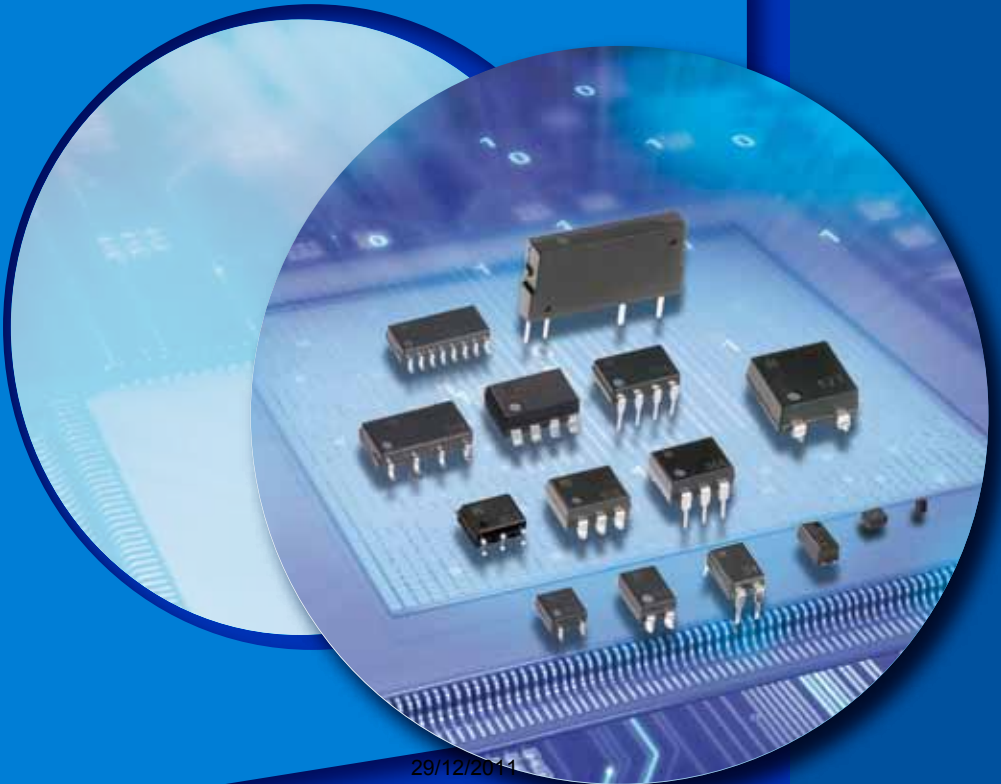


PHOTOMOS RELAYS

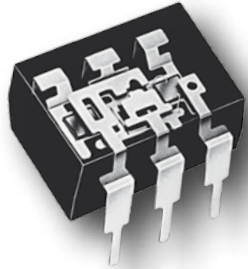
AN OVERVIEW



What makes PhotoMOS relays so successful?

Modern semiconductor technology enables fast, quiet, bounce-free switching, even in miniature sizes. PhotoMOS relays nevertheless enjoy an almost unlimited lifetime if used according to the specifications. Moreover, they are extremely reliable, unaffected by vibrations, and their

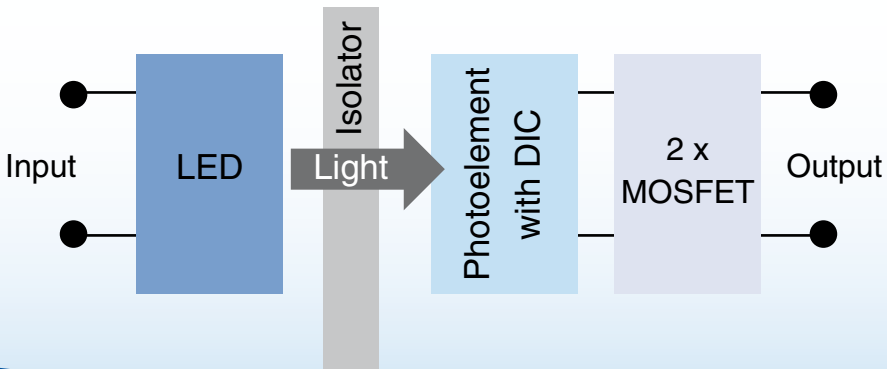
ON-resistance remains stable throughout their entire lifetime.



