



PRELIMINARY SPEC

3.5x2.8mm SMD TOP LED

PART NO: MS-A3528MWAR-M65

WHITE



ATTENTION

OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

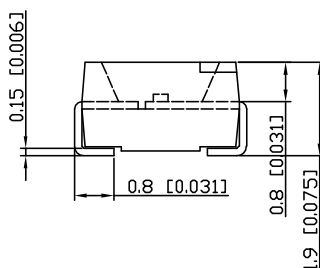
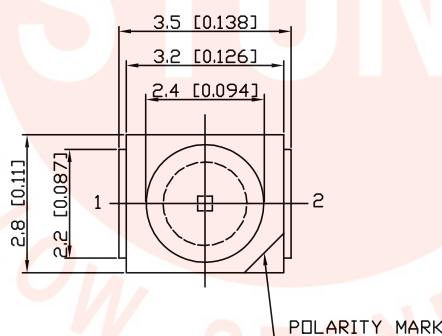
Features

- 3.5mmx2.8mm SMT LED, 1.9mm THICKNESS.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- PACKAGE : 2000PCS / REEL.
- RoHS COMPLIANT.

Applications

- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and back-lighting in telephone and fax.
- Flat backlight for LCD switch and symbol.

Package Dimensions



Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25 unless otherwise noted.
3. Specifications are subject to change without notice.

◆ Device Selection Guide

Part No.	Chip		Lens color
MS-A3528MWAR-M65	Material	Emitted color	Yellow Fluorescent
	(InGaN)	WHITE	

◆ Absolute Maximum Ratings at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	120	mW
Forward Current	I _F	30	mA
Peak Forward Current*1	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-40°C To +85°C	
Storage Temperature	T _{stg}	-40°C To +85°C	

Notes:

*1: Pulse width≤0.1ms, Duty cycle≤1/10

◆ Electrical / Optical Characteristics at T_A=25°C

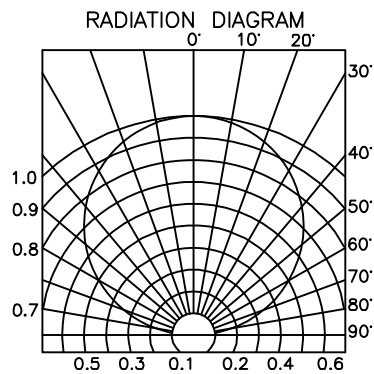
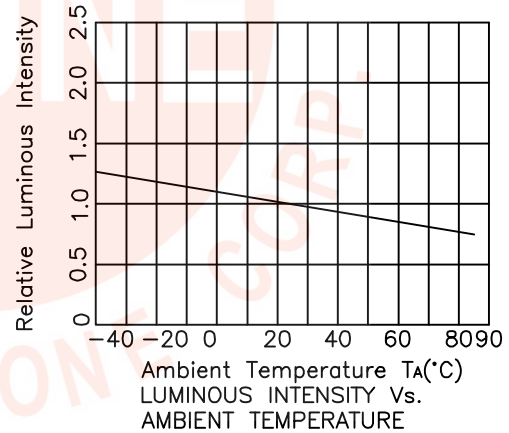
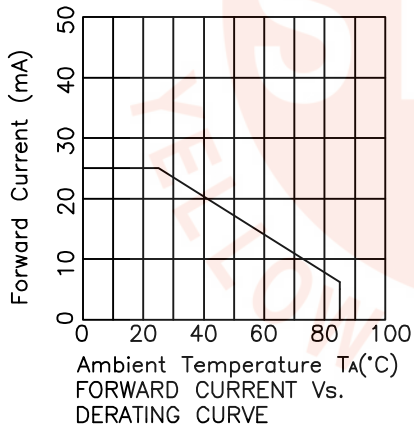
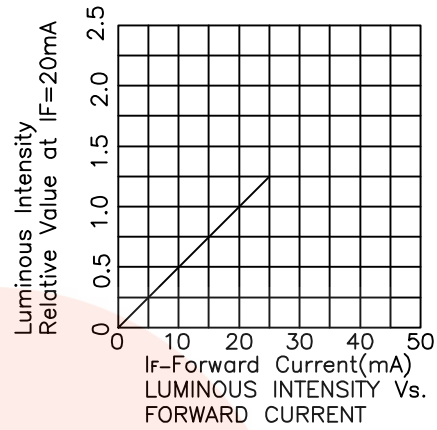
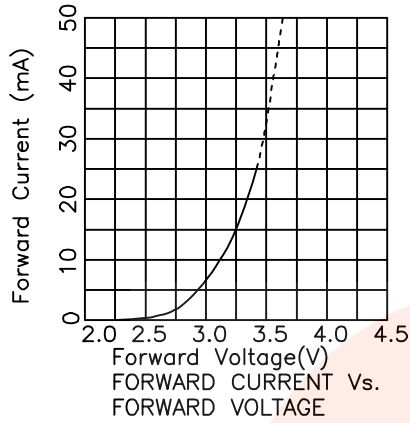
Parameter	Symbol	Min.	Typ.	Max	Unit	Test Conditions
Forward Voltage (one circuit)	V _F	2.8	—	3.6	V	I _F =20mA
Reverse Current (one circuit)	I _R	—	—	10	μA	V _R =5V
Chromaticity Coordinates	X	—	0.313	—		
	Y	—	0.337	—		
Color temperature	CCT	—	6500	—	K	
Color tolerance		0	—	6	SDCM	
Color Rendering Index	R _a	80	—	—		
Lumen	φ	7	8	—	LM	I _F =20mA
Viewing Angle	2θ1/2	—	120	—	Deg.	I _F =20mA

