

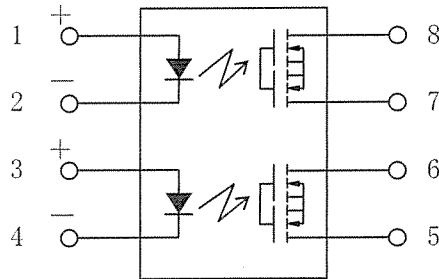
TITLE	SPECIFICATIONS FOR PHOTOMOS	PAGE	1/6
NAME	PhotoMOS	AQW214E2H **	

1. TYPE ; AQW214E2H ** GE 2 Form A type

2. DRAWING NO. ; AQW214E2H **

3. CHARACTERISTICS

3- 1 Equivalent circuit



3- 2 Absolute maximum ratings (Ta=25°C)

Item		Symbol	Number of used channels	Value	Unit
Input	LED forward current	I_F		50	mA
	LED reverse voltage	V_R		5	V
	Peak forward current *1	I_{FP}		1	A
	Power dissipation	P_{in}		75	mW
Output	Load voltage (Peak AC)	V_L		400	V
	Continuous load current *2	I_L	1ch 2ch	0.06 0.05	A
	Peak load current *3	I_{peak}		0.12	A
	Power dissipation	P_{out}		800	mW
Total power dissipation		P_T		850	mW
I/O isolation voltage		V_{iso}		5000 (AC)	V
Temperature Limits	Operating *4	T_{opr}		-40 to 85	°C
	Storage	T_{stg}		-40 to 100	°C

*1 f=100Hz, Duty factor=0.1%

*2 Peak AC/DC

*3 100ms (1 shot), $V_L=DC$

*4 Non-condensing at low temperatures

REFERENCE ONLY

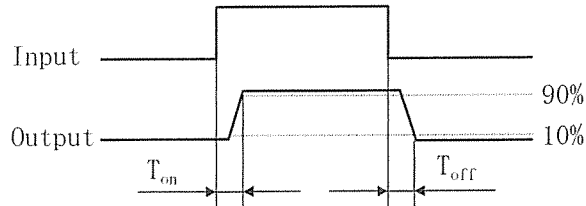
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Panasonic Corporation Automation Controls Business Division	CHECKED	<i>[Signature]</i>	
	ENACTED	<i>[Signature]</i>	

3- 3 Electrical characteristics (Ta=25°C)

Item		Symbol	Test conditions	Min.	Typ.	Max.	Unit	
Input	LED operate current	I_{Fon}	$I_L=Max.$	—	1.2	3	mA	
	LED turn off current	I_{Foff}	$I_L=Max.$	0.2	1.1	—	mA	
	LED dropout voltage *1	V_F	$I_F=50mA$	—	1.25	1.5	V	
Output	On resistance	R_{on}	$I_F=5mA, I_L=Max.$	—	52	120	Ω	
	Off state leakage current	I_{Leak}	$I_F=0mA, V_L=Max.$	—	—	1	μA	
Transfer characteristics	Switching speed	Turn on time *2	T_{on}	$I_F=5mA, I_L=Max.$	—	0.5	2	ms
		Turn off time *2	T_{off}	$I_F=5mA, I_L=Max.$	—	0.05	1	ms
	I/O capacitance		C_{iso}	$f=1MHz, V_B=0V$	—	0.8	1.5	pF
	Initial I/O isolation resistance		R_{iso}	DC500V	1000	—	—	M Ω

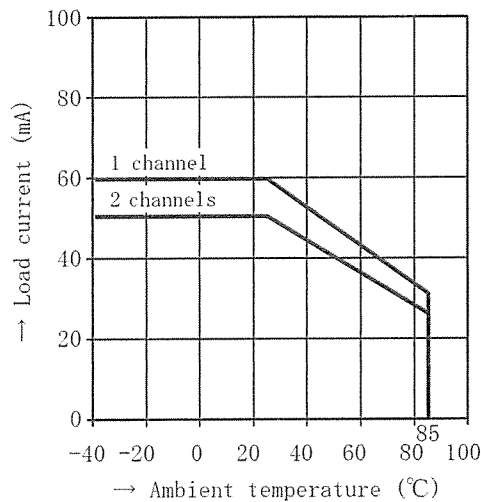
*1 Typ. 1.14V at $I_F=5mA$

*2 Turn on/Turn off time



3- 4 The terminal leads receive solder plating or solder dip plating.

