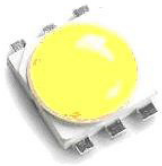
ASMT-Jx33

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 delivers high flux output and possesses high color rendering index. This device can handle high driving current. Option with electrically isolated metal slug is also available.

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

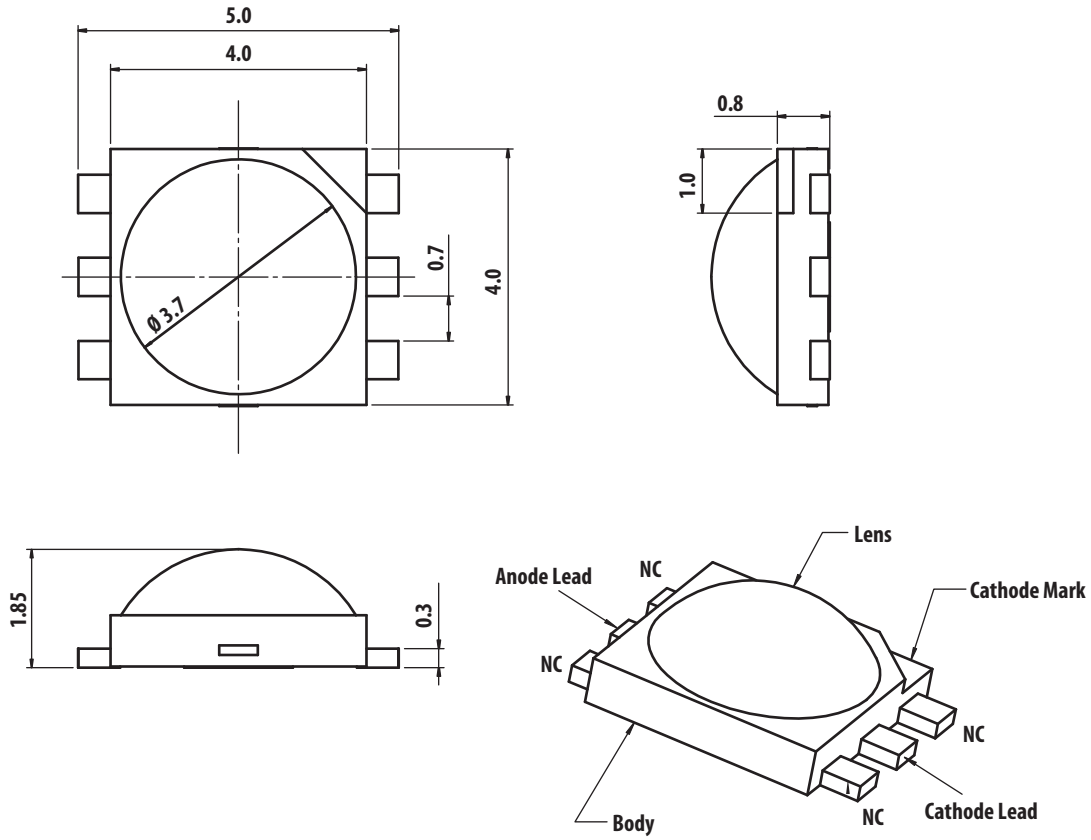
- High Color Rendering Index (CRI)
- Available in Cool White, Neutral White and Warm White
- Small footprint and low profile
- Symmetrical outline
- Energy efficient
- Direct heat transfer from metal slug to mother board
- Compatible with reflow soldering process
- High current operation
- Long operation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

Applications

- Retail lighting
- Display case lighting
- Security lighting
- Commercial lighting such as window decorative lighting in shopping malls
- Architectural 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-Jx33 package outline drawing

Part Numbering System

ASMT- J x_1 33 – N x_2 x_3 x_4 x_5

Packaging Option

Color Bin Selection

Maximum Flux Bin Selection

Minimum Flux Bin Selection

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

Note:
1. Please refer to Page 7 for selection details.

