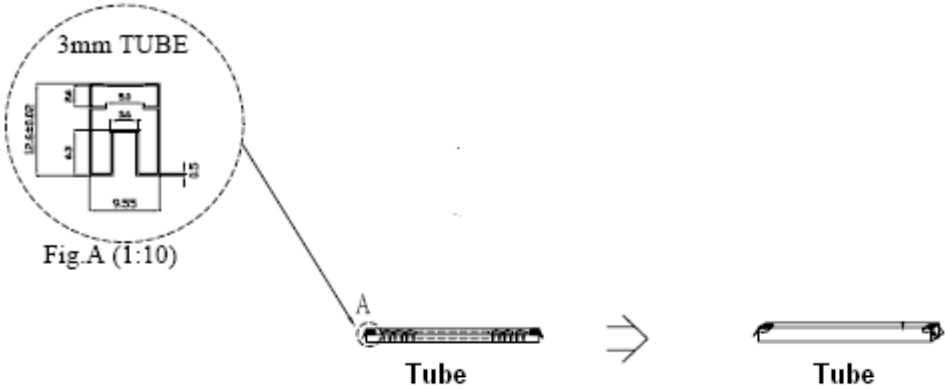
1. All dimensions are in millimeters, and tolerance is ± 0.2 mm unless otherwise noted.
2. Protruded resin under bottom surface of epoxy is 1.5mm max.
3. Lead spacing is measured where the leads emerge from the package.

Flat Curved Power LED

TLH-M1WC-ZMEG

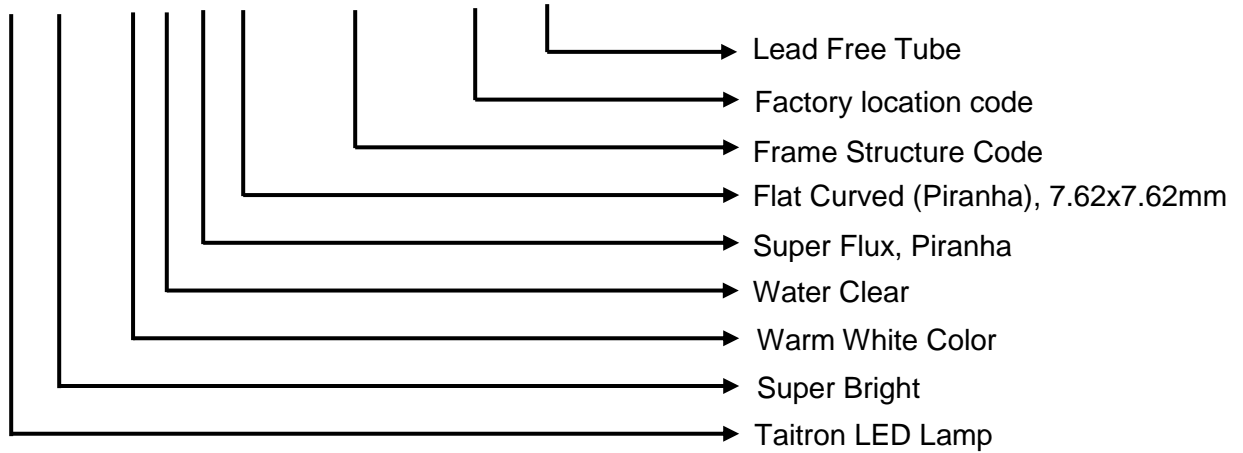
Packing Information

Packing Type	PCS per Tube	PCS Per Inner Box	PCS Per Carton
Tube	60	3,000	18,000



Ordering Information

TL H - M 1 W C - ZMEG - 88 - TU



Rank Combinations

Bin Range of Total Flux

Bin Code	Min.	Max.	Unit	Condition
2G	6000	7600	mlm	IF=50 mA
2H*	7600	10000		

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
K	3.0	3.2	V	IF=50 mA
G	3.2	3.4		
A	3.4	3.6		
B	3.6	3.8		

