

Shenzhen H-Great Optoelectronic Co., Ltd.

承认书 Approved Sheet

客 户 名 称 :	
客 户 物 料 名 称 :	
客 户 物 料 编 码 :	
文 件 编 号 :	A472 2835方/圆杯通用规格 (3V/6V/9V Ra80)
华 皓 品 名 :	<u>H-28XXXX4-</u> <u>XXXXXXXXX220Y03-X</u>
华 皓 料 号 :	

客户

华皓

检测员 :
审 核 :
批 准 :
盖 章 :

检测员 : 赵小吹
审 核 : 陈佳良
批 准 : 匡建军
日 期 : 20250409

H-28XXX4-XXXXXXXXX220Y03-X

PLCC LED Ultra high light efficiency series products have high reliability and luminous efficiency, and can be used in indoor and outdoor and conventional applications



Applications/ 产品应用

indoor illumination
General lighting
General use

室内照明
普通照明
一般应用

Features/ 特性

Size(mm):2.8*3.5*0.7(方) & 2.8*3.5*0.63 (圆)
Color : White
Thermal resistance: 13K/W
Viewing angle: 120°
ESD protection up to 2KV
Qualifications: The product qualification test based on the guidelines of LM-80
MSL: Level 3
RoHS compliant

尺寸 (毫米) : 2.8*3.5*0.7(方) & 2.8*3.5*0.63 (圆)
发光颜色 : 白光
热阻 : 13K/W
发光角度 : 120°
抗静电 : 2 KV

质量检测 : LM-80
湿敏等级 : Level 3
通过RoHS认证

H-G Naming Principle/ 华皓命名原则

H - 28 X X XX 4-XXX X X X T X 2 2 0 Y 0 3-X X
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

对应内容代表含义

- 1：公司代码（H，代表华皓）
- 2：产品外观尺寸代码（28，代表2835；30，代表3030等）
- 3：发光颜色代码（W,暖白3800K以下;N,自然白3800-4500K;C,正白/冷白4500K以上）
- 4：产品功率代码
(D,3V60MA;E,3V150MA;M,3V300MA;S,6V30MA;V,6V75MA;K,6V150MAH,9V100MA)
- 5：产品亮度代码（详见P13 Ranks）
- 6：显色指数代码
(1,50-60；2,60-70；3, 70-79；4,80-85；5,85-90；6,90-95；7,95-100)
- 7：晶片厂家代码
- 8：使用晶片数量代码（1，单晶；2，双晶；3，三晶 以此类推）
- 9：白光产品晶片投料波段代码
- 10：支架厂商代码
- 11：支架杯型代码（T，方杯;S，圆杯。详见P20 产品外观尺寸）
- 12：胶水厂商代码
- 13：胶水类型代码
- 14：产品脚位极性代码（2，缺口脚位为负极；3，缺口脚位为正极）
- 15：胶体外观颜色代码
- 16：串并方式代码(X，单晶；1，串联；2，并联；3，串并联)
- 17：齐纳代码（0，代表不加齐纳；Z，代表加齐纳）
- 18：线材代码（1，金线；2，合金线；3，银白线）
- 19：晶片尺寸代码
- 20：生产工艺代码（Y,不离心工艺；离心工艺无此码）

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Absolute maximum ratings(Ta=25℃)/最大额定值
3V单晶系列

Parameters/参数	Symbol/符号	Value/数值	Unit/单位
Power dissipated 功率消耗	P _D	0.5	W
Forward current 正向电流	I _F	150	mA
Peak pules forward current 峰值脉冲电流	I _{FP}	180	mA
Operating temperature 工作温度	T _{OPR}	-40~+100	℃
Storage temperature 储存温度	T _{STG}	-40~+100	℃
Maximum junction temperature(1) 最大结温	T _J	≤115	℃
Soldering temperature 焊接温度	Reflow soldering 260℃ for 5sec		

3V双晶系列

Parameters/参数	Symbol/符号	Value/数值	Unit/单位
Power dissipated 功率消耗	P _D	1	W
Forward current 正向电流	I _F	300	mA
Peak pules forward current 峰值脉冲电流	I _{FP}	360	mA
Operating temperature 工作温度	T _{OPR}	-40~+100	℃
Storage temperature 储存温度	T _{STG}	-40~+100	℃
Maximum junction temperature(1) 最大结温	T _J	≤115	℃
Soldering temperature 焊接温度	Reflow soldering 260℃ for 5sec		

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6V系列

Parameters/参数	Symbol/符号	Value/数值	Unit/单位
Power dissipated 功率消耗	P_D	1	W
Forward current 正向电流	I_F	150	mA
Peak pules forward current 峰值脉冲电流	I_{FP}	180	mA
Operating temperature 工作温度	T_{OPR}	-40~+100	℃
Storage temperature 储存温度	T_{STG}	-40~+100	℃
Maximum junction temperature(1) 最大结温	T_J	≤115	℃
Soldering temperature 焊接温度	Reflow soldering 260℃ for 5sec		

9V系列

Parameters/参数	Symbol/符号	Value/数值	Unit/单位
Power dissipated 功率消耗	P_D	1	W
Forward current 正向电流	I_F	100	mA
Peak pules forward current 峰值脉冲电流	I_{FP}	120	mA
Operating temperature 工作温度	T_{OPR}	-40~+100	℃
Storage temperature 储存温度	T_{STG}	-40~+100	℃
Maximum junction temperature(1) 最大结温	T_J	≤115	℃
Soldering temperature 焊接温度	Reflow soldering 260℃ for 5sec		

Proper current derating must be observed to maintain junction temperature below the Maximum.

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Electro optical characteristics(Ta=25℃)/光电特性
3V单晶系列

Parameters 参数	Test condition 测试条件	Symbol 符号	Min 最小	Typ 典型	Max 最大	Unit 单位
Forward voltage 正向电压	60mA	VF	2.7	--	3.0	V
	150mA		2.9	--	3.2	
View Angle 发光角度	60/150mA	2θ1/2	--	120	--	deg.
Electrostatic discharge 抗静电	HBM	ESD	--	--	2000	V

3V双晶系列

Parameters 参数	Test condition 测试条件	Symbol 符号	Min 最小	Typ 典型	Max 最大	Unit 单位
Forward voltage 正向电压	60mA	VF	2.6	--	2.8	V
	150mA		2.7	--	2.9	V
	300mA		2.9	--	3.2	V
View Angle 发光角度	60/150/300mA	2θ1/2	--	120	--	deg.
Electrostatic discharge 抗静电	HBM	ESD	--	--	2000	V

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6V系列

Parameters 参数	Test condition 测试条件	Symbol 符号	Min 最小	Typ 典型	Max 最大	Unit 单位
Forward voltage 正向电压	30mA	VF	5.0	--	5.6	V
	75mA		5.4	--	6.0	
	150mA		5.6	--	6.6	
View Angle 发光角度	30/75/150mA	2θ1/2	--	120	--	deg.
Electrostatic discharge 抗静电	HBM	ESD	--	--	2000	V

