佛山市国星光电股份有限公司

FOSHAN NATIONSTAR OPTOELECTRONICS CO., LTD

SPECIFICATION

Customer		Product	1210 TOP LED
Customer No.		Type	**FM-P3528WD-460G60**

APPROVED SIGNATURES			

ISO14001 环境管理体系认证

ISO9001 质量管理体系认证

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Research & Development Center		
APPROVE	CHECK	DRAW
Release Date：2009-10-22		

FM-P3528WD-460G60 Top Light Emitting Diode

Technical Data Sheet

FEATURES:

- Chip material: InGaN/GaN
- 3.5 mm×2.8 mm×1.9 mm TOP LED LAMP
- High luminous intensity, high reliability and long life
- Compatible with automatic placement equipment
- Pb free

PART NO.	LENS	Chip	
FM-P3528WD-460G60	Yellow diffused	Emitting color	Material
		White	InGaN/GaN

APPLICATIONS:

Mobile telephones，LCD Backlight，Instruction Lighting on Car instrument and the electronic products used surface mounted construction.

ABSOLUTE MAXIMUM RATINGS (at T_A=25℃):

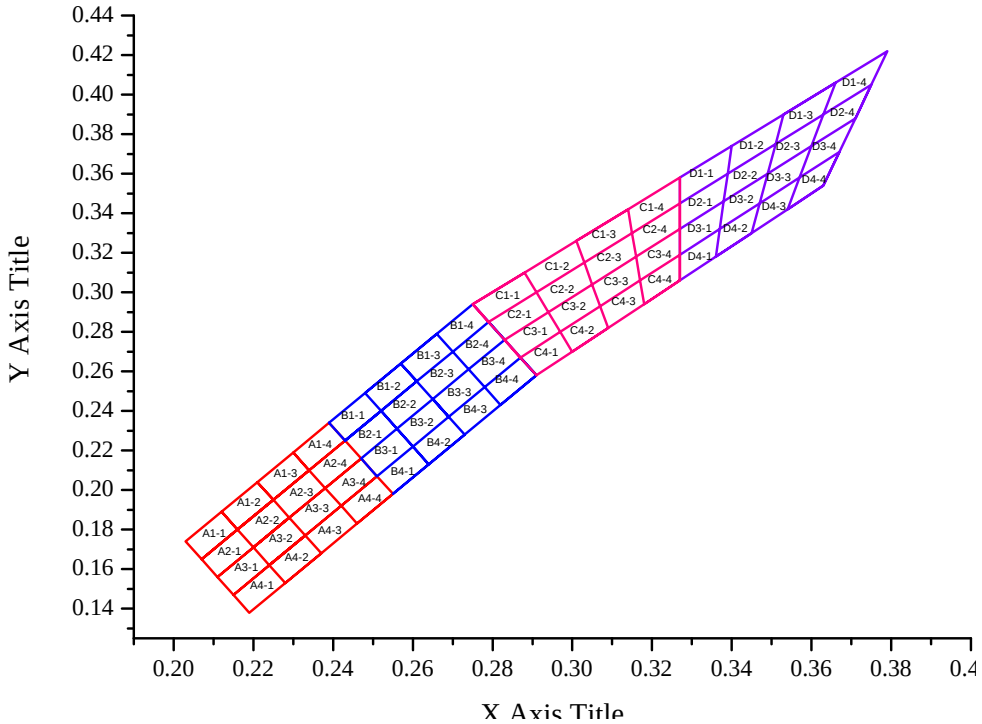
Parameter	Symbol	Min.	Max.	Unit
Forward Current	I_F		100	mA
Pulse Forward Current	I_{FP}*		200	mA
Reverse Voltage	V_R		5	V
Operating Temperature	Topr.	-30	+85	℃
Storage Temperature	Tstg.	-40	+100	℃
Power Dissipation	P_D		120	mW

*Pulse width:Max.0.1ms, Duty ratio: Max 1/10

Electrical/Optical Characteristics (at T_A=25℃):

Parameter		Condition	Unit	Min.	Typ.	Max.
Forward Voltage V_F		I_F=60mA	V		3.2	4.0
Reverse Current I_R		V_R=5V	μA			50
Luminous Intensity I_V		I_F=60mA	mcd	4000	6000	
Color Temperature Tc		I_F=60mA	K		7500	
Chromaticity Coordinates*	X	I_F=60mA			0.3	
	Y				0.3	
Viewing Angle 2 $\theta_{1/2}$			(°)		110	