Device Selection Guide (T_J = 25°C)

		Luminous Flux (lm), Φ_V[1,2]					
Part Number	**Color**	**Min.**	**Typ.**	**Max.**	**Test Current (mA)**	**Dice Technology**	**Electrically Isolated Metal Slug**
ASMT-JW33-NSU01	Cool White	51.7	70.0	99.6	350	InGaN	Yes
ASMT-JW33-NUV01		87.4	100.0	113.6	350	InGaN	Yes
ASMT-JN33-NSU01	Neutral White	51.7	70.0	99.6	350	InGaN	Yes
ASMT-JN33-NUV01		87.4	100.0	113.6	350	InGaN	Yes
ASMT-JY33-NQS01	Warm White	30.6	45.0	67.2	350	InGaN	Yes
ASMT-JY33-NRS01		39.8	60.0	67.2	350	InGaN	Yes
ASMT-JY33-NSTJ1		51.7	70.0	87.4	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	**InGaN**	**Units**
DC Forward Current [1]	700	mA
Peak Pulsing Current	2400	mA
Power Dissipation	2730	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 14	
Reverse Voltage [2]	Not recommended	

Notes:
1. Derate linearly based on Figure 10.
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)	Color Rendering Index, CRI
Part Number	**Color**	**Min.**	**Max.**	**Typ.**	**Typ.**	**Typ.**
ASMT-JW33-NSU01	Cool White	4500	10000	140	63	80
ASMT-JW33-NUV01		4500	10000	140	89	80
ASMT-JN33-NSU01	Neutral White	3500	4500	140	63	80
ASMT-JN33-NUV01		3500	4500	140	89	80
ASMT-JY33-NQS01	Warm White	2700	3500	140	40	90
ASMT-JY33-NRS01		2700	3500	140	54	90
ASMT-JY33-NSTJ1		2850	3250	140	63	85

Note:
1. θ½ 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, $R\theta_{J\text{-}MS}$(°C/W) [1]
Dice Type	**Min.**	**Typ**	**Max.**	**Typ.**
InGaN	2.8	3.2	3.5	9

Note:
1. $R\theta_{J\text{-}MS}$ 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-JW33-NSU01	Cool White	125.0	3.6
ASMT-JW33-NUV01		178.0	3.6
ASMT-JN33-NSU01	Neutral White	125.0	3.6
ASMT-JN33-NUV01		178.0	3.6
ASMT-JY33-NQS01	Warm White	80.0	3.6
ASMT-JY33-NRS01		107.0	3.6
ASMT-JY33-NSTJ1		125.0	3.6