Remarks:

If special sorting is required (e.g. binning based on forward voltage, luminous intensity, or chromaticity), the typical accuracy of the sorting process is as follows:

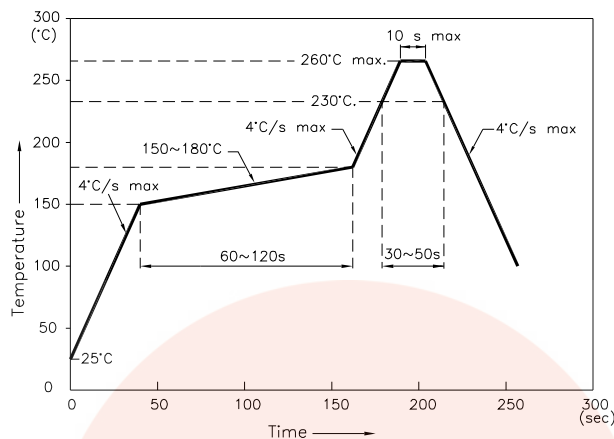
1. Chromaticity Coordinates: ±0.005
2. Luminous Intensity: ±15%
3. Forward Voltage: ±0.05V

◆ Typical Electrical/Optical Characteristics Curves



◆ Soldering Profile

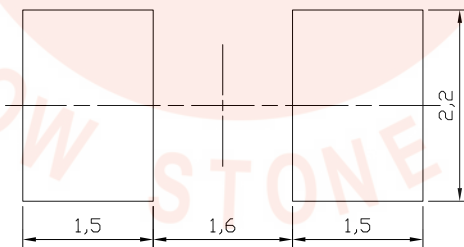
Reflow Soldering Profile For Lead-free SMT Process.



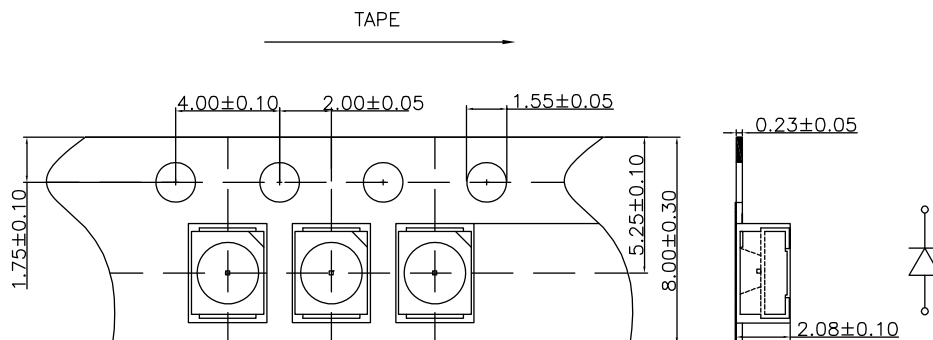
NOTES:

