ASMT-Jx32

3W Mini Power LED Light Source

Data Sheet

Lead (Pb) Free
RoHS 6 fully
compliant

Description

The 3W Mini Power LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The metal slug is electrically isolated.

The White Mini Power LED is available in the range of color temperature from 2700K to 10000K.

The low profile package design and ultra small footprint is suitable for a wide variety of applications especially where space and height is a constraint.

The package is compatible with reflow soldering process. To facilitate easy pick & place assembly, the LEDs are packed in EIA-compliant tape and reel.

Features

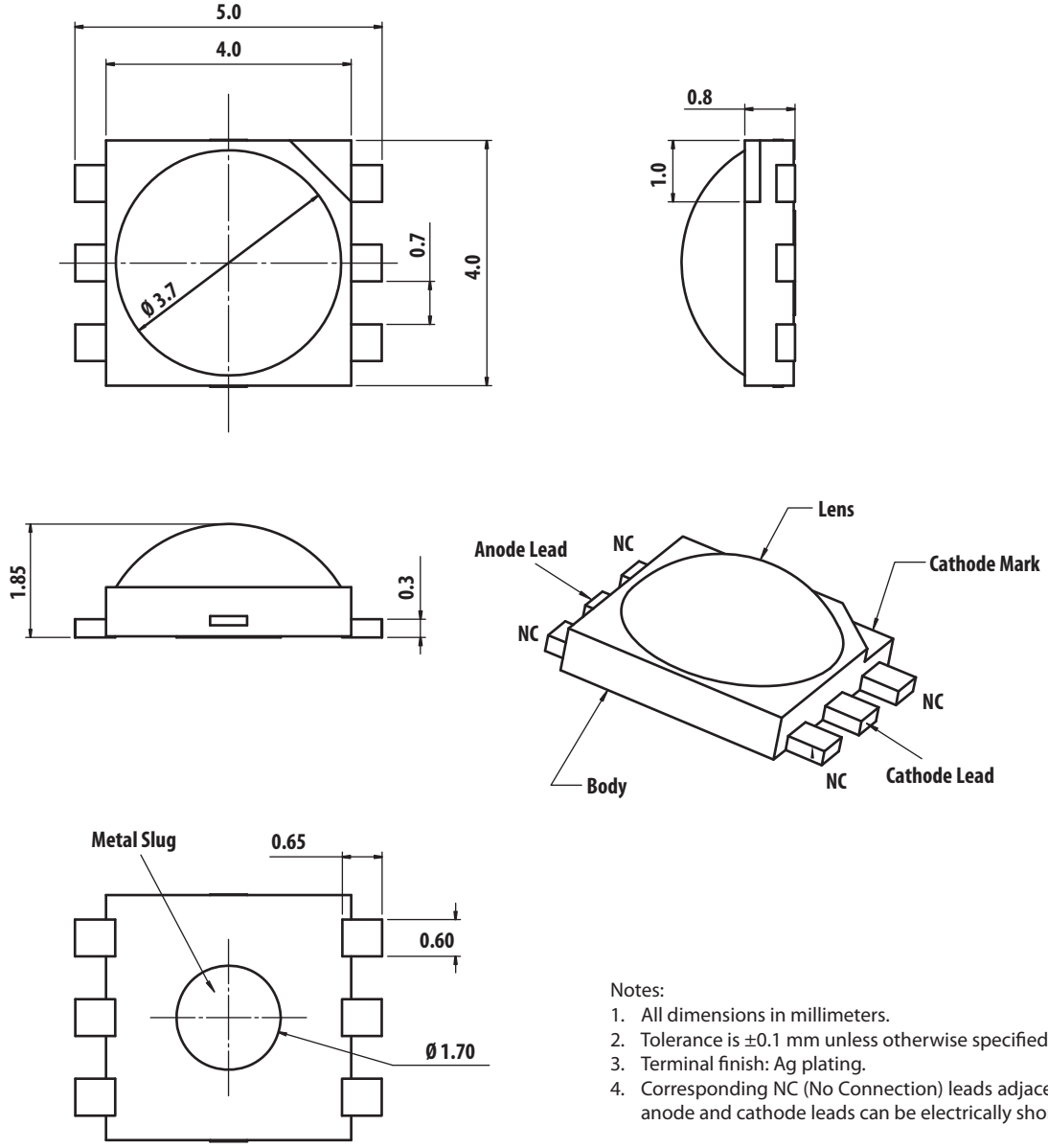
- Available in Cool White, Neutral White and Warm White
- Small footprint and low profile
- Symmetrical outline
- Energy efficient
- Direct heat transfer from metal slug to mother board
- Compatible with reflow soldering process
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Non-ESD sensitive (threshold > 16kV)
- MSL 1 products

