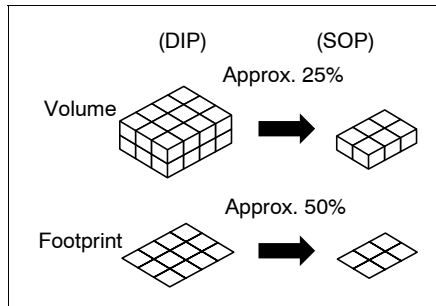
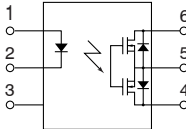
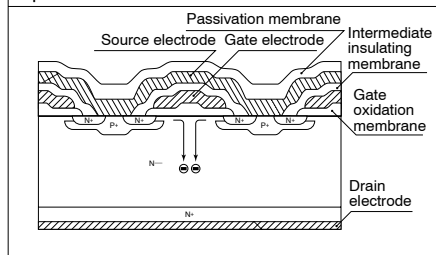


mm inch



2. Low on resistance (Max. 50 Ω) at 400 V for normally-closed type
has been achieved thanks to the built-in MOSFET processed by our proprietary method, DSD (Double-Diffused and Selective Doping) method.

Cross section of the normally-closed type of power MOS



3. Tape and reel

The device comes standard in a tape and reel (1,000 pcs./reel) to facilitate automatic insertion machines.

4. Controls low-level analog signals

PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

5. Low-level off state leakage current

In contrast to the SSR with an off state leakage current of several milliamperes, the PhotoMOS relay features a very small off state leakage current of typ. 100 pA even at the rated load voltage of 400 V.

6. Low thermal electromotive force (Approx. 1 μV)

FEATURES

1. 1 channel (Form B) in super miniature design

The device comes in a super-miniature SO package measuring (W) 4.4 × (L) 6.3 × (H) 2.1 mm (W) .173 × (L) .248 × (H) .083 inch — approx. 25% of the volume and 50% of the footprint size of DIP type PhotoMOS Relays.

TYPICAL APPLICATIONS

- Telephones
- Measuring instruments
- Computer
- Industrial robots
- High-speed inspection machines

TYPES

Type	Output rating*		Package size	Part No.			Packing quantity	
	Load voltage	Load current		Tube packing style	Tape and reel packing style		Tube	Tape and reel
AC/DC type	400V	100mA	SOP6pin	AQV414S	AQV414SX (Picked from the 1/2/3-pin side)	AQV414SZ (Picked from the 4/5/6-pin side)	1 tube contains: 75 pcs. 1 batch contains: 1,500 pcs.	1,000 pcs.

* Indicate the peak AC and DC values.

Note: For space reasons, the initial letters of the part number "AQ" the package style indicator "X" or "Z" are not marked on the relay.
(Ex. the label for product number AQV414S is V414S)

RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	Type of connection	AQV414S	Remarks	
Input	LED forward current	I_F		50 mA	f = 100 Hz, Duty factor = 0.1%	
	LED reverse voltage	V_R		5 V		
	Peak forward current	I_{FP}		1 A		
	Power dissipation	P_{in}		75 mW		
Output	Load voltage (peak AC)	V_L		400 V	A connection: Peak AC, DC B,C connection: DC	
	Continuous load current	I_L		A		0.10 A
				B		0.11 A
				C		0.12 A
	Peak load current	I_{peak}				0.3 A
Power dissipation	P_{out}		450 mW			
Total power dissipation		P_T		500 mW		
I/O isolation voltage		V_{iso}		1,500 V AC		
Temperature limits	Operating	T_{opr}		-40°C to +85°C -40°F to +185°F	Non-condensing at low temperatures	
	Storage	T_{stg}		-40°C to +100°C -40°F to +212°F		

GU PhotoMOS (AQV414S)

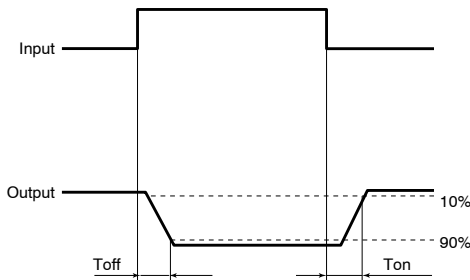
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	Type of connection	AQV414S	Remarks	
Input	LED operate (OFF) current	Typical	I_{Foff}	—	0.6 mA	$I_L = \text{Max.}$
		Maximum			3 mA	
	LED reverse (ON) current	Minimum	I_{Fon}	—	0.4 mA	$I_L = \text{Max.}$
		Typical			0.55 mA	
LED dropout voltage	Typical	V_F	—	1.25 V (1.14 V at $I_F = 5 \text{ mA}$)		
	Maximum			1.5 V	$I_F = 50 \text{ mA}$	
Output	On resistance	Typical	R_{on}	A	26 Ω	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum			50 Ω	
		Typical	R_{on}	B	20 Ω	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum			25 Ω	
	Typical	R_{on}	C	10 Ω	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time	
	Maximum			12.5 Ω		
Off state leakage current	Maximum	I_{Leak}	—	1 μA	$I_F = 5 \text{ mA}$ $V_L = \text{Max.}$	
Transfer characteristics	Operate (OFF) time*	Typical	T_{off}	—	0.47 ms	$I_F = 0 \text{ mA} > 5 \text{ mA}$ $V_L = \text{Max.}$
		Maximum			1.0 ms	
	Reverse (ON) time*	Typical	T_{on}	—	0.28 ms	$I_F = 5 \text{ mA} > 0 \text{ mA}$ $V_L = \text{Max.}$
		Maximum			1.0 ms	
	I/O capacitance	Typical	C_{iso}	—	0.8 pF	$f = 1 \text{ MHz}$
Maximum		1.5 pF			$V_B = 0 \text{ V}$	
Initial I/C isolation resistance	Minimum	R_{iso}	—	1,000 M Ω	500 V DC	

Note: Recommendable LED forward current $I_F = 5 \text{ mA}$.

[Type of connection](#)

*Operate/Reverse time



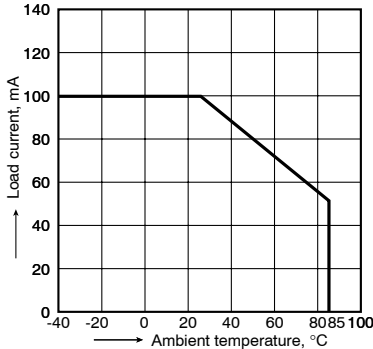
- [Dimensions](#)
- [Schematic and Wiring Diagrams](#)
- [Cautions for Use](#)

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

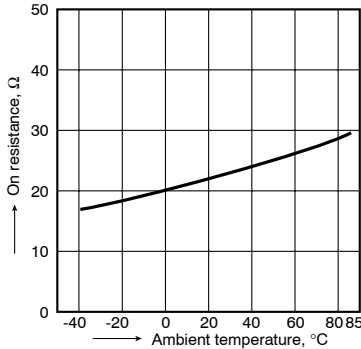
Allowable ambient temperature: -40°C to $+85^\circ\text{C}$
 -40°F to $+185^\circ\text{F}$

Type of connection: A



2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
LED current: 0 mA;
Continuous load current: 100 mA (DC)



3. Operate (OFF) time vs. ambient temperature characteristics

LED current: 5 mA;
Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)

