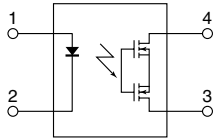


Miniature low profile SON package  
Lower output capacitance  
and on resistance (C×R5)  
25V load voltage

PhotoMOS®  
RF SON 1 Form A C×R5  
(AQY221N3M)



mm inch



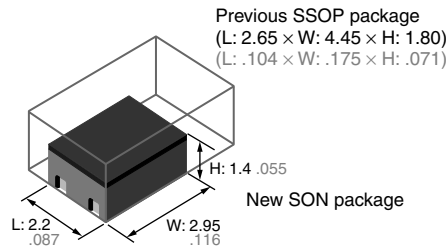
RoHS compliant

## FEATURES

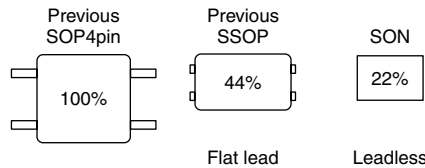
### 1. Miniature low profile SON\* package contributes to space savings and high density mounting.

The SON type is a new PhotoMOS with approximately 43% the volume ratio of existing SSOP type. The super miniature leadless construction reduces the mounting area and enables high density mounting.

### \*Small Outline No-lead package Reduced to approximately 43% volume ratio



Area comparison (including leads)



### 2. Lower output capacitance and on-resistance

Output capacitance (Cout): 1.1pF (typ.)

On resistance (Ron): 5.5Ω (typ.)

### 3. High speed switching

Turn on time: 0.02ms (typ.)

Turn off time: 0.02ms (typ.)

## TYPICAL APPLICATIONS

### 1. Measuring and testing equipment

IC tester, Probe cards, Board tester

### 2. Telecommunication and broadcasting equipment

### 3. Medical equipment

Ultrasonic wave diagnostic machine

## 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 and 4-pin side	Picked from the 2 and 3-pin side	
AC/DC dual use	25 V	150 mA	SON	AQY221N3MY	AQY221N3MW	3,500 pcs.

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

\*2 Only tape and reel package is available.

For space reasons, only "1N3" is marked on the product as the part number.

## RATING

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

Item		Symbol	AQY221N3M	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>	25V	
	Continuous load current	I <sub>L</sub>	0.15A	Peak AC, DC
	Power dissipation	P <sub>out</sub>	250mW	
Total power dissipation		P <sub>T</sub>	300mW	
I/O isolation voltage		V <sub>iso</sub>	200V AC	
Operating temperature		T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F	Non-condensing at low temperatures
Storage temperature		T <sub>stg</sub>	-40°C to +100°C -40°F to +212°F	

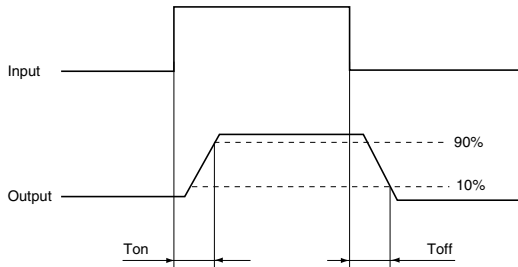
# RF SON 1 Form A C×R5 (AQY221N3M)

