

Agilent Surface Mount PLCC-2 LED Products Selection Guide



Background

An industry leader in high brightness LED technology, Agilent Technologies offers a wide range of surface-mount (SMT) LEDs, including Subminiature lamps, ChipLEDs and High flux LEDs. As more applications demand SMT LEDs, we have introduced the Agilent PLCC-2 SMT LEDs. These new products deliver top emission in the industry-standard PLCC-2 package.

About the products

This surface-mount LED comes in PLCC-2 standard package dimension. It has a substrate made up of a molded plastic reflector sitting on top of a bent lead frame. The die is attached within the reflector cavity and the cavity is encapsulated by an Agilent proprietary epoxy blend.

The PLCC-2 SMT LED products with a viewing angle of 120° is ideal for instruments/switch/icon backlighting. Its external reflector makes easy coupling with light pipe/light guide for an even-larger area backlighting. The package design coupled with careful selection of component materials allow these products to perform with high reliability in a larger temperature range -40°C to 100°C . The high reliability feature is crucial to Automotive Interior and Indoor ESS.

This package is also designed to be compatible with both IR-solder reflow and through-the-wave soldering.

The new Agilent TLED will carry the part number HSMx-A10x-xxxxx.

Features and Benefits

- **Industry Standard PLCC-2 SMT package**
 - No change in existing board layout, drop-in replacement for the existing PLCC-2 SMT LEDs
- **High brightness using AlInGaP and InGaN dice technologies**
 - Only supplier using TS AlInGaP material
- **Available in multiple colors**
 - Broad range of colors: Red, Red-Orange, Orange, Amber, Yellow-Green, Emerald Green, Green, Cyan and Blue
- **Super wide viewing angle at 120°**
 - Well-suited for backlighting applications
- **High volume, high reliability**
 - Cost effective solution
- **Compatible with both IR and TTW soldering process**
- **Black reflector surface**
 - for reduce contrast in ESS
- **High brightness performance – only PLCC-2 SMT LED supplier offering TS AlInGaP material**



Special Product Features and Benefits

- **Mold Clamp**
 - provides highest reliability performance by eliminating leadframe-epoxy delamination after solder reflow
- **Reflector Step Down**
 - perfect SMT pick-up due to epoxy overfill being eliminated


















- **Package Bottom Chamfer**
 - perfect lead forming giving high reliability performance (no lead over-formed), and no “tombstoning” defect after solder reflow

Target Markets and Applications

- **Interior automotive**
 - Instrument panel backlighting
 - Central console backlighting
 - Cabin backlighting

- **Electronic Signs and Signals**
 - Interior full color sign
 - Variable message sign
- **Office Automation, Electrical Appliances, Industrial Equipment**
 - Front panel backlighting
 - Push button backlighting
 - Display backlighting

Part Numbers and Typical Product Performance

| Part Number | Color | Dominant Wavelength λ_D (nm) | Viewing Angle $2\theta_{1/2}$ (°) | Intensity, I_v @ 20mA (mcd) | | V_f @ 20mA Typical (V) |
|------------------|---|--------------------------------------|-----------------------------------|-------------------------------|-----|--------------------------|
| | | | | Min | Typ | |
| HSMS-A100-J00J1 |  GaP Red | 626 | 120 | 4 | 15 | 2.2 |
| HSMH-A100-L00J1 |  AS AlGaAs Red | 637 | 120 | 10 | 50 | 1.9 |
| HSMC-A100-Q00J1 |  AS AlInGaP Red | 626 | 120 | 63 | 100 | 1.9 |
| HSMZ-A100-R00J1 |  TS AlInGaP Red | 630 | 120 | 100 | 400 | 2.2 |
| HSMJ-A100-Q00J1 |  AS AlInGaP Red Orange | 615 | 120 | 63 | 200 | 1.9 |
| HSMV-A100-R00J1 |  TS AlInGaP Red Orange | 617 | 120 | 100 | 350 | 2.2 |
| HSM D-A100-J00J1 |  GaP Orange | 602 | 120 | 4 | 15 | 2.2 |
| HSM L-A100-Q00J1 |  AS AlInGaP Orange | 605 | 120 | 63 | 160 | 1.9 |
| HSM Y-A100-J00J1 |  GaP Amber | 585 | 120 | 4 | 15 | 2.2 |
| HSM A-A100-Q00J1 |  AS AlInGaP Amber | 590 | 120 | 63 | 100 | 1.9 |
| HSM U-A100-R00J1 |  TS AlInGaP Amber | 592 | 120 | 100 | 270 | 2.2 |
| HSM G-A100-J02J1 |  GaP Yellow | 569 | 120 | 4 | 18 | 2.2 |
| HSM G-A100-H01J1 |  GaP Emerald Green | 560 | 120 | 2.5 | 8 | 2.2 |
| HSM M-A100-S00J1 |  InGaN Green | 525 | 120 | 160 | 280 | 3.7 |
| HSM K-A100-S00J1 |  InGaN Cyan | 505 | 120 | 160 | 280 | 3.5 |
| HSM B-A100-J00J1 |  GaN Blue | 462 | 120 | 4 | 15 | 4.0 |
| HSM N-A100-P00J1 |  InGaN Blue | 470 | 120 | 40 | 70 | 3.5 |