Applications

- Sign backlight
- Safety, exit and emergency sign lightings
- Specialty lighting such as task lighting and reading lights
- Retail display
- Commercial lighting
- Accent or marker lightings, strip or step lightings
- Portable lightings, bicycle head lamp, torch lights
- Decorative lighting
- Architectural lighting
- Pathway lighting
- Street lighting
- Pedestrian street lighting
- Tunnel lighting

CAUTION: *Customer is advised to keep the LEDs in the MBB when not in use as prolonged exposure to environment might cause the silver plated leads to tarnish, which might cause difficulties in soldering.*

Package Dimensions



Notes:
1. All dimensions in millimeters.
2. Tolerance is ±0.1 mm unless otherwise specified.
3. Terminal finish: Ag plating.
4. Corresponding NC (No Connection) leads adjacent to anode and cathode leads can be electrically short.

Figure 1. ASMT-Jx32 package outline drawing

Part Numbering System

ASMT- J x_1 3 2 – x_2 x_3 x_4 x_5 x_6

Packaging Option

Color Bin Selection

Maximum Flux Bin Selection

Minimum Flux Bin Selection

Dice Type
N – InGaN

Color
W – Cool White
N – Neutral White
Y – Warm White

Note:
1. Please refer to Page 8 for selection details.

Device Selection Guide (T_J = 25°C)

		Luminous Flux (Im), Φ_V[1,2]					Electrically
Part Number	Color	Min.	Typ.	Max.	Test Current (mA)	Dice Technology	Isolated Metal Slug
ASMT-JW32-NUV01	Cool White	87.4	100.0	113.6	350	InGaN	Yes
ASMT-JW32-NVV01		99.6	105.0	113.6	350	InGaN	Yes
ASMT-JN32-NUV01	Neutral White	87.4	100.0	113.6	350	InGaN	Yes
ASMT-JN32-NVV01		99.6	105.0	113.6	350	InGaN	Yes
ASMT-JY32-NTV01	Warm White	67.2	85.0	113.6	350	InGaN	Yes

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 ±10%

Absolute Maximum Ratings

Parameter	ASMT-Jx32	Units
DC Forward Current [1]	700	mA
Power Dissipation	3010	mW
LED Junction Temperature	135	°C
Operating Metal Slug Temperature Range at 350 mA	-40 to +120	°C
Operating Metal Slug Temperature Range at 700 mA	-40 to +105	°C
Storage Temperature Range	-40 to + 120	°C
Soldering Temperature	Refer to Figure. 13	
Reverse Voltage [2]	Not recommended	

Notes:
1. Derate linearly based on Figure 9.
2. Not designed for reverse bias operation.

Optical Characteristics at 350 mA ($T_J = 25°C$)

		Correlated Color Temperature, CCT (Kelvin)		Viewing Angle, $2\theta_{½}$ [1] (°)	Luminous Efficiency (lm/W)
Part Number	**Color**	**Min.**	**Max.**	**Typ.**	**Typ.**
ASMT-JW32-NUV01	Cool White	4500	10000	140	89
ASMT-JW32-NVV01		4500	10000	140	94
ASMT-JN32-NUV01	Neutral White	3500	4500	140	89
ASMT-JN32-NVV01		3500	4500	140	94
ASMT-JY32-NTV01	Warm White	2700	3500	140	76

Note:
1. $\theta_{½}$ is the off-axis angle where the luminous intensity is ½ the peak intensity.

Electrical Characteristic at 350 mA ($T_J = 25°C$)

	Forward Voltage, V_F (Volts)			Thermal Resistance, $R\theta_{J-MS}$(°C/W) [1]
Dice Type	**Min.**	**Typ**	**Max.**	**Typ.**
InGaN	2.8	3.2	3.5	9

Note:
1. $R\theta_{J-MS}$ is Thermal Resistance from LED junction to metal slug.

Optical and Electrical Characteristic at 700 mA ($T_J = 25°C$)

		Luminous Flux (lm), ϕ_V	Forward Voltage, V_F (Volts)
Part Number	**Color**	**Typ.**	**Typ.**
ASMT-JW32-NUV01	Cool White	175.0	3.6
ASMT-JW32-NVV01		180.0	3.6
ASMT-JN32-NUV01	Neutral White	175.0	3.6
ASMT-JN32-NVV01		180.0	3.6
ASMT-JY32-NTV01	Warm White	140.0	3.6

