

专业的LED光电产品研发、制造及销售商 Professional LED Packaging Specialist and Trader

#### **Brief Information**



Date of Establishment : Oct 2009

Capital Investment : RMB 40 million

Factory Area : 5000 m2 (Including 800m2 of dustfree, anti-static Cleanroom)

Employees : 205 (150 of direct & 55 of indirect)

Production Capacity : SMD 600M/year & LAMP LED 400M/year

Certification : SGS ISO9001:2015; ISO14001:2015 ; IATF16949:2016;

#### **Company Introduction**



Inhere Opto Co., Ltd. is located in Guancheng Hi-tech Park, Dongguan, Guangdong Province, that is an environmentally-friendly industrial area and is easily accessible. Inhere is specialized in industrial grade Light Emitting Diode R&D, packaging and sales. The products are mainly used for computers, electronics, Electronics, consumer electronics, robots, drones, communications equipment, security, automotive electronics, industrial as well as military industries.

#### **Company Introduction**



**Inhere Opto Co., Ltd.** With constant temperature and humidity anti-static comply to the highest purification production workshop, the use of the industry's most advanced automated assembly and test equipment, the professional manufacturer of high quality raw material, USES the method of scientific and standardized management, based on long-term, concentrate on business.

**Inhere Opto Co., Ltd.** focuses on customer oriented service. All staff strive to exceed customer's expectations in product quality, delivery and service. The company has distribution network in various cities in China and overseas.

Brand concept inhere<sup>×</sup>— Light for your mind

Enterprise spirit Respect Ideal Persistence Innovation

Management idea For customers: be customer oriented and provide sincere service.

**Products**: make good products; second best is not good enough.

For employees: treasure lies in credit as good as gold and leads to prosperity.

To shareholders: provide impartial judgment with integrity and appreciation.

For the environment: low carbon lives in action; promote green development.

For society: ensure sustainable management for the benefit of mankind.

## **Enterprise Culture**

Development goals: forge Inhere Company into LED industry as an influential enterprise and make Inhere become a famous LED industry brand.



## **Organization chart**



Note: 1. decision-making department + marketing department + financial department + administrative department + production department + PMC department + Engineering department + Quality assurance department + branch staff = total 205 people
2. Production / QA / Engineering equipment is day / night shift department.

Approved by	Checked by	Prepared by
Wang Lifeng	Cac Zhijun	BaiXin



## **Supply Chain**

#### Major raw materials and manufacturers

Name of material	Supplier	Origin
wafer	CREE, Bridgelux,Toyoda GoseiCo, SDK, Epistar, Tyntek, ED,Sanan etc.	America, Japan, Taiwan, China
Bracket /BT plate	Dongxu, Tuopu, APCB, Boyi, Novartis	Taiwan, Hongkong
Glue / glue cake	Dow Corning, Shin-Etsu, Nitto, precision polymerization, Whaley	America, Japan, Taiwan.
Gold thread	Heraeus	China
Carrier tape / tray		
Die / die strip	Well, Huaichang, Eastcom	Taiwan, China
Other	Welding needle, suction nozzle, thimble, etc.	America, Taiwan

Inhere's purpose is based on "excellence to create the industry quality" and strives to provide customers with perfect products. To ensure the quality of our products, the raw materials we use, such as wafers, gold wires, thermosetting materials, BT boards, scaffolds and glue, comes from the United States, Japan, Taiwan and other regions. Quality and a perfect supply chain system ensures the quality, stability, and reliability of Inhere products





## **Research and development**

R & D team, academic background and industry								
experience								
Department The Education / LED industry experience								
Engineering director	1	master	14 years					
RD engineer	3	master	7 years					
Production engineer	8	bachelor	6 years					
Material certification engineer	2	bachelor	4 years					
Electronic Engineer	2	bachelor	3 years					
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#### Patent project

Patent name	Nature	Application
Preparation of white SMD LED glue cake	Utility model	July, 2010
TOP LED molding technology	Invention patent	July, 2010
Matching technology of CHIP LED white phosphor	Invention patent	December, 2010

The professional engineers in our company have many years experience in the LED industry. Our workers contribute their own time towards the innovation in research & development, guality control, and production. Our R&D team has significant abilities to produce new products, from raw material selection to optimize the process, from equipment modification to design the mold, we help customers to develop nonstandard and special-shaped products professionally. Our sales team provides suggestions for our customers regarding practical application. As a result of these contributions we have the ability to custommake uncommon LEDS that unavailable elsewhere in the market . Inhere company assures our customers of product quality with good value and prompt delivery.