9V系列

Parameters 参数	Test condition 测试条件	Symbol 符号	Min 最小	Typ 典型	Max 最大	Unit 单位
Forward voltage 正向电压	20mA	VF	8.0	--	8.6	V
	50mA		8.2	--	8.8	
	100mA		8.4	--	9.4	
View Angle 发光角度	20/50/100mA	2θ1/2	--	120	--	deg.
Electrostatic discharge 抗静电	HBM	ESD	--	--	2000	V

1. Tolerance of luminous flux is ±10%
光通量公差为±10%
2. Tolerance of forward voltage is ±0.05V
正向电压公差±0.05v

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Electro optical parameter chart(Ta=25℃)/光电参数表-3V单晶系列

IF	Part Number 产品型号	Color Rendering Index 显色指数	Brightness efficiency 光效 (lm/W)	Luminous Flux光 通亮 (lm)	CCT色温 (K)
60mA	H-28WDXX4- HBX1DLXH220X03-J	80	175-195	28-32	2700
	H-28WDXX4- HBX1DLXH220X03-J	80	185-205	30-34	3000
	H-28NDXX4- HBX1DLXH220X03-J	80	195-215	32-36	4000
	H-28CDXX4- HBX1DLXH220X03-J	80	195-215	32-36	5000
	H-28CDXX4- HBX1DLXH220X03-J	80	195-215	32-36	5700
	H-28CDXX4- HBX1DLXH220X03-J	80	195-215	32-36	6500
150mA	H-28WEXX4- HBX1DLXH220X03-J	80	130-150	60-70	2700
	H-28WEXX4- HBX1DLXH220X03-J	80	140-160	65-75	3000
	H-28NEXX4- HBX1DLXH220X03-J	80	150-170	70-80	4000
	H-28CEXX4- HBX1DLXH220X03-J	80	150-170	70-80	5000
	H-28CEXX4- HBX1DLXH220X03-J	80	150-170	70-80	5700
	H-28CEXX4- HBX1DLXH220X03-J	80	150-170	70-80	6500

(此表每行产品包含方杯及圆杯两款产品参数信息，光通量包含多个亮度档，详细见分档Bin，圆杯产品较方杯产品亮度低一档，具体参数以下单为准，此表仅供参考)

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Electro optical parameter chart(Ta=25℃)/光电参数表-3V双晶系列

IF	Part Number 产品型号	Color Rendering Index 显色指数	Brightness efficiency 光效 (lm/W)	Luminous Flux光 通亮 (lm)	CCT色温 (K)
60mA	H-28WDXX4- HBX2DLXH220X03-J	80	180-195	28-32	2700
	H-28WDXX4- HBX2DLXH220X03-J	80	190-205	30-34	3000
	H-28NDXX4- HBX2DLXH220X03-J	80	200-215	32-36	4000
	H-28CDXX4- HBX2DLXH220X03-J	80	200-215	32-36	5000
	H-28CDXX4- HBX2DLXH220X03-J	80	200-215	32-36	5700
	H-28CDXX4- HBX2DLXH220X03-J	80	200-215	32-36	6500
150mA	H-28WEXX4- HBX2DLXH220X03-J	80	190-200	75-85	2700
	H-28WEXX4- HBX2DLXH220X03-J	80	190-200	75-85	3000
	H-28NEXX4- HBX2DLXH220X03-J	80	210-220	80-90	4000
	H-28CEXX4- HBX2DLXH220X03-J	80	210-220	80-90	5000
	H-28CEXX4- HBX2DLXH220X03-J	80	210-220	85-90	5700
	H-28CEXX4- HBX2DLXH220X03-J	80	210-220	80-90	6500
300mA	H-28WMXX4- HBX2DLXH220X03-J	80	140-155	120-140	2700
	H-28WMXX4- HBX2DLXH220X03-J	80	150-165	130-150	3000
	H-28NMXX4- HBX2DLXH220X03-J	80	160-175	140-160	4000
	H-28CMXX4- HBX2DLXH220X03-J	80	160-175	140-160	5000
	H-28CMXX4- HBX2DLXH220X03-J	80	160-175	140-160	5700
	H-28CMXX4- HBX2DLXH220X03-J	80	160-175	140-160	6500

(此表每行产品包含方杯及圆杯两款产品参数信息，光通量包含多个亮度档，详细见分档Bin，圆杯产品较方杯产品亮度低一档，具体参数以下单为准，此表供参考)

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Electro optical parameter chart(Ta=25℃)/光电参数表-6V系列

IF	Part Number 产品型号	Color Rendering Index 显色指数	Brightness efficiency 光效 (lm/W)	Luminous Flux光 通亮 (lm)	CCT色温 (K)
30mA	H-28WSXX4- HBX2DLXH220103-J	80	190-210	30-34	2700
	H-28WSXX4- HBX2DLXH220103-J	80	195-215	32-36	3000
	H-28WSXX4- HBX2DLXH220103-J	80	195-215	32-36	3500
	H-28NSXX4- HBX2DLXH220103-J	80	210-230	34-38	4000
	H-28CSXX4- HBX2DLXH220103-J	80	210-230	34-38	5000
	H-28CSXX4- HBX2DLXH220103-J	80	210-230	34-38	5700
	H-28CSXX4- HBX2DLXH220103-J	80	210-230	34-38	6500
75mA	H-28WVXX4- HBX2DLXH220103-J	80	185-205	65-75	2700
	H-28WVXX4- HBX2DLXH220103-J	80	190-210	70-80	3000
	H-28WVXX4- HBX2DLXH220103-J	80	190-210	70-80	3500
	H-28NVXX4- HBX2DLXH220103-J	80	195-215	75-85	4000
	H-28CVXX4- HBX2DLXH220103-J	80	195-215	75-85	5000
	H-28CVXX4- HBX2DLXH220103-J	80	195-215	75-85	5700
	H-28CVXX4- HBX2DLXH220103-J	80	195-215	75-85	6500
150mA	H-28WKXX4- HBX2DLXH220103-J	80	145-165	130-150	2700
	H-28WKXX4- HBX2DLXH220103-J	80	155-175	140-160	3000
	H-28WKXX4- HBX2DLXH220103-J	80	155-175	140-160	3500
	H-28NKXX4- HBX2DLXH220103-J	80	165-185	150-170	4000

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	H-28CKXX4- HBX2DLXH220103-J	80	165-185	150-170	5000
	H-28CKXX4- HBX2DLXH220103-J	80	165-185	150-170	5700
	H-28CKXX4- HBX2DLXH220103-J	80	165-185	150-170	6500

(此表每行产品包含方杯及圆杯两款产品参数信息，光通量包含多个亮度档，详细见分档Bin，圆杯产品较方杯产品亮度低一档，具体参数以下单为准，此表供参考)

For Reference Only

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Electro optical parameter chart(Ta=25℃)/光电参数表-9V系列

