ASMT-Mx20
3W Power LED Light Source

Data Sheet

Lead (Pb) Free
RoHS 6 fully
compliant

Description

3W 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 mother-board.

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 process. This will give more freedom and flexibility to the light source designer.

Features

- Available in white color
- Energy efficient
- Exposed pad for excellent heat transfer
- Suitable for reflow soldering process
- High current operation up to 700 mA
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- ESD of 2 kV
- MSL 2A

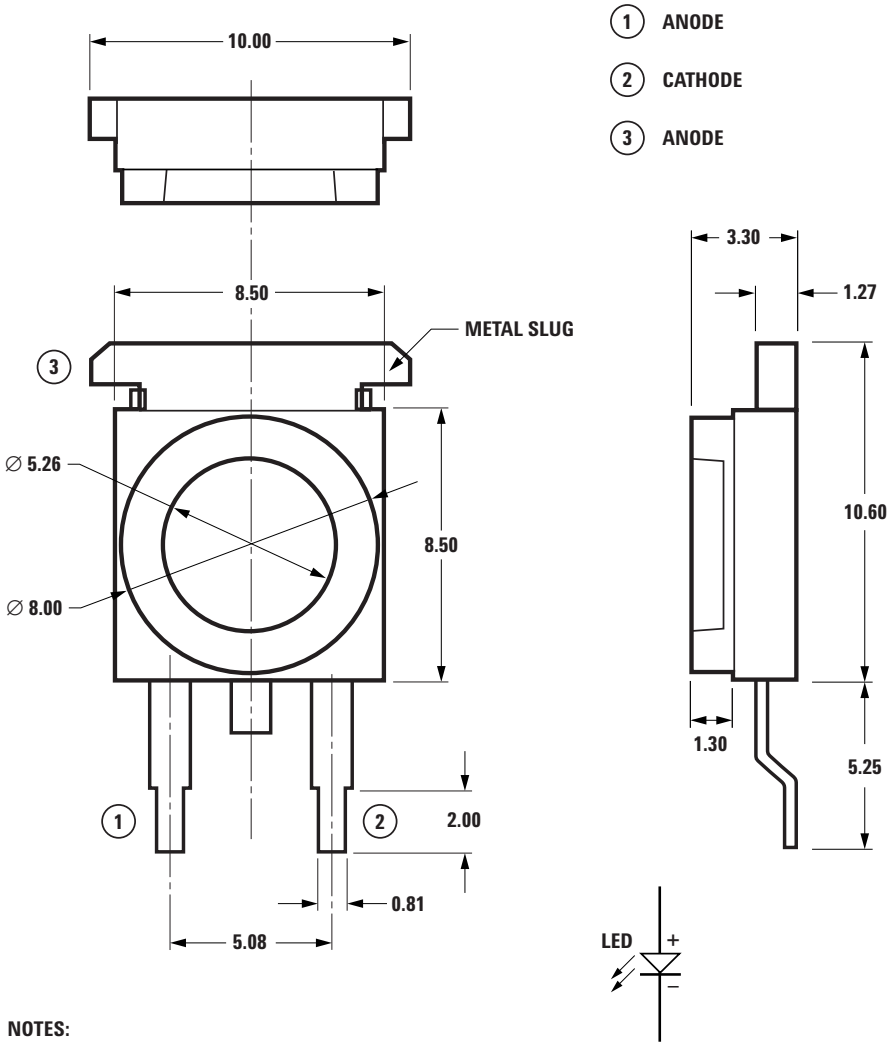
Specifications

- InGaN technology
- 4.0 V, 700 mA (max.)
- 110 viewing angle

Applications

- Portable (flash light, bicycle headlight)
- Reading light
- Architectural lighting
- Garden lighting
- Decorative lighting
- Backlighting
- General lighting

Package Dimensions



NOTES:
1. **ALL DIMENSIONS IN MILLIMETERS.**
2. **TOLERANCE IS ± 0.1 mm UNLESS OTHERWISE SPECIFIED.**

Device Selection Guide at Junction Temperature Tj = 25°C

Color	Part Number	Luminous Flux, Φ_v [1][2] (lm) Min.	Typ.	Test Current (mA)	Dice Technology
White	ASMT-MW20	95	140	700	InGaN

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

Part Numbering System

ASMT-M x 20 – N x_1 x_2 x_3 0

- x_3 – Color Bin Selection
- x_2 – Max. Flux Bin Selection
- x_1 – Min. Flux Bin Selection
- x – Color
  - W – White