4. LOAD CURRENT VS. AMBIENT TEMPERATURE CHARACTERISTICS

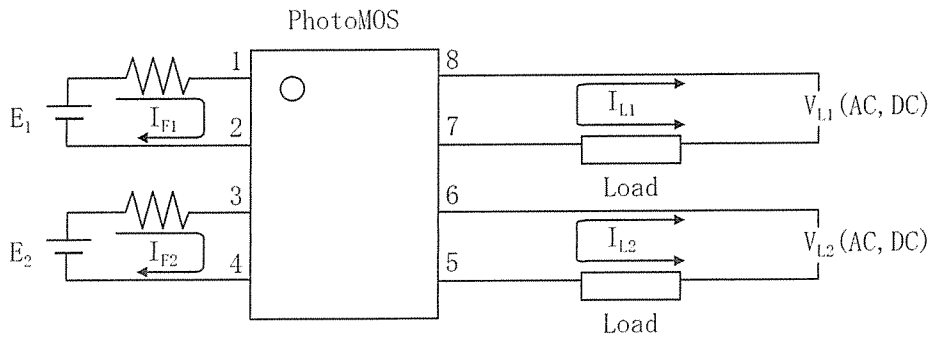


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5: USING METHODS

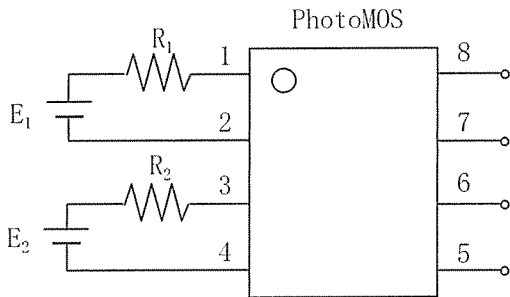
5- 1 Wiring diagram



E : Power source at input side
 I_F : LED forward current
 V_L : Load voltage
 I_L : Load current

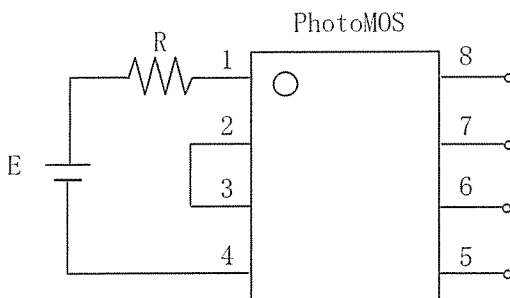
5- 2 Examples of each input power supply and current limit resistors (I_F=5mA)

(1) 2 channels



E	R
5V	Approx. 700 Ω
15V	Approx. 2.7k Ω
24V	Approx. 4.5k Ω

(2) 1 channel



E	R
5V	Approx. 500 Ω
15V	Approx. 2.5k Ω
24V	Approx. 4.3k Ω

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6. NOTE

6- 1 Regarding cautions for use and explanation of technical terms, please refer to our web site.

6- 2 About derating design

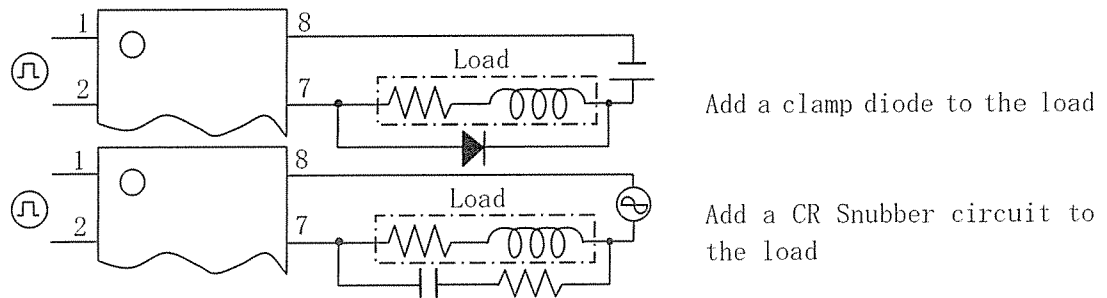
Derating is essential in any reliable design and is a significant factor for product life. Even if the conditions of use (temperature, current, voltage, etc.) of the product fall within the absolute maximum ratings, reliability can be reduced remarkably when used under high load (high temperature, high humidity, high current, high voltage, etc.). Therefore, please derate sufficiently below the absolute maximum rating and verify operation of the actual design before using.

