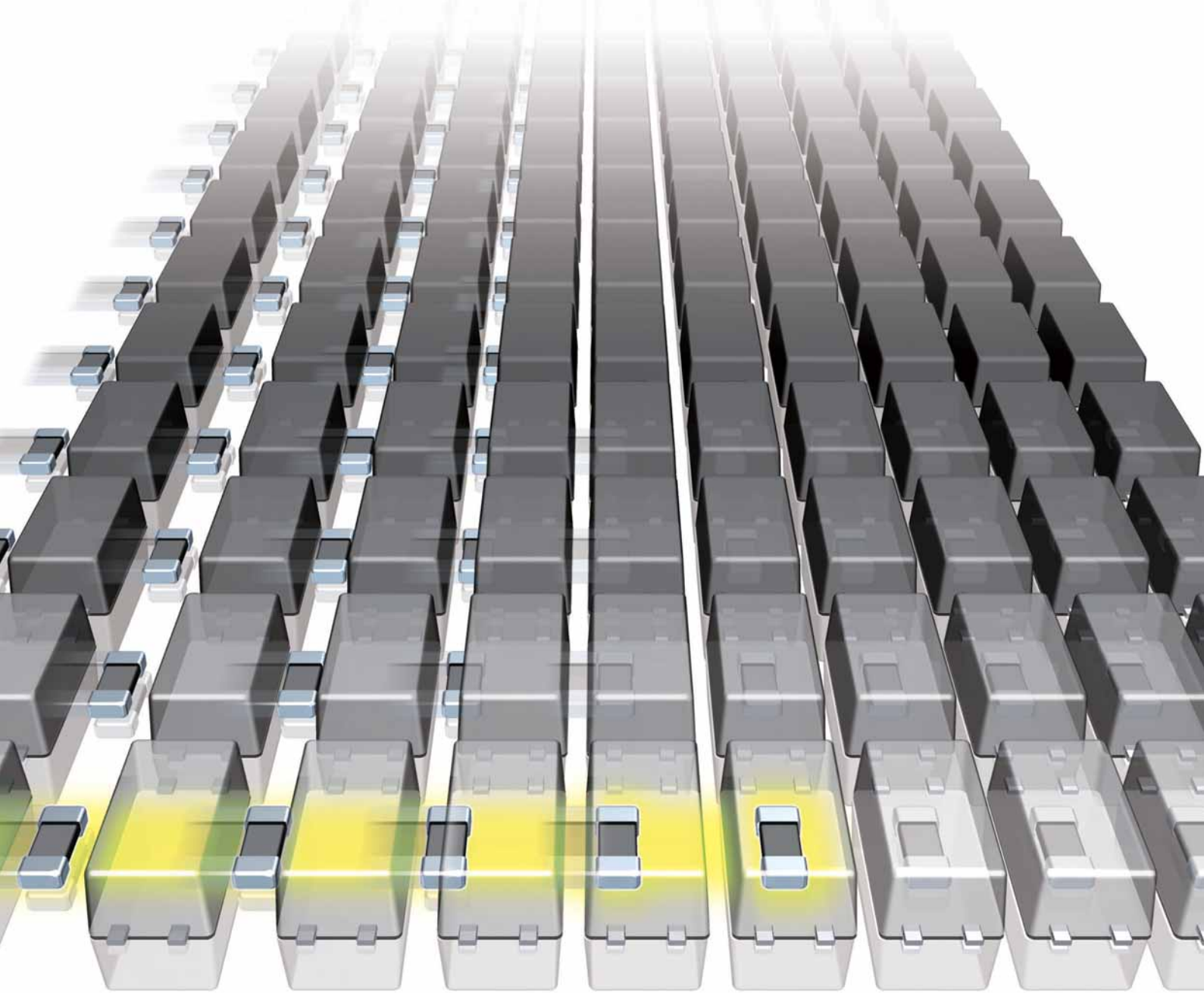
Panasonic
ideas for life

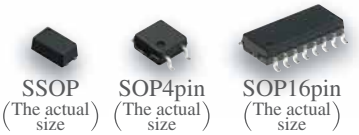
PhotoMOS Relays

RF C×R10/GU High Capacity
VOLTAGE-SENSITIVE TYPE

ANOTHER SPACE-CREATING PhotoMOS Relay with BUILT-IN RESISTOR



No need to mount input-resistor!
A NEW SOLUTION for SPACE & LABOR-SAVING MOUNTING



Panasonic
ideas for life

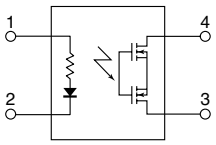
RF C×R10/GU High capacity Voltage-sensitive Type, SSOP/SOP16/SOP, 40V/60V load voltage

RF/GU PhotoMOS (AQY2○○F/AQS221F)

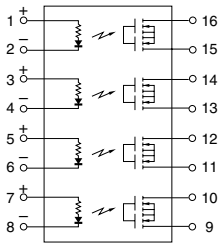
New

L 2.65mm .104inch
W 4.45mm .175inch
H 1.80mm .071inch

L 4.30mm .169inch
W 4.40mm .173inch
H 2.10mm .083inch



L 10.37mm .408inch
W 4.40mm .173inch
H 2.10mm .083inch



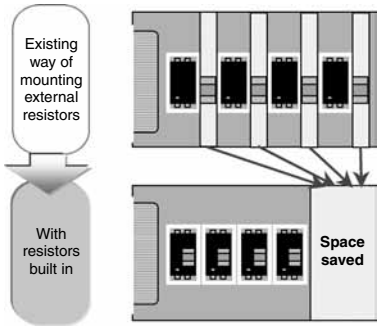
FEATURES

1. Built-in input resistor means less man-hours when mounting

The voltage-sensitive type, which eliminates the need to mount an external input resistor, is now available in a small package (recommended input voltage is 5 V). Man-hours spent mounting external input resistors are cut and board designing is simplified.

2. Save space on PC board

Since the small package size remains the same while including a built-in input resistor, space on the PC board is saved. This makes it easier to incorporate space savings when designing miniature devices.



<Artistic impression of PC board space savings due to built-in resistor>

3. Wide variation of small packages

A total of five types are available in small SSOP, SOP16pin (4a) and SOP4pin packages including the low on resistance type (R type), the low capacitance type (C type), and the high capacity type.

Type and Shape			Load voltage	Continuous load current
RF C×R10	SSOP (1a)	R	40V	0.25A
		C	40V	0.12A
	SOP16pin (4a)	R	40V	0.16A
		C	40V	0.06A
GU High capacity	SOP4pin (1a)		60V	1.25A

TYPICAL APPLICATIONS

1. Measuring and testing equipment

Semiconductor testing equipment, Probe cards, Datalogger, Board tester and other testing equipment.

