

ASMT-Mx01

1W Power LED Light Source



Data Sheet



Lead (Pb) Free
RoHS 6 fully
compliant



Description

1W Power LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The exposed pad design has excellent heat transfer from the package to the motherboard.

The low profile package design is suitable for a wide variety of applications especially where height is a constraint.

The package is compatible with reflow soldering. This will give more freedom and flexibility to the light source designer.

Applications

- Portable (flash light, bicycle head light)
- Reading light
- Architectural lighting
- Garden lighting
- Decorative lighting

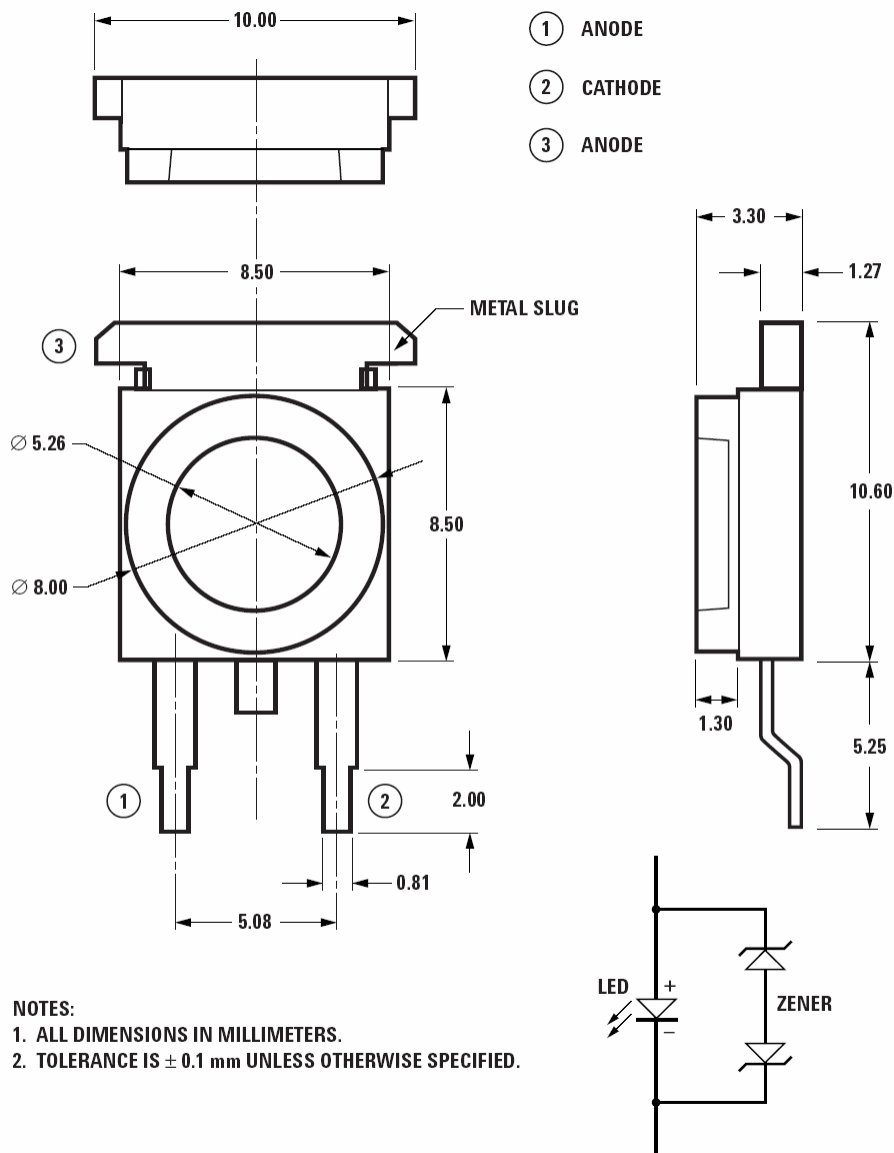
Features

- Available in White color.
- Energy efficient
- Exposed pad for excellent heat transfer.
- Suitable for reflow soldering process.
- High current operation.
- Long operation life.
- Wide viewing angle.
- Silicone encapsulation
- ESD of 16kV
- MSL 2A

Specifications

- InGaN Technology
- 3.6V, 350 mA (typical)
- 110 viewing angle

Package Dimensions



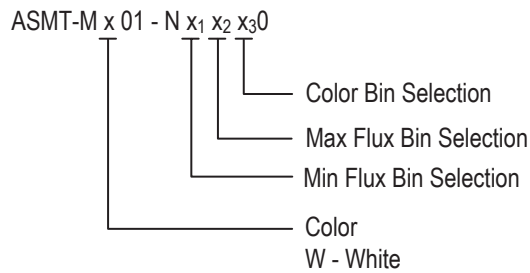
Device Selection Guide at Junction Temperature $T_j = 25^\circ\text{C}$