Description Of SMD LEDs Bin Selection



		Bottom	Left	Top	Right			Bottom	Left	Top	Right
A ☒ X:0.229 Y:0.186	X	0.219	0.203	0.239	0.255	B ☒ X:0.265 Y:0.246	X	0.255	0.239	0.275	0.291
	Y	0.138	0.174	0.234	0.198		Y	0.198	0.234	0.294	0.258
C ☒ X:0.305 Y:0.304	X	0.291	0.275	0.327	0.327	D ☒ X:0.349 Y:0.36	X	0.327	0.327	0.379	0.363
	Y	0.258	0.294	0.358	0.306		Y	0.306	0.358	0.422	0.354

IV(cd)		VF(V)
4.0 ~ 5.0		2.8~3.0
5.0 ~ 6.0		3.0~3.2
6.0 ~ 7.5		3.2~3.4
		3.4~3.6

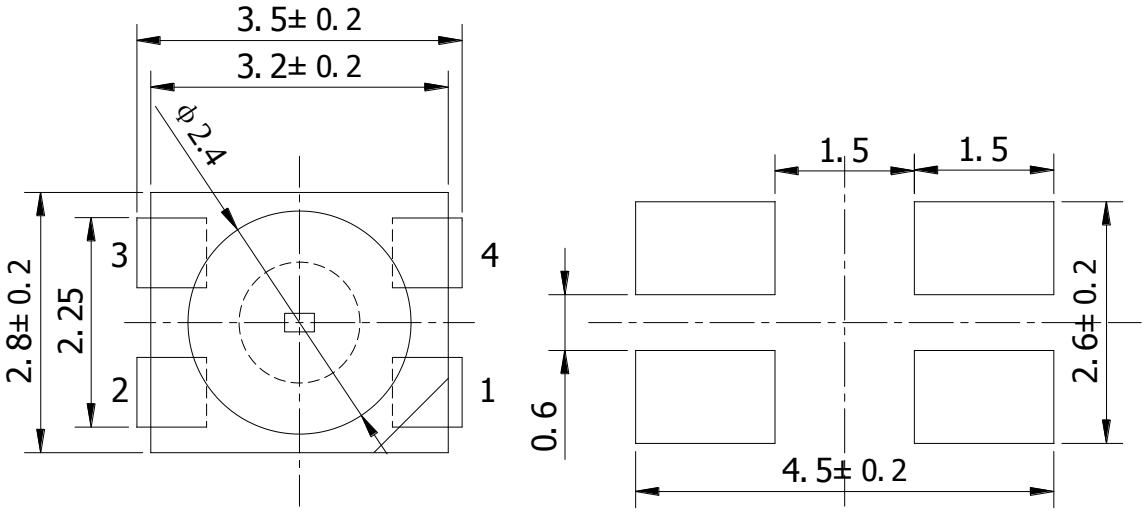
Notes：Measurement Condition：I_F=60mA ;

*1：Measurement Uncertainty ： ±0.05 ;

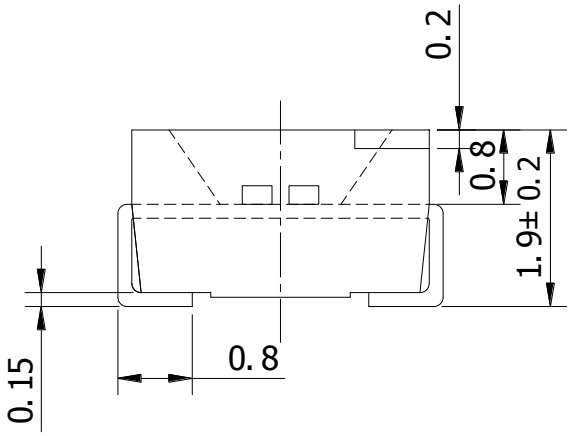
*2：Measurement Uncertainty ： ±20% ;

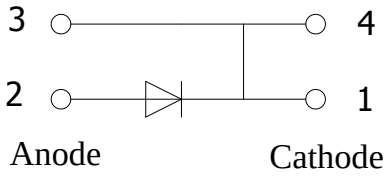
*3：Measurement Uncertainty ： ±0.05V .