2. Telecommunication, Broadcasting, and Medical equipment

RoHS Directive compatibility information
http://panasonic-denko.co.jp/ac/e/service/environment/

TYPES

1. SSOP

Type				Output rating*1		Part No.*2	
				Load voltage	Load current	Tape and reel packing style (Picked from the 1 and 4-pin side)	Tape and reel packing style (Picked from the 2 and 3-pin side)
AC/DC type	RF C×R SSOP voltage-sensitive	Low on resistance (R type)	1a	40 V	0.25A	AQY221FR2VY	AQY221FR2VW
		Low capacitance (C type)		40 V	0.12A	AQY221FN2VY	AQY221FN2VW

Packing quantity: 3,500 pcs.
Notes: *1 Indicate the peak AC and DC values.
*2 Only tape and reel package is available.
Due to space restrictions the part numbers marked on the products have been abbreviated. The three initial letters of the part number "AQY", the package (SSOP) indicator "V", and the packaging style indicator "Y" or "W" have been omitted. (Example: Part number AQY221FR2VY → 221FR2)

2. SOP16

Type				Output rating*1		Part No.*2		
				Load voltage	Load current	Tube packing style	Tape and reel packing style (Picked from the 1/2/3/4/5/6/7/8-pin side)	Tape and reel packing style (Picked from the 9/10/11/12/13/14/15/16-pin side)
AC/DC type	RF C×R10 SOP16 voltage-sensitive	Low on resistance (R type)	4a	40 V	0.16A	AQS221FR2S	AQS221FR2SX	AQS221FR2SZ
		Low capacitance (C type)		40 V	0.06A	AQS221FN2S	AQS221FN2SX	AQS221FN2SZ

Packing quantity; Tube: 1 tube contains: 50 pcs., 1 batch contains: 1,000 pcs. Tape and reel: 1,000 pcs.
Notes: *1 Indicate the peak AC and DC values. *2 The packaging style indicator "X" or "Z" are not marked on the relay.

3. SOP4

Type			Output rating		Part No.*2		
			Load voltage	Load current	Tube packing style	Tape and reel packing style X (Picked from the 1 and 2-pin side)	Tape and reel packing style Z (Picked from the 3 and 4-pin side)
AC/DC type	GU SOP4 High capacity voltage-sensitive	1a	60V	1.25A	AQY212FG2S	AQY212FG2SX	AQY212FG2SZ

Packing quantity; Tube: 1 tube contains: 100 pcs., 1 batch contains: 2,000 pcs. Tape and reel: 1,000 pcs.
Notes: *1 Indicate the peak AC and DC values.
*2 For space reasons, only "212FG2" is marked on the product as the part number. The three initial letters of the part number "AQY", the package (SOP) indicator "S", and the packaging style indicator "X" or "Z" have been omitted.

RATING

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

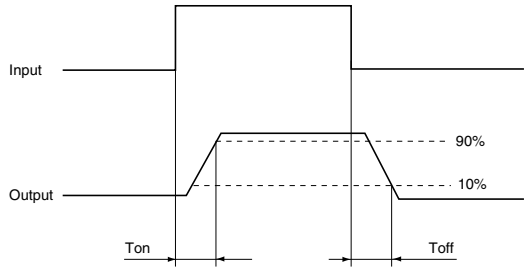
Item		Symbol	SSOP		SOP16 (4a type)		SOP4	Remarks
			AQY221FR2V	AQY221FN2V	AQS221FR2S	AQS221FN2S	AQY212FG2S	
Input	Input voltage	V_{IN}	6V					
	Input reverse voltage	V_{RIN}	5V					
	Power dissipation	P_{in}	65mW	65mW	260mW*	260mW*	65mW	*65mW for 1a
Output	Load voltage (peak AC)	V_L	40V	40V	40V	40V	60V	
	Load current (peak AC)	I_L	0.25A	0.12A	0.16A	0.06A	1.25A	
	Peak load current	I_{peak}	0.75A	0.2A	0.2A	0.12A	3A	100ms (1shot), V_L=DC
	Power dissipation	P_{out}	250mW	250mW	600mW	600mW	300mW	
Total power dissipation		P_T	300mW	300mW	650mW	650mW	350mW	
I/O isolation voltage		V_{iso}	500V AC					
Operating temperature		T_{opr}	–40°C to +85°C –40°F to +185°F					Non-condensing at low temperatures
Storage temperature		T_{stg}	–40°C to +100°C –40°F to +212°F					

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

Item			Symbol	SSOP		SOP16 (4a type)		SOP4	Condition
				AQY221FR2V	AQY221FN2V	AQS221FR2S	AQS221FN2S	AQY212FG2S	
Input	Operate voltage	Typ.	V_{Fon}	1.3V	1.3V	1.3V	1.3V	1.4V	AQY221FR2V: I_L = Max. AQY221FN2V: I_L = 80mA AQS221FR2S: I_L = Max. AQS221FN2S: I_L = Max. AQY212FG2S: I_L = 100mA
		Max.		4V	4V	4V	4V	4V	
	Turn off voltage	Min.	V_{Foff}	0.8V	0.8V	0.8V	0.8V	0.8V	
		Typ.		1.3V	1.3V	1.3V	1.3V	1.4V	
	Input current	Typ.	I_{IN}	8.5mA					V_{IN} = 5V
Output	On resistance	Typ.	R_{on}	0.75Ω	9.5Ω	0.75Ω	9.5Ω	0.2Ω	AQY221FR2V: V_{IN} = 5V, I_L = Max. AQY221FN2V: V_{IN} = 5V, I_L = 80mA AQS221FR2S: V_{IN} = 5V, I_L = Max. AQS221FN2S: V_{IN} = 5V, I_L = Max. AQY212FG2S: V_{IN} = 5V, I_L = Max. Within 1 s on time
		Max.		1.25Ω	12.5Ω	1.25Ω	12.5Ω	0.5Ω	
	Output capacitance	Typ.	C_{out}	12.5pF	1pF	12.5pF	1pF	–	V_{IN} = 0V, V_B = 0V, f = 1MHz
		Max.		18pF	1.5pF	18pF	1.5pF	–	
	Off state leakage current	Typ.	I_{Leak}	0.02nA	0.01nA	0.02nA	0.01nA	–	V_{IN} = 0V, V_L = Max.
		Max.		10nA	10nA	10nA	10nA	1μA	
Transfer characteristics	Turn on time*	Typ.	T_{on}	0.05ms	0.01ms	0.07ms	0.02ms	0.7ms	AQY221FR2V: V_{IN} = 5V, V_L = 10V, R_L = 40Ω AQY221FN2V: V_{IN} = 5V, V_L = 10V, R_L = 125Ω AQS221FR2S: V_{IN} = 5V, I_L = Max. AQS221FN2S: V_{IN} = 5V, V_L = 10V, R_L = 500Ω AQY212FG2S: V_{IN} = 5V, I_L = 100mA, V_L = 10V
		Max.		0.5ms	0.5ms	0.5ms	0.5ms	5ms	
	Turn off time*	Typ.	T_{off}	0.06ms	0.03ms	0.07ms	0.02ms	0.1ms	
		Max.		0.2ms	0.2ms	0.2ms	0.2ms	0.5ms	
	I/O capacitance	Typ.	C_{iso}	0.8pF	0.8pF	0.8pF	0.8pF	0.8pF	f = 1MHz, V_B = 0V
		Max.		1.5pF	1.5pF	1.5pF	1.5pF	1.5pF	f = 1MHz, V_B = 0V
	Initial I/O isolation resistance	Min.	R_{iso}	1,000MΩ	1,000MΩ	1,000MΩ	1,000MΩ	1,000MΩ	500V DC
	Maximum operating frequency	Max.	–	–	–	–	–	5 cps	V_{IN} = 5V, duty = 50% $V_I \times I_I$ = 75V·A

