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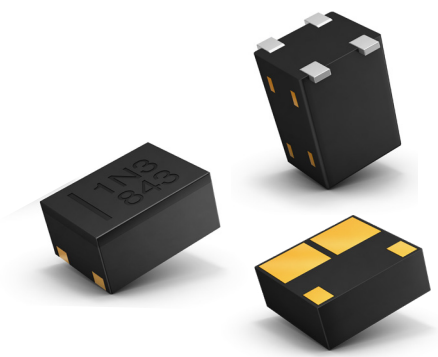
INDUSTRY

PhotoMOS® relays for measurement applications

High-precision applications like measurement or data acquisition devices require switches with low on-resistance and low capacitance. The answer are Low CxR PhotoMOS® relays, which offer low signal loss and suitable characteristics for higher frequency load signals.

Application Note



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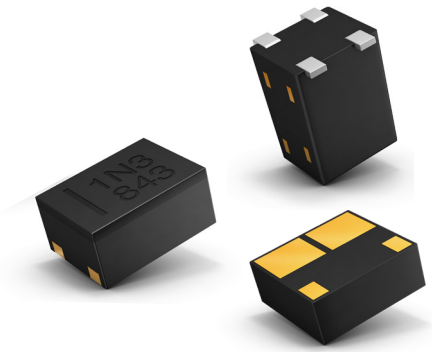
High-precision applications



Product

PhotoMOS® relays for measurement applications

Purpose

Low CxR PhotoMOS® relays feature an optimized layout of the MOSFET and its guard ring region combined with an improved internal structure. The results are low signal loss, quick switching times and good isolation characteristics for high-precision applications.

Features

- Low control current
- Fast switching times
- Small analog signal control
- Low leakage current
- Stable on-resistance over lifetime
- No preferred mounting position
- High vibration and shock resistance
- No bouncing and no switching noise
- Extremely long lifetime
- Small size

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Facts & Figures

High-precision applications like measurement or data acquisition devices require switches with low on-resistance and low capacitance, whereby the last requirement influences switching times and isolation characteristics for high frequency load signals. To this end, Panasonic Industry has developed special MOSFETs with low on-resistance and low capacitance. Since both values are reduced, these relays are called “low CxR” PhotoMOS®, signifying the reduced capacitance (C) and on-resistance (R). The improved characteristics are realized by an optimised layout of the MOSFET, combined with an improved internal structure including the layout of the bonding pads, manner of wire bonding and new terminal leads.

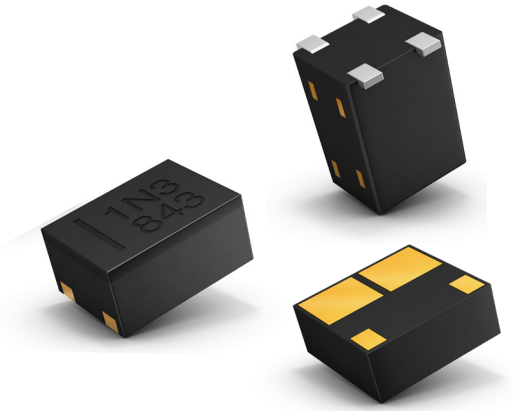
Because of their low on-resistance and concurrent capacities, low CxR PhotoMOS® relays are especially well-suited for measurement and data acquisition applications. For example, AQY221N2V offers a typical on-resistance of 9.5 Ω and a low output capacitance value of 1.0 pF, leading to switching times of 20 µs and providing good isolation characteristics for high frequency load signals. In addition, measurement applications benefit from the reduced length of internal bonding wires and the flat lead terminals, which result in reduced signal propagation delay. The new design has been implemented in a reshaped package. The SSOP’s (Shrink small outline package) area is only 60% compared to the conventional SOP (Small outline package) and its volume has been reduced by 40%.

If several switches are used in a system, the SSOP saves significant mounting space and volume. In addition to this space-saving size, Panasonic Industry offers a second package form, incorporating four Form-A switches in one single SOP package. With various package forms and a variety of PhotoMOS® relays from General Usage types (GU types) to Radio Frequency types (RF types) with reduced on-resistance or low CxR values, relays for numerous applications can be supplied.

IN Your Future

Learn
more about PhotoMOS® technology

Get
here the PhotoMOS® relay App!



Application Note - How to solve various tasks with PhotoMOS® relays for measurement applications
Date: April 2024
Contact: Panasonic Industry Europe GmbH, photomos@eu.panasonic.com
Notes: Data and descriptions in this document are subject to change without notice.
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