

3.5x2.8mm SURFACE MOUNT LED LAMP

Part Number: AA3528SURCKT-AMT

Hyper Red

Features

- Industry standard PLCC-2 package.
- High reliability LED package.
- Wide viewing angle.
- Single color.
- Suitable for all SMD assembly and solder process.
- Available on tape and reel.
- Ideal for backlighting.
- Package: 2,000pcs / reel.
- Moisture sensitivity level: level 3.
- RoHS compliant.

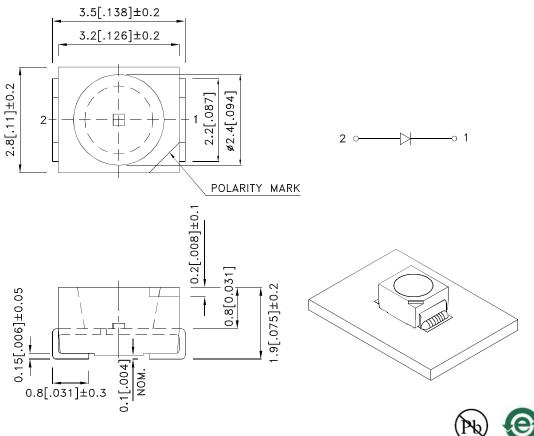
Description

The Hyper Red source color devices are made with Al-GaInP on GaAs substrate Light Emitting Diode.

Applications

- Traffic signaling.
- Backlighting (illuminated advertising, general lighting).
- Interior and exterior automotive lighting.
- Substitution of micro incandescent lamps.
- Reading lamps.
- Signal and symbol luminaire for orientation.
- Marker lights (e.g. Steps, exit ways, etc).
- Decorative and entertainment lighting.
- Indoor and outdoor commercial and residential architectural lighting.

Package Dimensions



- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is ±0.25(0.01") unless otherwise noted.
- 3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice. 4.The device has a single mounting surface. The device must be mounted according to the specifications.

SPEC NO: DSAO0678 **REV NO: V.2A DATE: JUL/18/2016** PAGE: 1 OF 6 **APPROVED: Wynec CHECKED: Allen Liu** DRAWN: W.Q.Zhong ERP: 1201004172

Part No.	Emitting Color (Material)	Lens Type		lv (mcd) [2] @ 20mA		
			Code.	Min.	Max.	201/2
AA3528SURCKT-AMT	Hyper Red (AlGaInP)	Water Clear	Р	200	300	120°
			Q	300	400	
			R	400	500	
			S	500	700	
			*H	*55	*80	
			*M	*80	*120	
			*N	*120	*200	1
			*P	*200	*300	

- 1. 01/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
 2. Luminous intensity / luminous Flux: +/-15%.

 * Luminous intensity value is traceable to CIE127-2007 standards.

Parameter	Symbol	Value	Unit
Power dissipation	PD	75	mW
Reverse Voltage	VR	5	V
Junction temperature	TJ	115	°C
Operating Temperature	Тор	-40 To +100	°C
Storage Temperature	Tstg	-40 To +115	°C
DC Forward Current	lf	30	mA
Peak Forward Current [2]	IFM	185	mA
Electrostatic Discharge Threshold (HBM)	•	3000	V
Thermal Resistance (Junction/ambient) [1]	Rth j-a	410	°C/W
	•		

Notes:

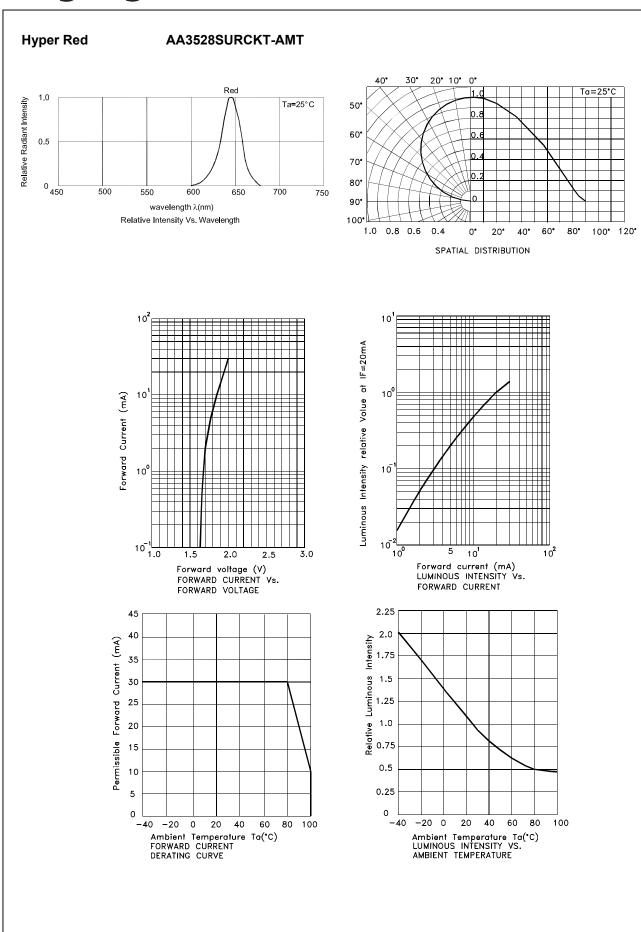
- 1. Rth(j-a) Results from mounting on PC board FR4 (pad size≥16 mm² per pad),
- 2. 1/10 Duty Cycle, 0.1ms Pulse Width.
- 3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity - Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

Electrical / Optical Characteristics at Ta=25°C

Parameter	Symbol	Value	Unit	
Wavelength at peak emission IF=20mA [Typ.]	λ peak	645	nm	
Dominant Wavelength IF=20mA [Min.]	λ dom [1]	620	nm	
Dominant Wavelength IF=20mA [Max.]	λ dom [1]	640	nm	
Spectral bandwidth at 50%Φ REL MAX IF=20mA [Typ.]	Δλ	28	nm	
Forward Voltage Ir=20mA [Min.]		-		
Forward Voltage IF=20mA [Typ.]	VF [2]	1.95	V	
Forward Voltage IF=20mA [Max.]		2.5		
Reverse Current (VR = 5V) [Max.]	lr	10	uA	
Temperature coefficient of λ peak IF=20mA, -10°C \leq T \leq 100°C [Typ.]	TC λ peak	0.13	nm/°C	
Temperature coefficient of λ dom IF=20mA, -10°C≤ T≤100°C [Typ.]	TC λ dom	0.06	nm/°C	
Temperature coefficient of VF IF=20mA, -10°C≤ T≤100°C [Typ.]	TCv	-2.8	mV/°C	

- 1. The dominant Wavelength (λ d) above is the setup value of the sorting machine. (Tolerance λ d : ± 1 nm.)
- 2.Forward Voltage: +/-0.1V.
- 3. Wavelength value is traceable to CIE127-2007 standards.
- 4.Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

SPEC NO: DSAO0678 **REV NO: V.2A DATE: JUL/18/2016** PAGE: 2 OF 6 APPROVED: Wynec **CHECKED: Allen Liu** DRAWN: W.Q.Zhong ERP: 1201004172

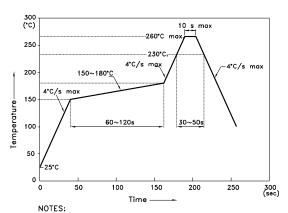


SPEC NO: DSAO0678 REV NO: V.2A DATE: JUL/18/2016 PAGE: 3 OF 6
APPROVED: Wynec CHECKED: Allen Liu DRAWN: W.Q.Zhong ERP: 1201004172

AA3528SURCKT-AMT

Reflow soldering is recommended and the soldering profile is shown below. Other soldering methods are not recommended as they might cause damage to the product.

Reflow Soldering Profile For Lead-free SMT Process.



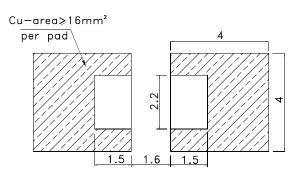
- 1.We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
 2.Don't cause stress to the epoxy resin while it is exposed to high temperature.
- to high temperature.

 3.Number of reflow process shall be 2 times or less.