Package Dimensions：



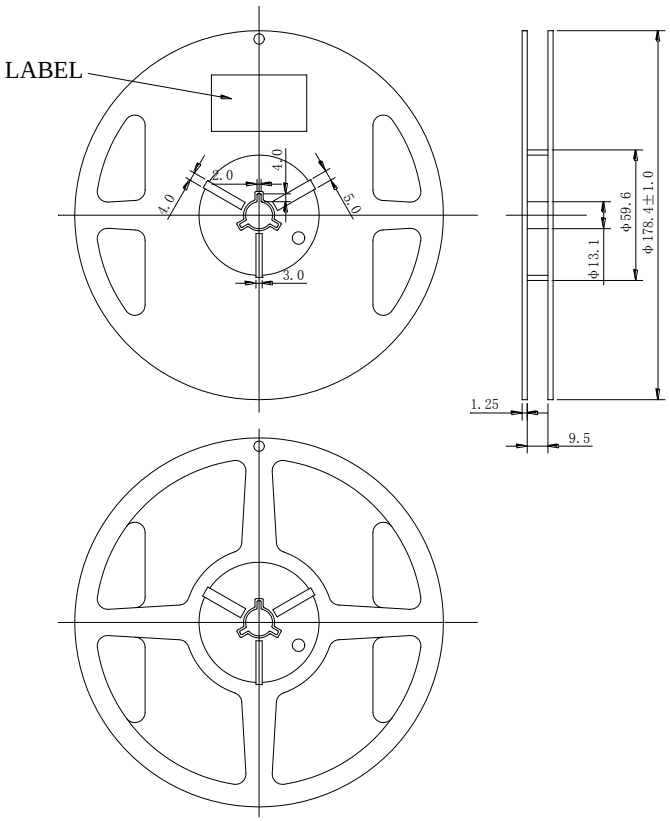
Recommended soldering pad layout





✡ All dimensions are millimeters.

✡ Tolerance is 0.2mm unless otherwise noted.



〈Unit：mm〉

Fig.1

Progressive direction

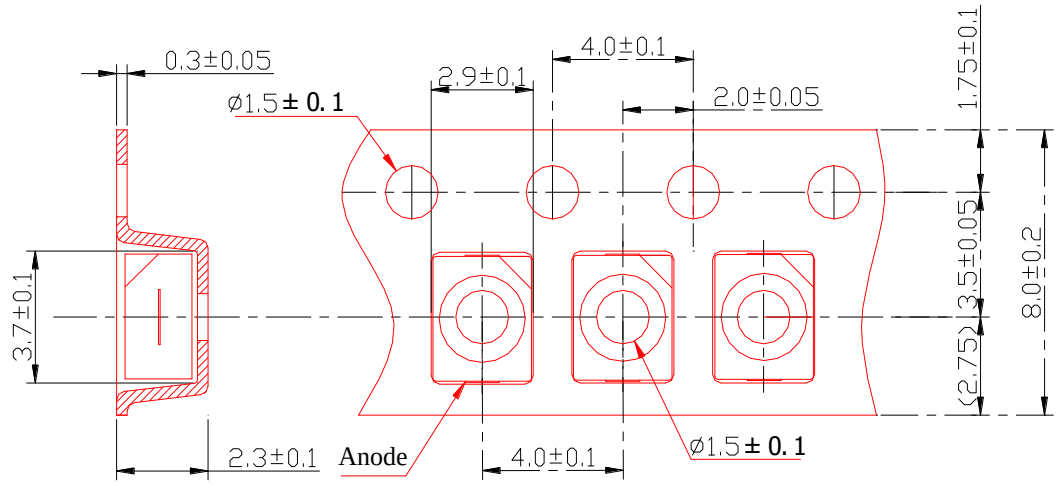
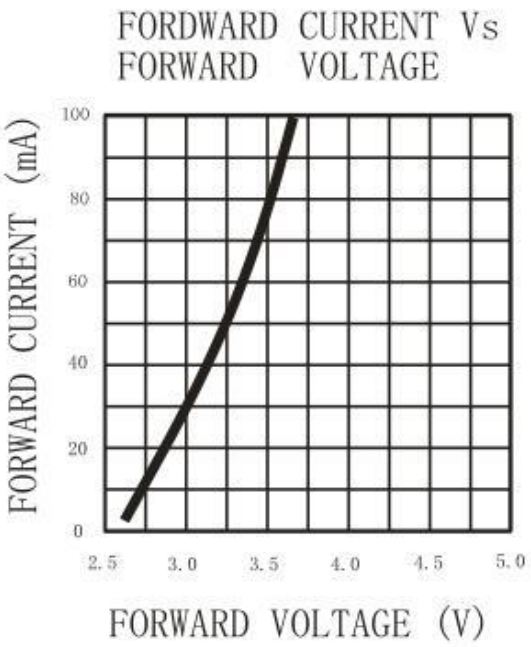
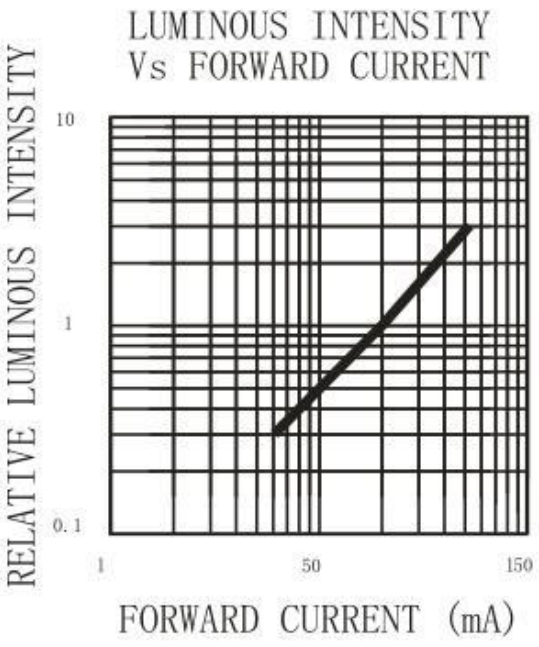
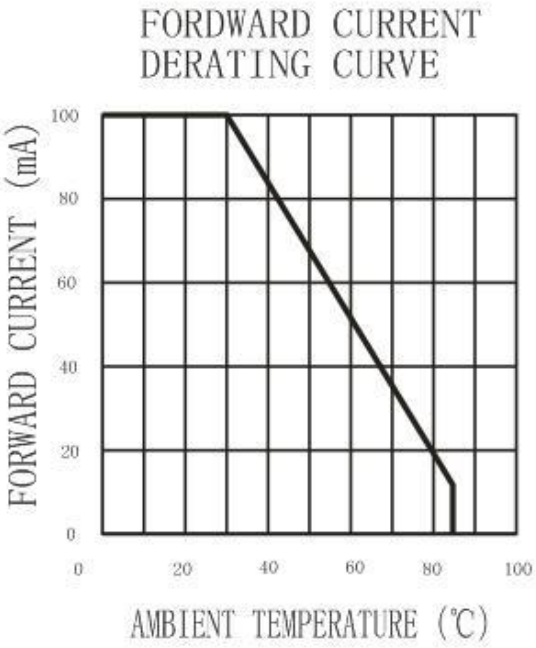