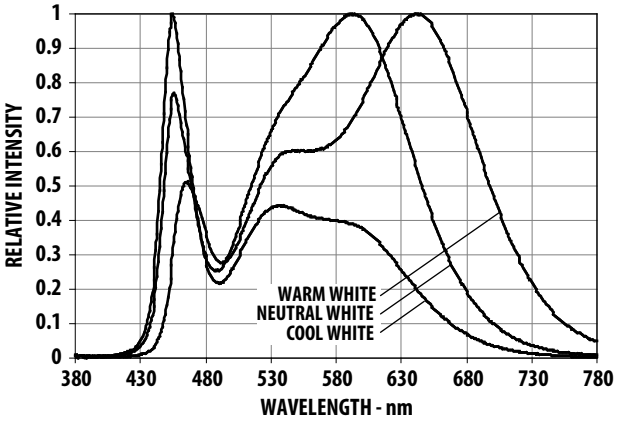


Figure 2. Relative Intensity vs. Wavelength for Cool White and Warm White

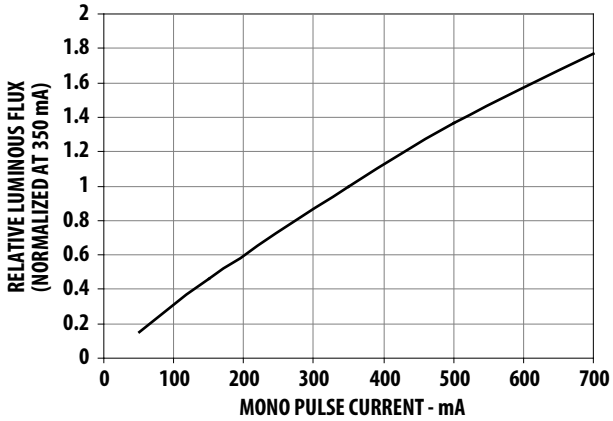


Figure 3. Relative Luminous Flux vs. Mono Pulse Current

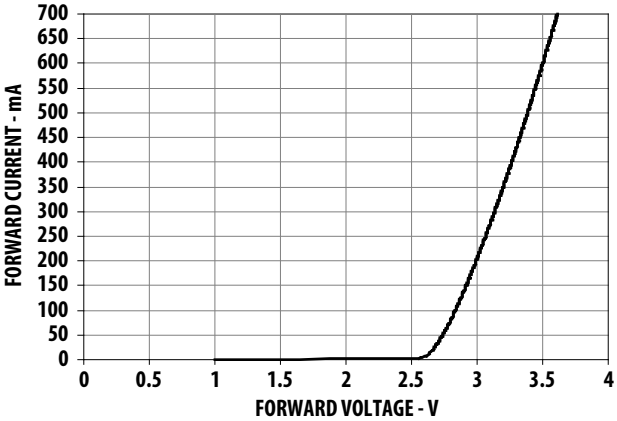


Figure 4. Forward Current vs. Forward Voltage

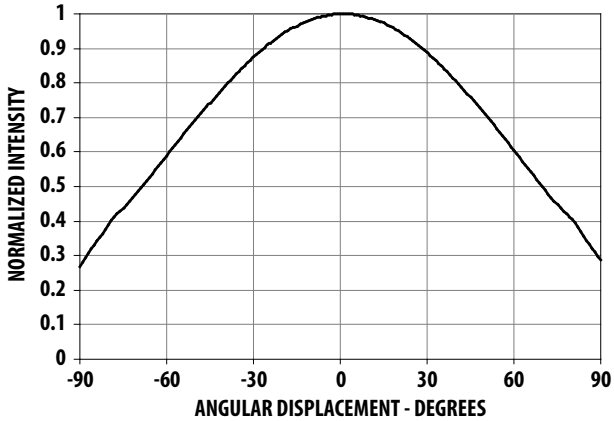


Figure 5. Radiation Pattern for Cool White, Warm White and Neutral White

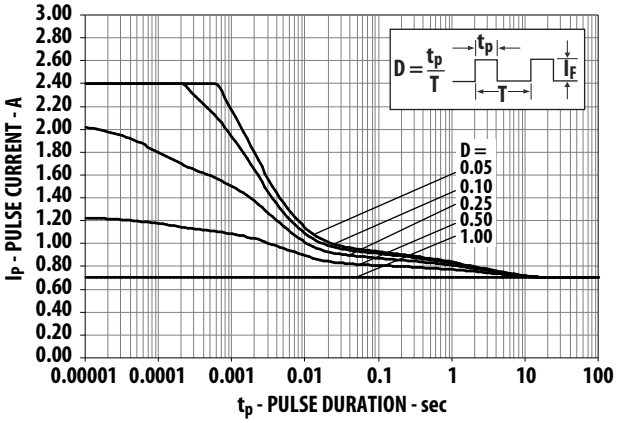


Figure 6. Maximum pulse current vs. pulse duration. Derated based on $T_A = 25°C$, $R\theta_{J-A} = 30°C/W$.

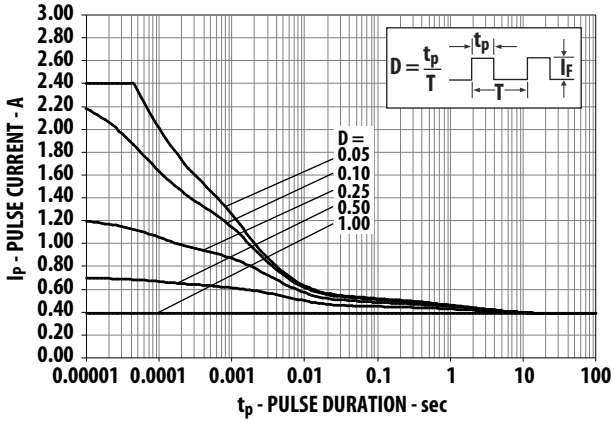


Figure 7. Maximum pulse current vs. pulse duration. Derated based on $T_A = 85°C$, $R\theta_{J-A} = 30°C/W$.