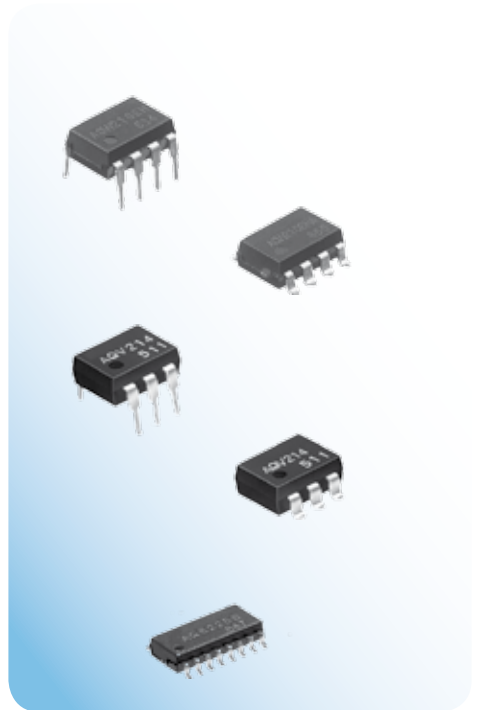
PhotoMOS technology

The basic construction of the PhotoMOS relay can be seen in the illustration. Light emitted from an LED on the input side passes through an isolator permeable to light and is detected by a solar cell. Via a trigger circuit, the solar cell's output voltage controls the gates of two source-coupled MOSFETs at the output. This arrangement allows PhotoMOS relays to switch both AC and DC loads.

The integration of MOSFET technology in PhotoMOS relays differentiates them significantly from semiconductor relays with triacs or transistors at the output.



Package variations



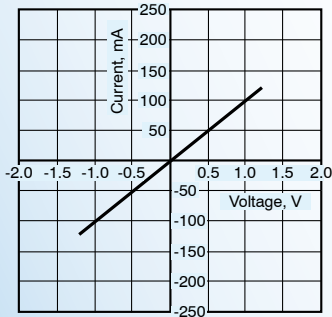
The most important advantages at a glance

- Linear output characteristics
- No threshold voltage
- Low operate current
(sensitive type $\leq 0.31\text{mA}$)
- Low output capacitance
(RF type $\leq 1\text{pF}$)
- Absolute minimum leakage current
(pA)
- Extremely long lifetime
- Stable ON-resistance over the entire lifetime
- Extremely compact design
(VSSOP, SON, SSOP, SOP)
- No contact bounce
- Highly resistant to shock and vibration
- Flexible mounting orientation

A few distinguishing features of PhotoMOS relays

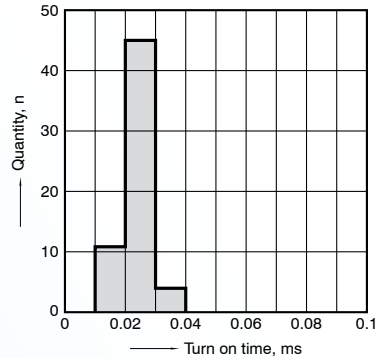
1. Linear output characteristics

(e.g. AQY225R2V)



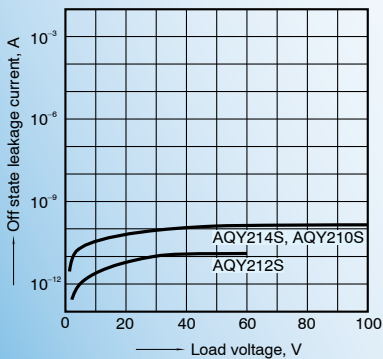
2. Fast switching times

with little variation (e.g. AQY221N3V)



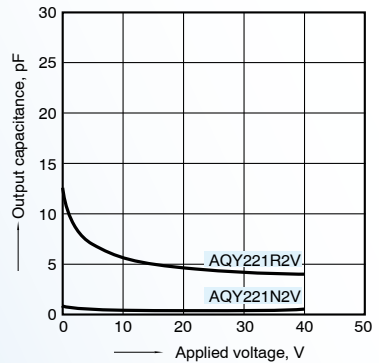
3. Low off-state leakage current

in the pA range (e.g. AQY21*S)