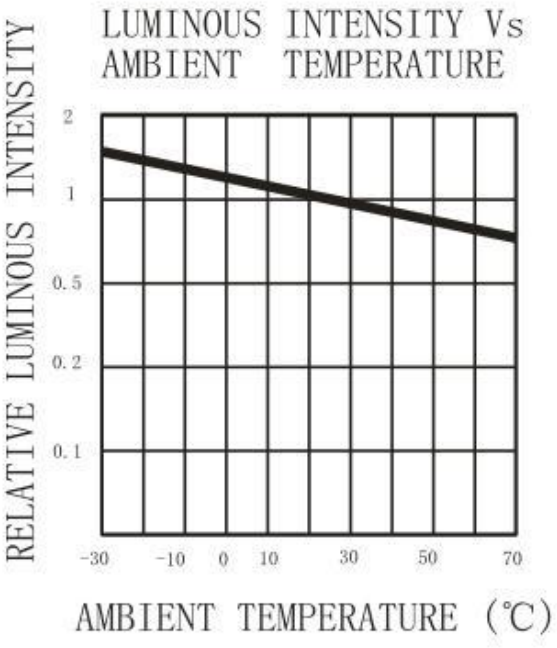
Fig.2

CHARACTERISTIC CURVES：









RELIABILITY TEST ITEM AND CONDITION：

No	Item	Test Condition	Result	Criteria for Judging
1	Soldering Test	T=300℃ t =3.5±0.5sec.	0/15	Area of Soldering: ≥95%
2	Rapid change of temperature followed by: damp heat，cyclic	T_A：-40℃ 10min ↕ （2~3）min T_B：+100℃ 10min 5cycle T=（25~55）℃ RH：（90~95）% 2cycle 48h recovery time 2h	0/11	*1
3	Soldering Heat	Reflow Soldering（Fig.3）	0/15	*1
4	Electrical endurance	I_F=70mA t =1000h	0/22	*1
5	High Temperature Storage	T=+100℃ t=1000h	0/15	*1
6	Damp heat，cyclic	T=25~55℃ RH=90~95% 6Cycle144h recovery time 2h	0/11	*1