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

Item			Symbol	AQY221N3M	Condition
Input	LED operate current	Typical	$I_{Fon}$	1.0 mA	$I_L = 80 \text{ mA}$
		Maximum		3.0 mA	
	LED turn off current	Minimum	$I_{Foff}$	0.2 mA	$I_L = 80 \text{ mA}$
		Typical		0.9 mA	
LED dropout voltage	Typical	$V_F$	1.35 V (1.14 V at $I_F = 5 \text{ mA}$ )		$I_F = 50 \text{ mA}$
	Maximum		1.5 V		
Output	On resistance	Typical	$R_{on}$	5.5Ω	$I_F = 5 \text{ mA}$ $I_L = 80 \text{ mA}$ Within 1 s on time
		Maximum		7.5Ω	
	Output capacitance	Typical	$C_{out}$	1.1 pF	$I_F = 0 \text{ mA}$ $V_B = 0 \text{ V}$ $f = 1 \text{ MHz}$
		Maximum		1.5 pF	
	Off state leakage current	Typical	$I_{Leak}$	0.01 nA	$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$
		Maximum		10 nA	
Transfer characteristics	Turn on time*	Typical	$T_{on}$	0.02 ms	$I_F = 5 \text{ mA}$ $V_L = 10 \text{ V}$ $R_L = 125\Omega$
		Maximum		0.2 ms	
	Turn off time*	Typical	$T_{off}$	0.02 ms	$I_F = 5 \text{ mA}$ $V_L = 10 \text{ V}$ $R_L = 125\Omega$
		Maximum		0.2 ms	
	I/O capacitance	Typical	$C_{iso}$	0.8 pF	$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$
		Maximum		1.5 pF	

Note: Variation possible through combinations of output capacitance and on resistance. For more information, please contact our sales office in your area.

\*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	$I_F$	5	mA

■ For Dimensions.

■ For Schematic and Wiring Diagrams.

■ For Cautions for Use.

■ These products are not designed for automotive use.

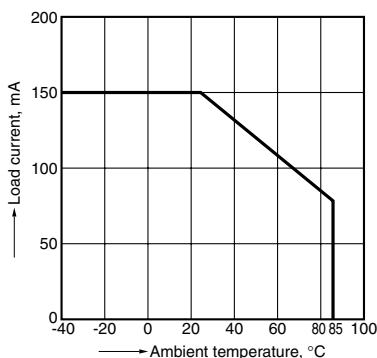
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

For more information.

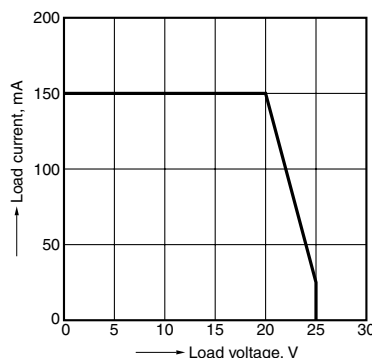
## REFERENCE DATA

1. Load current vs. ambient temperature characteristics

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

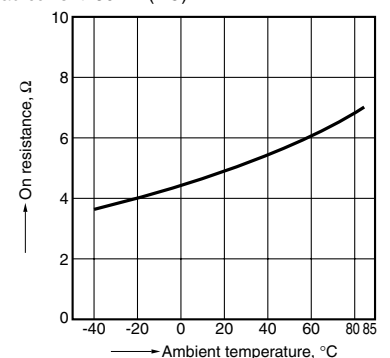


2. Load current vs. Load voltage characteristics  
Ambient temperature: 25°C 77°F



3. On resistance vs. ambient temperature characteristics

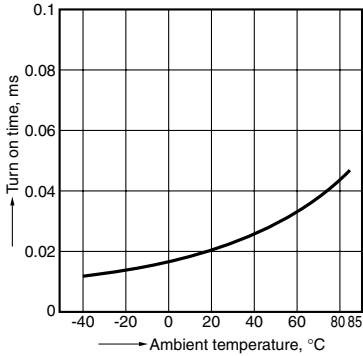
Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC);  
Load current: 80mA (DC)



# RF SON 1 Form A C×R5 (AQY221N3M)

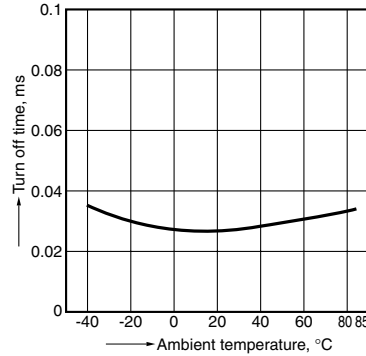
## 4. Turn on time vs. ambient temperature characteristics