IF	Part Number 产品型号	Color Rendering Index 显色指数	Brightness efficiency 光效 (lm/W)	Luminous Flux 光通亮 (lm)	CCT色温 (K)
20mA	H-28WXXX4- HBX3DLXH220103-0	80	160-180	26-28	2700
	H-28WXXX4- HBX3DLXH220103-0	80	170-190	28-30	3000
	H-28NXXX4- HBX3DLXH220103-0	80	180-200	30-32	4000
	H-28CXXX4- HBX3DLXH220103-0	80	180-200	30-32	5000
	H-28CXXX4- HBX3DLXH220103-0	80	180-200	30-32	5700
	H-28CXXX4- HBX3DLXH220103-0	80	180-200	30-32	6500
50mA	H-28WXXX4- HBX3DLXH220103-0	80	140-160	55-65	2700
	H-28WXXX4- HBX3DLXH220103-0	80	150-170	60-70	3000
	H-28NXXX4- HBX3DLXH220103-0	80	160-180	65-75	4000
	H-28CXXX4- HBX3DLXH220103-0	80	160-180	65-75	5000
	H-28CXXX4- HBX3DLXH220103-0	80	160-180	65-75	5700
	H-28CXXX4- HBX3DLXH220103-0	80	160-180	65-75	6500
100mA	H-28WHXX4- HBX3DLXH220103-0	80	110-125	105-115	2700
	H-28WHXX4- HBX3DLXH220103-0	80	115-130	115-125	3000
	H-28NHXX4- HBX3DLXH220103-0	80	140-155	130-140	4000
	H-28CHXX4- HBX3DLXH220103-0	80	140-155	130-140	5000
	H-28CHXX4- HBX3DLXH220103-0	80	140-155	130-140	5700
	H-28CHXX4- HBX3DLXH220103-0	80	140-155	130-140	6500

(此表每行产品包含方杯及圆杯两款产品参数信息，光通量包含多个亮度档，详细见分档Bin，圆杯产品较方杯产品亮度低一档，具体参数以下单为准，此表供参考)

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Ranks(Ta=25℃)/档位- Luminous Flux

Item 项目	Rank 档位	Min 最小值	Max 最大值	Unit 单位
Luminous Flux 光通亮	G1	26	28	lm
	G2	28	30	
	G3	30	32	
	G4	32	34	
	G5	34	36	
	G6	36	38	
	M4	55	60	
	M5	60	65	
	M6	65	70	
	M7	70	75	
	M8	75	80	
	H1	80	85	
	H2	85	90	
	H3	105	115	
	H4	115	125	
	H5	120	130	
	H6	130	140	
	H7	140	150	
	H8	150	160	
	H9	160	170	
	N1	170	180	
	N2	180	190	

Ranks(Ta=25℃)/档位- VF

Item 项目	Rank 档位	Min 最小值	Max 最大值	Unit 单位
VF电压	V1	2.6	2.7	V
	V2	2.7	2.8	
	V3	2.8	2.9	
	V4	2.9	3.0	
	V5	3.0	3.1	
	V6	3.1	3.2	
	T0	5.0	5.2	
	T1	5.2	5.4	
	T2	5.4	5.6	
	T3	5.6	5.8	
	T4	5.8	6.0	
	T5	6.0	6.2	
	T6	6.2	6.4	
	T7	6.4	6.6	
	U0	8.0	8.2	
	U1	8.2	8.4	
	U2	8.4	8.6	
	U3	8.6	8.8	
	U4	8.8	9.0	
	U5	9.0	9.2	
	U6	9.2	9.4	

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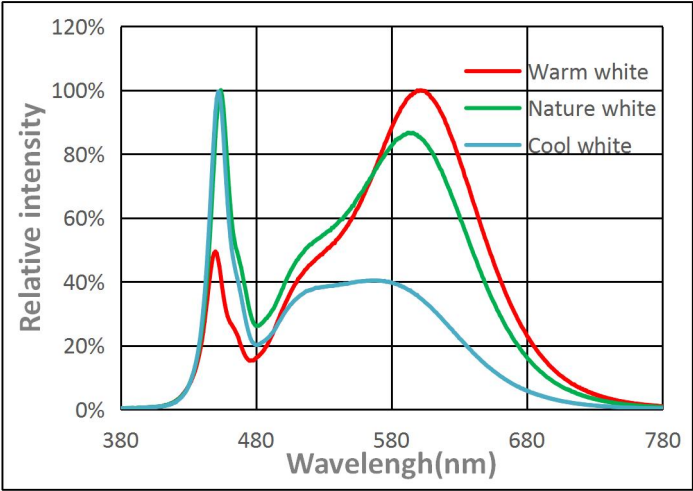
Chroma ticity Coordinates(Ta=25℃)/色坐标

CCT	Bin Code	CIE x	CIE y	Radius a	Radius b	Angle	SDCM
2700K	27W-3S	0.463	0.420	0.00774	0.00411	57.17	3step
3000K	30W-3S	0.440	0.403	0.00834	0.00408	53.10	3step
3500K	FY35-3S	0.409	0.394	0.00951	0.00417	52.58	3step
4000K	40N-3S	0.380	0.380	0.00939	0.00402	54.00	3step
5000K	50C-3S	0.346	0.359	0.00822	0.00354	59.37	3step
5700K	MB57-3S	0.3287	0.3417	0.00774	0.00327	58.75	3step
6500K	65M-3S	0.313	0.337	0.00669	0.00285	58.23	3step
2700K	27W	0.463	0.420	0.0129	0.00685	57.17	5step
3000K	30W	0.440	0.403	0.0139	0.0068	53.10	5step
3500K	FY35-5S	0.409	0.394	0.01585	0.00695	52.58	5step
4000K	40N	0.380	0.380	0.01565	0.0067	54.00	5step
5000K	50C	0.346	0.359	0.0137	0.0059	59.37	5step
5700K	57C	0.3287	0.3417	0.0129	0.00545	58.75	5step
6500K	65M	0.313	0.337	0.01115	0.00475	58.23	5step

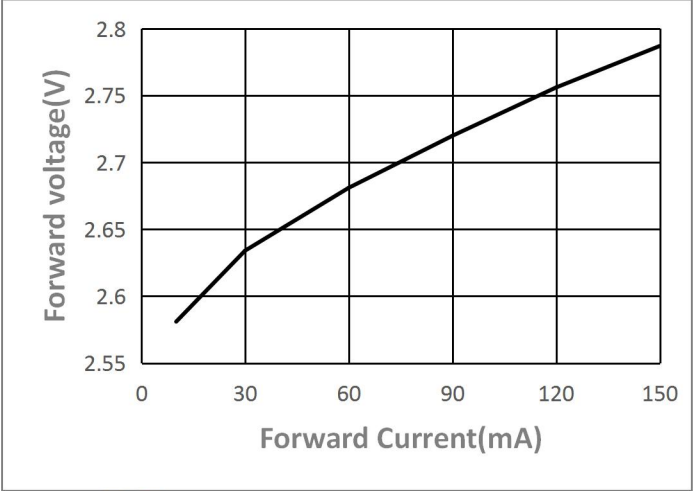
Tolerance of Chromaticity Coordinates : ±0.0020
色坐标公差 : ±0.0020