## Manufacturing

Main production equipment							
Device name	Quantity	Supplier and Model					
Automatic crystal enlarging machine	3	XINHUA 1000					
Automatic crystal bonder	/12	ASM AD830/AD862					
Automatic line welding machine	16	ASM-IHAWK/IHAWK-V					
Automatic cutting machine	////5///	DISCO DAD322					
Automatic glue filling machine	3	Power Mach A023/LD13					
Automatic die press	3	KK ST-200					
Automatic testing machine		ASM SL-S230					
Automatic dividing machine	6	СҮТ Н260					
Automatic packaging machine	10	ASM LT400					
Cake press		Independent research and development					
Automatic dispensing machine	2	Japan Musashi					
Automatic glue machine	2	NUVLSP3000NNNNNNNNN					
Automatic stripping machine	6	Independent research and development					
Hand packing machine	5	Independent research and development					
Vacuum packaging machine	5	YUPACK V600					
LED special oven	30	Song ling four song					
Drying box	26	LADRY FCM320A					
Total		148 sets					

Our company has fully automatic highprecision technology machines with the function of packing and testing. We have a strict quality control system to test our imported raw materials and our products, so as to ensure all satisfaction of our customers according to company high quality standards. Our productions are processed in 100,000 level purification, constant temperature and humidity, antistatic production workshops.





### **Quality policy and target**



#### **Quality Policy**

We put our customer focus first and strive to deliver products and sincere service beyond the customer's expectations to shape our brand by constantly striving for excellence.

continually improving, pursuing domestic leadership.

standardizing management, providing quality benefits.

quickly handling customer complaints.

#### Quality target

LAMP pass at a rate of 98.3%

SMD pass at a rate of 99.5%

HIGH POWER pass at a rate of 96%

Qualified product delivery at a rate of 100%

ISO9001:2015 Certificate Number : CN10/30981

# **Quality Assurance System**



# IATF16949:2016 Certificate



Certificate Number: 0296017

# Mainly test equipments

Inspection Facility							
Device name	QTY	Brand/type					
LED Electrical Tester	9	WEIMIN LED616					
Luminosity Tester 、integrating sphere	6	EVERFINE HAAS-1200					
Second Element Imager	1	DEXIN AE3020					
XRF RoHS Halogen-free Environmental Detector	1	UNIQUE Ux-220-M					
Zoom-stereo Microscope	22	MT10031808					
High-power electron microscope(thousand times)	1	KEYENCE VHX-5000					
Gold Line Tensiometer		Dage4000					
ESD Tester	1	CHROMA 58154-C					
Vibration testing machine		DONGLING ES-2-150					
Impact testing machine	<u> </u>	DONGLING DL SY10-5					
Peeling Force Tester	XXAAXX	PT-90					
Thermal Shock Chamber	2	KSON KTCB-3TBS					
Temperature and Humidity Chamber	1	KSON KTHA-010TBS					
High Temperature test Chamber	1	CZ-602A					
Low Temperature Test Chamber	1	CZ-F-40F					
Salt Spraying Tester	1	CZ-60A					
Aging Tester	5	MH-022					











