

## UL TECHNICAL GUIDANCE DOCUMENTS

This Document is prepared and published by UL.

**Product Category (CCN): FKSZ (2,3)**

**Standard Number: UL 8750**

**Standard Title: Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products**

**Edition Date: September 15, 2015**

**Edition Number: 2**

**Section / Paragraph Reference: 2.1**

**Subject: Surge Protective Devices (SPDs)**

### GUIDANCE:

This document provides guidance regarding the appropriate level of evaluations for Surge-protective Devices that are integral to LED drivers. The acronyms below are described in the guide card for VZCA2 (Component Surge-protective Devices). (Note- if the link will not launch; to access the guide card go to [www.ul.com/database](http://www.ul.com/database) click on UL Category Code (options) enter UL category code VZCA2, check the box for Display Guide Information only, click search)

1 – When a SPD is used to provide surge suppression claims to UL 1449, it should be investigated per the applicable requirements of UL 1449. The description of the SPD is to be in accordance with the program requirements for that category.

2 – When a SPD is used to comply with requirements in UL 840 where levels of overvoltage are controlled, Clearance “B”- clause 8 requirements apply. When describing the SPD, information noted below should be included; <sup>Φ</sup>

Surge Protective Devices – VZCA2/CN, SPD Type [ 1CA ] [ 2CA ] [ 3CA ] [ 4CA ] [ 5 ], minimum rated operating voltage \_\_\_\_ V \_\_\_\_ [ac] [dc], minimum \_\_\_\_ MCOV, minimum \_\_\_\_ In, maximum \_\_\_\_ MLV or VPR , minimum \_\_\_\_ SCCR (as applicable to the SPD and as needed for the end-use application).

3 – When the SPD is not used for one of the above purposes, it should be evaluated to mitigate the potential hazard of the SPD itself. The following characteristics should be confirmed as part of end product evaluation:

- Minimum (working) voltage rating
- Minimum current rating (if SPD carries load current in the circuit)
- Minimum temperature rating

When describing the SPD, information noted below should be included; <sup>Φ</sup>

Surge Protective Device – VZCA2/CN, SPD Type [ 1CA ] [ 2CA ] [ 3CA ] [ 4CA ] [ 5 ], minimum voltage rating \_\_\_\_ V [ ac ] [ dc ], [ minimum rated current \_\_\_\_ A (when applicable)], minimum temperature rating \_\_\_\_ °C.

UL COPYRIGHTED MATERIAL –  
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR  
DISTRIBUTION WITHOUT PERMISSION FROM UL



**Documents**

Document Sharing Hub

Φ When “Note 4” is included in the individual Recognition card (see example attached), it means the SPD employed a specific upstream protective device in order to comply with the safety requirements of UL 1449. Therefore, this SPD should be described by manufacturer and catalog number and presence of the specified protective device should be noted in accordance with the conditions of use.

### RATIONALE FOR GUIDANCE:

This guidance is provided to document the current certification practice for evaluating and describing metal oxide varistors (MOVs) and other types of SPDs used in lighting equipment.

When the SPD provides the basis for suppression ratings per UL 1449, or allows reduced clearances per UL 840, its evaluation and description needs to be in accordance with the requirements of these standards.

When the SPD is used to provide some level of surge immunity to the end-product for commercial purposes, its suitability is determined by its compliance with the end-product normal and abnormal conditions tests, and by verifying that the SPD has suitable minimum rated working voltage and temperature for the end-product application. For SPDs that normally carry load current, such as 3-wire and 2-port devices, they should also be suitably rated for the current they will carry during normal operation of the end-product. A current rating is not applicable to two-wire devices intended to only carry current during transient events, such as MOVs connected across the line or between line and ground.

SPDs that include “Note 4” as part of their component certification are special cases due to their reliance on upstream protective components. As such, the conditions of use associated with this note need to be considered and addressed in the end-product.

Sample of a Recognition card with Note 4 underlined

| VPR<br>(Vpk) | MLV<br>(Vpk) | MCOV<br>(V) | Vn<br>(Vdc) | In<br>(kA) | SCCR<br>(kA) | NOTES          |
|--------------|--------------|-------------|-------------|------------|--------------|----------------|
| –            | 590          | 130         | 200         | 3          | n/a          | 1, 3, <u>4</u> |

Copyright © 2018 UL LLC

*UL’s Technical Guidance Documents are intended to be used as reference documentation and are designed to provide assistance in understanding the application of requirements contained in the corresponding UL Standard, provide assistance in addressing the use and applications of the respective products covered by the associated UL Standard(s), or both.*

*These guidelines do not contain any construction or performance requirements.*

UL COPYRIGHTED MATERIAL –  
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR  
DISTRIBUTION WITHOUT PERMISSION FROM UL



**Documents**  
Document Sharing Hub