Typical electrical optical characteristic curves/典型光电特征曲线-3V单晶系列

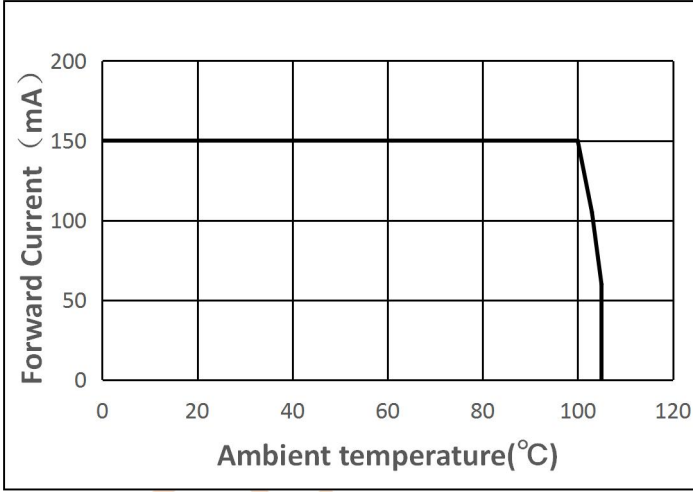
Spectrum Distribution
(@IF = 150 mA; T=25℃)



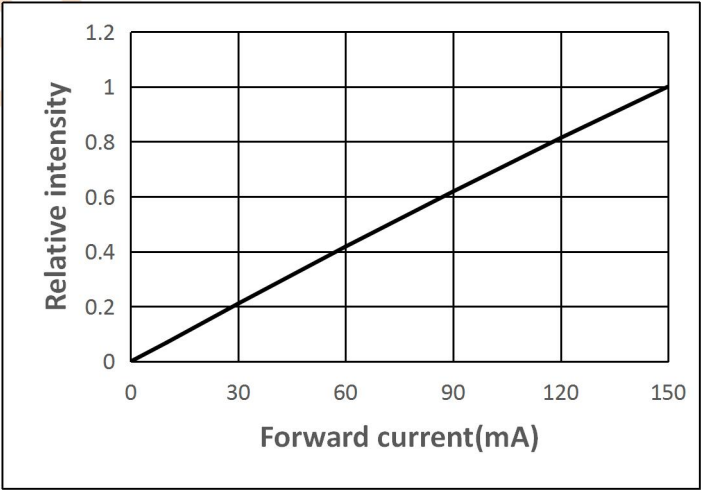
Forward current VS. Forward voltage
(@T = 25℃)



Forward current derating curve
VS. Ambient temperature

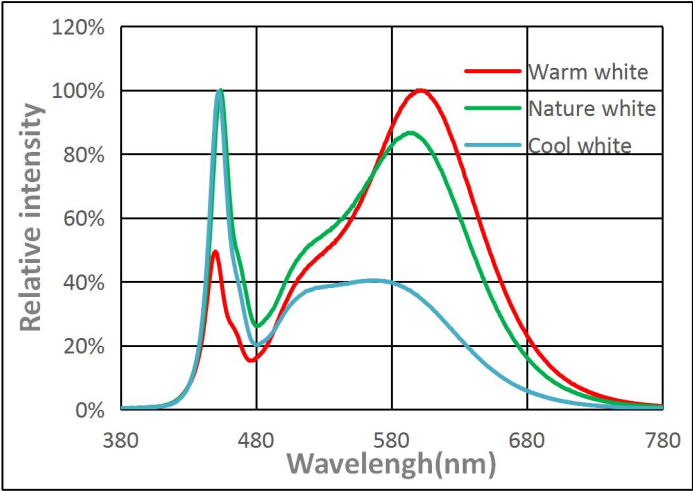


Relative intensity VS. Forward current
(@IF = 150mA; T=25℃)

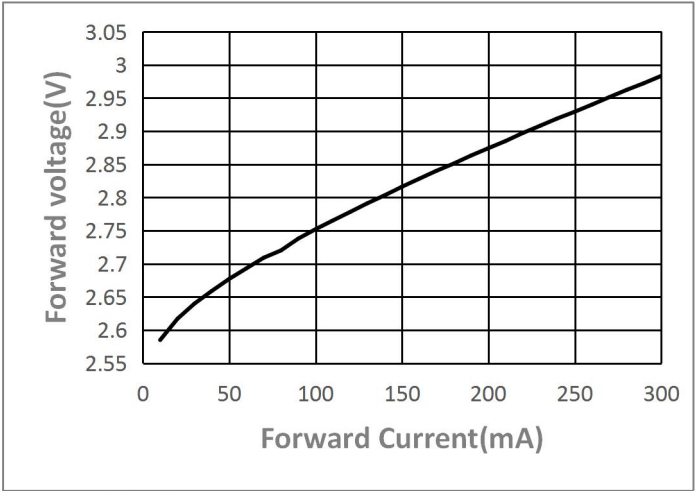


Typical electrical optical characteristic curves/典型光电特征曲线-3V双晶系列

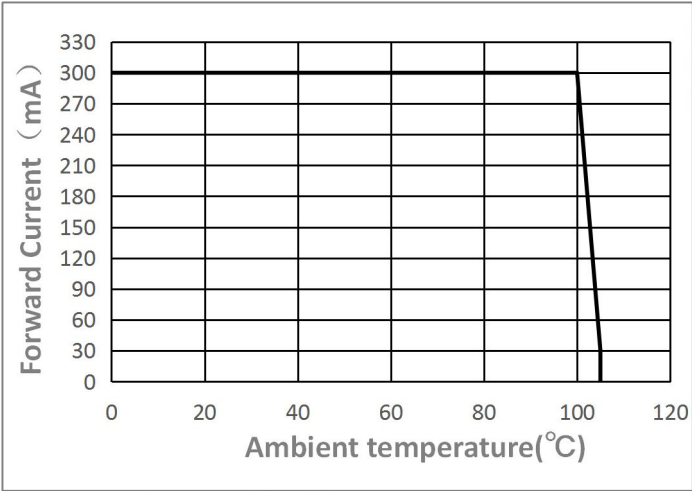
Spectrum Distribution
(@IF = 150 mA; T=25℃)



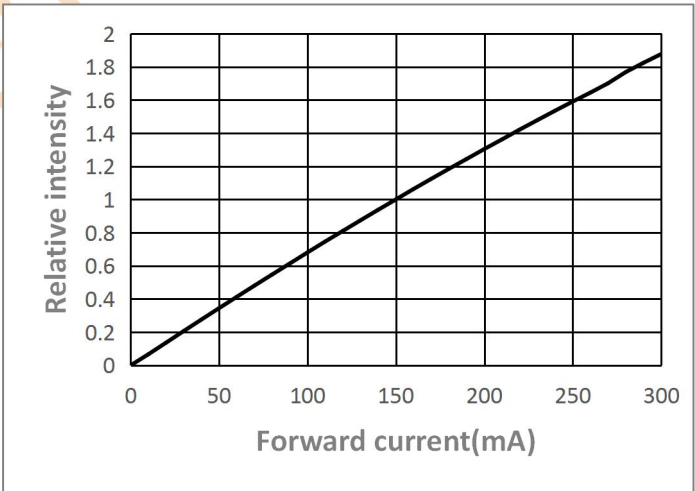
Forward current VS. Forward voltage
(@T = 25℃)