Color	Part Number	Luminous Flux, Φ_v [1, 2] (lm)			Test Current	
		Min	Typ	Max	(mA)	Dice Technology
White	ASMT-MW01	19.5	28.0	43.0	350	InGaN

Notes:

1. Φ_v is the total luminous flux output as measured with an integrating sphere at 25ms mono pulse condition.
2. Flux tolerance is $\pm 10\%$

Part Numbering System



Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

Parameter	ASMT-Mx01	Units
DC Forward Current ^[1]	350	mA
Peak Pulsing Current ^[2]	500	mA
Power Dissipation	1400	mW
LED Junction Temperature	110	$^\circ\text{C}$
Operating Ambient Temperature Range	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	-40 to +100	$^\circ\text{C}$
Soldering Temperature	Refer to figure 7	

Note:

1. DC forward current – derate linearly based on Figure 5.
2. Pulse condition duty factor = 10%, Frequency = 1kHz.

Optical Characteristics ($T_A = 25^\circ\text{C}$)

Part Number	Color	Typical Chromaticity Coordinates		Viewing Angle $2\theta_{1/2}$ ^[1] (Degrees)	Luminous Efficiency (lm/W)
		x	y	Typ	Typ
ASMT-MW01	White	0.33	0.33	110	22

Notes:

1. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is $1/2$ the peak intensity.

Electrical Characteristic ($T_A = 25^\circ\text{C}$)

Dice Type	Forward Voltage V_F (Volts) @ $I_F = 350\text{mA}$		Reverse Voltage V_R ^[1]	Thermal Resistance $R_{\theta j-ms}$ ($^\circ\text{C/W}$) ^[2]
	Typ	Max.		Typ.
InGaN	3.6	4.0	Not recommended	10

Note:

1. Not designed for reverse bias operation.
2. $R_{\theta j-ms}$ is Thermal Resistance from LED junction to metal slug.

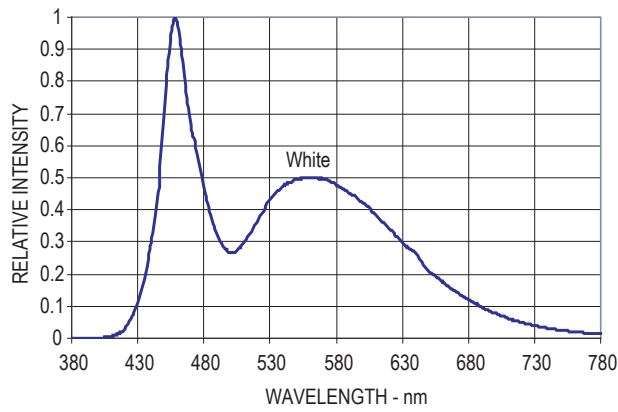


Figure 1. Relative intensity vs. wavelength

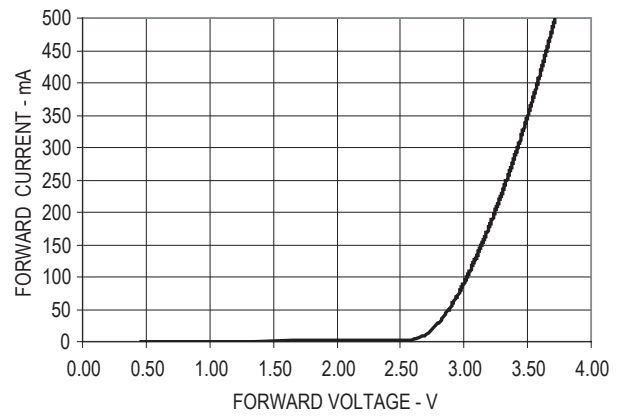


Figure 2. Forward Current vs Forward Voltage

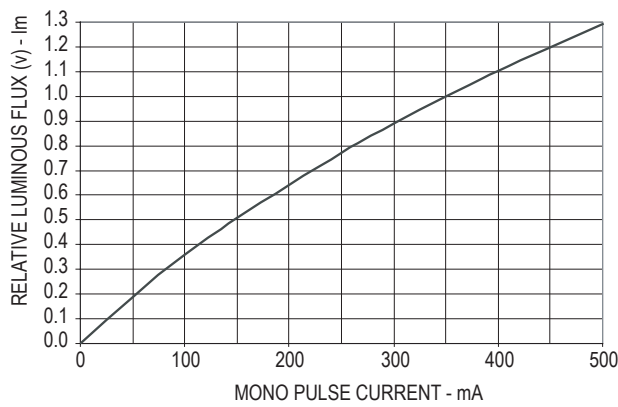


Figure 3. Relative Luminous Flux vs. Mono Pulse Current

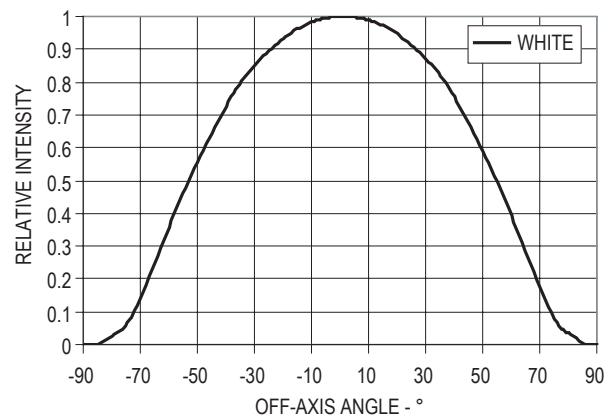


Figure 4. Radiation Pattern

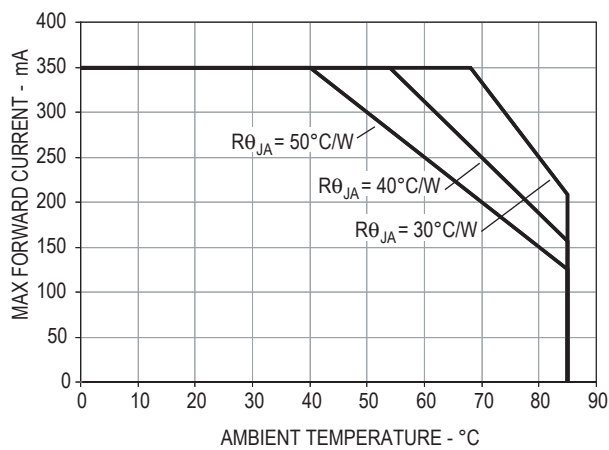


Figure 5. Maximum forward current vs. ambient temperature
Derated based on $T_{JMAX} = 110^{\circ}C$, $R\theta_{JA} = 30^{\circ}C/W$ / $40^{\circ}C/W$ and $50^{\circ}C/W$

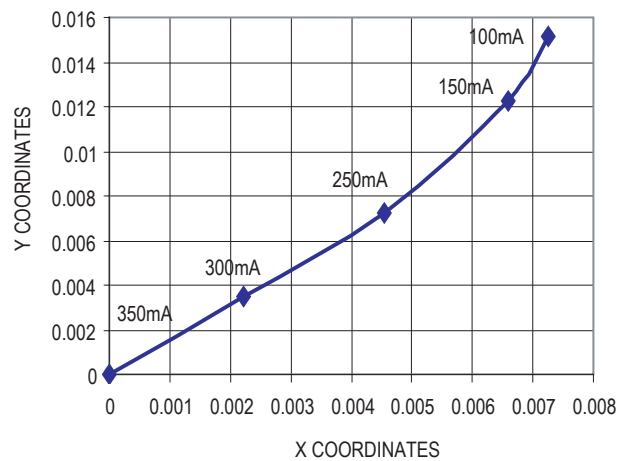


Figure 6. Chromaticity shift vs. current
*Note: (x,y) values @ 350mA reference to (0.0)