4. Low output capacitance










(e.g. AQY221*V)



Typical applications

- Measuring devices and technology
- IC and PC board testers
- Multiplexers
- Medical technology
- Industrial control systems
- Battery management
- Signal/alarm contacts
- Outputs for programmable controllers
- Pulse and counter outputs

PhotoMOS relays: Popular type selection table

| | Type ¹⁾ | Package | Contact | Voltage (V) ²⁾ | Current (A) ²⁾ | R _{on} ³⁾ (Ω) | Info. | |
|---|---|-----------|---------|---------------------------|---------------------------|-----------------------------------|-------------|--|
|  | AQY211EH(A) | DIP4 | 1a | 30 | 1.0 | 0.25 | General use | |
| | AQY212EH(A) | | | 60 | 0.55 | 0.85 | | |
| | AQY212GH(A) | | | | 1.1 | 0.34 | | |
| | AQY210EH(A) | | | 350 | 0.13 | 18 | | |
| | AQY214EH(A) | | | 400 | 0.12 | 26 | | |
| | AQY216EH(A) | | | 600 | 0.05 | 52 | | |
|  | AQY212S | SOP4 | 60 | 0.5 | 0.83 | General use | | |
| | AQY212GS | | | 1.0 | 0.34 | | | |
| | AQY212G2S | | | | 1.25 | | | 0.2 |
| | AQY210S | | 350 | 0.12 | 17 | | | |
| | AQY214S | | 400 | 0.1 | 25 | | | |
| | AQY412S | | 1b | 60 | 0.5 | | | 1 |
| | AQY410S | | | 350 | 0.12 | | 18 | |
| | AQY414S | | | 400 | 0.1 | | 26 | |
| |  | | AQY232S | SOP4 | 1a | | 60 | 0.5 |
| AQY230S | | 350 | 0.12 | | | | 19 | |
| AQY234S | | 400 | 0.1 | | | | 27 | |
|  | AQY210KS | SOP4 | 1a | 350 | 0.12 | | 23 | Short circuit protected |
| | AQV112KL(A) | DIP6 | | 60 | 0.5 | 0.55 | | |
| | AQV251G | DIP6 | 1a | 30 | 3.5 | 0.035 | High power | |
| | AQV252G | | | 60 | 2.5 | 0.08 | | |
| | AQV259H(A) | | | 1.000 | 0.03 | 85 | | |
| | AQV258H(A) | | | 1.500 | 0.02 | 345 | | |
| AQV255GS | SOP6 | 80 | 1.25 | 0.09 | | | | |
|  | AQY221R2T | VSSOP | 1a | 40 | 0.25 | 0.8 | | Low CxR for high frequencies C _{min} =1pF |
| | AQY221R2M | SON | | 40 | 0.25 | 0.8 | | |
| | AQY221N2M | | | 40 | 0.12 | 9.5 | | |
| | AQY221N3M | | | 25 | 0.15 | 5.5 | | |
|  | AQY221N2V | | | SSOP | 40 | 0.12 | 9.5 | |
| | AQY221R2V | 40 | | | 0.25 | 0.75 | | |
| | AQY221N3V | 25 | | | 0.15 | 5.5 | | |
| | AQY225R2V | 80 | | | 0.12 | 10.5 | | |
| | AQY221R4V | 40 | | | 0.5 | 0.55 | | |
| |  | AQY221N2S | | | SOP4 | 40 | 0.12 | |
| AQY221R2S | | 40 | | 0.25 | | 0.8 | | |
| AQY225R2S | | 80 | | 0.15 | | 10.5 | | |
|  | AQS225R2S | SOP16 | 4a | 80 | 0.07 | 10.5 | | |
|  | AQZ102 | SIL4 | 1a | 60 | 4.0 | 0.05 | DC only | |
| | AQZ202 | | | 60 | 3.0 | 0.11 | AC & DC | |
| | AQZ205 | | | 100 | 2.0 | 0.23 | | |
| | AQZ204 | | | 400 | 0.5 | 2 | | |
| | AQZ404 | | 1b | 400 | 0.5 | 2.8 | | |

1) A = SMD type

2) Maximum values (DC or peak AC)

3) Typical value

29/12/2011

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