

RoHS compliant

## FEATURES

### 1. Low capacitance and on-resistance with 80V load voltage

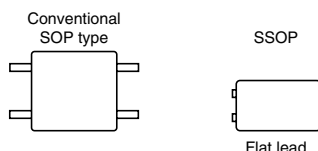
Output capacitance (C<sub>out</sub>): 4.5pF (typ.)

ON resistance (R<sub>on</sub>): 10.5Ω (typ.)

### 2. Reduced package size

The bottom dimension has been reduced by 60% and mounting space by 40% compared to conventional SOP4-pin type.

### 3. Mounting space has been reduced and output signals have been improved by using new flat lead terminals.



### 4. High speed switching

Turn on time: 0.05ms (typ.)

Turn off time: 0.05ms (typ.)

## TYPICAL APPLICATIONS

### 1. Measuring and testing equipment

IC tester, Liquid crystal driver tester, Semiconductor performance tester, Bare board tester, In-circuit tester, function tester, etc.

### 2. Telecommunication and broadcasting equipment

### 3. Medical equipment

### 4. Multi-point recorder

Warping, Thermo couple, etc.

## TYPES

|                | Output rating*1 |              | Package | Tape and reel packing style*2 |                              | Packing quantity in tape and reel |
|----------------|-----------------|--------------|---------|-------------------------------|------------------------------|-----------------------------------|
|                | Load voltage    | Load current |         | Picked from the 1/4-pin side  | Picked from the 2/3-pin side |                                   |
| AC/DC dual use | 80 V            | 0.12 A       | SSOP    | AQY225R2VY                    | AQY225R2VW                   | 3,500 pcs.                        |

Notes: \*1 Indicate the peak AC and DC values.

\*2 Tape and reel is the standard packing style for SSOP.

For space reasons, the three initial letters of the part number "AQY" the package (SSOP) indicator "V" and the packing style indicator "Y" or "W" are not marked on the device.

## RATING

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

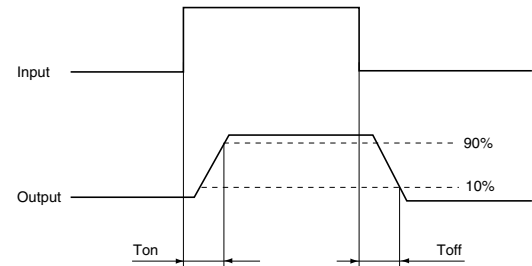
| Item                    |                         | Symbol            | AQY225R2V                       | Remarks                                            |
|-------------------------|-------------------------|-------------------|---------------------------------|----------------------------------------------------|
| Input                   | LED forward current     | I <sub>F</sub>    | 50mA                            |                                                    |
|                         | LED reverse voltage     | V <sub>R</sub>    | 5V                              |                                                    |
|                         | Peak forward current    | I <sub>FP</sub>   | 1A                              | f=100 Hz, Duty factor=0.1%                         |
|                         | Power dissipation       | P <sub>in</sub>   | 75mW                            |                                                    |
| Output                  | Load voltage (peak AC)  | V <sub>L</sub>    | 80V                             |                                                    |
|                         | Continuous load current | I <sub>L</sub>    | 0.12A                           | Peak AC, DC                                        |
|                         | Peak load current       | I <sub>peak</sub> | 0.3A                            | A connection: 100 ms (1 shot), V <sub>L</sub> = DC |
|                         | Power dissipation       | P <sub>out</sub>  | 250mW                           |                                                    |
| Total power dissipation |                         | P <sub>T</sub>    | 300mW                           |                                                    |
| I/O isolation voltage   |                         | V <sub>iso</sub>  | 1,500V AC                       |                                                    |
| Temperature limits      | Operating               | T <sub>opr</sub>  | −40°C to +85°C −40°F to +185°F  | Non-condensing at low temperatures                 |
|                         | Storage                 | T <sub>stg</sub>  | −40°C to +100°C −40°F to +212°F |                                                    |