Recommended Soldering Pattern (Units: mm; Tolerance: ± 0.1)

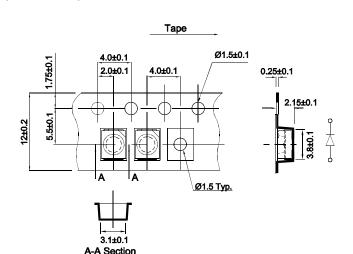
Pad design for improved heat dissipation



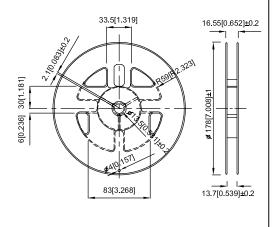


Solder resist

Tape Specifications (Units : mm)

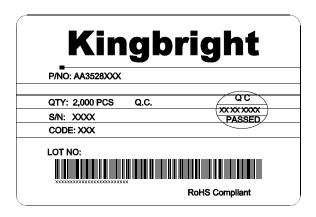


Reel Dimension



SPEC NO: DSAO0678 APPROVED: Wynec REV NO: V.2A CHECKED: Allen Liu DATE: JUL/18/2016 DRAWN: W.Q.Zhong PAGE: 4 OF 6 ERP: 1201004172

PACKING & LABEL SPECIFICATIONS User Direction Of Feed Label 2,000PCS / Reel 1 Reel / Bag Outside Label Kingbright Kingbright



20K / 55# Box

Terms and conditions for the usage of this document

40K / 56# Box

- 1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
- 2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
- When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
- 4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
- 5. The contents and information of this document may not be reproduced or re-transmitted without permission by Kingbright.
- $\textbf{6. All design applications should refer to Kingbright application notes available at $\underline{\text{http://www.KingbrightUSA.com/ApplicationNotes}}$$

 SPEC NO: DSAO0678
 REV NO: V.2A
 DATE: JUL/18/2016
 PAGE: 5 OF 6

 APPROVED: Wynec
 CHECKED: Allen Liu
 DRAWN: W.Q.Zhong
 ERP: 1201004172



Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below

Lot Tolerance Percent Defective (LTPD): 10%

No.	Test Item	Standards	Test Condition	Test Times / Cycles	Number of Damaged
1	Continuous operating test	-	Ta =25°C ,IF = maximum rated current*	1,000 h	0 / 22
2	High Temp. operating test	EIAJ ED- 4701/100(101)	Ta = 100°C IF = derated current at 100°C	1,000 h	0 / 22
3	Low Temp. operating test	-	Ta = -40°C, IF = maximum rated current*	1,000 h	0 / 22
4	High temp. storage test	EIAJ ED- 4701/100(201)	Ta = maximum rated storage temperature	1,000 h	0 / 22
5	Low temp. storage test	EIAJ ED- 4701/100(202)	Ta = -40°C	1,000 h	0 / 22
6	High temp. & humidity storage test	EIAJ ED- 4701/100(103)	Ta = 60°C, RH = 90%	1,000 h	0 / 22
7	High temp. & humidity operating test	EIAJ ED- 4701/100(102)	Ta = 60°C, RH = 90% IF = maximum rated current*	1,000 h	0 / 22
8	Soldering reliability test	EIAJ ED- 4701/100(301)	Moisture soak : 30°C,70% RH, 72h Preheat : 150~180°C(120s max.) Soldering temp : 260°C(10s)	2 times	0 / 18
9	Thermal shock operating test	-	Ta = -40°C(15min) ~ 100°C(15min) IF = derated current at 100°C	1,000 cycles	0 / 22
10	Thermal shock test	-	Ta = -40°C(15min) ~ 100°C(15min)	1,000 cycles	0 / 22
11	Electric Static Discharge (ESD)	EIAJ ED- 4701/100(304)	C = 100pF , R2 = 1.5KΩ V = 3000V	Once each Polarity	0 / 22
12	Vibration test	-	a = 196m/s², f = 100~2KHz, t = 48min for all xyz axes	4 times	0 / 22

^{* :} Refer to forward current vs. derating curve diagram

Failure Criteria

Items	Symbols	Conditions	Failure Criteria
luminous Intensity	lv	IF = 20mA	Testing Min. Value <spec.min.value 0.5<="" td="" x=""></spec.min.value>
Forward Voltage	VF	IF = 20mA	Testing Max. Value ≥Spec.Max.Value x 1.2
Reverse Current	lR	VR = Maximum Rated Reverse Voltage	Testing Max. Value ≥Spec.Max.Value x 2.5
High temp. storage test	-	l _	Occurrence of notable decoloration, deformation and cracking

SPEC NO: DSAO0678 REV NO: V.2A DATE: JUL/18/2016 PAGE: 6 OF 6
APPROVED: Wynec CHECKED: Allen Liu DRAWN: W.Q.Zhong ERP: 1201004172