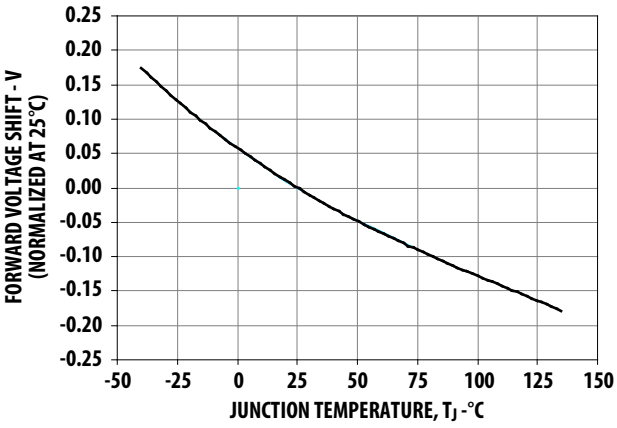


Figure 8. Relative Light Output vs. Junction Temperature

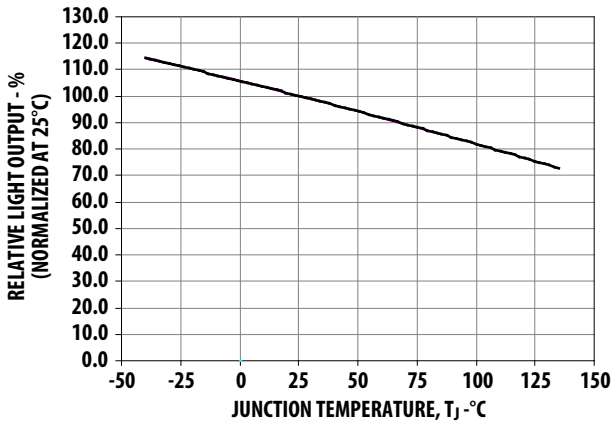


Figure 9. Forward Voltage Shift vs. Junction Temperature

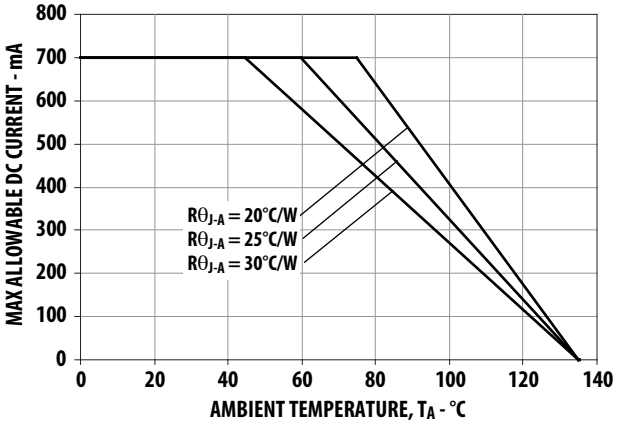


Figure 10. Maximum Forward Current vs. Ambient Temperature. Derated based on T_{JMAX} = 125°C, $R\theta_{J\text{-}A}$ = 20°C/W, 25°C/W and 30°C/W

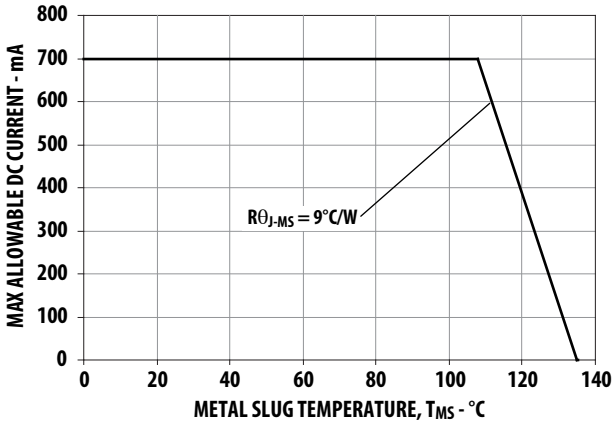


Figure 11. Maximum Forward Current vs. Metal Slug Temperature. Derated based on T_{JMAX} = 125°C, $R\theta_{J\text{-}MS}$ = 9°C/W