1. We recommend the reflow temperature $245^{\circ}\text{C} (+/-5^{\circ}\text{C})$. The maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

◆ Recommended soldering pattern (Units:mm)



◆ Tape specifications (Units:mm)





◆ Label Explanation

CODE: XX XX XX
 ↓ ↓ ↓
 IV X/Y(WL) VF
 亮度 坐标(波长) 电压

Part NO. : xxxxxxxxxxxxxx
QTY: xxx PCS CODE: xx xx xx
Lot NO: xxxxxxxxxxxxxx
ERP NO. : xxxxxxxxxxxxxx
Date: xxxxxxxxxxxxxx

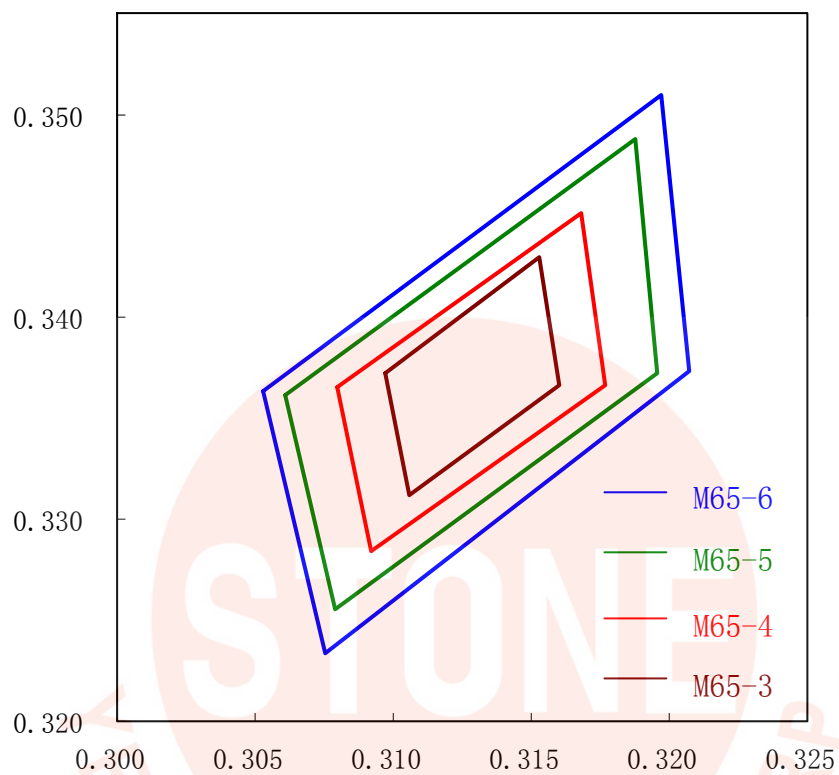


◆ VF Rank

Rank	VF(V)		Condition
	Min	Max	
G1	2.8	2.9	IF=20mA
G2	2.9	3.0	
H1	3.0	3.1	
H2	3.1	3.2	
J1	3.2	3.3	
J2	3.3	3.4	
K1	3.4	3.5	
K2	3.5	3.6	

Tolerance:±0.05V

◆ X/Y Rank



Bin	x	y	Bin	x	y
M65-6 6030-6850K	0.3053	0.3363	M65-5 6100-6800K	0.3061	0.3361
	0.3197	0.3509		0.3188	0.3488
	0.3207	0.3373		0.3196	0.3372
	0.3075	0.3234		0.3079	0.3255
M65-4 6200-6700K	0.3080	0.3365	M65-3 6300-6600K	0.3097	0.3372
	0.3168	0.3451		0.3153	0.3429
	0.3177	0.3366		0.3160	0.3366
	0.3092	0.3284		0.3106	0.3312