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



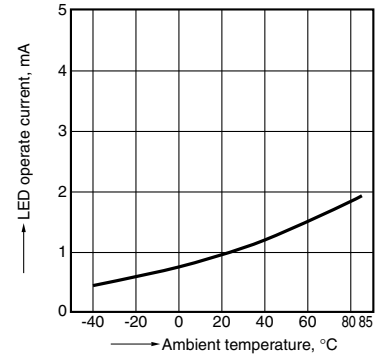
## 5. Turn off time vs. ambient temperature characteristics

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



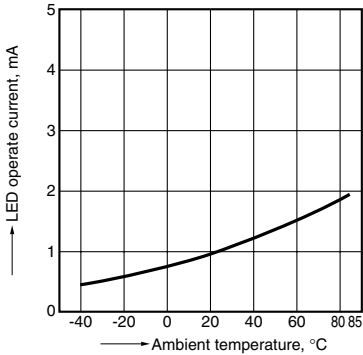
## 6. LED operate current vs. ambient temperature characteristics

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



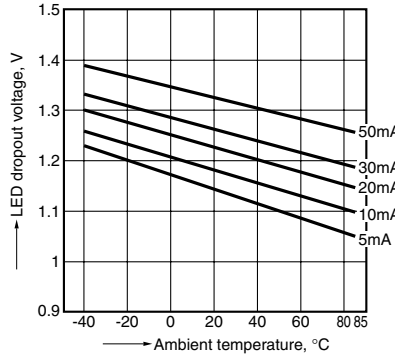
## 7. LED turn off current vs. ambient temperature characteristics

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



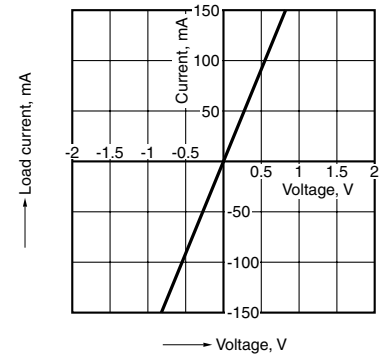
## 8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



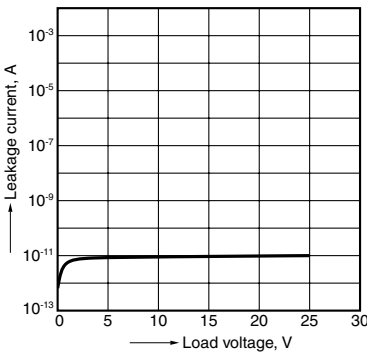
## 9. Current vs. voltage characteristics of output at MOS portion

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



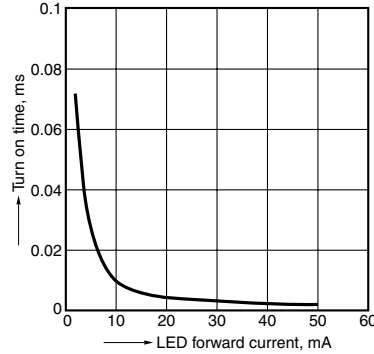
## 10. Off state leakage current vs. load voltage characteristics

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



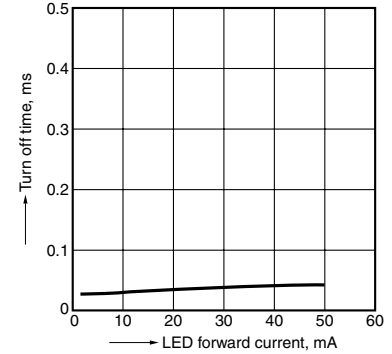
## 11. Turn on time vs. LED forward current characteristics

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



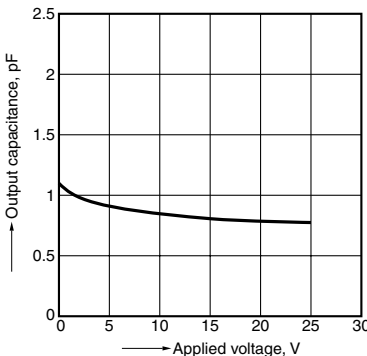
## 12. Turn off time vs. LED forward current characteristics