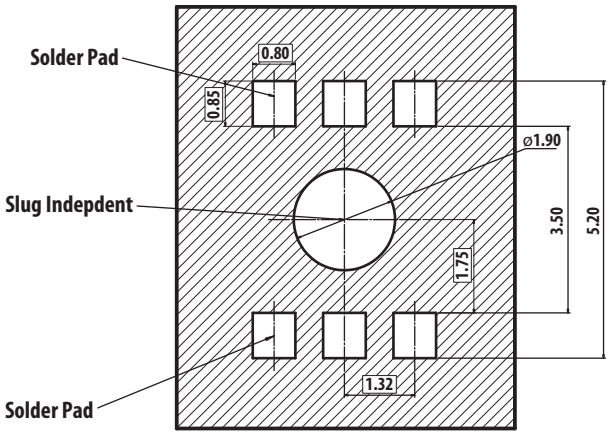


Figure 12. Recommended soldering land pattern

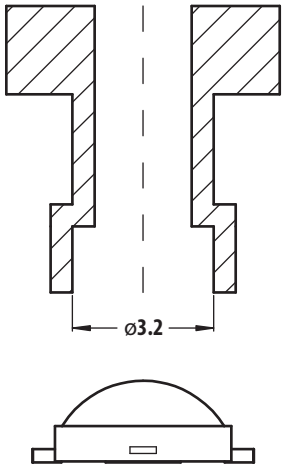


Figure 13. Recommended pick and place nozzle tip. Inner diameter = 3.2 mm

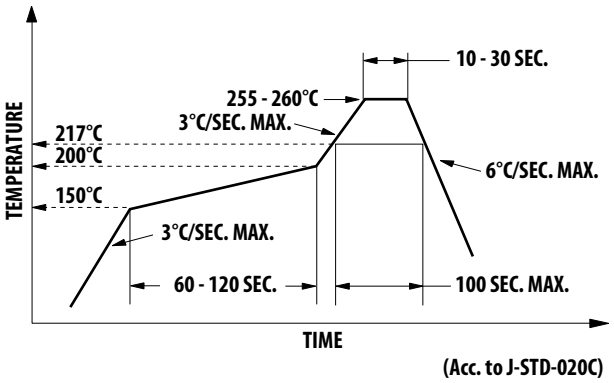


Figure 14. Recommended Reflow Soldering Profile

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 33 – N x_2 x_3 x_4 x_5

x_2 – Minimum Flux Bin Selection

x_3 – Maximum Flux Bin Selection

x_4 – Color Bin Selection

x_5 – Packaging Option

Flux Bin Limit [x_2, x_3]

	Luminous Flux (lm) at 350 mA	
Bin ID	**Min.**	**Max.**
Q	30.6	39.8
R	39.8	51.7
S	51.7	67.2
T	67.2	87.4
U	87.4	99.6
V	99.6	113.6
W	113.6	129.5

Tolerance for each bin limits is ±10%

Color Bin Selection [x_4]

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

Cool White

Selection	Bin ID
0	Full Distribution
H	UN, VN, U0 and V0
J	WN, VN, W0 and V0
K	XN, WN, X0 and W0
P	Y0

Neutral White

Selection	Bin ID
0	Full Distribution
G	S1, R1, S0 and R0
H	TN, S1, T0 and S0

W**arm White**

Selection	Bin ID
0	Full Distribution
H	M1, N1, M0 and N0
J	P1, N1, P0 and N0
K	Q1, P1, Q0 and P0