Notes: 1. Please refer to the schematic and wiring diagram for connection method.
2. If you wish to change the input voltage, rating or performance, please inquire with our sales.

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation (turn on) and resetting (turn off).

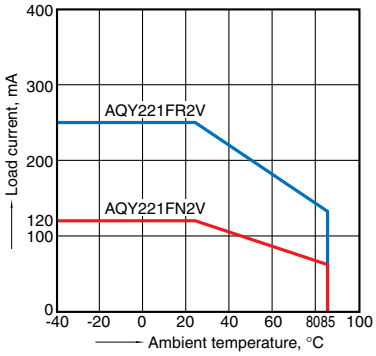
Item	Symbol	Minimum	Typical	Maximum	Unit
Input voltage	V_{IN}	4.5	5	5.5	V

REFERENCE DATA

• RF C×R10 SSOP Voltage-sensitive type (AQY221FR2V: R type, AQY221FN2V: C type)

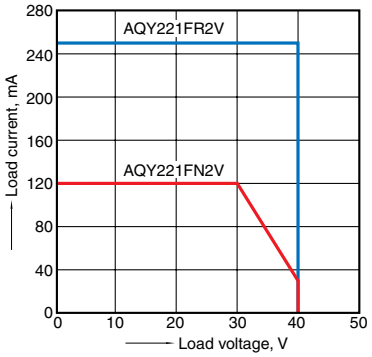
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



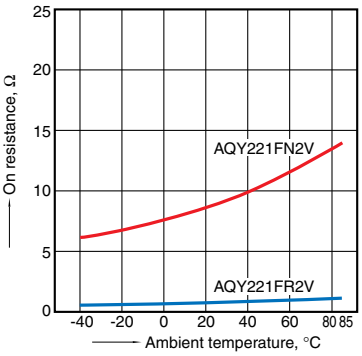
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



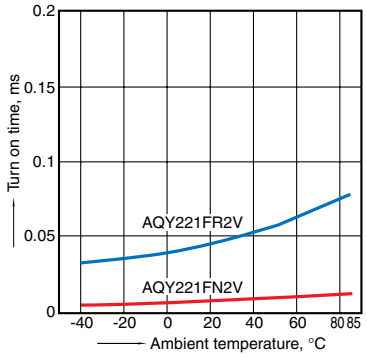
3. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



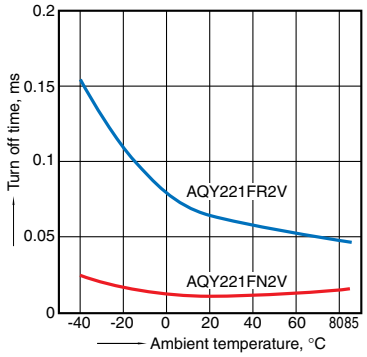
4. Turn on time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type



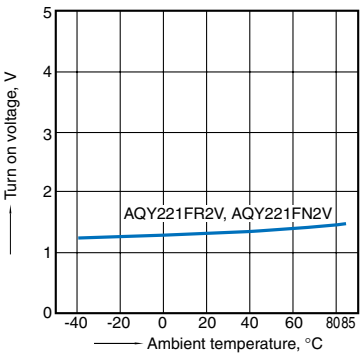
5. Turn off time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type



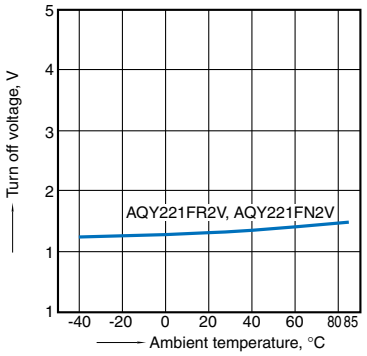
6. Turn on voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type



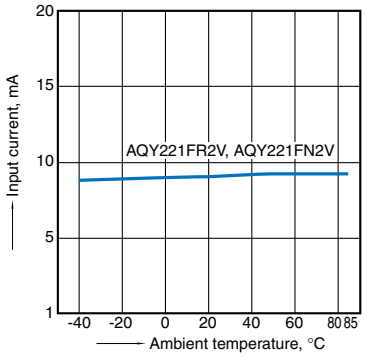
7. Turn off voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type



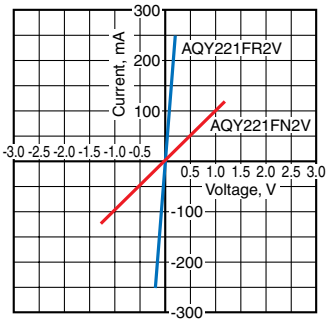
8. Input current vs. ambient temperature characteristics

Input voltage: 5V



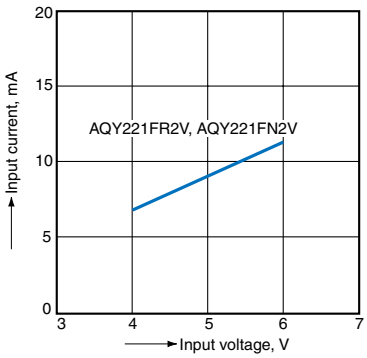
9. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



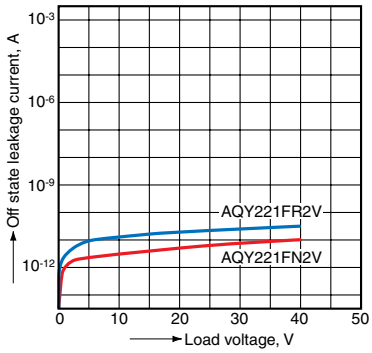
10. Input current vs. input voltage characteristics