6- 3 Short across terminals

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

6- 4 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.

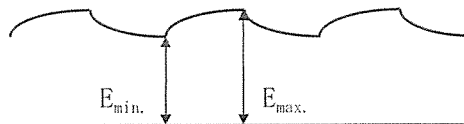


(2) Even if spike voltages generated at the load are limited with a clamp diode if the circuit wires are long, spike voltages will occur by inductance. Keep wires as short as possible to minimize inductance.

6- 5 Ripple in the input power supply

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

- (1) For LED forward current at E_{min} , maintain min. 5mA
- (2) Keep the LED forward current at 50mA or less at E_{max} .

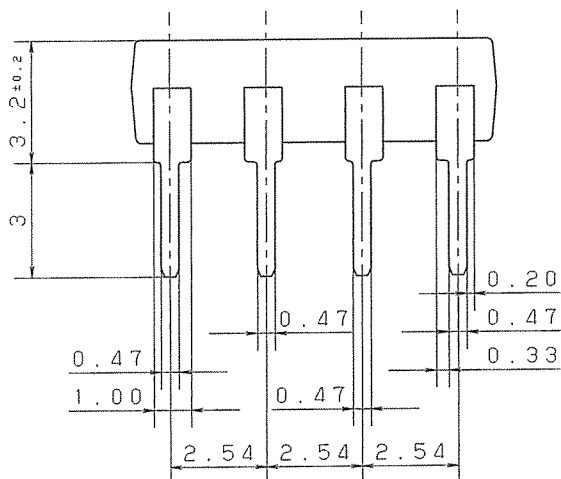
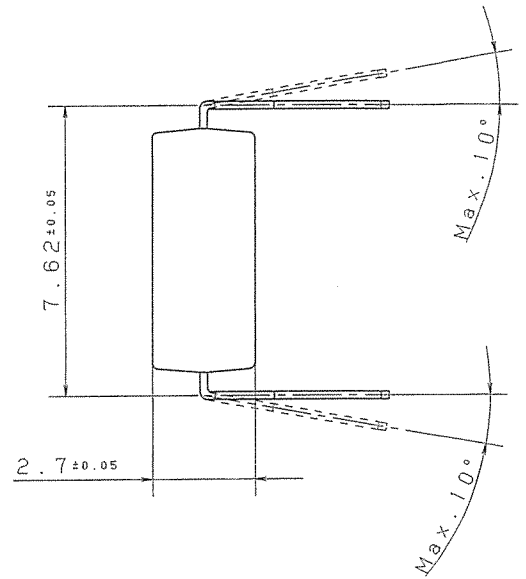
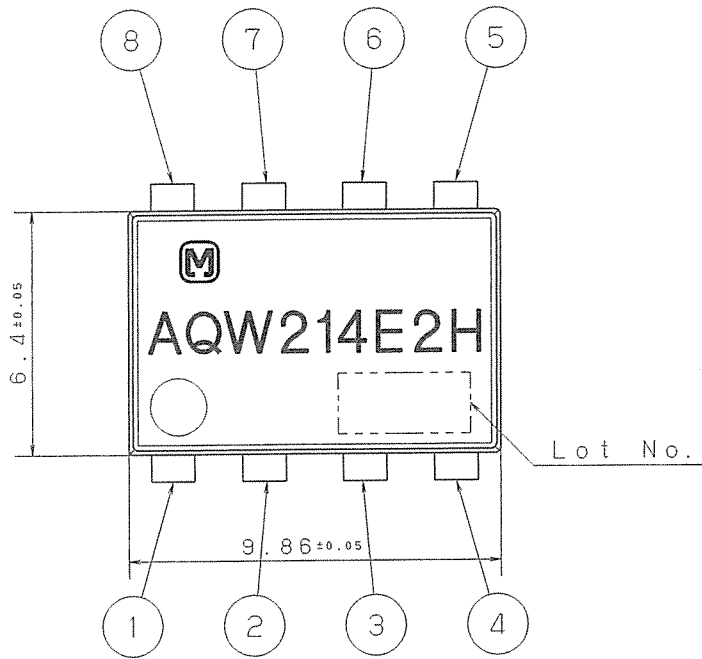