# RF SSOP 1 Form A C×R (AQY225R2V)

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

| Item                     |                                  |         | Symbol            | AQY225R2V                                | Condition                                      |         |
|--------------------------|----------------------------------|---------|-------------------|------------------------------------------|------------------------------------------------|---------|
| Input                    | LED operate current              | Typical | I <sub>Fon</sub>  | 0.5 mA                                   | I <sub>L</sub> = 80 mA                         |         |
|                          |                                  | Maximum |                   | 3.0 mA                                   |                                                |         |
|                          | LED turn off current             | Minimum | I <sub>Foff</sub> | 0.1 mA                                   | I <sub>L</sub> = 80 mA                         |         |
|                          |                                  | Typical |                   | 0.45 mA                                  |                                                |         |
|                          | LED dropout voltage              | Typical | V <sub>F</sub>    | 1.32 V (1.14 V at I <sub>F</sub> = 5 mA) | I <sub>F</sub> = 50 mA                         |         |
|                          |                                  | Maximum |                   | 1.5 V                                    |                                                |         |
| Output                   | On resistance                    | Typical | R <sub>on</sub>   | 10.5Ω                                    | I <sub>F</sub> = 5 mA                          |         |
|                          |                                  | Maximum |                   | 15Ω                                      | I <sub>L</sub> = 80 mA                         |         |
|                          | Output capacitance               | Typical | C <sub>out</sub>  | 4.5 pF                                   | I <sub>F</sub> = 0 mA                          |         |
|                          |                                  | Maximum |                   | 6 pF                                     | V <sub>B</sub> = 0 V<br>f = 1 MHz              |         |
|                          | Off state leakage current        | Typical | I <sub>Leak</sub> | 0.01 nA                                  | I <sub>F</sub> = 0 mA                          |         |
|                          |                                  | Maximum |                   | 10 nA                                    | V <sub>L</sub> = Max.                          |         |
| Transfer characteristics | Turn on time*                    | Typical | T <sub>on</sub>   | 0.05 ms                                  | I <sub>F</sub> = 5 mA                          |         |
|                          |                                  | Maximum |                   | 0.5 ms                                   | V <sub>L</sub> = 10 V<br>R <sub>L</sub> = 125Ω |         |
|                          | Turn off time*                   | Typical | T <sub>off</sub>  | 0.05 ms                                  | I <sub>F</sub> = 5 mA                          |         |
|                          |                                  | Maximum |                   | 0.2 ms                                   | V <sub>L</sub> = 10 V<br>R <sub>L</sub> = 125Ω |         |
|                          | I/O capacitance                  | Typical | C <sub>iso</sub>  | 0.8 pF                                   | f = 1 MHz                                      |         |
|                          |                                  | Maximum |                   | 1.5 pF                                   | V <sub>B</sub> = 0 V                           |         |
|                          | Initial I/O isolation resistance |         | Minimum           | R <sub>iso</sub>                         | 1,000MΩ                                        | 500V DC |

\*Turn on/Turn off time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper device operation and resetting.

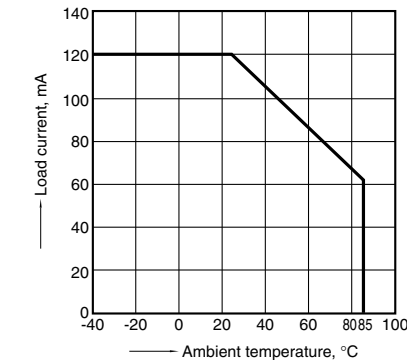
| Item              | Symbol         | Recommended value | Unit |
|-------------------|----------------|-------------------|------|
| Input LED current | I <sub>F</sub> | 5                 | mA   |

- For Dimensions.
- For Schematic and Wiring Diagrams.
- For Cautions for Use.

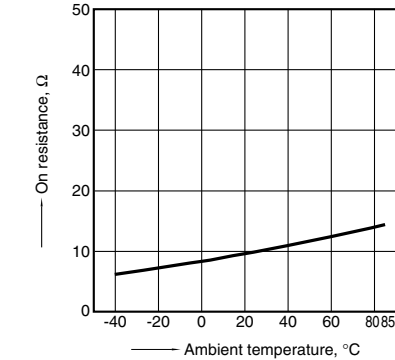
■ These products are not designed for automotive use.  
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.  
For more information.

## REFERENCE DATA

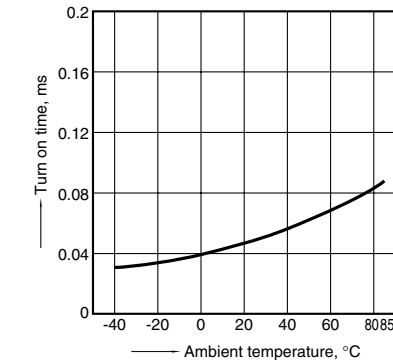
1. Load current vs. ambient temperature characteristics  
Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F



2. On resistance vs. ambient temperature characteristics  
Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC);  
Load current: 80mA (DC)



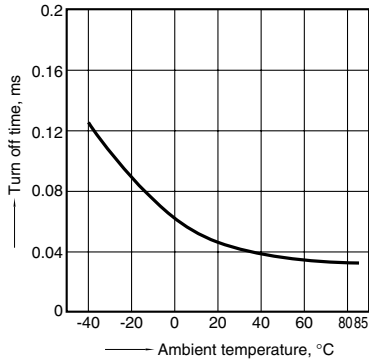
3. Turn on time vs. ambient temperature characteristics  
LED current: 5 mA; Load voltage: 10V (DC);  
Continuous load current: 80mA (DC)