Ambient temperature: 25°C 77°F
(Recommended input voltage: 5±0.5V)



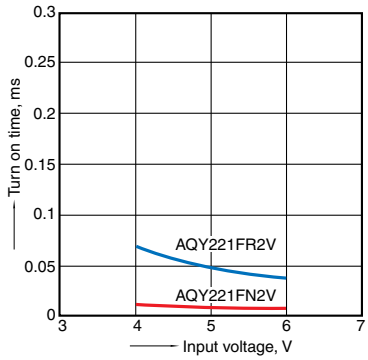
11. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



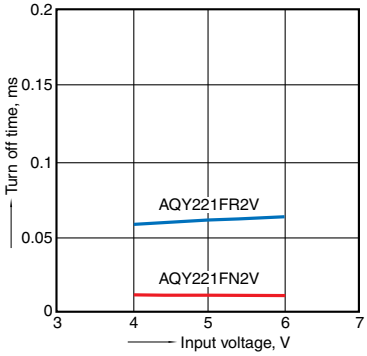
12. Turn on time vs. input voltage characteristics

Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type; Ambient temperature: 25°C 77°F



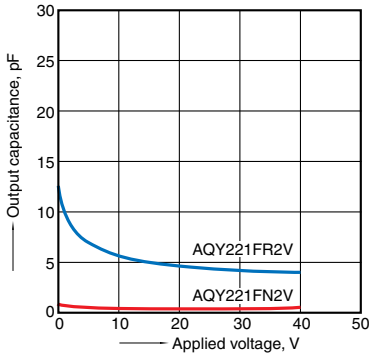
13. Turn off time vs. input voltage characteristics

Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 250mA (DC) R type,
80mA (DC) C type; Ambient temperature: 25°C 77°F



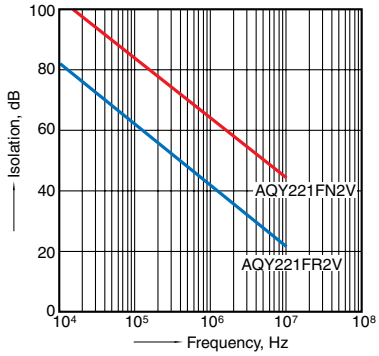
14. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4
Frequency: 1 MHz, 30m Vrms;
Ambient temperature: 25°C 77°F



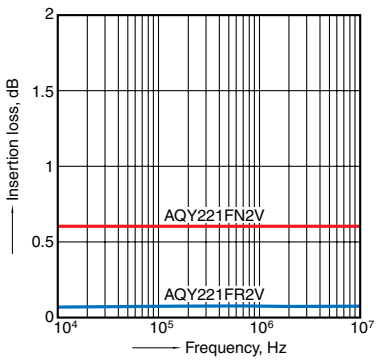
15. Isolation vs. frequency characteristics (50Ω impedance)

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



16. Insertion loss vs. frequency characteristics (50Ω impedance)

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F

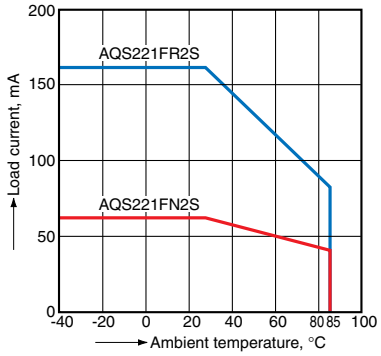


RF/GU PhotoMOS (AQY2❍❍F/AQS221F)

• RF C×R10 SOP16 (4a) Voltage-sensitive type (AQS221FR2S: R type, AQS221FN2S: C type)

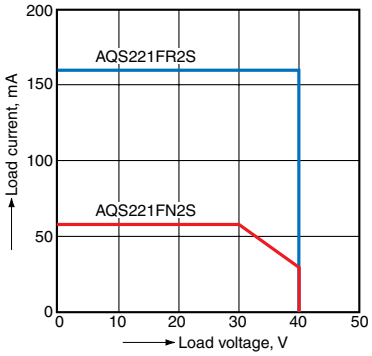
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



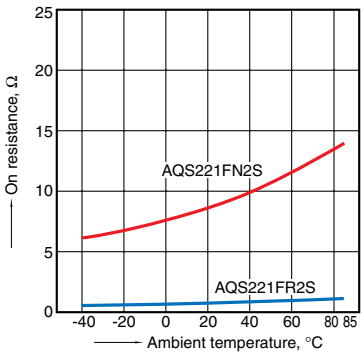
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



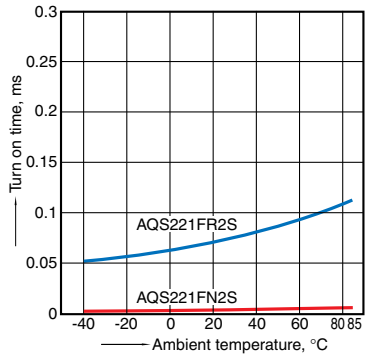
3. On resistance vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



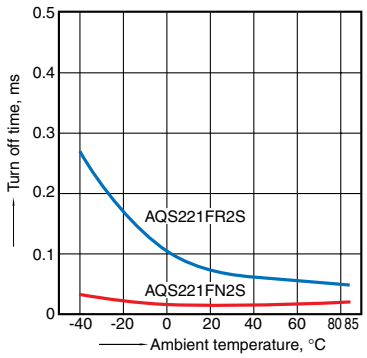
4. Turn on time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type



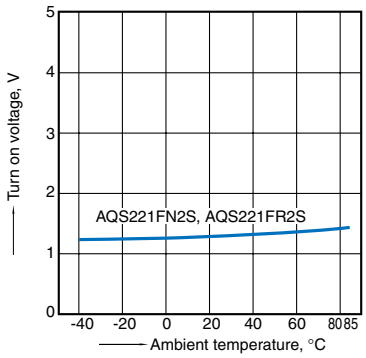
5. Turn off time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type



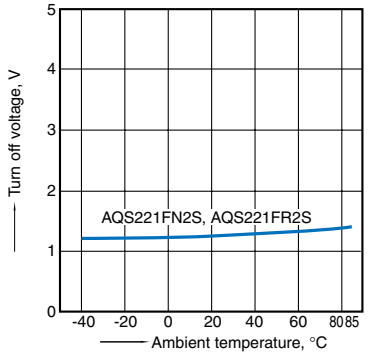
6. Turn on voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