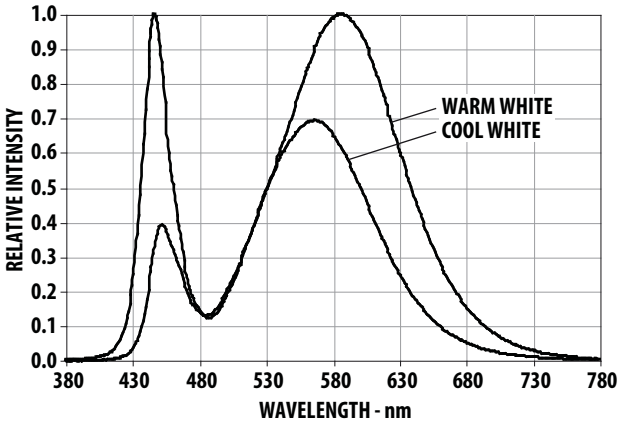


Figure 2. Relative Intensity vs. Wavelength for Cool White and Warm White

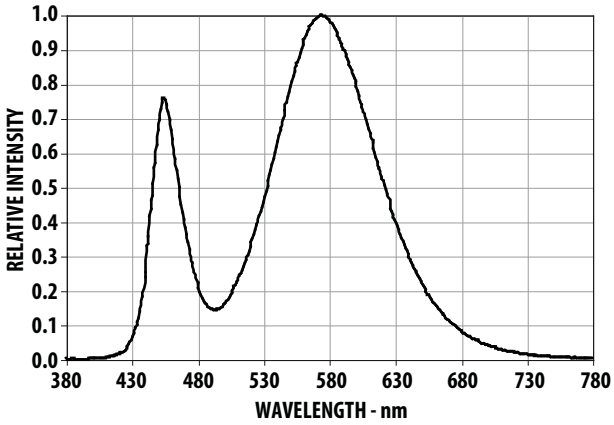


Figure 3. Relative Intensity vs. Wavelength for Neutral White

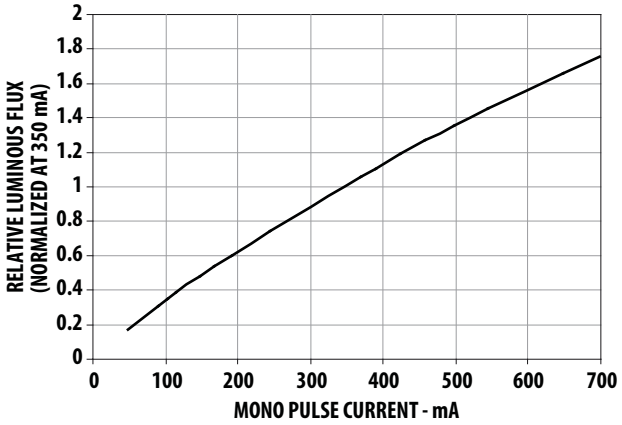


Figure 4. Relative Luminous Flux vs. Mono Pulse Current

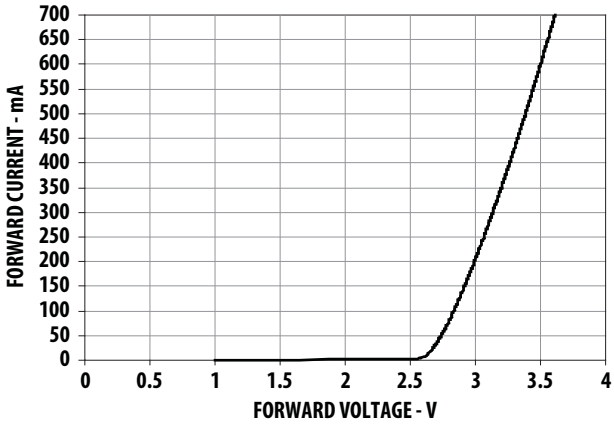


Figure 5. Forward Current vs. Forward Voltage

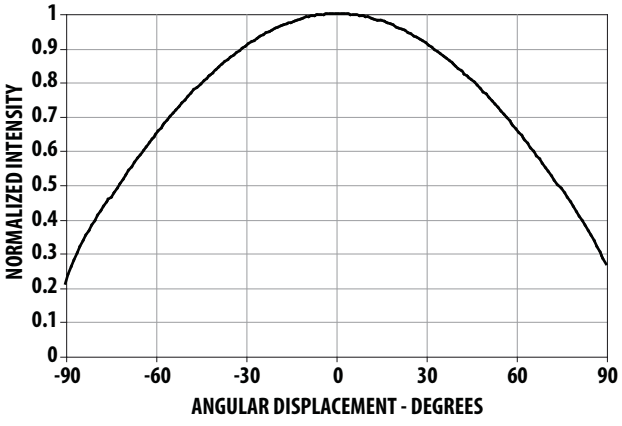


Figure 6. Radiation Pattern for Cool White, Warm White and Neutral White