Forward current derating curve
VS. Ambient temperature

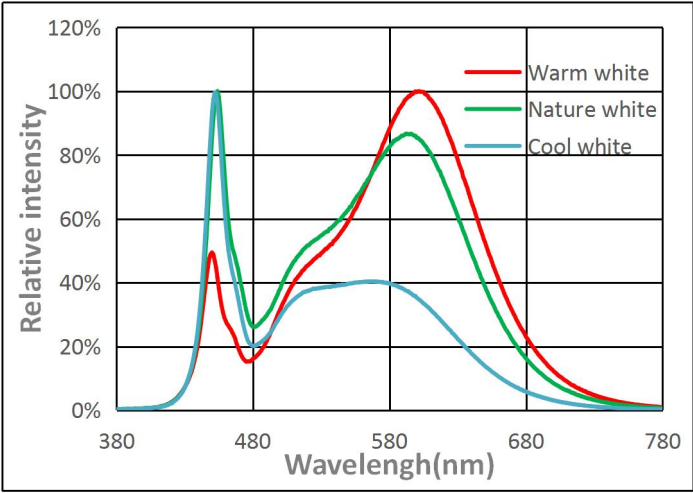


Relative intensity VS. Forward current
(@IF = 150mA; T=25℃)

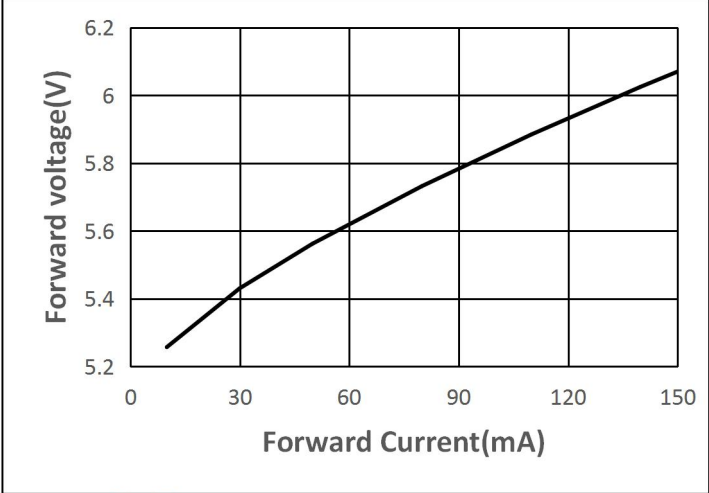


Typical electrical optical characteristic curves/典型光电特征曲线 -6V系列

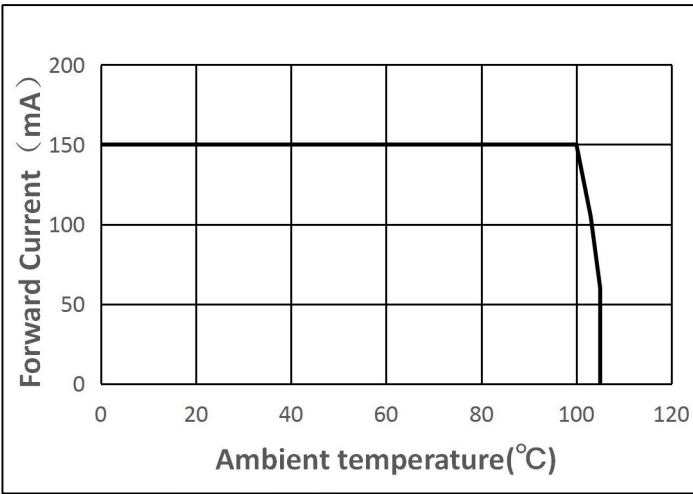
Spectrum Distribution
(@IF = 30 mA; T=25℃)



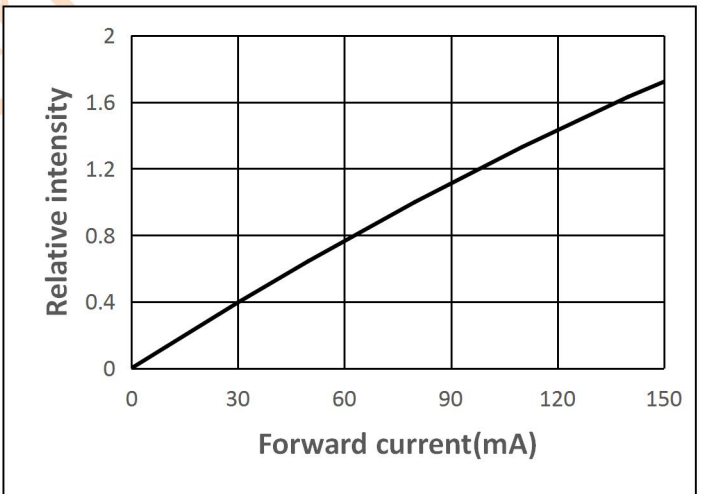
Forward current VS. Forward voltage
(@T = 25℃)



Forward current derating curve
VS. Ambient temperature

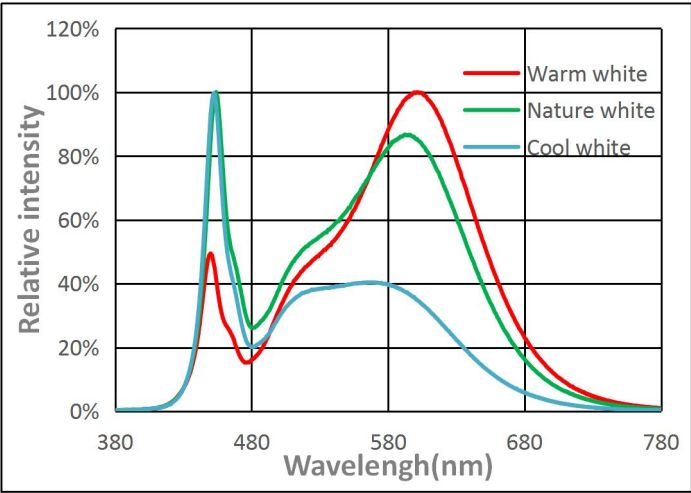


Relative intensity VS. Forward current
(@IF = 30 mA; T=25℃)