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



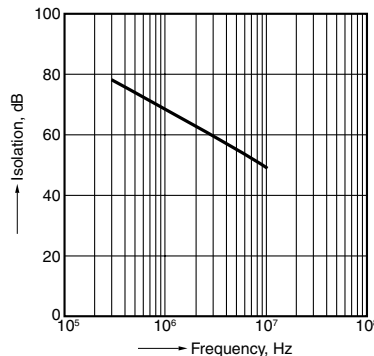
## 13. Output capacitance vs. applied voltage characteristics

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



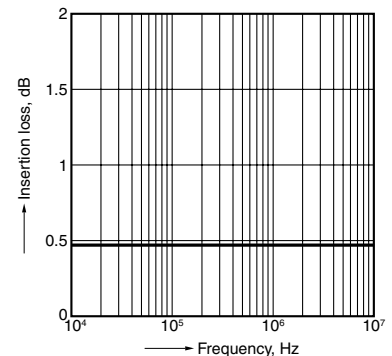
## 14. Isolation vs. frequency characteristics (50Ω impedance)

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



## 15. Insertion loss vs. frequency characteristics (50Ω impedance)

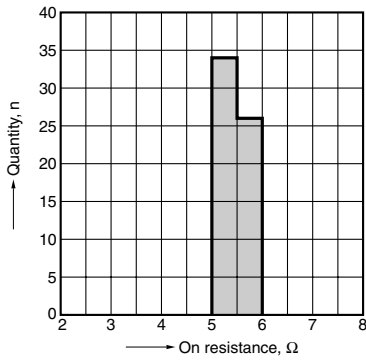
Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



# RF SON 1 Form A C×R5 (AQY221N3M)

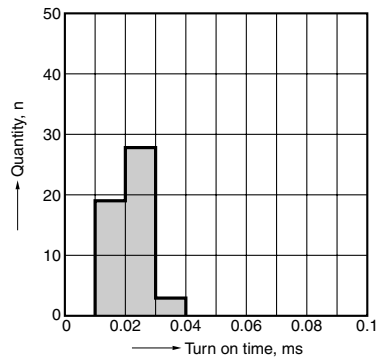
## 16. On resistance distribution

Measured portion: between terminals 3 and 4  
Continuous load current: 80mA (DC), n: 50pcs.  
Ambient temperature: 25°C 77°F



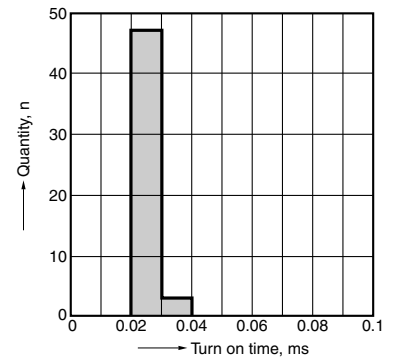
## 17. Turn on time distribution

Load voltage: 10V (DC)  
Continuous load current: 80mA (DC), n: 50pcs.  
Ambient temperature: 25°C 77°F



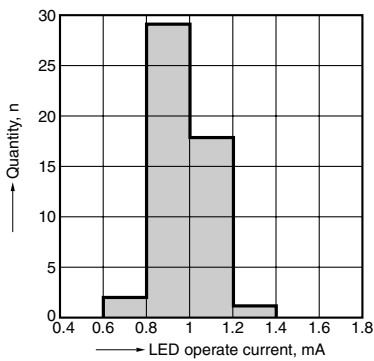
## 18. Turn off time distribution

Load voltage: 10V (DC)  
Continuous load current: 80mA (DC), n: 50pcs.  
Ambient temperature: 25°C 77°F



## 19. LED operate current distribution

Load voltage: 10V (DC)  
Continuous load current: 80mA (DC), n: 50pcs.  
Ambient temperature: 25°C 77°F





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.