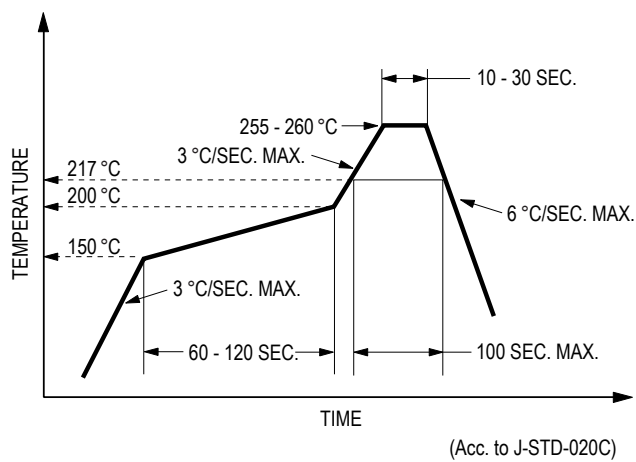


Figure 7. Recommended Reflow Soldering

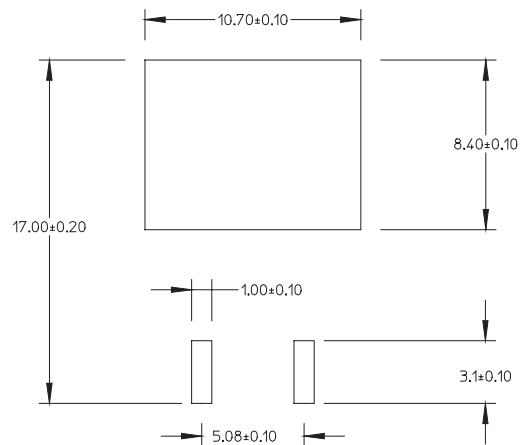


Figure 8. Recommended soldering land pattern

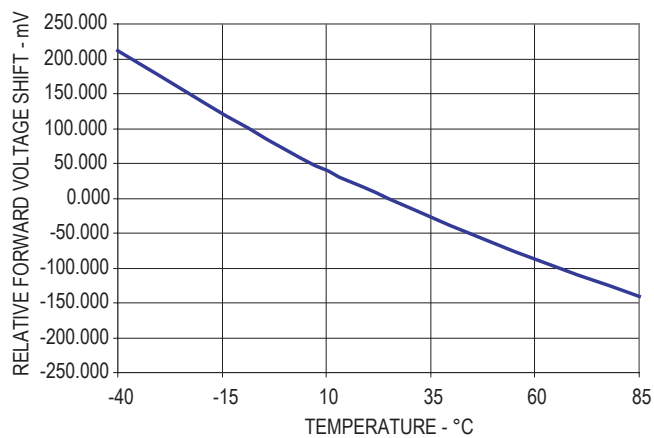


Figure 9. Temperature vs. relative forward voltage shift

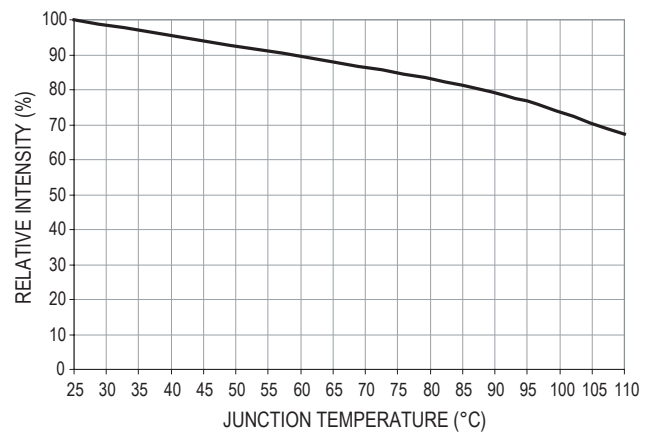


Figure 10. Relative LOP vs. junction temperature

Flux Bin Limit (For reference only) [X₁ X₂]

Bin	Flux (lm) at 350mA	
	Min	Max
F	19.5	25.5
G	25.5	33.0
H	33.0	43.0

Tolerance for each bin limits is $\pm 10\%$

Color Bin Selections [X₃]

Individual reel will contain parts from one full bin only.

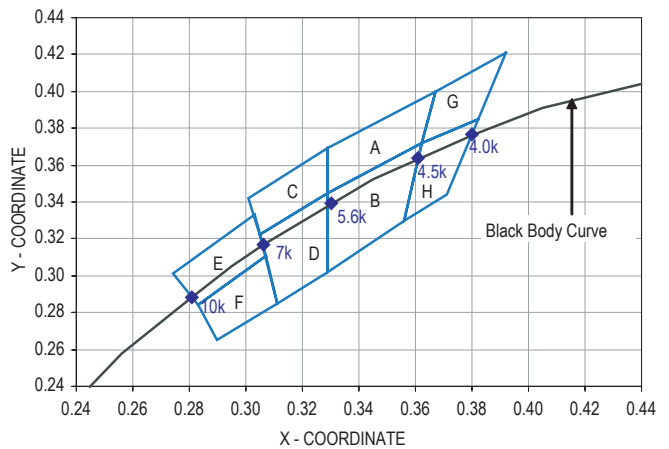
O	Full Distribution
A	A only
B	B only
C	C only
D	D only
E	E only
F	F only
G	G only
H	H only
Z	A and B only
Y	B and C only
W	C and D only
V	D and E only
U	E and F only
T	F and G only
S	G and H only
Q	A, B and C only
P	B, C and D only
N	C, D and E only
M	D, E and F only
L	E, F and G only
K	F, G and H only
J	Special Color Bin
1	A, B, C and D only
2	E, F, G and H only
3	B, C, D and E only
4	C, D, E and F only
5	A, B, C, D and E only
6	B, C, D, E, and F only