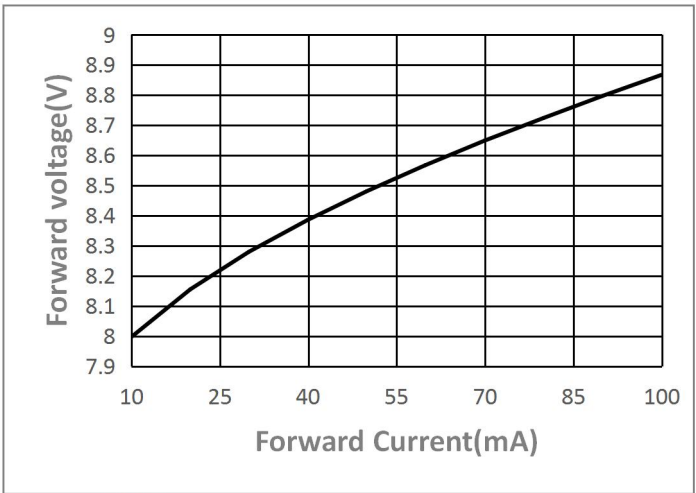


Typical electrical optical characteristic curves/典型光电特征曲线-9V系列

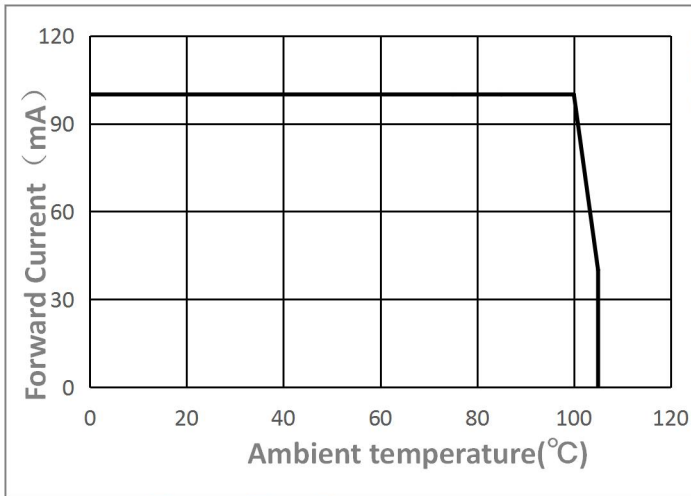
Spectrum Distribution
(@IF = 100 mA; T=25℃)



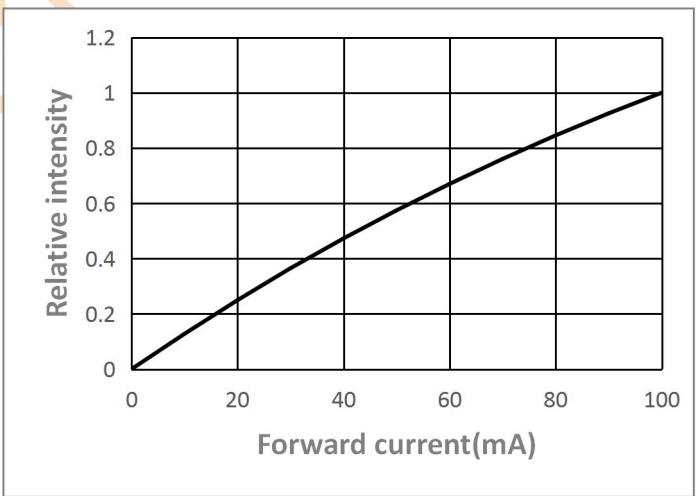
Forward current VS. Forward voltage
(@T = 25℃)



Forward current derating curve
VS. Ambient temperature



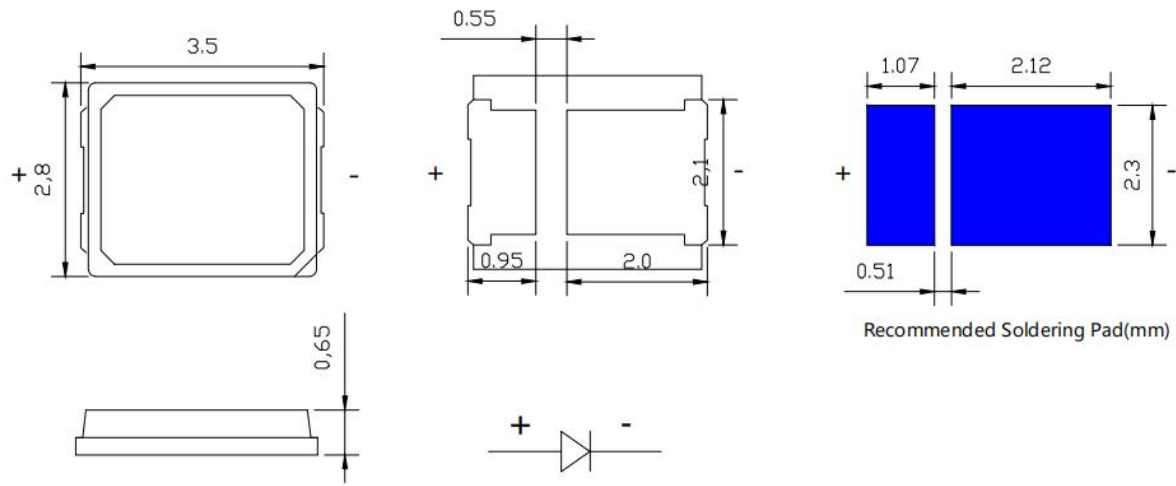
Relative intensity VS. Forward current
(@IF = 100mA; T=25℃)



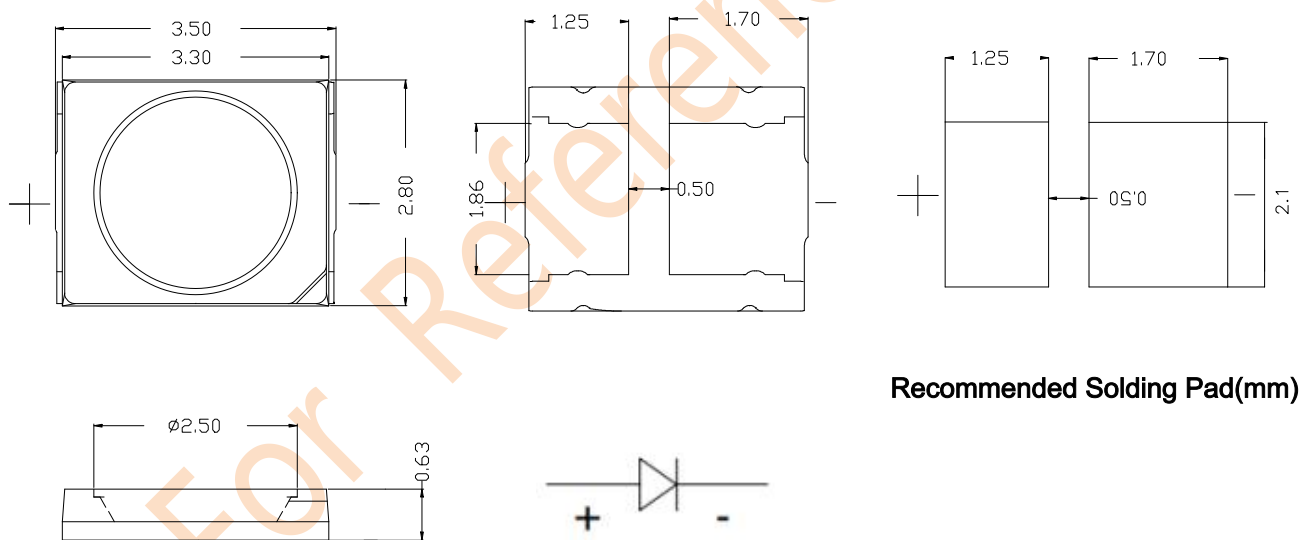
H-28XXXX4-XXXXXXXXX220Y03-X

Package dimensions/产品外观尺寸

2835方杯（缺口为负）：



2835圆杯（缺口为负）：



Notes:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.1 mm
3. Approximate Weight : 20.0 mg