Notes: Tolerance of Luminous Intensity: $\pm 15\%$

Tolerance of Forward Voltage: $\pm 0.05V$

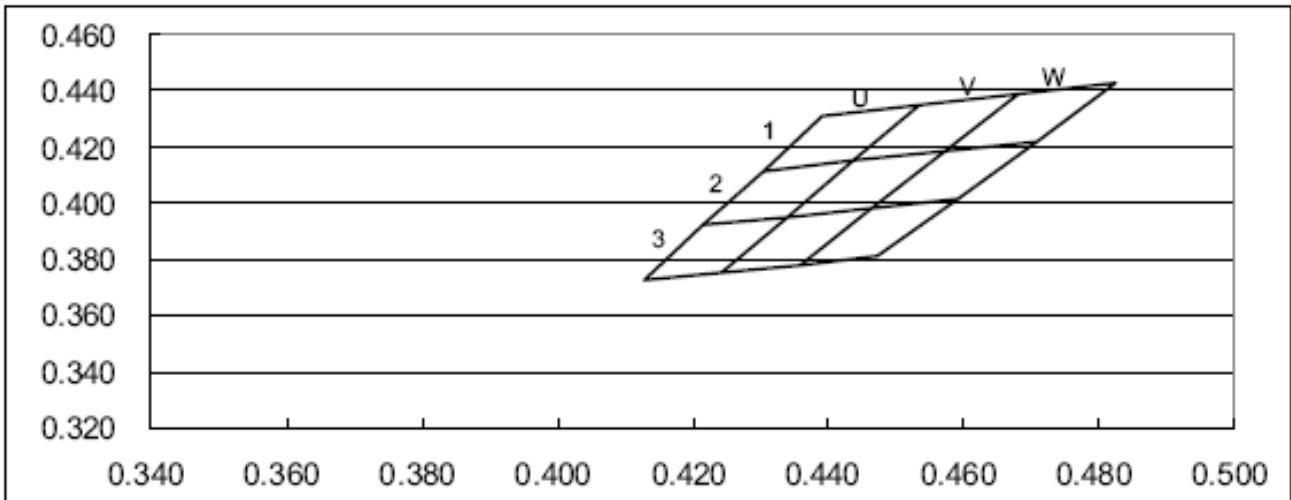
*Bin with less distribution

Chromaticity Coordinates Specifications for Bin Grading

Typical CCT (K)	Bin Code	CIE BIN CODE	Typical CCT (K)	Bin Code	CIE BIN CODE
2750	U1	{0.4303,0.4115}{0.4390,0.4310}{0.4535,0.4349}{0.4438,0.4150}	2750	W1	{0.4573,0.4186}{0.4680,0.4388}{0.4825,0.4427}{0.4708,0.4221}
	U2	{0.4216,0.3920}{0.4303,0.4115}{0.4438,0.4150}{0.4340,0.3951}		W2	{0.4465,0.3983}{0.4573,0.4186}{0.4708,0.4221}{0.4590,0.4015}
	U3	{0.4129,0.3725}{0.4216,0.3920}{0.4340,0.3951}{0.4243,0.3753}		W3	{0.4358,0.3781}{0.4465,0.3983}{0.4590,0.4015}{0.4473,0.3809}
	V1	{0.4438,0.4150}{0.4535,0.4349}{0.4680,0.4388}{0.4573,0.4186}			
	V2	{0.4340,0.3951}{0.4438,0.4150}{0.4573,0.4186}{0.4465,0.3983}			
	V3	{0.4243,0.3753}{0.4340,0.3951}{0.4465,0.3983}{0.4358,0.3781}			

Notes: Measurement uncertainty of the chromatic coordinates: ±0.01

CIE Chromaticity Diagram



Reliability Data

1. Test Conditions, Acceptable Criteria & Results:

Classification	Test Item	Standard Test Method	Test Conditions	Duration	Unit	Acc / Rej Criteria	Result
Life Test	Operation Life Test (OLT)	MIL-STD-750D Method 1026.3	$T_A=25^{\circ}\text{C}$, $I_F=70\text{mA}$ *	1000 Hrs	100	0 / 1	Pass
Environment Test	High Temperature Storage (HTS)	MIL-STD-750D Method 1032.1	$T_A=100^{\circ}\text{C}$	1000 Hrs	100	0 / 1	Pass
	Low Temperature Storage (LTS)	MIL-STD-750D Method 1032.1	$T_A=-40^{\circ}\text{C}$	1000 Hrs	100	0 / 1	Pass
	Temp. & Humidity with Bias (THB)	MIL-STD-750D Method 103B	$T_A=85^{\circ}\text{C}$, $\text{Rh}=85\%$ $I_F=45\text{mA}$ **	500 Hrs	100	0 / 1	Pass
	Thermal Shock Test (TST)	MIL-STD-750D Method 1056.1	$0^{\circ}\text{C} \sim 100^{\circ}\text{C}$ 2min 2min	100 cycles	100	0 / 1	Pass
	Temperature Cycling Test (TCT)	MIL-STD-750D Method 1051.5	$-40^{\circ}\text{C} \sim 25^{\circ}\text{C} \sim 100^{\circ}\text{C} \sim 25^{\circ}\text{C}$ 30min 5min 30min 5min	100 cycles	100	0 / 1	Pass
Mechanical Test	Solderability	MIL-STD-750D Method 2026.4	$235\pm 5^{\circ}\text{C}$, 5 sec	1 time	20	0 / 1	Pass
	Resistance to Soldering Heat	MIL-STD-750D Method 2031.1	$260\pm 5^{\circ}\text{C}$, 5 sec	1 time	20	0 / 1	Pass
	Lead Integrity	MIL-STD-750D Method 2036.3	Load 2.5N (0.25kgf) $0^{\circ} \sim 90^{\circ} \sim 0^{\circ}$, bend	3 times	20	0 / 1	Pass

Remark : (*) $I_F=70\text{mA}$ for AlInGaP chip ; $I_F=50\text{mA}$ for InGaN chip

(**) $I_F=45\text{mA}$ for AlInGaP chip ; $I_F=30\text{mA}$ for InGaN chip

2. Failure Criteria ($T_A=25^{\circ}\text{C}$):

Test Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max.
Luminous Intensity	I_V	$I_F=20\text{ mA}$	$\text{LSL}\times 0.5$ **	
Forward Voltage	V_F	$I_F=20\text{ mA}$		$\text{USL}\times 1.1$ *

(*) USL : Upper Standard Level , (**) LSL : Lower Standard Level

How to contact us

USA HEADQUARTERS

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162

Tel: (800)-TAITRON (800)-824-8766 (661)-257-6060

Fax: (800)-TAITFAX (800)-824-8329 (661)-257-6415

Email: taitron@taitroncomponents.com

Http://www.taitroncomponents.com

TAITRON COMPONENTS INCORPORATED TAIWAN BRANCH

6F., NO.190, SEC. 2, ZHONGXING RD., XINDIAN DIST., NEW TAIPEI CITY 23146, TAIWAN R.O.C.

Tel: 886-2-2913-6238

Fax: 886-2-2913-6239

TAITRON COMPONENT TECHNOLOG SHANGHAI CORPORATION

SUITE 1503, METROBANK PLAZA, 1160 WEST YAN'AN ROAD, SHANGHAI, 200052, CHINA

Tel: +86-21-5424-9942

Fax: +86-21-2302-5027