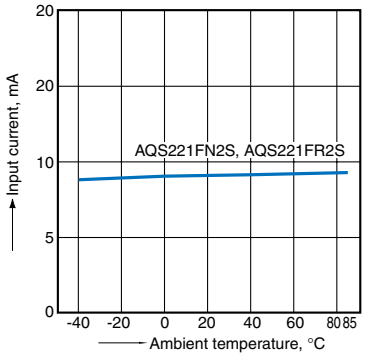
7. Turn off voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



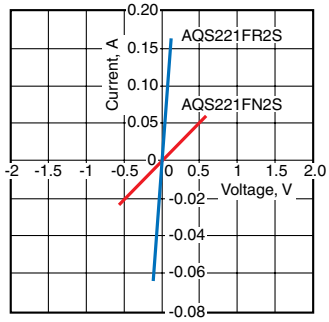
8. Input current vs. ambient temperature characteristics

Input voltage: 5V



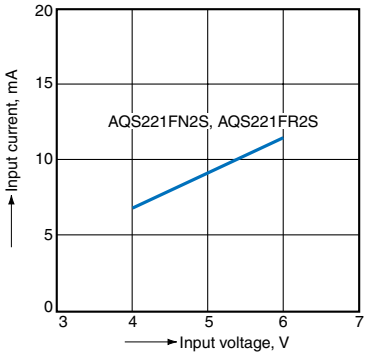
9. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



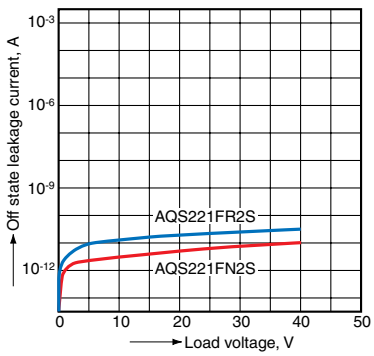
10. Input current vs. input voltage characteristics

Ambient temperature: 25°C 77°F
(Recommended input voltage: 5±0.5V)



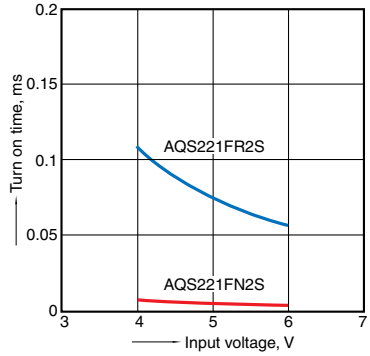
11. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



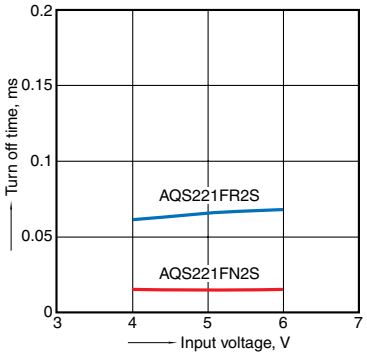
12. Turn on time vs. input voltage characteristics

Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type; Ambient temperature: 25°C 77°F



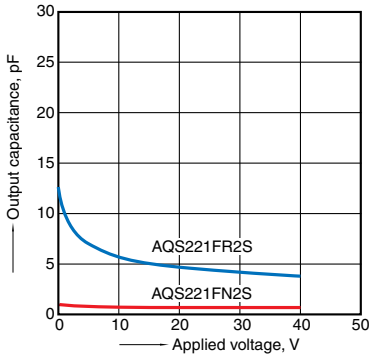
13. Turn off time vs. input voltage characteristics

Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type; Ambient temperature: 25°C 77°F



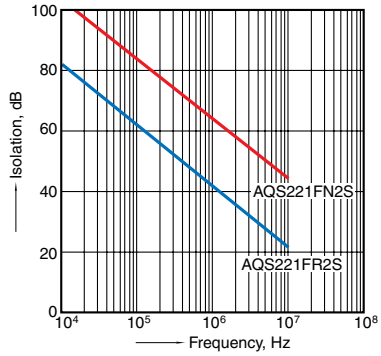
14. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4
Frequency: 1 MHz, 30m Vrms;
Ambient temperature: 25°C 77°F



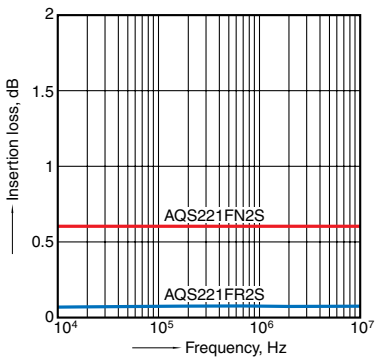
15. Isolation vs. frequency characteristics (50Ω impedance)

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



16. Insertion loss vs. frequency characteristics (50Ω impedance)

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F

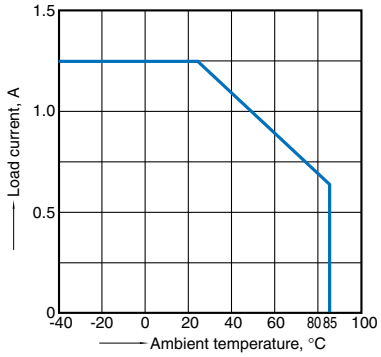


RF/GU PhotoMOS (AQY2❍❍F/AQS221F)

• GU High capacity SOP4 Voltage-sensitive type (AQY212FG2S)

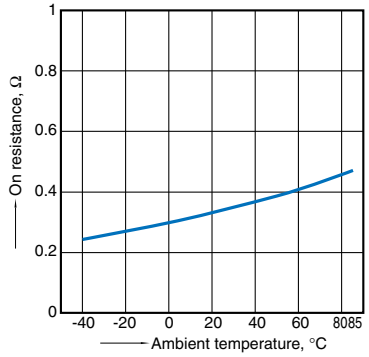
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



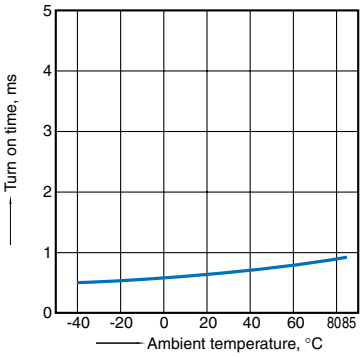
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
Input voltage: 5V; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



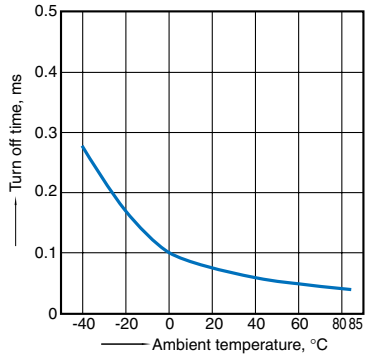
3. Turn on time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