Notes:

1. The luminous intensity I_v is measured at the mechanical axis of the lamp package. The actual peak of the spatial radiation pattern may not be aligned with this axis.
2. The dominant wavelength, λ_D , is derived from the CIE Chromaticity Diagram and represents the color of the device.
3. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is 1/2 the peak intensity.

Intensity Bin Select (X₅X₆)

Individual reel will contain parts from 1 half bin only.

| X ₅ | Minimum lv Bin |
|----------------|--|
| X ₆ | |
| 0 | Full Distribution |
| 3 | 3 half bins starting from X ₅ 1 |
| 4 | 4 half bins starting from X ₅ 1 |
| 5 | 5 half bins starting from X ₅ 1 |
| 7 | 3 half bins starting from X ₅ 2 |
| 8 | 4 half bins starting from X ₅ 2 |
| 9 | 5 half bins starting from X ₅ 2 |

| Bin ID | Customer lv in mcd | |
|--------|--------------------|---------|
| | Min | Max |
| J1 | 4.50 | 5.60 |
| J2 | 5.60 | 7.20 |
| K1 | 7.20 | 9.00 |
| K2 | 9.00 | 11.20 |
| L1 | 11.20 | 14.00 |
| L2 | 14.00 | 18.00 |
| M1 | 18.00 | 22.40 |
| M2 | 22.40 | 28.50 |
| N1 | 28.50 | 35.50 |
| N2 | 35.50 | 45.00 |
| P1 | 45.00 | 56.00 |
| P2 | 56.00 | 71.50 |
| Q1 | 71.50 | 90.00 |
| Q2 | 90.00 | 112.50 |
| R1 | 112.50 | 140.00 |
| R2 | 140.00 | 180.00 |
| S1 | 180.00 | 224.00 |
| S2 | 224.00 | 285.00 |
| T1 | 285.00 | 355.00 |
| T2 | 355.00 | 450.00 |
| U1 | 450.00 | 560.00 |
| U2 | 560.00 | 715.00 |
| V1 | 715.00 | 900.00 |
| V2 | 900.00 | 1125.00 |

Tolerance of each bin limit = ± 12%

Color Bin Select (X₇)

Individual reel will contain parts from 1 full bin only.

| X ₇ | |
|----------------|--------------------|
| 0 | Full Distribution |
| 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 |
| 1 | A, B, C and D only |
| 2 | E, F G and H only |