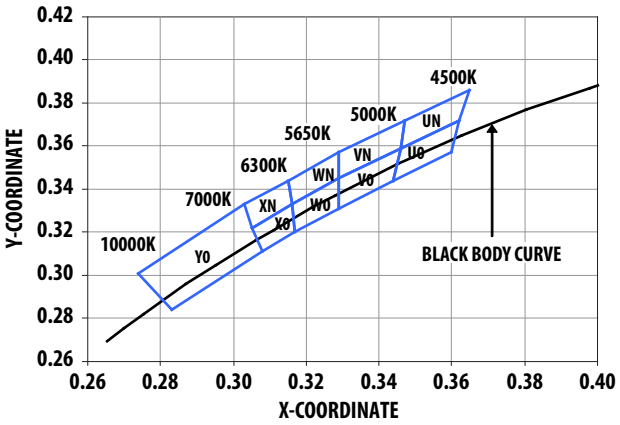


Figure 15. Color bin Structure for Cool White

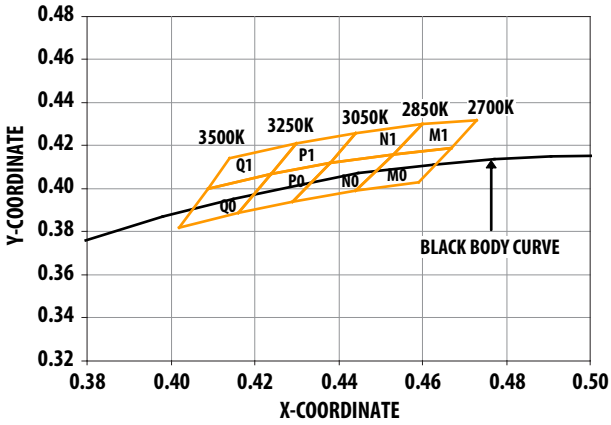


Figure 16. Color bin structure for Warm White

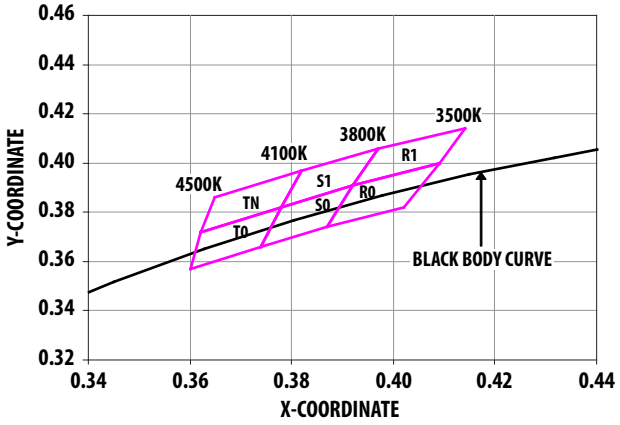


Figure 17. Color bin structure for Neutral White

Color Bin Limits

Cool White	Color Limits (Chromaticity Coordinates)				
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 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 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 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 YO	x	0.308	0.283	0.274	0.303
	y	0.311	0.284	0.301	0.333

Tolerance: ±0.01

Warm White	Color Limits (Chromaticity Coordinates)				
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 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 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 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

Tolerance: ±0.01

Neutral White	Color Limits (Chromaticity Coordinates)				
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 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 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

Tolerance: ±0.01

Packaging Option [x_5]