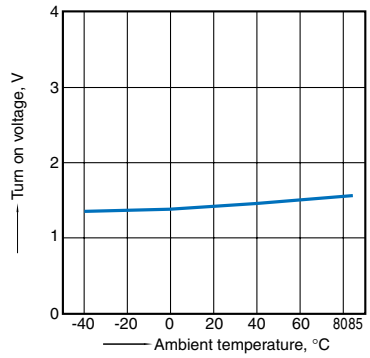
4. Turn off time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



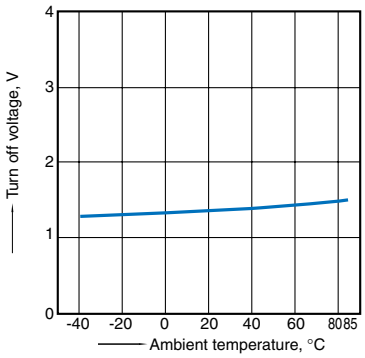
5. Turn on voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



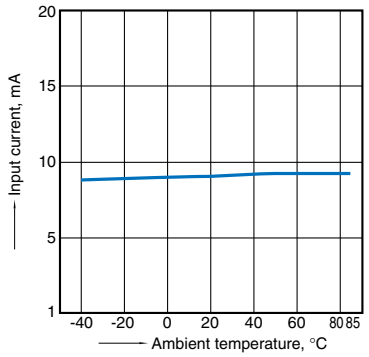
6. Turn off voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



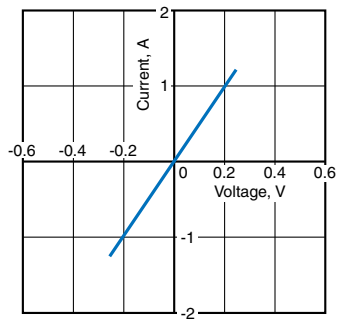
7. Input current vs. ambient temperature characteristics

Input voltage: 5V



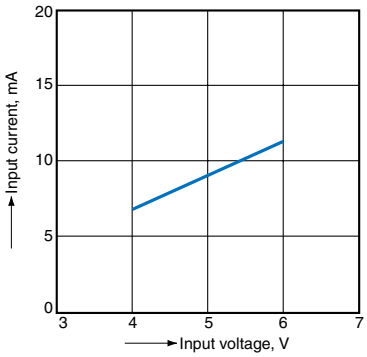
8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F

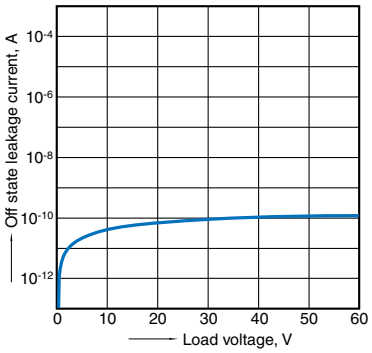


9. Input current vs. input voltage characteristics

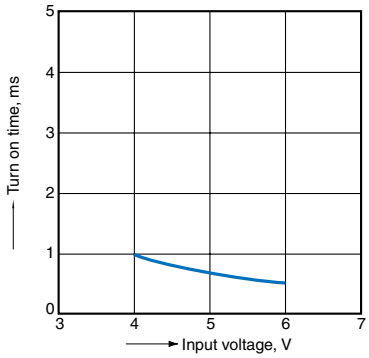
Ambient temperature: 25°C 77°F
(Recommended input voltage: 5±0.5V)



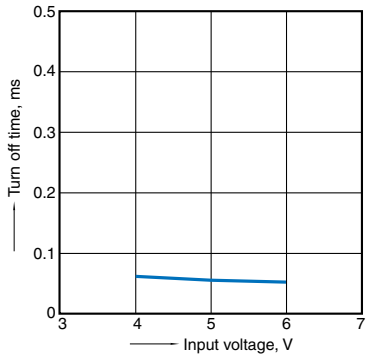
10. Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



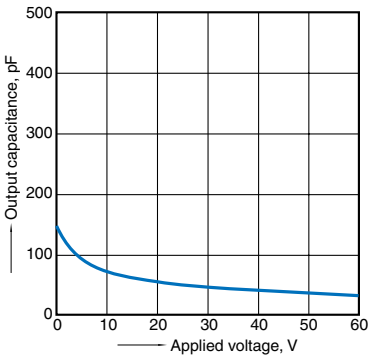
11. Turn on time vs. input voltage characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 100mA (DC);
Ambient temperature: 25°C 77°F



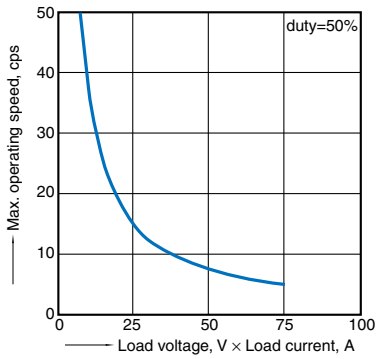
12. Turn off time vs. input voltage characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 100mA (DC);
Ambient temperature: 25°C 77°F



13. Output capacitance vs. applied voltage characteristics
Measured portion: between terminals 3 and 4
Frequency: 1 MHz, 30m Vrms;
Ambient temperature: 25°C 77°F



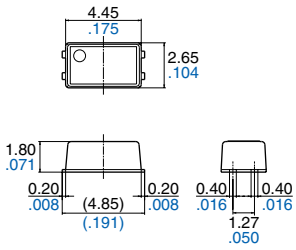
14. Max. operating speed vs. load voltage-load current characteristics
Input voltage: 5V
Ambient temperature: 25°C 77°F



DIMENSIONS (Unit: mm inch)

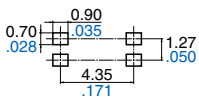
1. SSOP

External dimensions



Terminal thickness t = ±0.15 ±.006
General Tolerance: ±0.1 ±.004

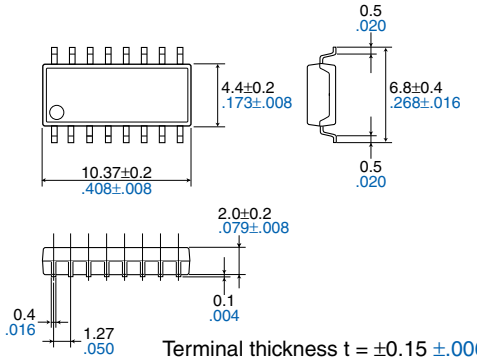
Recommended mounting pad (Top view)