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<p>6- 6 Soldering When soldering PC board terminals, keep soldering time less than 10s at 260°C.</p> <p>6- 7 Cleaning solvents compatibility The PhotoMOS forms an optical path by coupling a light-emitting diode (LED) and photodiode via light transmissive resin. For this reason, unlike other directory element molded resin products (e. g., MOS transistors and bipolar transistors), avoid ultrasonic cleansing if at all possible. 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.</p> <ul style="list-style-type: none"> • Frequency : 27 to 29kHz • Ultrasonic output : No greater than 0.25W/cm² • Cleaning time : No longer than 30s • Cleanser used : Asahiklin AK-225 • Others : Submerge in solvent in order to prevent the PCB and elements from being contacted directly by the ultrasonic vibrations. <p>Note; Applies to unit area ultrasonic output for ultrasonic baths.</p> <p>6- 8 Transportation and storage</p> <p>(1) Extreme vibration during transport will warp the lead or damage the PhotoMOS. Handle the outer and inner boxes with care.</p> <p>(2) Storage under extreme conditions will cause soldering degradation, external appearance defects, and deterioration of the characteristics. The following storage conditions are recommended:</p> <ul style="list-style-type: none"> • Temperature : 0 to 45°C • Humidity : Less than 70%R. H. • Atmosphere : No harmful gasses such as sulfurous acid gas, minimal dust. 			
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NAME	PhotoMOS	AQW214E2H **	
<p>7. WARRANTY</p> <p>Panasonic Corporation will do our utmost to keep our product to be free from defects. However:</p> <p>(1) To avoid uses of the product not in accordance with its specifications, Panasonic Corporation asks the purchaser to present the purchaser's specification, the final destination, application of the final product and the method of installation of the product.</p> <p>(2) If the purchaser believes that the possibility exists that the installation or anticipated use of the product may cause personal injury, death or property damage, Panasonic Corporation advises the purchaser to be broad-minded about conditions and performance requirements listed on this specification and to take precautions such as applying a double-circuit.</p> <p>(3) The warranty period of this product is one year from the date of arrival of the product at the location of the purchaser, and is limited to the listed items on this specification. If upon arrival any defect due to Panasonic Corporation's failure to perform becomes apparent, Panasonic Corporation will replace exchange or repair the defective product on the site where it was received.</p> <p>The following are excluded from the warranty conditions:</p> <p>① Any consequential damages or loss of profits are resulting from malfunctions or defects of the product.</p> <p>② The product is affected by the use, the storage and the transport after the delivery.</p> <p>③ An unforeseen situation arises which was unable to be predicted by the technology level at the time of shipment.</p> <p>④ A natural or man-made disaster which is outside of Panasonic Corporation's control occurs such as earthquake, flood, fire or social strife.</p>			
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- ① INPUT 1 : DC +
- ② INPUT 1 : DC -
- ③ INPUT 2 : DC +
- ④ INPUT 2 : DC -
- ⑤ OUTPUT 2 : DC / AC
- ⑥ OUTPUT 2 : DC / AC
- ⑦ OUTPUT 1 : DC / AC
- ⑧ OUTPUT 1 : DC / AC

t = 0.20

General tolerance: ±0.1

sym	Item or Code No.	Material & Size	qt.	Process	Remark
Catalog No. AQW214E2H **			Drawing Name DIMENSIONS		
Name Photomos			Drawing No. AQW214E2H **		
Remark		Scale 5:1		Unit: mm	Date Mar.11.'15
Drawn	<i>B. Imue</i>	Checked	<i>M. Fuyuno</i>	Panasonic Corporation Automation Controls Business Division	
Designed	<i>S. Uchi</i>	Enacted	<i>S. Uchi</i>		
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> REFERENCE ONLY SEP 13 2014 Panasonic Corporation SE Factory </div>					