# **Product reliability test (general standard for electronics industry)**

				Test	Failur
Category	Project	Test condition	Test equipment	quantity	rate
	Room-temperature operation Life (RTOL)	Ta =25±5℃ RH= ( 50±10 ) % IF=20mA Time=1000hrs	Burn-in board	22	0
	High-temperature& High-humidity Storage life (HTHHSL)	T=(85±5)°C RH=(85±5)% Time=1000hrs	Environmental testing Chamber	22	0
Endurance test	Temperature- Humidity-bias(THB)	T=(85±5)℃ RH=(85±5)% VR=5V Time=1000hrs	Environmental testing Chamber	22	0
	High-temperature Storage life(HTSL)	T=(100±5)℃ Time=1000hrs	High-temperature testing chamber	22	0
	Low-temperature Storage life(LTSL)	T=(-40±5)°C Time=1000hrs	Low-temperature testing chamber	22	0
Ull	Temperature Cycle Test(TC)	-40 °C ~25°C~ 100 °C Duration:30, 5, 30min Cycle:100	Environmental testing Chamber	22	o
	Thermal Shock Test(TS)	T=260±5°C Dwell Time=(10±1)sec Test times=3 times	Thermal Shock Tester	22	ø
Environm ental test		Ta = ( -260 ± 5 ) °C Dwell time = ( 10±1 ) sec Testing = 5 times	Tin furnace	22	0
	Solder ability(BS)	Temp=230±5℃ Dwell Time=5±1sec	Tin furnace	22	0
	Salt Mist Test(SMT)	T=35℃ Salt Water=5% Time=8hrs	Salt Water Mist Tester	22	0





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#### **Environmental policy**



#### **Environmental Policy**

Comply with laws and regulations and raise environmental awareness.

Improve the image our company by preventing pollution, producing green products.

Save energy and continue to improve green products.

Be people-oriented and implement ecological harmony.

Inhere company has passed SGS ISO14001: 2015 environmental system certifications.We decided to manufacture eco-friendly LED products for our customers, and we have reduced pollution and energy consumption in our manufacturing process and put a lot of effort into the protection of our environment.

ISO14001:2015 Certificate number : CN12/31344

# **Product Capacity**



The colloid shape, colloid color, emitted color, brightness, testing condition and so on can be customized according to the customer's requirements.



#### **Customer service**

	Delive	ery time from sa	mple to finished pro	oducts	
Product spe	ecification	Sample time	Finished products delivery time	New product development cycle	
		3 days	7days 10 days		
SMD LED	TOP	3days	7days	20 days	
	CHIP	4days	3days	20 days	
HIGH POWER		4days	7days	30 days	





Customer complaint handling efficiency cycle							
Emergency countermea sures	completing short- term improvement reports.	Long term improvement report reply	effective tracking				
24H	72H	168H	three consecutive batches.				

Specification: quick response to customers, quick delivery of samples, quick delivery in mass production, stable quality and competitive price!



### Introduction of automotive LED products

In recent years, we have devoted ourselves to developing automotive LED products. Currently we have 3mm and 5mm lamps,0805/1206/2014/3020/3528 LED lamps. These products are for automobile interior light.

We invested 7 million RMB to develop 3528 automobile brake light with lens and turn signal light lamp series. These LED products have been produced and shipped by our company sucessfully.

#### **Interior light series**



## Interior light -0603 visible light



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	WLD(nm)	Reverse voltage(v)	ESD(HBM )																	
			120°	20	Min.100	Min.620		6000v																	
S1608xxR20xx	Red	(//AlGalnP///		20	Тур.180	Max.630																			
51C00-005-0	S1608xxO05xx Orange AlGaInP		120°	20	Min.80	Min.600	5	6000v																	
51608XX005XX		AlgainP			Тур.160	Max.610																			
64.600 620					Min.250	Min.520	7772222																		
S1608xxG20xx	Green	InGaN/GaN	120	120	120	<u> 1</u> ZU	ΨZU	120	TZU	12U	1/2U	<u> 1</u> ZU	120	120°	112U	12U	12U	12U	120	120	20	Тур.500	Max.530	8	///8000v
					Min.125	Min.464	I M																		
S1608xxB65xx	Blue	InGaN/GaN	120 <sup>°</sup>	20	Тур.180	Max.474	8	<b>€8000</b> ¥																	

## **Interior light -0603 white light**



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	CIE	Reverse voltage(v)	ESD(HBM)
S1608xxB55aP	Ice-Blue	InGaN/GaN	140°	20	Min.32	X:0.19	8	8000v
-G	-G			Typ.500	Y:0.24			
S1608xxW55T	White	InGaN/GaN	140°	20	Min.40 0	X:0.26	8	8000v
P-G White			140	20	Тур.600	Y:0.24	, <b>9</b> ///	