*1 Criteria For Judging the Damage

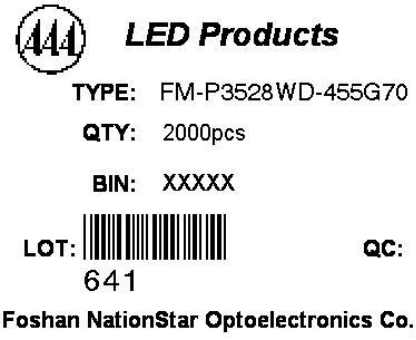
Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward Voltage	V_F	I_F=60mA	Over U×1.2
Reverse current	I_R	V_R=5V	Over U×2
Luminous intensity	I_V	I_F=60mA	Below S×0.5

U means the upper limit of specified characteristics. S means initial value.

PACKAGING：

1）Packing material：Reel(Fig.1)

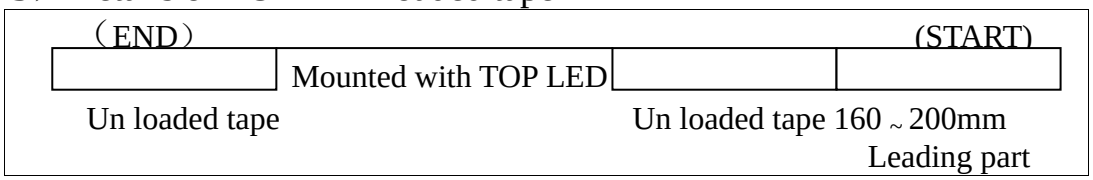
2）Indication: Label of below in the reel



LOT：

6	4	1
Last Digit Of Year	Month	Week

3）Details of TOP LED loaded tape



Loaded quantity per reel：2，000pcs (Fig.2)

APPLICATION NOTES：

1） Static Electricity：

Products are sensitive to static electricity and a high standard of care must be taken when handling products. Particularly if an over-voltage which exceeds the Absolute Maximum Rating of Products is applied, the overflow in energy may cause damage to, or possibly result in destruction of the products. To touch the lead directly must be avoided. Customer shall take absolutely secure countermeasures against static electricity and surge when handling products.

Proper grounding of products(via 1 M Ω),use of conductive mat, semiconductive working uniform and shoes, grove and semiconductive containers are considered to be effective as countermeasures against static electricity and surge. The soldering iron point shall be properly grounded.

2)Soldering：

① Manual soldering by soldering iron：

The use of a soldering iron of less than 20W is recommended and the temperature of the iron must be kept at no higher than 300℃(one time only).

② Reflow soldering：

a. The temperature profile as shown in Fig.3 is recommended for soldering TOP LED by the reflow furnace.

b. Care must be taken that the products be handled after their temperature has dropped down to the normal room temperature after soldering.

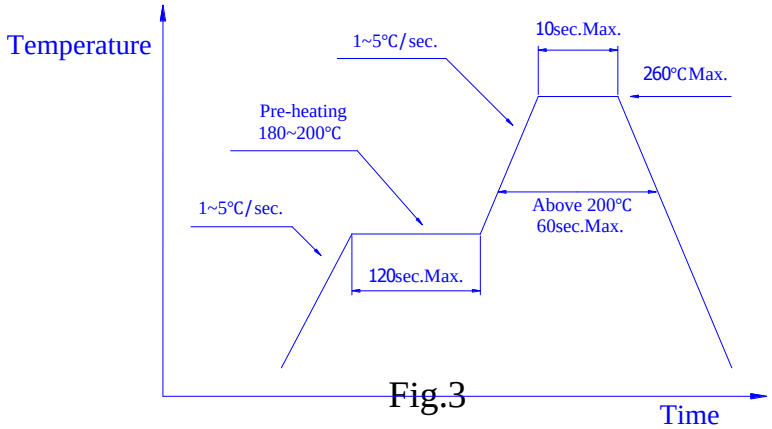


Fig.3

3)Post solder cleaning：

When cleaning after soldering is needed，the following conditions must be adhered to.

① Cleaning solvents：Freon TF or equivalent or alcohol.

② Temperature：50℃ Max. for 30 seconds or
30℃ Max. for 3 minutes

③ Ultrasonic：300W Max.

4) OTHERS：

a. Care must be taken not to cause stress to the epoxy resin portion of TOP LED while it is exposed to the high temperature.

b. Care must be taken not to the rub the epoxy resin portion of TOP LED with a hard or sharp edged article such as the sand blast and the metal hook as the epoxy resin is rather soft and liable to be damaged.