Color Bin Limits

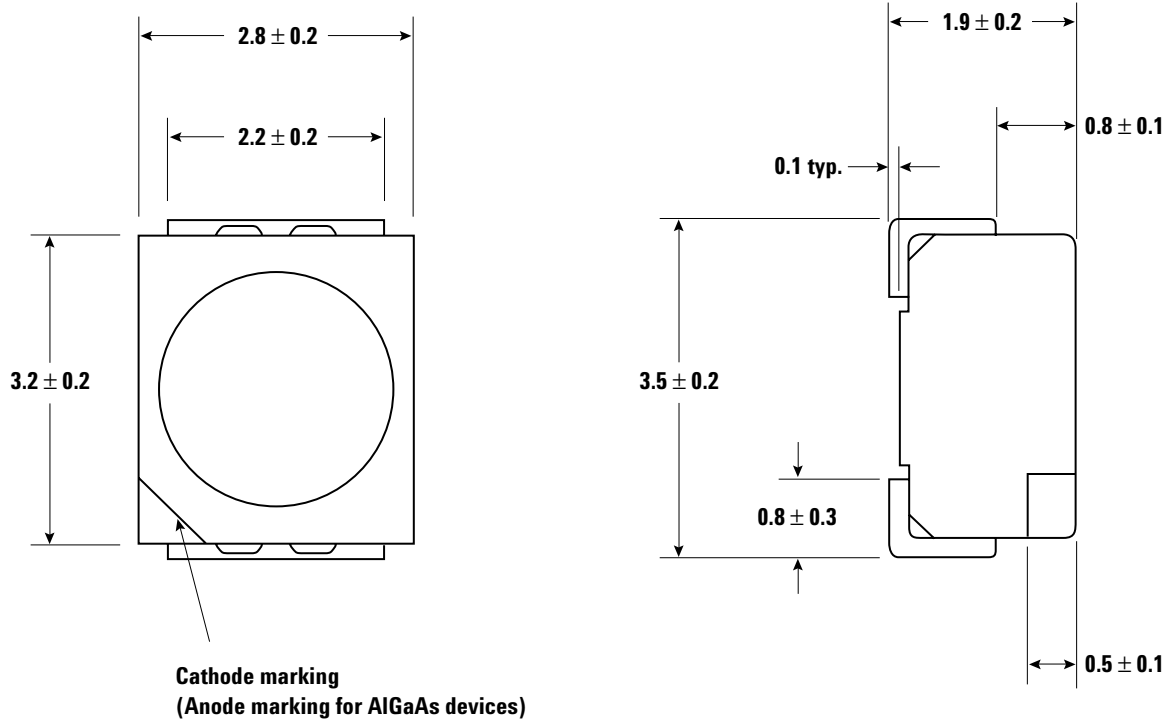
| Color/Bin | Wavelength (nm) | |
|--------------------------------|-----------------|-------|
| | Min | Max |
| Blue | | |
| A | 460.0 | 465.0 |
| B | 465.0 | 470.0 |
| C | 470.0 | 475.0 |
| D | 475.0 | 480.0 |
| Cyan | | |
| A | 490.0 | 495.0 |
| B | 495.0 | 500.0 |
| C | 500.0 | 505.0 |
| D | 505.0 | 510.0 |
| Green | | |
| A | 515.0 | 520.0 |
| B | 520.0 | 525.0 |
| C | 525.0 | 530.0 |
| D | 530.0 | 535.0 |
| Yellow Green/ Emerald Green | | |
| A | 552.5 | 555.5 |
| B | 555.5 | 558.5 |
| C | 558.5 | 561.5 |
| D | 561.5 | 564.5 |
| E | 564.5 | 567.5 |
| F | 567.5 | 570.5 |
| G | 570.5 | 573.5 |
| H | 573.5 | 576.5 |
| Amber | | |
| A | 582.0 | 584.5 |
| B | 584.5 | 587.0 |
| C | 587.0 | 589.5 |
| D | 589.5 | 592.0 |
| E | 592.0 | 594.5 |
| F | 594.5 | 597.0 |
| Orange | | |
| A | 597.0 | 600.0 |
| B | 600.0 | 603.0 |
| C | 603.0 | 606.0 |
| D | 606.0 | 609.0 |
| E | 609.0 | 612.0 |
| Red Orange | | |
| A | 611.0 | 616.0 |
| B | 616.0 | 620.0 |
| Red Full Distribution | | |

Tolerance of each bin limit = ±1nm

Packaging Option ($X_g X_g$)

| | |
|----|-----------------------------|
| J1 | Top Mount, 7 inch Reel |
| J4 | Top Mount, 13 inch Reel |
| H1 | Reverse Mount, 7 inch Reel |
| H4 | Reverse Mount, 13 inch Reel |

Package Dimensions



Note: All dimensions in mm

www.agilent.com/semiconductors

For product information and a complete list of distributors, please go to our web site.

For technical assistance call:

Americas/Canada: +1 (800) 235-0312 or
(408) 654-8675

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Data subject to change.

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