Tolerance: ±0.1 ±.004

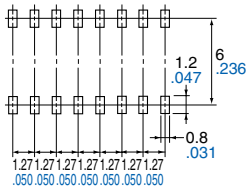
2. SOP16

External dimensions



Terminal thickness t = ±0.15 ±.006
General Tolerance: ±0.1 ±.004

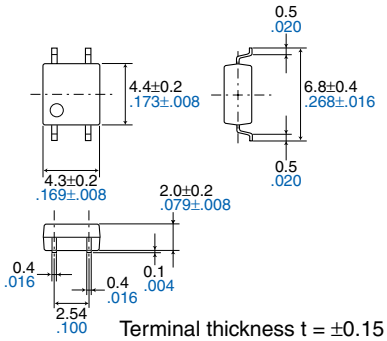
Recommended mounting pad
(Top view)



Tolerance: ±0.1 ±.004

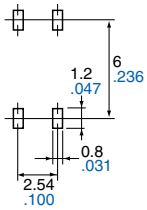
3. SOP4

External dimensions



Terminal thickness t = ±0.15 ±.006
General Tolerance: ±0.1 ±.004

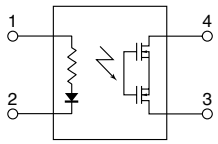
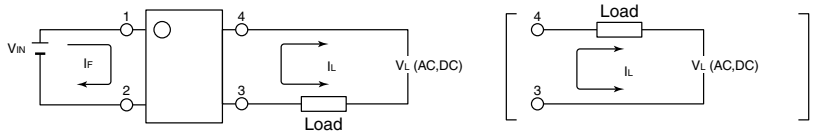
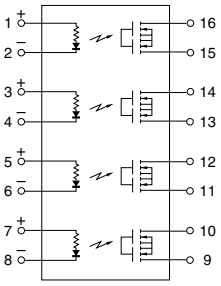
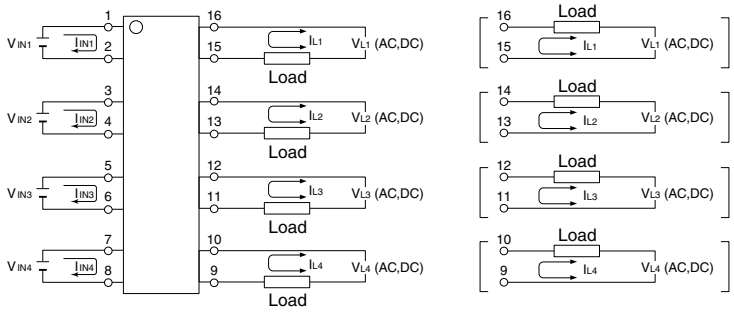
Recommended mounting pad
(Top view)



Tolerance: ±0.1 ±.004

SCHEMATIC AND WIRING DIAGRAMS

V_{IN}: Input voltage; I_{IN}: Input current; V_L: Load voltage; I_L: Load current

Package type	Schematic	Output configu-ration	Load	Wiring diagram
SSOP, SOP4 pin		1a	AC/DC	
SOP16 pin		4a	AC/DC	

PhotoMOS Relay Cautions for Use

SAFETY WARNINGS

• Do not use the product under conditions that exceed the range of its specifications. It may cause overheating, smoke, or fire.
• Do not touch the recharging unit while the power is on. There is a danger of electrical shock. Be sure to turn off the power when performing mounting, maintenance, or repair operations on the relay (including connecting parts such as the terminal board and socket).
• Check the connection diagrams in the catalog and be sure to connect the terminals correctly. Erroneous connections could lead to unexpected operating errors, overheating, or fire.

PhotoMOS RELAY CAUTIONS FOR USE

1. Please refer to "PhotoMOS Relays" catalog (latest version) for cautions for use and explanations of terminology.

2. Applying stress that exceeds the absolute maximum rating

If the voltage or current value for any of the terminals exceeds the absolute maximum rating, internal elements will deteriorate because of the excessive voltage or current. In extreme cases, wiring may melt, or silicon P/N junctions may be destroyed.

Therefore, the circuit should be designed in such a way that the load never exceed the absolute maximum ratings, even momentarily. (We recommend that the RF CxR10 type be used with no more than 15V DC and 9V AC.)

3. Deterioration and destruction caused by discharge of static electricity

This phenomenon is generally called static electricity destruction, and occurs when static electricity generated by various factors is discharged while the relay terminals are in contact, producing internal destruction of the element.

To prevent problems from static electricity, the following precautions and measures should be taken when using your device.

1) Employees handling relays should wear anti-static clothing and should be grounded through protective resistance of 500 kΩ to 1 MΩ.

2) A conductive metal sheet should be placed over the work table. Measuring instruments and jigs should be grounded.

3) Devices and equipment used in assembly should also be grounded.

4) When packing printed circuit boards and equipment, avoid using high-polymer materials such as foam styrene, plastic, and other materials which carry an electrostatic charge.

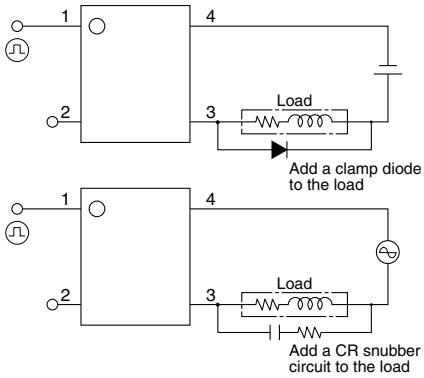
5) When storing or transporting relays, the environment should not be conducive to generating static electricity (for instance, the humidity should be between 45 and 60%), and relays should be protected using conductive packing materials.

4. Short across terminals

Do not short circuit between terminals when relay is energized, since there is possibility of breaking of the internal IC.

5. Output spike voltages

1) If an inductive load generates spike voltages which exceed the absolute maximum rating, the spike voltage must be limited. Typical circuits are shown below.



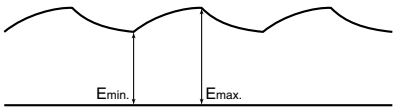
2) Even if spike voltages generated at the load are limited with a clamp diode if the circuit wires are long, spike voltages will occur by inductance. Keep wires as short as possible to minimize inductance.

6. Ripple in the input power supply

If ripple is present in the input power supply, observe the following:

1) Please maintain an input voltage of at least 4 V for E_{min}.

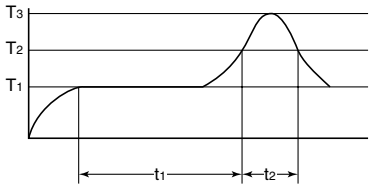
2) Please make sure the input voltage for E_{max}. is no higher than 6 V.