## **Interior light -0805 visible light**



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Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	WLD(nm)	Reverse voltage(v )	ESD(HBM)														
620122202			120°	120°	20	Min.100	Min.620	5	CODO:													
S2012xxR20xx	() Red ///	AlGainP 120					1P ( 1 ( 1 2 0 ( 1 3 8	20	Typ.180	Max.630		6000v										
S2012xxO05x	S2012xxO05x x Orange AlGaInP					120°	120°	120°	120°	120° 20	Min.80	Min.600	5									
×		AIGaIMP																				
S2012xxG20x	Inc	InGaN/Ga N			120°	20	Min.250	Min.520														
х	Green		N 120	N IZO		120	120	120	120	20	Тур.500	Max.530	8	/8000v/								
62012xx2665xx	InGaN/Ga	120 <sup>°</sup>	1.0.0°	20	Min.125	Min.464	•															
S2012xxB65xx	ыце	Blue N		20	Тур.180	Max.474	8	8000v														

### Interior light -0805 white light



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	CIE	Reverse voltage(v )	ESD(HBM)
S2012xxB55aP-G	Ice-Blue	InGaN/Ga N	140°	20	Min.320	X:0.19	8	8000v
					Typ.500	Y:0.24		
S2012xxW55TP- G		InGaN/Ga	140°		Min.400	X:0.26		8000v
	White		140	20	Тур.600	Y:0.24	8///	BUUUV

### **Interior light -1206 visible light**



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	WLD(nm)	Reverse voltage(v )	ESD(HBM)
6221622202			120°	20	Min.100	Min.620	5	cooo.
S3216xxR20xx Red	XXXRed XX	AlGainP		20	Typ.180	Max.630		6000v
S3216xxO05x		AlGaInP	120°	20	Min.80	Min.600	5	6000v
×	Orange				Тур.160	Max.610		
S3216xxG20x	Croop	InGaN/Ga	120°	20	Min.250	Min.520		
х	Green	N			Тур.500	Max.530	8	/8000v
S3216xxB65xx Blue	Dhuo	InGaN/Ga	120°	20	Min.125	Min.464	8	
	ыие	Bine N		20	Тур.180	Max.474	Ő	80000

#### **Interior light -1206 white light**



Туре	Emitting Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	CIE	Reverse voltage(v )	ESD(HBM)
S3216xxB55aP-G	lce-Blue	InGaN/Ga N	140°	20	Min.320	X:0.19	8	8000v
					Typ.500	¥:0.24		
S3216xxW55TP- G		InGaN/Ga	140°	20	Min.400	X:0.26		8000v
	White	N	140		Тур.600	Y:0.24	8	

## **Interior light -3528 visible light**



Туре	Emittin Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	WLD(nm)	Reverse voltage (v)	ESD(HBM)	
R3528MIPO05TN -E	Orange A	AlGainP	120°	20	Min.250	Min.600	5	6000v	
		AIGGINF			Тур.400	Max.610			
R3528MPB65TP-	Plus	InGaN/Ga	120°	30	Min.160	Min.464	8	8000v	
I	DIVE	Blue		20	Тур.200	Max.474		80000	

#### **Interior light -3528 white light**



#### EEEEEEEEEEEEEEEEEEEEEEEEEEEEE

Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	CIE	Reverse voltage(v)	ESD(HBM)
R3528MPB55aP-	Ice-Blue	InGaN/Ga	120°	20	Min.850	X:0.19	8	8000v
G	ICE-DIGE	N			Тур.950	¥:0.24		
R3528MPW55TP-		InGaN/Ga			Min.400	X:0.26		
G R3528MPW551P-	White		120°	20	Тур.600	Y:0.24	8	8000v

### **Interior light -3020 visible light**



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	WLD(nm)	Reverse voltage(v)	ESD(HBM)	
R3020xxR20x		AlGaInP	120°	20	Min.500	Min.620	5		
K K K K K K K K K K K K K K K K K K K	AIGamP		20	Тур.700	Max.630		6000v		
R3020xxO05x		AlGaInP	120	20	Min.80	Min.600	5	6000v	
x	Orange				Typ.160	Max.610			
R3020xxG20x	Croop	InGaN/Ga	120°	20	Min.400	Min.520			
х	Green	N	120		Тур.600	Max.530	8	8000v	
R3020xxB65x	R3020xxB65x	InGaN/Ga	120 <sup>°</sup>	20	Min.200	Min.464	8		
X	Blue	Ν	IZU	20	Тур.350	Max.474	0	8000v	