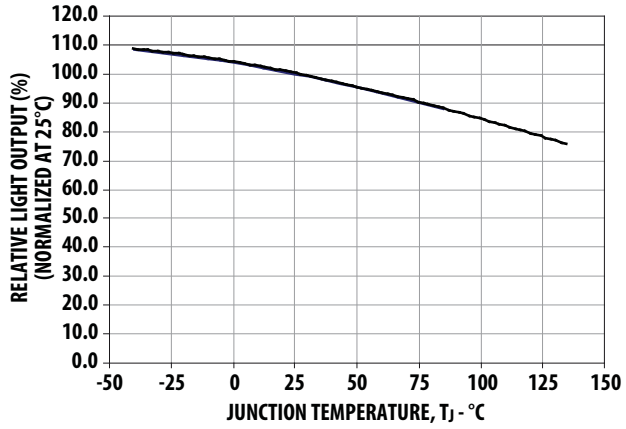


Figure 7. Relative Light Output vs. Junction Temperature

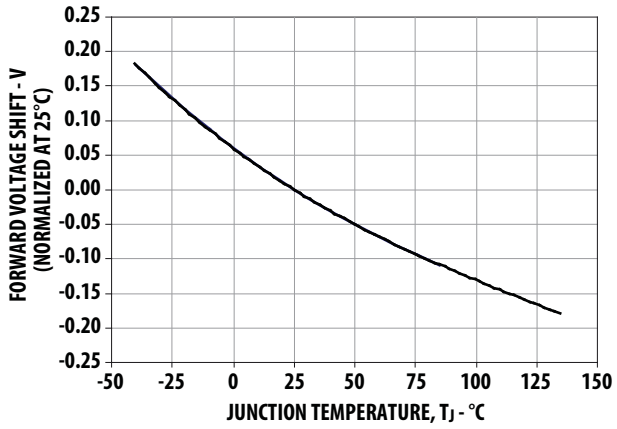


Figure 8. Forward Voltage Shift vs. Junction Temperature

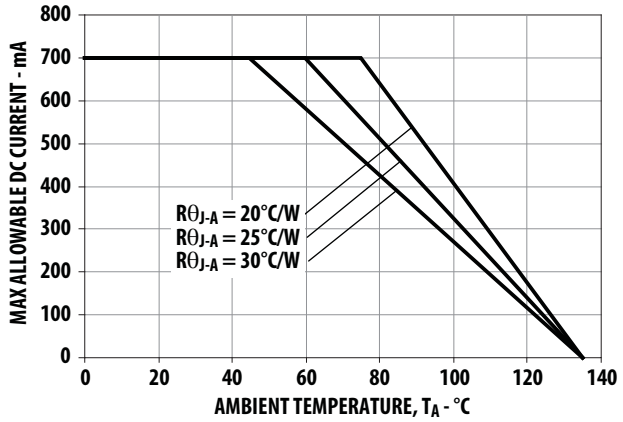


Figure 9. Maximum Forward Current vs. Ambient Temperature. Derated based on T_{JMAX} = 125°C, $R\theta_{J\text{-}A}$ = 20°C/W, 25°C/W and 30°C/W

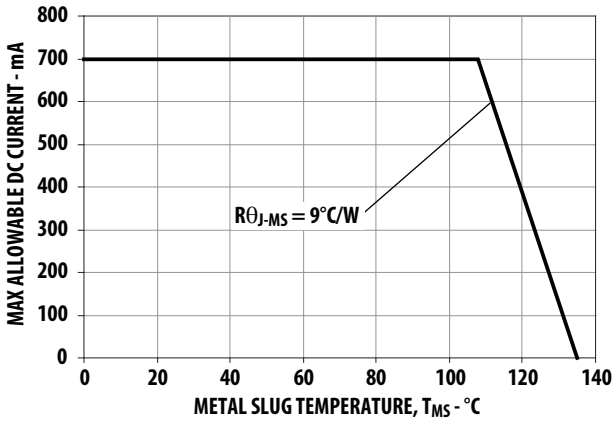


Figure 10. Maximum Forward Current vs. Metal Slug Temperature. Derated based on T_{JMAX} = 125°C, $R\theta_{J\text{-}MS}$ = 9°C/W