Absolute Maximum Ratings at $T_A = 25°C$

Parameter	ASMT-Mx20	Units
DC Forward Current	700	mA
Peak Pulsing Current[1]	1000	mA
LED Junction Temperature	120	°C
Operating Ambient Temperature Range	-30 to +85	°C
Storage Temperature Range	-40 to +120	°C
Soldering Temperature	Refer to Figure 5	

Note:

1. Pulse condition duty factor = 10%, Frequency = 1 kHz.

Optical Characteristics ($T_A = 25°C$)

Part Number	Color	Typical Chromaticity Coordinates x	y	Viewing Angle $2\theta_{1/2}$[1] (Degrees) Typ.	Luminous Efficiency (lm/W) Typ.
ASMT-MW20	White	0.33	0.33	110	57

Notes:

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

Electrical Characteristic ($T_A = 25°C$)

Dice Type	Forward Voltage V_F (Volts) Min.	Max.	Reverse Voltage V_R[1]	Thermal Resistance $R_{\Theta j\text{-}ms}$ (°C/W)[2] Typ.
InGaN	3.03	4.00	Not recommended	8

Notes:

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

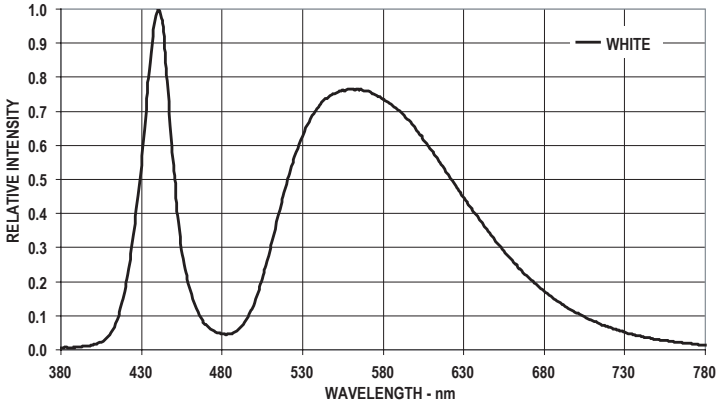


Figure 1. Relative intensity vs. wavelength

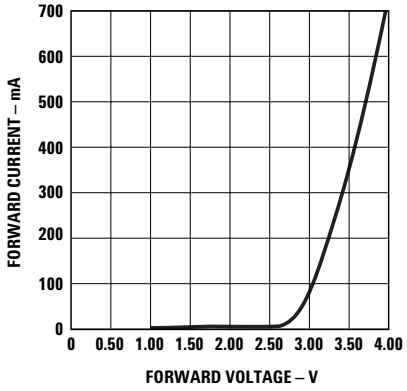


Figure 2. Forward current vs. forward voltage

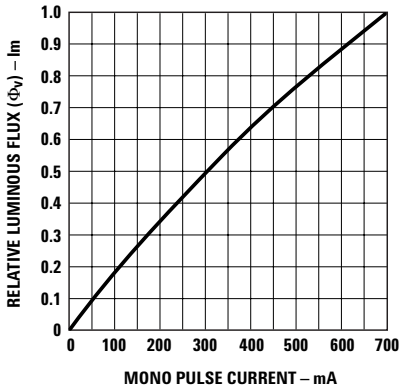


Figure 3. Relative luminous flux vs. mono pulse current

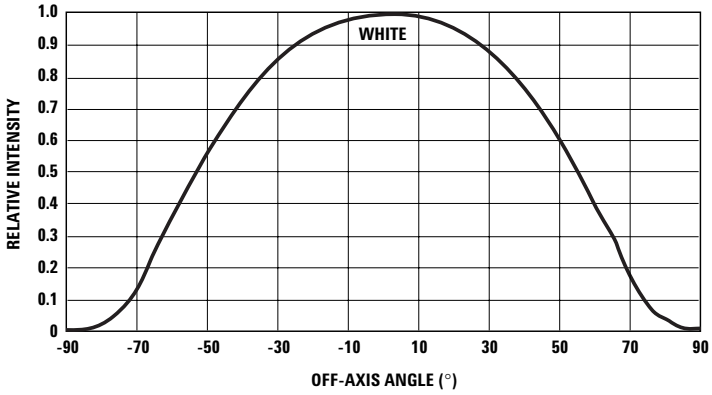


Figure 4. Radiation pattern

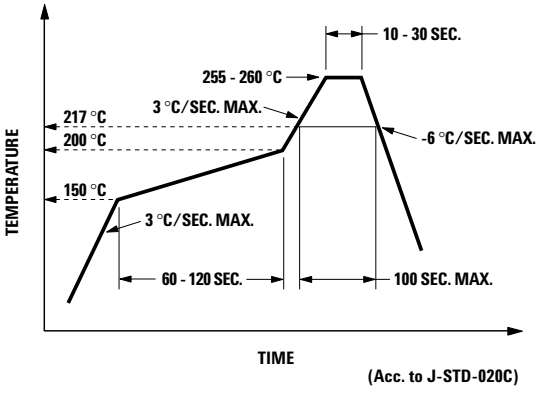


Figure 5. Recommended reflow soldering

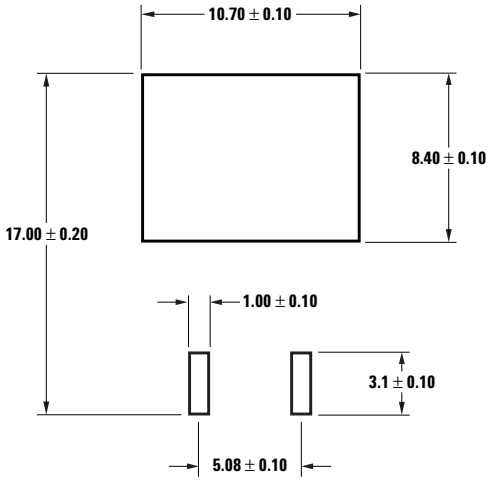


Figure 6. Recommended soldering land pattern

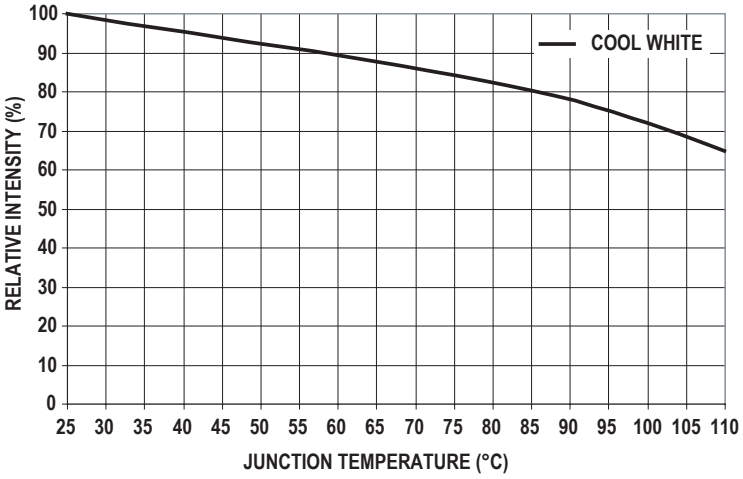


Figure 7. Relative LOP vs. junction temperature

Flux Bin Limit (for Reference Only) [X_1 X_2]

	Flux (lm) at 700 mA	
Bin	**Min.**	**Max.**
A	5.5	7.0
B	7.0	9.0
C	9.0	11.5
D	11.5	15.0
E	15.0	19.5
F	19.5	25.5
G	25.5	33.0
H	33.0	43.0
J	43.0	56.0
K	56.0	73.0
L	73.0	95.0
M	95.0	124.0
N	124.0	161.0