Pakaging specifications/包装规格

Product Labeling/产品标签

Label Explanation/标签解释

CPN: Customers Product Number

P/N: Product Number

Lot NO: Lot Number

VF(V): Forward voltage Bin

IV:Luminous intensity rank

CCT:Color temperature grade

QTY (pcs): Package Quantity

SHENZHEN H-GREAT OPTOELECTRONIC CO.LTD

CPN: XXXXXXXX



ROHS

H-20XXXXX-XXXXXXXXXXXXXX-X

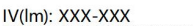
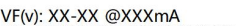


P/N: XXXXX-XXXX

Lot NO: XXXXXXXXXXXX

VF(v): XX-XX @XXXmA

IV(lm): XXX-XXX



CCT(K): XXXX-XXXX XXX XX



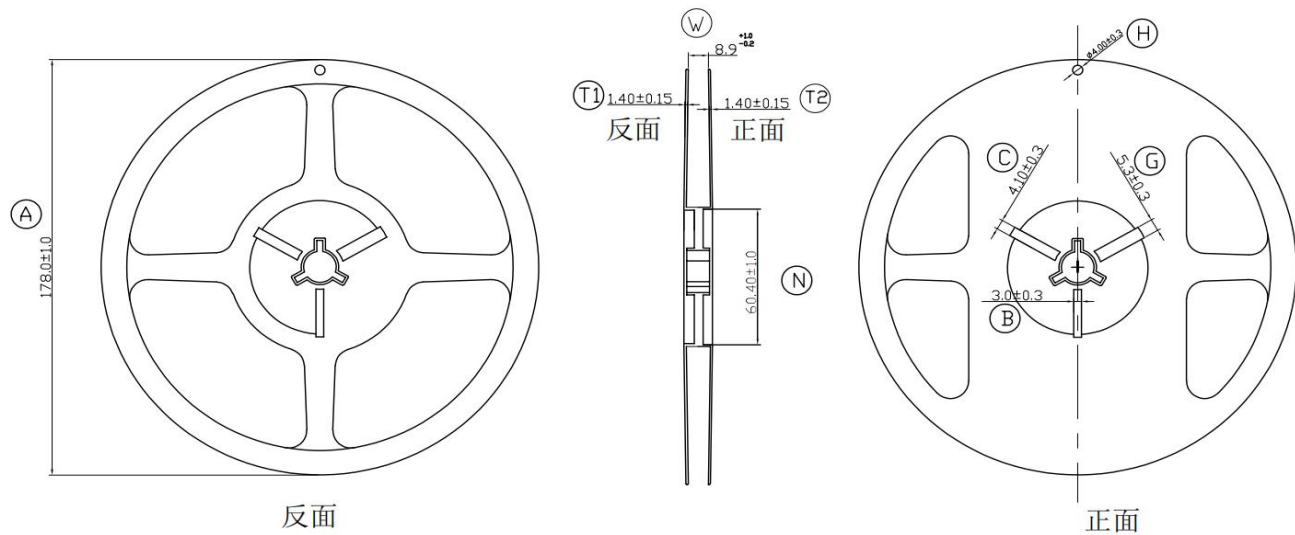
QTY(pcs): XXXX

XX-XX-XXXXXXXXXX-XXXX



Carrier Tape Dimensions/卷盘包装

Reel Dimensions/卷盘尺寸



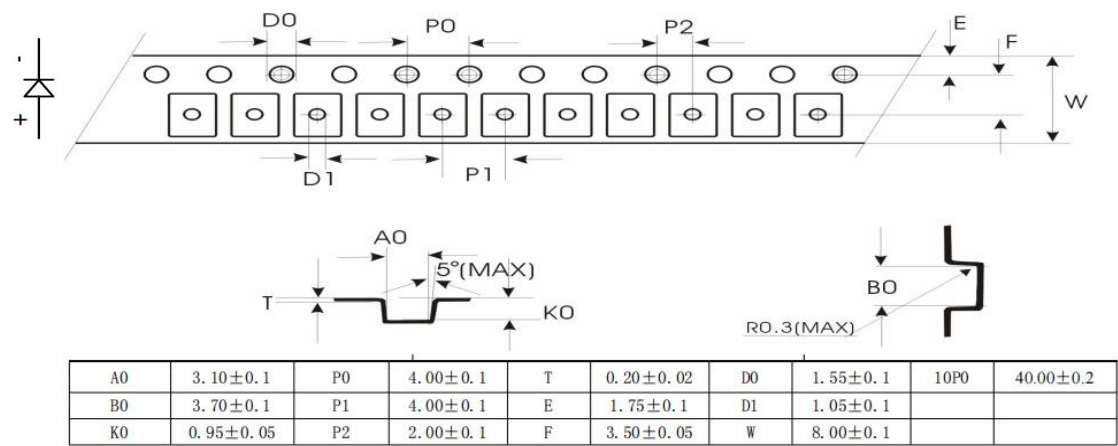
Note/备注 :

1. All dimensions are in millimeters ;

单位 : 毫米

Tape On Reel Package/载带包装

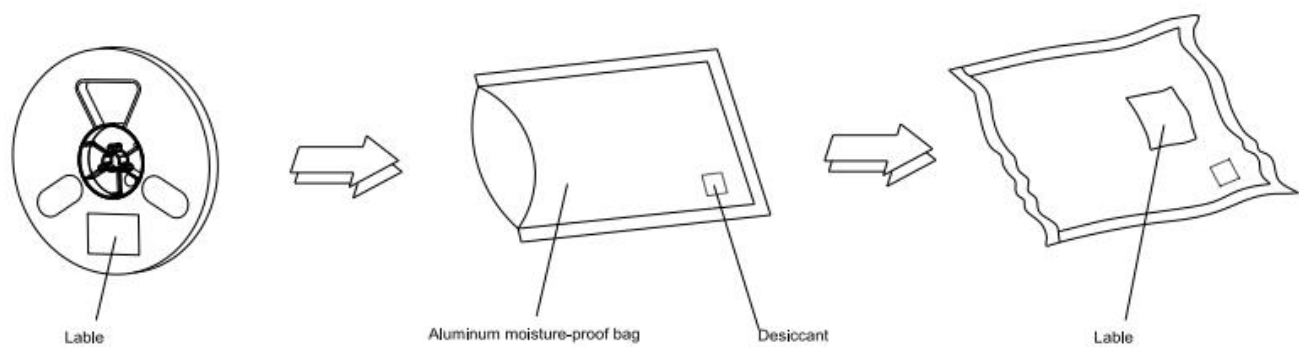
Carrier Tape Dimensions as the following/载带尺寸



