

Application Note

Film caps for LED lighting

Lighting technology is becoming a part of our lifestyle, controlled by ambient intelligence. This trend inescapably leads to an increasing requirement of high safety, long lifetime and high reliability of used components - like film capacitors, when it comes to power supply and output circuit of lighting devices.



LED Lighting devices

Panasonic
INDUSTRY

PRODUCT

ECQUA (X2) & ECQUB (X1/Y2) series metallized polypropylene film capacitor

PURPOSE

Solid-State Lighting (SSL), mostly based on LEDs and OLEDs, is a globally fast growing market. Especially in retrofit applications with a supply voltage of 230V AC, each and every bulb needs its own power supply. LEDs for instance need a DC current with at low level voltage. Film capacitors with a wide voltage range and, especially for outdoor lamps, high humidity resistance are a perfect solution for reliable power supply circuits.

FEATURES

- Wide voltage range
- Long lifetime
- High humidity resistance
- Integrated safety function (X2 and X1 safety classes only)

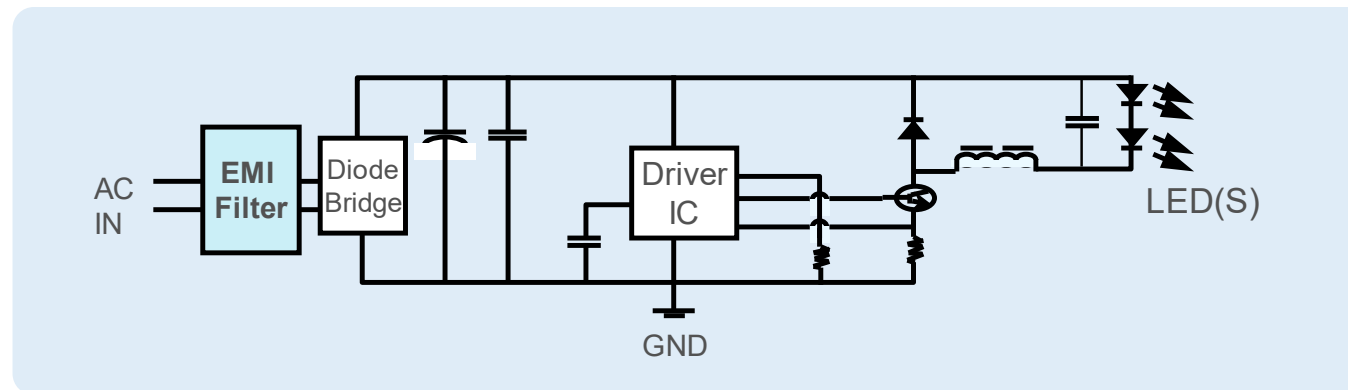


Lighting Devices

FACTS & FIGURES

As EMI suppression film capacitor is placed at the input side of the power supply circuit, it is required to handle high voltage impulses and protect users from harm due to electrical shock. Thanks to Panasonic's in-house patterned metallization technology, also well

known as „built-in fuse function“, the ECQUA series (safety class X2) and ECQUB series (safety class X1) offer overvoltage impact reduction to realize high safety with open failure mode.



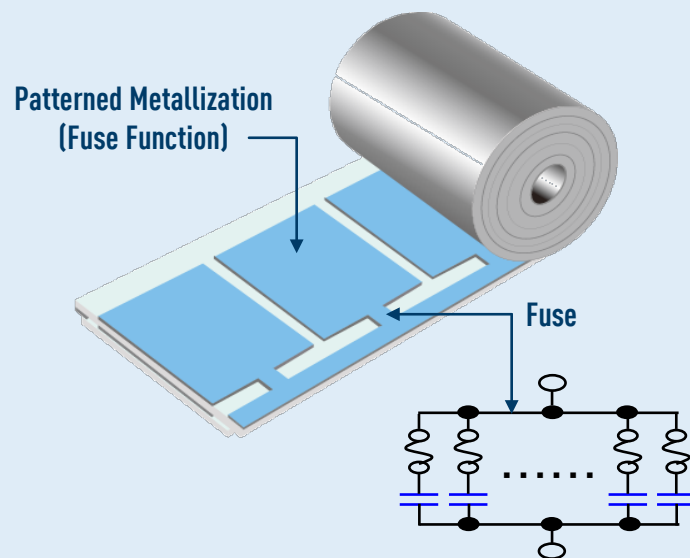
Application	EMI Supression
Voltage	275VAC to 310VAC
Product	ECQUA, ECQUB

Lighting Devices

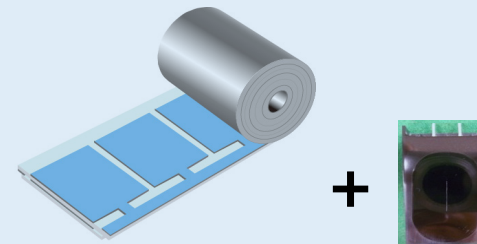
FACTS & FIGURES

On a very thin layer of vapor deposited aluminum, cells are made within capacitor's dielectric material. These cells perform as independent small capacitors which are connected in parallel. When overvoltage occurs at one spot, the damaged cell localizes the failure caused by overstress, therefore the damage is only limited in a few section of the capacitor.

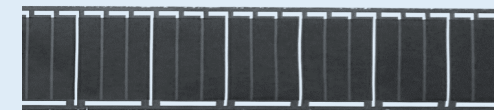
When too many of the areas fail in a very short period of time, capacitor will then fail in an open mode. Considering that reliability especially humidity resistance is critical for outdoor lighting application, Panasonic has developed its enclosure sealing technology and aluminum vapor deposition to achieve high humidity resistance.



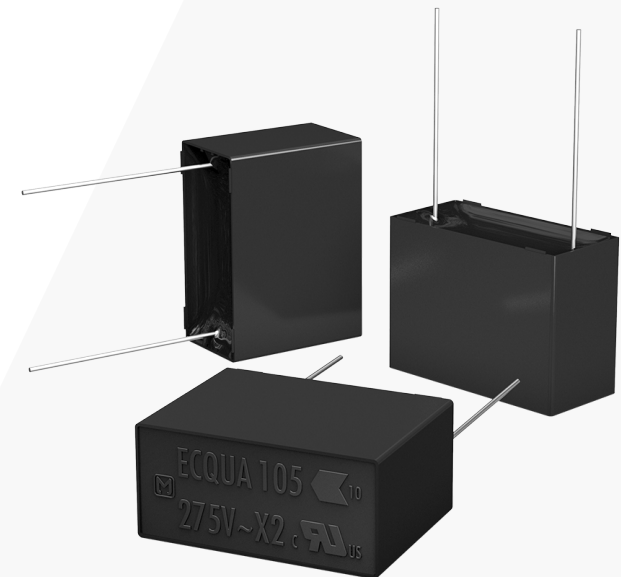
1. **100% Al** patterned metallized film
 - Strong resistance against moisture



2. Sealing technology with *vacuum control*
 - Even thickness of epoxy resin surface



Stable thin oxide film (Al_2O_3) formed → **Stable capacitance value**



Application Note - How to solve various tasks with film capacitors for lighting devices

Date: May 2021

Contact: Panasonic Industry Europe GmbH, capacitor@eu.panasonic.com

Notes: Data and descriptions in this document are subject to change without notice.

Product renderings are for illustration purposes only and may differ from the real product appearance.