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INTERNATIONAL STANDARD

NORME INTERNATIONALE

LED packages for general lighting – Specification sheet

LED encapsulées pour eclairage général – Feuille de spécification

IEC 63146:2019-05(en-fr)

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FOREWORD

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International Standard IEC 63146 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
34A/2133/FDIS	34A/2135/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

LED PACKAGES FOR GENERAL LIGHTING – SPECIFICATION SHEET

1 Scope

This document establishes requirements for specification sheets relating to light emitting diode (LED) packages designed for the emission of white light for general lighting applications.

This document does not contain compliance criteria.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI C78.374-2015, *American National Standard for Electric Lamps – Light-Emitting Diode Package Specification Sheet for General Illumination Applications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ANSI C78.374-2015 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 General requirements for product information

4.1 Title on the specification sheet

ANSI C78.374-2015, Subclause 4.1 applies.

4.2 Graphic presentation requirements

ANSI C78.374-2015, Subclause 4.2 applies.

5 Performance characteristics

5.1 Correlated colour temperature versus luminous flux

ANSI C78.374-2015, Subclause 5.1 applies with the following deviation:

- Replace item 1) with: "Correlated colour temperature (CCT)".

5.2 Colour binning

ANSI C78.374-2015, Subclause 5.2 applies with the following deviations:

- Replace item 2) with "Chromaticity values for a given CCT".

NOTE The four corners A, B, C, and D as mentioned in t.2 item 2) of ANSI C78.374-2015 is an example of providing chromaticity values.

5.3 Spectral power distribution

ANSI C78.374-2015, Subclause 5.3 applies.

5.4 Luminous intensity distribution

ANSI C78.374-2015, Subclause 5.4 applies.

5.5 Luminous flux versus forward current

ANSI C78.374-2015, Subclause 5.5 applies.

5.6 Luminous flux versus temperature

ANSI C78.374-2015, Subclause 5.6 applies.

5.7 Colour-over-angle

Information shall be provided concerning where to obtain colour-over-angle data, for example a URL.

5.8 Luminous flux binning

For each nominal CCT, the minimum and the maximum luminous flux values shall be provided in a table format.

5.9 Forward voltage binning

The forward voltage V_f binning information shall be provided in a table format. It may be expressed as minimum and maximum values.

5.10 Change in colour coordinates versus temperature

Change in colour coordinates versus junction temperature shall be provided in a graphical format.

5.11 Luminous efficacy versus forward current

Luminous efficacy versus forward current should be provided in a graphical format together with information on the other influencing factors. Typical values of the luminous flux at the selected nominal CCT(s) and the forward voltage shall be stated.

6 Operational characteristics

6.1 Operating limits

ANSI C78.374-2015, Subclause 6.1 applies with the following deviations:

- 3) Maximum forward pulse current, pulse width and duty cycle (if applicable).
- 4) Maximum reverse voltage.

The following applies in addition:

- 6) Combination of operating values that result in unintended use should be indicated.
- 7) Minimum forward current.

6.2 Thermal and electrical characteristics

ANSI C78.374-2015, Subclause 6.2 applies with the following deviations:

- Replace item 1) with: "The thermal resistance shall be based on the dissipated power ($P_{\text{electrical}} - P_{\text{optical}}$) or electrical input power ($P_{\text{electrical}}$). For both cases it shall be indicated what the R_{th} is based on. The thermal resistance is from junction to case or from junction to soldering point and shall be stated."
- Replace item 3) with: "Electrostatic discharge-human body model (ESD-HBM) minimum withstand voltage or class."

6.3 Forward current versus forward voltage

ANSI C78.374-2015, Subclause 6.3 applies.

The following applies in addition:

- 4) Forward voltage should be presented starting from 0 V.

6.4 Forward current versus temperature

ANSI C78.374-2015, Subclause 6.4 applies.

6.5 Forward voltage versus temperature

ANSI C78.374-2015, Subclause 6.5 applies.

7 Physical and electrical connection characteristics

7.1 Mechanical characteristics

ANSI C78.374-2015, Subclause 7.1 applies.

7.2 Electrical diagram

ANSI C78.374-2015, Subclause 7.2 applies.

8 Product handling

8.1 Assembly

ANSI C78.374-2015, Subclause 8.1 applies.

8.2 LED packing information

ANSI C78.374-2015, Subclause 8.2 applies.

8.3 Moisture sensitivity level

The moisture/reflow sensitivity classification shall be provided.

It is recommended to use IPC/JEDEC J-STD-020E. If an alternative method is used, the method of measurement shall be disclosed.

9 Measurement method reporting

9.1 Photometric and chromaticity data

For the reporting of photometric and chromaticity data, ANSI C78.374-2015, Subclause 9.1 applies.

9.2 Thermal characteristics data

It is recommended to use JESD 51-51-2012 to obtain thermal characteristic data such as thermal resistance and junction temperature. If an alternative method is used, the method of measurement shall be disclosed.

Bibliography

JESD 51-51-2012, *Implementation of the Electrical Test Method for the Measurement of Real Thermal Resistance and Impedance of Light-Emitting Diodes with Exposed Cooling Surface*

IPC/JEDEC J-STD-020E, *Moisture/reflow sensitivity classification for nonhermetic surface mount devices*

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