White Color Limits

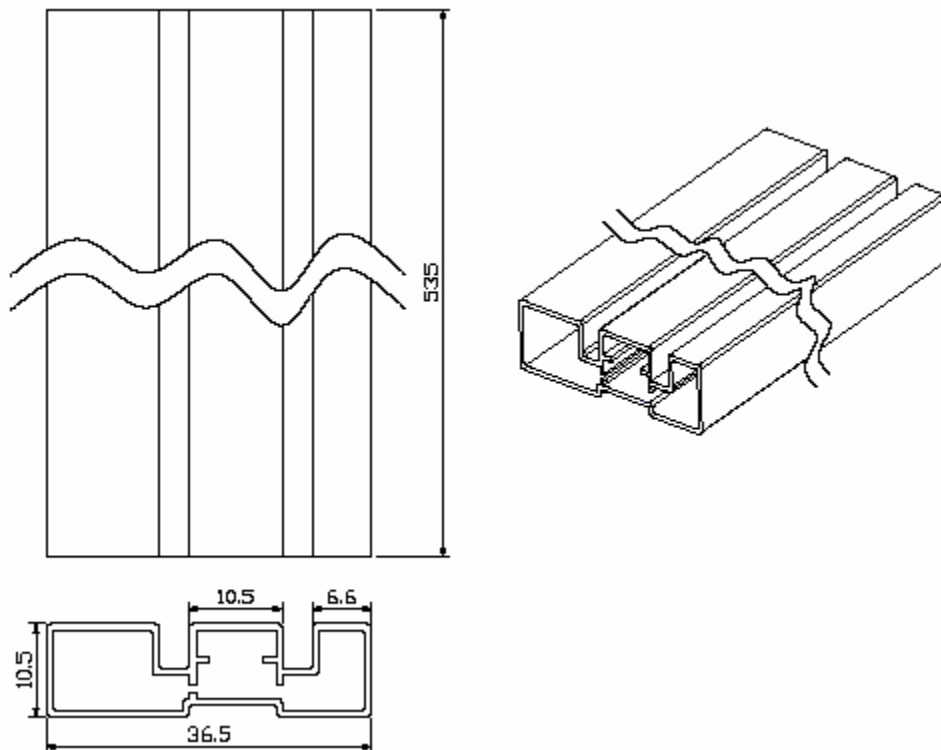
(Chromaticity Coordinates)

White	Color Limits (Chromaticity Coordinates)				
Bin A	X	0.367	0.362	0.329	0.329
	Y	0.400	0.372	0.345	0.369
Bin B	X	0.362	0.356	0.329	0.329
	Y	0.372	0.330	0.302	0.345
Bin C	X	0.329	0.329	0.305	0.301
	Y	0.369	0.345	0.322	0.342
Bin D	X	0.329	0.329	0.311	0.305
	Y	0.345	0.302	0.285	0.322
Bin E	X	0.303	0.307	0.283	0.274
	Y	0.333	0.311	0.284	0.301
Bin F	X	0.307	0.311	0.290	0.283
	Y	0.311	0.285	0.265	0.284
Bin G	X	0.388	0.379	0.362	0.367
	Y	0.417	0.383	0.372	0.400
Bin H	X	0.379	0.369	0.356	0.362
	Y	0.383	0.343	0.330	0.372

Tolerances ± 0.01



Package Tube Dimensions



Handling Precaution

The encapsulation material of the product is made of silicone for better reliability of the product. As silicone is a soft material, please do not press on the silicone or poke a sharp object onto the silicone. These might damage the product and cause premature failure. During assembly or handling, the unit should be held on the body (white epoxy).

Moisture Sensitivity

This product is classified as moisture sensitive level 2A

When the bag is opened, parts required to mount within 672 hours of factory conditions $\leq 30^{\circ}\text{C}/60\%$, and stored at $<10\%$ RH.

Devices required bake, before mounting if:

- a) The humidity indicator card is $>10\%$ when read at $23\pm5^{\circ}\text{C}$
 - b) The pack has been opened for more than 672 hours.
- Baking recommended condition: $60\pm5^{\circ}\text{C}$ for 20 hours.

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