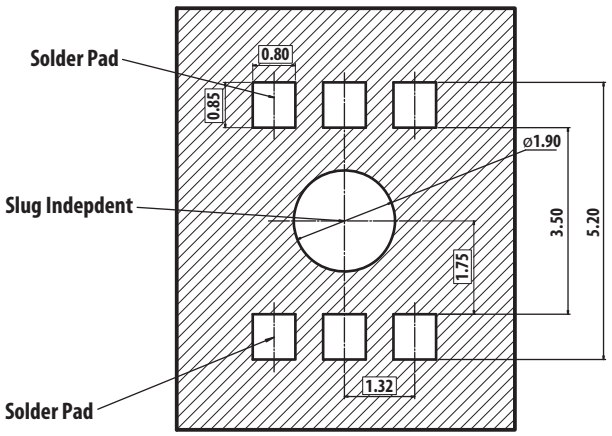


Figure 11. Recommended soldering land pattern

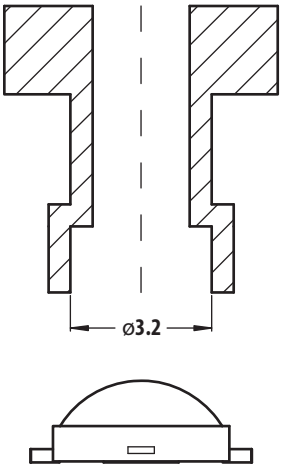


Figure 12. Recommended pick and place nozzle tip. Inner diameter = 3.2 mm

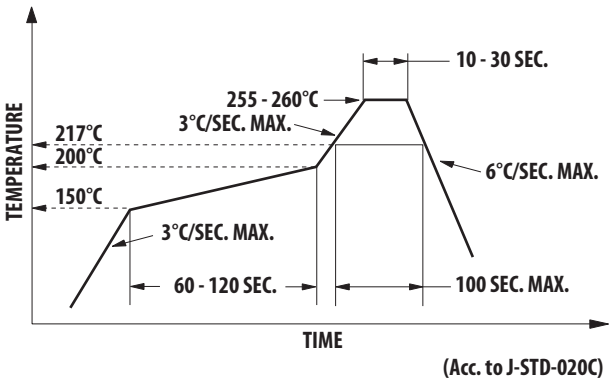


Figure 13. Recommended Reflow Soldering Profile

Note:
For detail information on reflow soldering of Avago surface mount LEDs, do refer to Avago Application Note AN1060 Surface Mounting SMT LED Indicator Components.

Option Selection Details

ASMT-J x_1 3 2 – x_2 x_3 x_4 x_5 x_6

x_3 – Minimum Flux Bin Selection

x_4 – Maximum Flux Bin Selection

x_5 – Color Bin Selection

x_6 – Packaging Option

Flux Bin Limit [x_3, x_4]

	Luminous Flux (lm) at 350 mA	
Bin ID	**Min.**	**Max.**
T	67.2	87.4
U	87.4	99.6
V	99.6	113.6

Color Bin Selection [x_5]

Individual reel will contain parts from one color bin selection only.

Cool White

Selection	Bin ID
0	Full Distribution
E	VM, UM, VN and UN
F	WM, VM, WN and VN
G	XM, WM, XN and WN
H	UN, VN, U0 and V0
J	WN, VN, W0 and V0
K	XN, WN, X0 and W0
L	V0, U0, VP and UP
M	W0, V0, WP, VP and WQ
N	X0, W0, XP, WP and WQ
P	Y0
Q	YA

W**arm White**

Selection	Bin ID
0	Full Distribution
E	NM, MM, N1 and M1
F	PM, NM, P1 and N1
G	QM, PM, Q1 and P1
H	M1, N1, M0 and N0
J	P1, N1, P0 and N0
K	Q1, P1, Q0 and P0
L	N0, M0, NA and MA
M	P0, N0, PA and NA
N	Q0, P0, QA and PA

Neutral White

Selection	Bin ID
0	Full Distribution
E	SM, RM, S1 and R1
F	TM, SM, TN and S1
G	S1, R1, S0 and R0
H	TN, S1, T0 and S0
J	S0, R0, SA and RA
K	T0, S0, TP and SA