Note/备注：

- (1) The cathode is oriented towards the tape sprocket hole in accordance with data sheet specifications.
根据图表显示，负极朝向载带孔。
- (2) MPQ:4000pcs per reel.
4000颗/每盘。

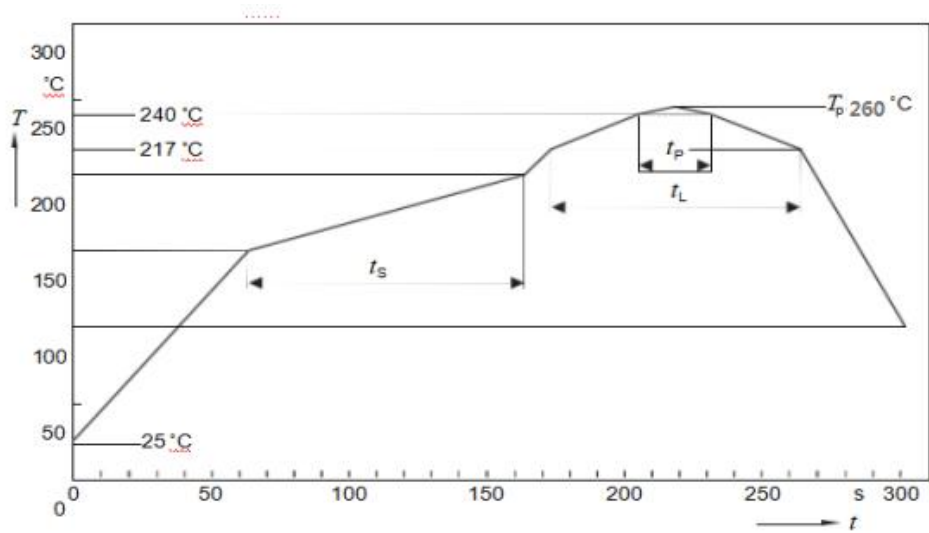
Moisture Resistant Packaging/防潮包装



Soldering Characteristics/焊接工艺

Reflow Soldering Profile/回流曲线

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Pb-Free Assembly	Unit Einheit
Average Ramp- up Rate 25 °C to 150 °C	2-3	°C /sec
Preheat Temperature Min.	150	sec
Preheat Temperature Max.	200	sec
Preheat Time	60- 120	sec
Time Maintained Above Temperature	217	°C
Time Maintained Above Time	60-90	sec
Peak Temperature (max.)	260	°C

- c. Reflow soldering should not be done more than twice.
- d. In soldering process, stress on the LEDs during heating should be avoided.
- e. After soldering, do not bend the circuit board.

Cautions/注意事项

1. Moisture-Proof Package/防潮包装

- 1.1 When moisture is absorbed into the LED package it may vaporize and expand products during soldering. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof package is used to keep moisture to a minimum in the package.

当水分被吸收到 LED 包装中时，它可能会在焊接过程中蒸发并膨胀产品。这可能会导致触点脱落并损坏 LED 的光学特性。因此，防潮包装需要将包装中的水分保持在最低限度。

2. Current limiting/限流

- 2.1 A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could be occur.

应使用电阻器限制电压波动引起的电流峰值。否则可能会发生损坏。

3. Iron Soldering/烙铁焊接

- 3.1 Hand soldering is not recommended for regular production. These guidelines are for rework only.

常规生产不建议手工焊接。此方法仅适用于返工。

- 3.2 The recommended condition is less than 5s at 260°C.

建议的条件是在 260°C 时小于 5s。

- 3.3 The time must be shorter for higher temperatures. (+10°C→-1sec)

对于较高的温度，时间必须更短。(+10°C→-1 秒)

- 3.4 The power dissipation of the soldering iron should be lower than 25W and the surface temperature of the device should be controlled at under 300°C.

烙铁的功耗应低于 25W，器件表面温度应控制在 300°C 以下。

4. Storage Conditions/储存条件

- 4.1 Before opening the package : The LEDs should be kept at 30°C or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture-proof packaging with moisture-absorbent material is recommended.

打开包装前：LED 应保持在 30°C 或以下，相对湿度为 90% 或以下。LED 应在一年内使用。储存 LED 时，建议使用吸湿材进行防潮包装。

- 4.2 After opening the package: The LEDs should be kept at 30°C or less and 60%RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture-absorbent material. It is also recommended to return the LEDs to the original moisture-proof bag and to reseal the moisture-proof bag again.

打开包装后：LED 应保持在 30°C 或以下，相对湿度为 60% 或以下。LED 应在打开包装后 168 小时（7 天）内焊接。如果仍有未使用的 LED 灯珠，则应将其储存在防潮包装中，例如带有吸湿材料包装的密封容器中。也建议将 LED 灯珠放回原来的防潮袋，并再次重新密封防潮袋。

4.3 If the moisture-absorbent material has faded away or the LEDs have exceeded the recommended storage time, baking treatment should be performed using the following conditions. Baking treatment: more than 24 hours at $65\pm5^{\circ}\text{C}$

如果吸湿材料褪色或 LED 超过建议的存储时间，则应使用以下条件进行除湿处理。除湿处理：在 $65\pm5^{\circ}\text{C}$ 下烘烤超过 24 小时。

4.4 H-Great LED electrode sections are comprised of a silver-plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid condition which may cause difficulty environments during soldering operations. It is recommended that the user uses the LEDs as soon as possible.

华皓 LED 灯珠电极部分由镀银铜合金组成。银表面可能受到含有腐蚀性气体等环境的影响。在焊接操作过程中，避免出现可能由环境导致问题的情况。建议用户尽快使用 LED 灯珠。

4.5 Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

请避免环境温度快速变化，尤其是在可能发生冷凝的高湿度环境中。

5. Handling of Silicone LEDs/硅胶 LED 灯珠处理

5.1 Avoid silicone resin parts especially with sharp tools such as tweezers.

避免使用锋利工具，尤其是使用镊子等接触硅胶部分。

5.2 Avoid leaving fingerprints on silicone part.

避免在硅胶零件上留下指纹。

6. Usage/用途

6. 1Do not exceed the values given in this specification.

不要超出本规范中给出的使用条件。

Revision History

Versions	Description	Release Date
A0	Standard data sheet	2025/01/15
A1	Update electro optical characteristics	2025/03/12
A2	Version update	2025/04/01
A3	Version update	2025/04/09