# RF SSOP 1 Form A C×R (AQY225R2V)

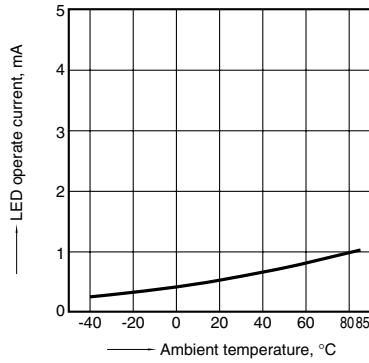
## 4. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);  
Continuous load current: 80mA (DC)



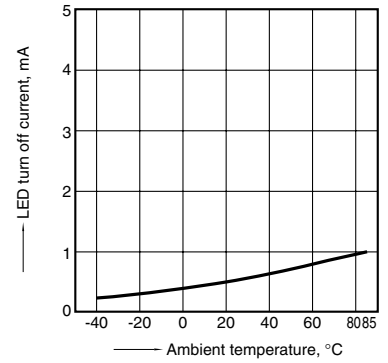
## 5. LED operate current vs. ambient temperature characteristics

Load voltage: 10V (DC);  
Continuous load current: 80mA (DC)



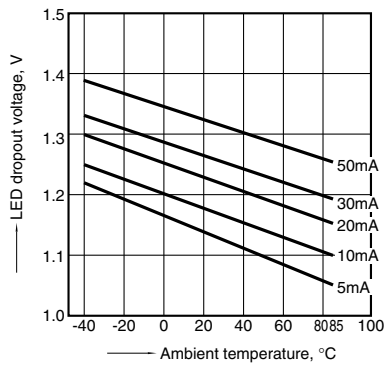
## 6. LED turn off current vs. ambient temperature characteristics

Load voltage: 10V (DC);  
Continuous load current: 80mA (DC)



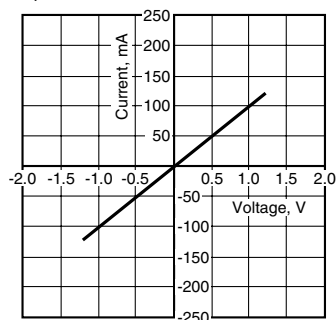
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



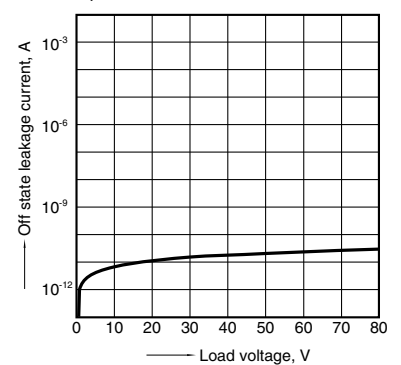
## 8. Current vs. voltage characteristics of output at MOS portion

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



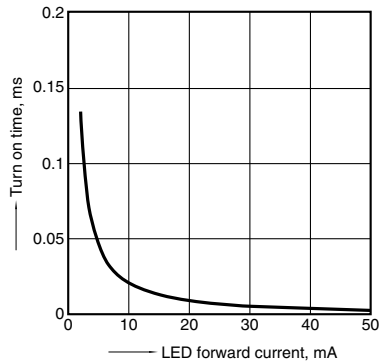
## 9. Off state leakage current vs. load voltage characteristics

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



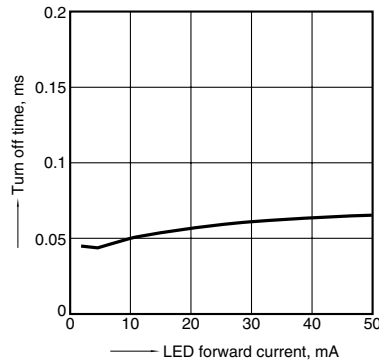
## 10. Turn on time vs. LED forward current characteristics

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



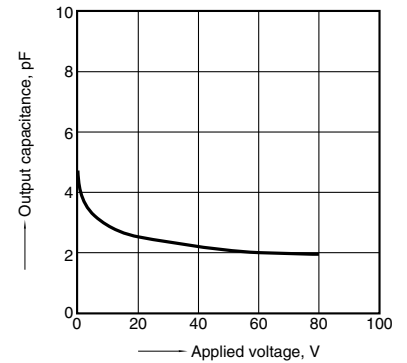
## 11. Turn off time vs. LED forward current characteristics

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



## 12. Output capacitance vs. applied voltage characteristics

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



# AMEYA360

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