Tolerance: ±0.005



◆ CAUTIONS:

1.Storage

儲存

- 1 Storage condition before opening the package: 5°C~30°C, the largest percentage relative humidity is 60% and the storage period is one month. The LEDs beyond the storage period just can be used after dealing as step 4.
- 2 After opening the package, If the LEDs will be Infrared reflow soldering, Oxygen phase reflow soldering or any other welding.
 - a. must be welding within 24 hours.
 - b. the storage humidity must be below 30% .
- 3 If the situation does not satisfy 2a or 2b, the LEDs must be roasted.
- 4 If the LEDs need to be roasted, the roast temperature should be 60°C +/-3 and the roast time should be 48 hours.
- 1 未拆封前的儲存條件：5°C~30°C，最大相對濕度60%，儲存時間1個月，超過1個月的LED按步驟4處理後才能正常使用。
- 2 袋子開封後，元件若將進行紅外線回焊、氧相回焊或類似的焊接處理，必須在
 - a. 24小時內完成焊接工作。
 - b. 儲存濕度低於30%。
- 3 假如不符合2a或2b的條件，則元件必須烘烤。
- 4 若元件須烘烤，烘烤條件為：60°C ±3，48小時。

2.ESD (Electrostatic Discharge)

靜電

Static Electricity or power surge will damage the LED.

The following procedures may decrease the possibility of ESD damage.

- All production machinery and test instruments must be electrically grounded.
- Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- Maintain a humidity level of 50% or higher in production areas.
- Use anti-static packaging for transport and storage.

靜電和電涌會對LED造成損毀。

下列方式有減少靜電危害的可能性。

- 所有生產機械和測試設備必須接地。
- 操作LED燈時，需佩戴防靜電手环或防靜電手套。
- 在生產車間維持濕度等級在50%或以上。
- 運輸和儲存需用抗靜電袋包裝。

3.Cleaning

清洗

- Led should be cleaned in a normal temperature and the time for cleaning should be less than 3 minutes ; please use Alcohol as cleaner ,before you use other cleaning solvent ,please make sure that the cleaner will not make any damage to the LED performance or the appearance .
- Ultrasonic Cleaning is also commonly used for cleaning LED , please verify the Ultrasonic cleaning 's Power and time to avoid any damage to the LED .
- The recommended solvent for cleaning:
- LED的清洗推薦在常溫下進行且清洗時間不超過3分鐘，建議優先選用酒精做為清洗劑，在選用其他溶劑清洗前請先確認不會對LED封裝性能或外觀造成損傷。
- 超声波清洗也是常用的有效方法，在進行大批量清洗前請先驗證超声波清洗的功率及時間是否會對LED造成損傷。

- 推荐的溶剂:

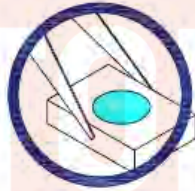
Common cleaning solvent 常用清洁溶剂	Disable cleaning solvent 禁用清洁溶剂
Alcohol 酒精	Thinner、Acetone、Two fluorine resin 、 Acetone b dilute 稀释剂、丙酮、 二氟脂、三氯乙稀

4.Handing Precautions

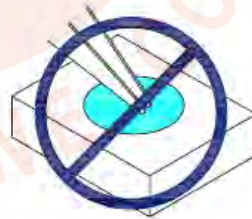
警惕手取

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might leads to damage and premature failure of the LED.

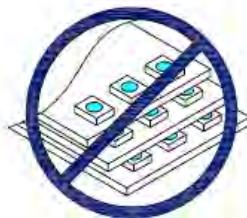
1. Handle the component along the side surfaces by using forceps or appropriate tools.



2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Outside impact may scratch the silicone lens or damage the internal circuitry.



4. During surface-mounting, the pickup capillary diameter should be larger than the silicone lens to insure the capillary does not scratch or damage the lens.