Tolerance for each bin limits is ±10%

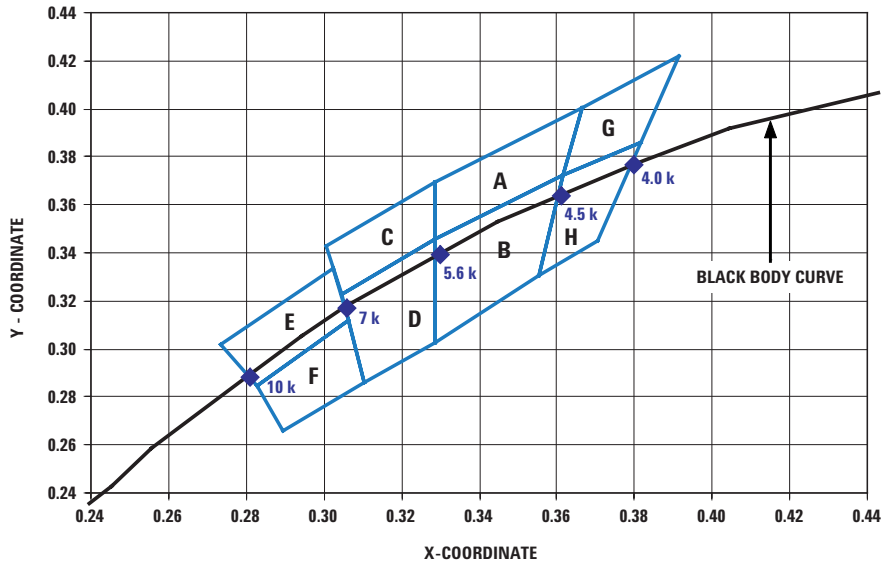
Color Bin Selections [X_3]

Individual reel will contain parts from one full bin only.

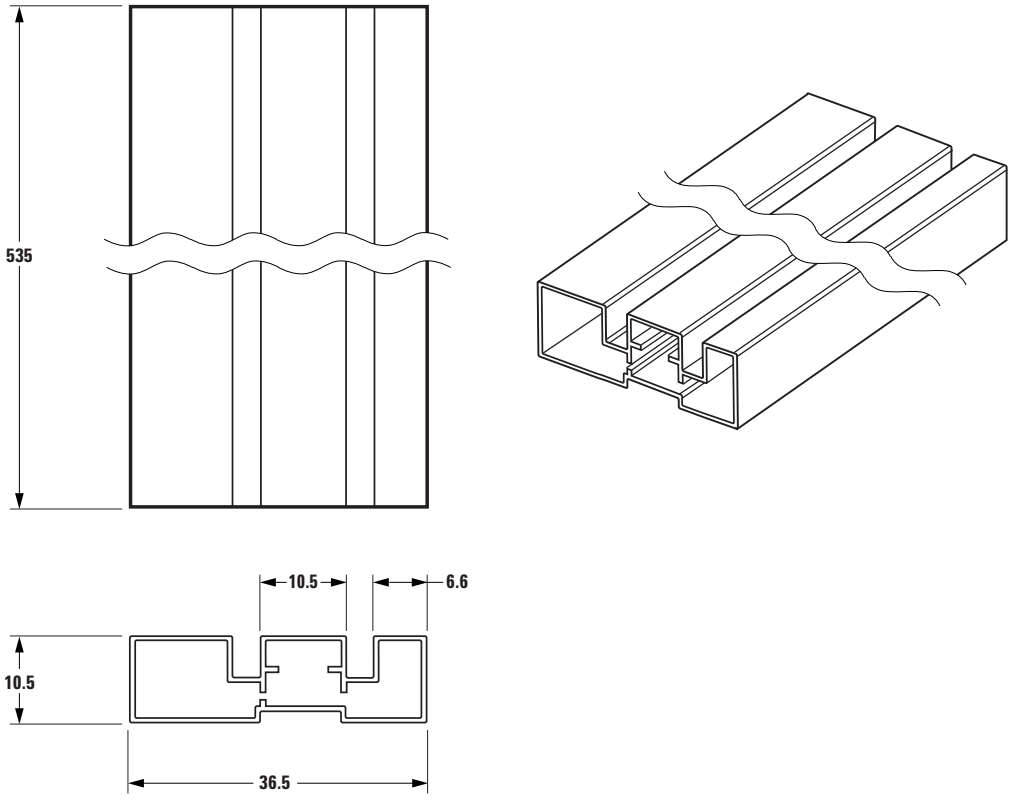
0	Full Distribution
A	A only
B	B only
C	C only
D	D only
E	E only
F	F only
Z	A and B only
Y	B and C only
W	C and D only
V	D and E only
U	E and F only
T	F and G only
S	G and H only
Q	A, B and C only
P	B, C and D only
N	C, D and E only
M	D, E and F only
L	E, F and G only
K	F, G and H only
J	Special Color 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)				
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).

This product is classified as moisture sensitive level 2A

When the bag is opened, parts required to mount within 672 hours of factory conditions ≤30°C/60%, and stored at <10% RH.

Devices required bake, before mounting if:

a) The humidity indicator card is >10% when read at 23 ± 5°C

b) The pack has been opened for more than 672 hours.

Baking recommended condition: 60 ± 5°C for 20 hours.

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