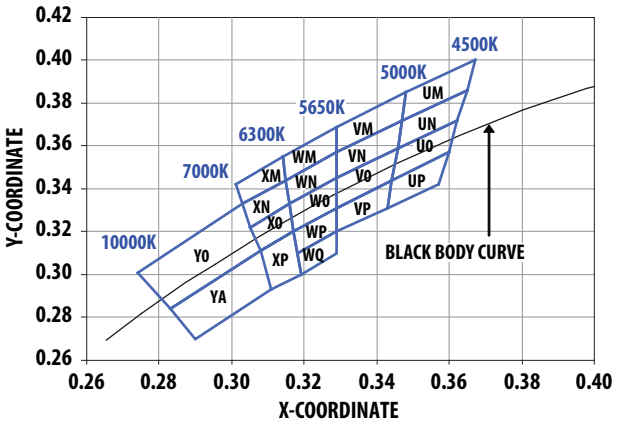


Figure 14. Color bin Structure for Cool White

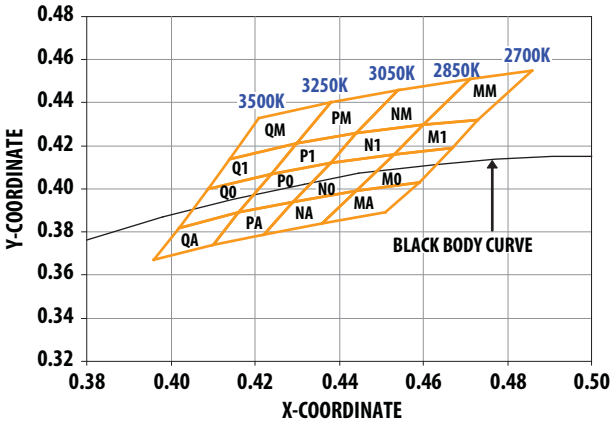


Figure 15. Color bin structure for Warm White

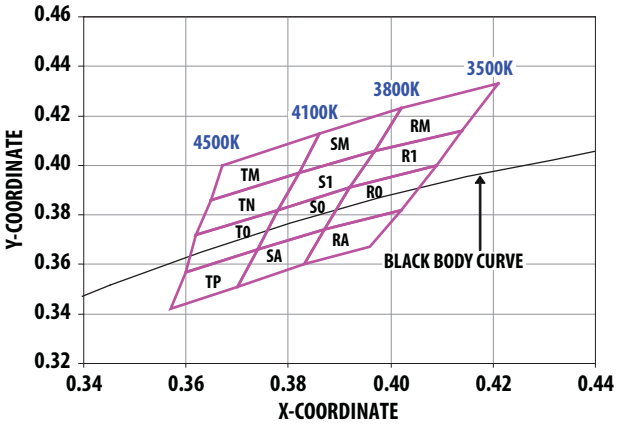


Figure 16. Color bin structure for Neutral White

Color Bin Limits

Cool White	Color Limits (Chromaticity Coordinates)				
Bin UM	x	0.365	0.367	0.348	0.347
	y	0.386	0.400	0.385	0.372
Bin UN	x	0.365	0.362	0.346	0.347
	y	0.386	0.372	0.359	0.372
Bin U0	x	0.362	0.360	0.344	0.346
	y	0.372	0.357	0.344	0.359
Bin UP	x	0.360	0.357	0.343	0.344
	y	0.357	0.342	0.331	0.344
Bin VM	x	0.329	0.329	0.348	0.347
	y	0.357	0.369	0.385	0.372
Bin VN	x	0.329	0.329	0.347	0.346
	y	0.345	0.357	0.372	0.359
Bin V0	x	0.329	0.329	0.346	0.344
	y	0.331	0.345	0.359	0.344
Bin VP	x	0.329	0.344	0.343	0.329
	y	0.331	0.344	0.331	0.320
Bin WM	x	0.329	0.329	0.315	0.314
	y	0.369	0.357	0.344	0.355
Bin WN	x	0.329	0.316	0.315	0.329
	y	0.345	0.333	0.344	0.357
Bin W0	x	0.329	0.329	0.317	0.316
	y	0.345	0.331	0.320	0.333
Bin WP	x	0.329	0.329	0.318	0.317
	y	0.331	0.320	0.310	0.320
Bin WQ	x	0.329	0.329	0.319	0.318
	y	0.320	0.310	0.300	0.310
Bin XM	x	0.301	0.314	0.315	0.303
	y	0.342	0.355	0.344	0.333
Bin XN	x	0.305	0.303	0.315	0.316
	y	0.322	0.333	0.344	0.333
Bin X0	x	0.308	0.305	0.316	0.317
	y	0.311	0.322	0.333	0.320
Bin XP	x	0.308	0.317	0.319	0.311
	y	0.311	0.320	0.300	0.293
Bin YO	x	0.308	0.283	0.274	0.303
	y	0.311	0.284	0.301	0.333
Bin YA	x	0.308	0.311	0.290	0.283
	y	0.311	0.293	0.270	0.284

Tolerance: ±0.01

Warm White	Color Limits (Chromaticity Coordinates)				
Bin MM	x	0.471	0.460	0.473	0.486
	y	0.451	0.430	0.432	0.455
Bin M1	x	0.460	0.453	0.467	0.473
	y	0.430	0.416	0.419	0.432
Bin M0	x	0.453	0.444	0.459	0.467
	y	0.416	0.399	0.403	0.419
Bin MA	x	0.459	0.444	0.436	0.451
	y	0.403	0.399	0.384	0.389
Bin NM	x	0.454	0.444	0.460	0.471
	y	0.446	0.426	0.430	0.451
Bin N1	x	0.444	0.438	0.453	0.460
	y	0.426	0.412	0.416	0.430
Bin N0	x	0.438	0.429	0.444	0.453
	y	0.412	0.394	0.399	0.416
Bin NA	x	0.444	0.429	0.422	0.436
	y	0.399	0.394	0.379	0.384
Bin PM	x	0.438	0.430	0.444	0.454
	y	0.440	0.421	0.426	0.446
Bin P1	x	0.430	0.424	0.438	0.444
	y	0.421	0.407	0.412	0.426
Bin P0	x	0.424	0.416	0.429	0.438
	y	0.407	0.389	0.394	0.412
Bin PA	x	0.429	0.416	0.410	0.422
	y	0.394	0.389	0.374	0.379
Bin QM	x	0.421	0.414	0.430	0.438
	y	0.433	0.414	0.421	0.440
Bin Q1	x	0.414	0.409	0.424	0.430
	y	0.414	0.400	0.407	0.421
Bin Q0	x	0.409	0.402	0.416	0.424
	y	0.400	0.382	0.389	0.407
Bin QA	x	0.416	0.402	0.396	0.410
	y	0.389	0.382	0.367	0.374