Туре	Emittin g Color	Dice	View Angle @10mA	IF(mA)	IV(mcd)	CIE	Reverse voltage(v)	ESD(HBM)
R3020xxB55xx-G	lce-Blue	InGaN/Ga N	120°	20	Min.400	X:0.20	8	8000v
					Тур.600	Y:0.27		
R3020xxW55xx-	White	InGaN/Ga	120°	20	Min.210 0	X:0.26	8	8000v
G	N		120	20	Тур.2400	Y:0.24	I AN	

## **Interior lamp products summary**



#### **Exterior lamp series**



#### The exterior lamp lens -3528







#### Reliability testing of automotive products (AEC-Q101 Standard Implementation)

Project	Test standards	Test conditions	Test cycles	Test equipment	Test Qty
Visual inspection	JESD22 B-101	Visual inspection	-	X40 microscope	-
Parametric test constant current aging	JESD22 A-108	25 ℃, 1000 hours @20mA	1000hrs	Adjustable life aging table	25pcs
Destructive physical analysis	AEC-Q101-004	Random Sample H3TRB,HAST,TC	-	Outgoing products test	3pcs
electrostatic discharge	JESD22 A-114	HBM,R=1.5KΩ,C=100pF(Negative/Positive)	3times	LED electrostatic tester	30pcs
vibration test	JESD22 B-103	0.06 inch displacement,20 to 100 Hz,50/100 Hz to 2KHz	4times	Semiconductor vibration tester	30pcs
Outline size	JESD22 B-100	Verify physical dimensions against device mechanical drawing	3times	Quadratic element	30pcs
Machine impact test	JESD22 B-104	1500 g/s for 0.5 ms, 5 blows, 3 orientations	3times	Impact tester	30pcs
Temperature cycle	JESD22 A-104	Tc= -40 °C ~100 °C, 30 min. dwell, 5 min transfer, 1000 cycles	1000hrs	Cold and hot impact tester	77pcs
Power up and temperature cycling	JESD22 A-105	Ta=-40 °C ~85 °C , If=20mA, 20 min dwell/20 min transition (1 hour cycle), 2 min ON/2 min OFF	1000hrs	Cold and hot impact tester	77pcs
High temperature and humidity life test	JESD22 A-101	85°C/85%RH, @20mA	1000hrs	Constant temperature and humidity testing machine	77pcs
High temperature service life	JESD22 A-108C	Ta=100°C, If=20mA	1000hrs	High temperature testing machine	77pcs
Low temperature service life	JESD22 A-108C	Ta=-40°C, If=20mA	1000hrs	Cryogenic Testing Machine	77pcs
Low temperature storage life	JE\$D22 A-119	Ta=-40°C, non-operating	1000hrs	Cryogenic Testing Machine	77pcs
High temperature storage life	JESD22-A-103	Ta=100°C, non-operating	1000hrs	High temperature testing machine	77pcs
Thermal shock test	JE\$D22-A-104	-40°C~100°C,20 min. dwell,<10 minutes transfer	1000 cycles	Cold and hot impact testing machine	77pcs
Stress test of bond line	AEC-Q101-C Annex three	Wire bond pull test, gold solder joint shear test, shear test wafer	-	Push and pull tester	10pcs
Vulcanization test	Enterprise standard	T=40°C , RH=90% , H2S=5% , Time=24hrs	336hrs	Vulcanizing machine	77pcs
Salt spray test	Enterprise standard	$35(+3/-0)^\circ C$ , Salt Water=5% , Time=24hrs	24hrs	Salt spray test machine	5pcs
Reflow soldering test	Enterprise standard	Max 260℃±5℃,10S	5times	Reflow soldering machine	10pcs

# **Service Team**



尊重 理想 坚持 创新 Respect Dream Persistence Innovation

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# **Our partners**











We look forward to working with you!