7. Soldering

• Example of recommended soldering conditions

IR (Infrared reflow) soldering method



T1 = 150 to 180°C 302 to 356°F
T2 = 230°C 446°F
T3 = 245°C 473°F or less
t1 = 60 to 120 s or less
t2 = 30 s or less

• When using lead-free solder, we recommend a type with an alloy composition of Sn 3.0 Ag 0.5 Cu. Please inquire about soldering conditions and other details.
• The temperature profile indicates the temperature of the soldered terminal on the surface of the PC board. The ambient temperature may increase excessively. Check the temperature under mounting conditions.

8. Notes for mounting

1) If many different packages are combined on a single substrate, then lead temperature rise is highly dependent on package size. For this reason, please make sure that the temperature of the terminal solder area of the PhotoMOS relay falls within the temperature conditions of item 7 before mounting.

2) If the mounting conditions exceed the recommended solder conditions in item 7, resin strength will fall and the nonconformity of the heat expansion coefficient of each constituent material will increase markedly, possibly causing cracks in the package, severed bonding wires, and the like. For this reason, please inquire with us about whether this use is possible.

3) We recommend cleaning with an organic solvent. If you cannot avoid using ultrasonic cleansing, and check beforehand for defects.

9. Cleaning

We recommend cleaning with an organic solvent. If you cannot avoid using ultrasonic cleansing, please ensure that the following conditions are met, and check beforehand for defects.

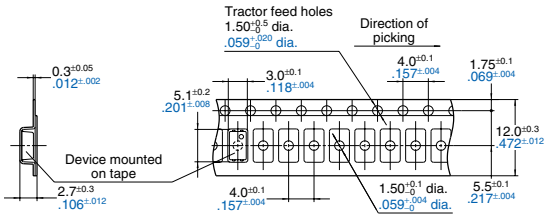
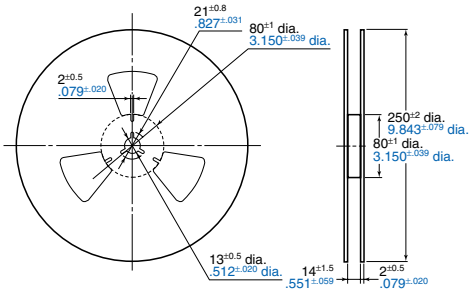
• Frequency: 27 to 29 kHz
• Ultrasonic output:
  No greater than 0.25W/cm²*
• Cleaning time: No longer than 30 s
• Cleanser used: Asahiklin AK-225
• Other:
  Submerge in solvent in order to prevent the PC board and elements from being contacted directly by the ultrasonic vibrations.

* Note: Applies to unit area ultrasonic output for ultrasonic baths.

10. Packaging format

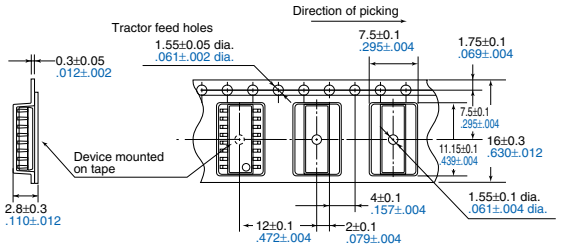
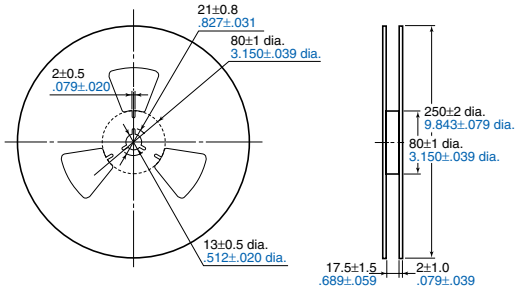
• Tape and reel packing style (Unit: mm inch)

(1) SSOP4pin type

Tape dimensions	Dimensions of paper tape reel
	

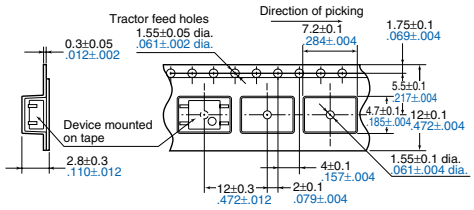
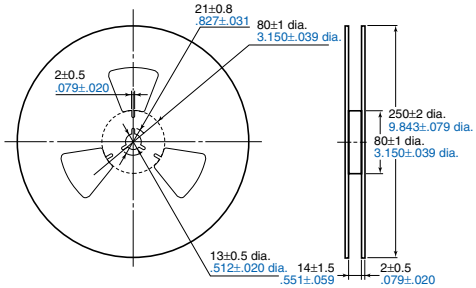
(1) When picked from 1 and 4-pin side: Part No. AQY221F❍2VY (Shown above)
(2) When picked from 2 and 3-pin side: Part No. AQY221F❍2VW

(2) SOP16pin type

Tape dimensions	Dimensions of paper tape reel
	

(1) When picked from 1, 2, 3, 4, 5, 6, 7 and 8-pin side: Part No. AQS221F❍2SX (Shown above)
(2) When picked from 9, 10, 11, 12, 13, 14, 15 and 16-pin side: Part No. AQS221F❍2SZ

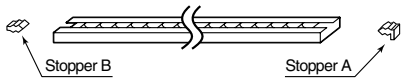
(3) SOP4pin type

Tape dimensions	Dimensions of paper tape reel
	

(1) When picked from 1 and 2-pin side: Part No. AQY212FG2SX (Shown above)
(2) When picked from 3 and 4-pin side: Part No. AQY212FG2SZ

• Tube packing style

<SOP type>



11. Transportation and storage

1) Extreme vibration during transport will damage the relay. Handle the outer and inner boxes with care.

2) Storage under extreme conditions will cause soldering degradation, external appearance defects, and deterioration of the characteristics. The following storage conditions are recommended:

• Temperature: 0 to 45°C 32 to 113°F
• Humidity: Less than 70% R.H.
• Atmosphere: No harmful gasses such as sulfurous acid gas, minimal dust.

3) PhotoMOS relays implemented in SOP type and SSOP type are sensitive to moisture and come in sealed moisture-proof packages. Observe the following cautions on storage.

• After the moisture-proof package is unsealed, take the devices out of storage as soon as possible (within 1 month, less than 45°C 113°F/70% R.H.).
• If the devices are to be left in storage for a considerable period after the moisture-proof package has been unsealed, it is recommended to keep them in another moisture-proof bag containing silica gel (within 3 months at the most).

*When thermal stress is applied when mounting with solder after the product has absorbed moisture, the water will evaporate, swelling will occur, and the inside of the package will become stressed. Since this can lead to bulging and cracking of the package surface, please be sure to be careful and follow the correct soldering conditions.