Tolerance: ±0.01

Neutral White	Color Limits (Chromaticity Coordinates)				
Bin RM	x	0.421	0.414	0.397	0.402
	y	0.433	0.414	0.406	0.423
Bin R1	x	0.414	0.409	0.392	0.397
	y	0.414	0.400	0.391	0.406
Bin R0	x	0.392	0.387	0.402	0.409
	y	0.391	0.374	0.382	0.400
Bin RA	x	0.387	0.383	0.396	0.402
	y	0.374	0.360	0.367	0.382
Bin SM	x	0.402	0.397	0.382	0.386
	y	0.423	0.406	0.397	0.413
Bin S1	x	0.397	0.392	0.378	0.382
	y	0.406	0.391	0.382	0.397
Bin S0	x	0.392	0.387	0.374	0.378
	y	0.391	0.374	0.366	0.382
Bin SA	x	0.387	0.383	0.370	0.374
	y	0.374	0.360	0.351	0.366
Bin TM	x	0.386	0.382	0.365	0.367
	y	0.413	0.397	0.386	0.400
Bin TN	x	0.382	0.378	0.362	0.365
	y	0.397	0.382	0.372	0.386
Bin T0	x	0.378	0.374	0.360	0.362
	y	0.382	0.366	0.357	0.372
Bin TP	x	0.374	0.370	0.357	0.360
	y	0.366	0.351	0.342	0.357

Tolerance: ±0.01

Packaging Option [x_6]