Selection	Option
1	Tape and Reel

Example

ASMT-JW33-NSU01

ASMT-JW33-Nxxxx – Cool White, InGaN, Electrically isolated Heat Sink

X_2 = S – Minimum Flux Bin S

X_3 = U – Maximum Flux Bin U

X_4 = 0 – Full Distribution

X_5 = 1 – Tape and Reel Option

Tape and Reel – Option 1

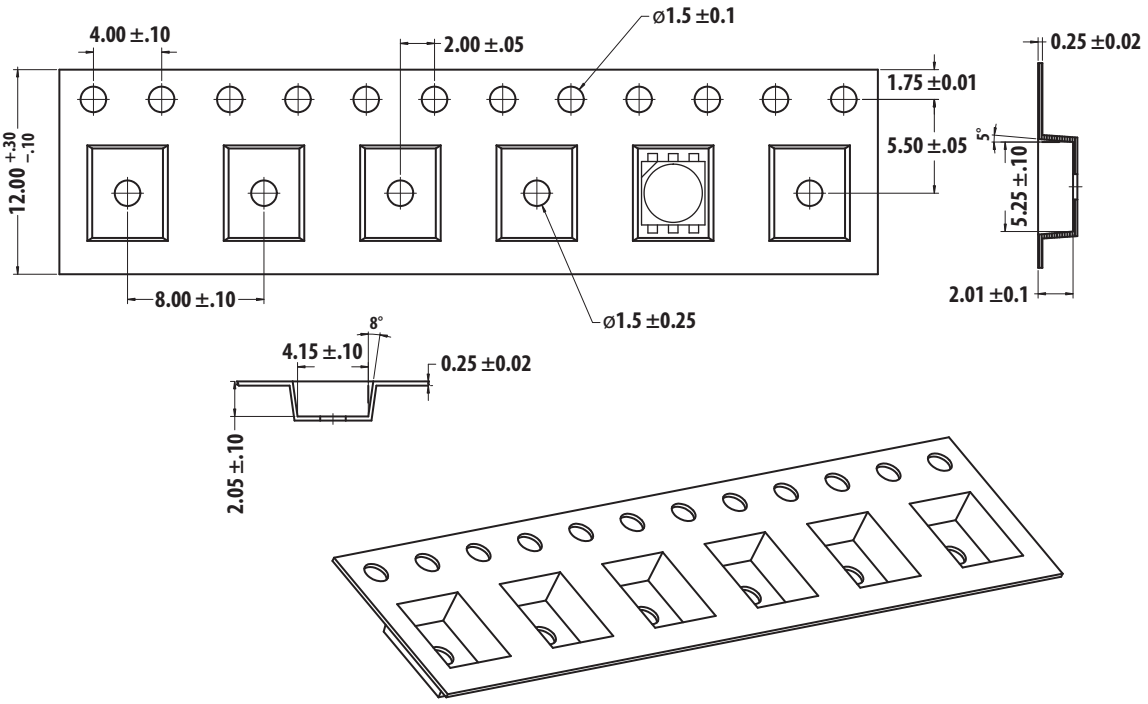
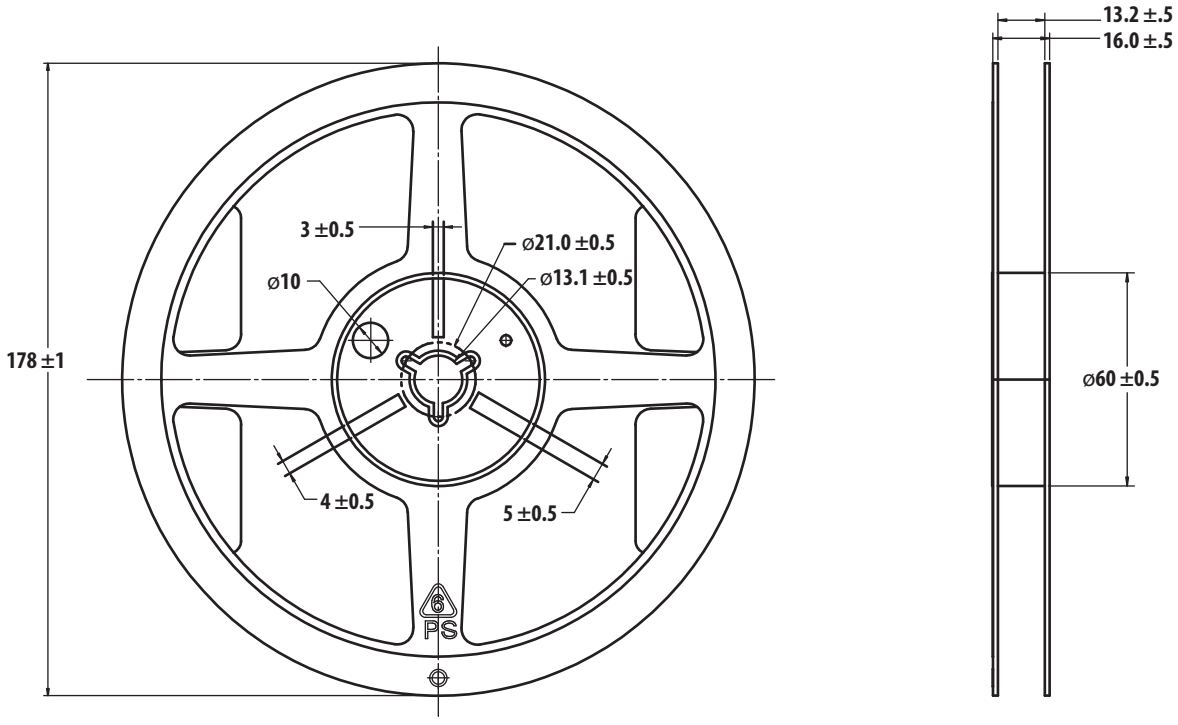


Figure 18. Carrier Tape Dimensions



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 19. Reel dimensions

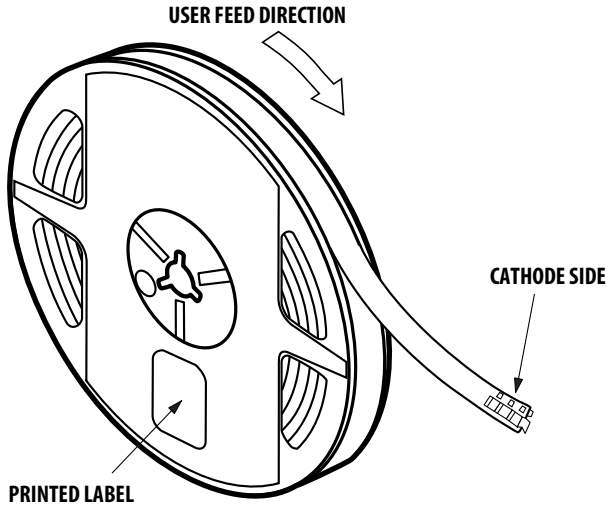


Figure 20. Reeling Orientation

For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

AV02-2430EN - September 8, 2010