Selection	Option
1	Tape and Reel

Example

ASMT-JW32-NUV01

ASMT-JW32-Nxxxx – Cool White, InGaN, Electrically isolated Heat Sink

X_3 = U – Minimum Flux Bin U

X_4 = V – Maximum Flux Bin V

X_5 = 0 – Full Distribution

X_6 = 1 – Tape and Reel Option

Tape and Reel – Option 1

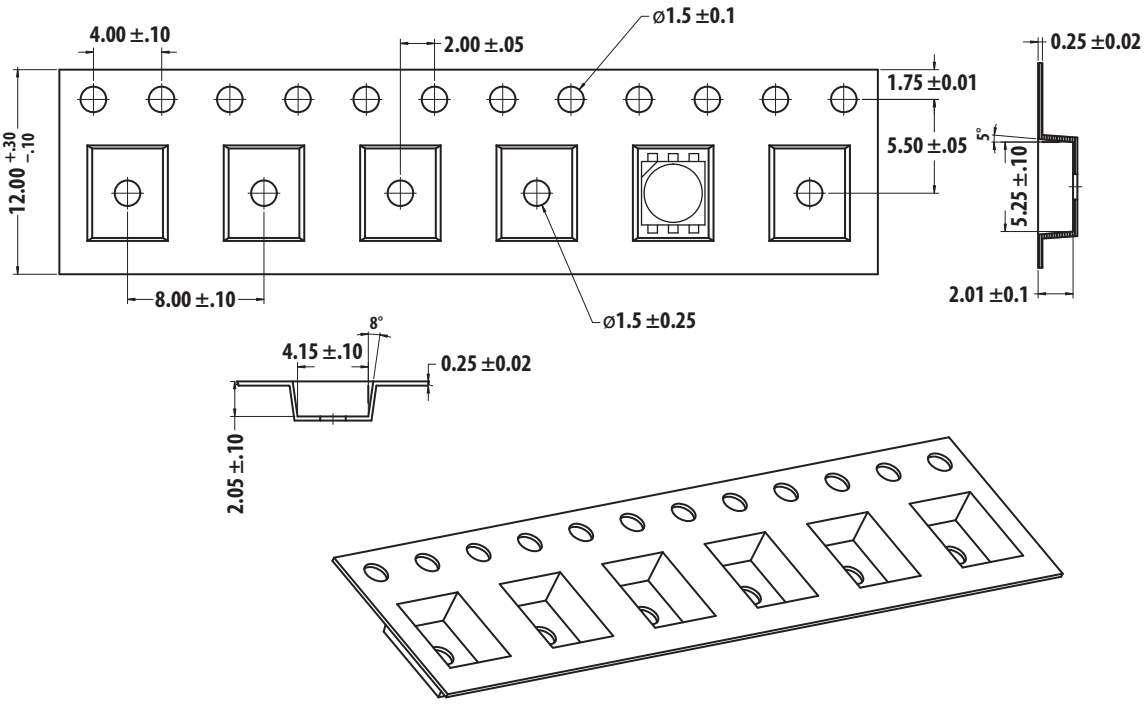
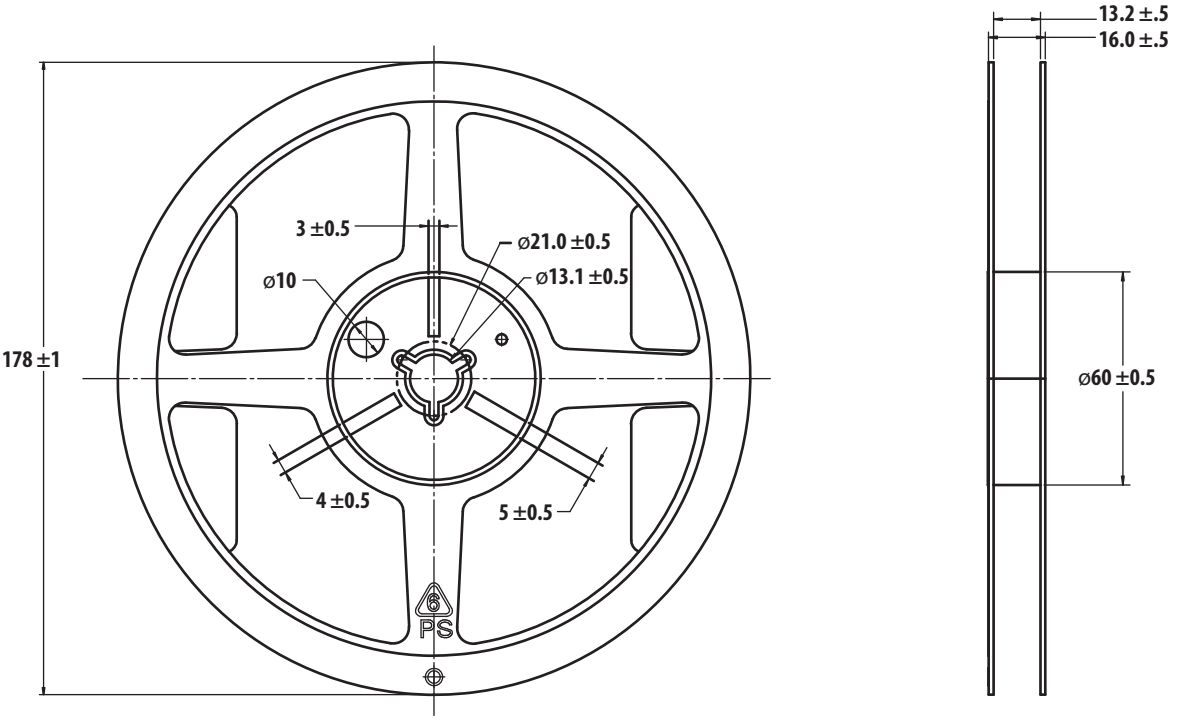


Figure 17. Carrier Tape Dimensions



Notes:
1. Empty component pockets sealed with top cover tape.
2. 250 or 500 pieces per reel.
3. Drawing not to scale.
4. All dimensions are in millimeters.

Figure 18. Reel dimensions

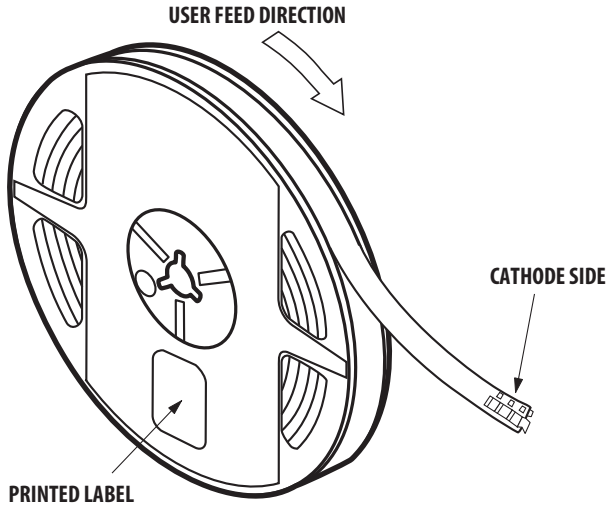


Figure 19. Reeling Orientation

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