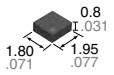
Super miniature TSON package, Capacitor Coupled isolation type

PhotoMOS®

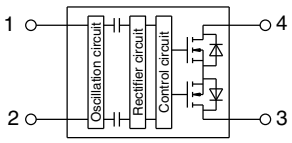
CC TSON C×R

(AQY2C○○○P)

New



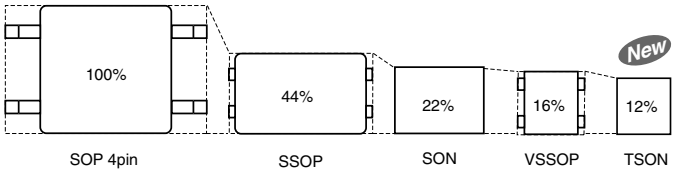
mm inch



RoHS compliant

FEATURES

1. Super miniature TSON package contributes to space savings and high density mounting.
3.5 mm² mounting area achieved. Approx. 46 % less than previous product (SON type).



2. Low current consumption (input current: Max. 0.2 mA)
3. Guaranteed performance at high temperature (Max. 105°C 221°F)
4. Voltage driving type (3 V to 5 V)
5. Input current of CC type is less than half of previous products, contributing energy saving of device and increases drivability

Comparison with previous products

		CC type (AQY2C1R2P V_{IN} = 5 V)	HS type (AQY232S)	GU type (AQY212S)
Input current	Typical	0.09 mA	0.35 mA	0.9 mA
	Maximum	0.2 mA	0.5 mA	3 mA

TYPICAL APPLICATIONS

1. Measuring equipment: IC tester, probe cards, board tester and other testing equipment
2. Telecommunication equipment
3. Security, voltage operating equipment application for requiring low electricity consumption.
Security equipment: Security camera, intruder detection
Disaster-preventing equipment: Fire alarm, smoke, heat and fire detectors
Industrial equipment: Electric measuring equipment, Industrial measuring equipment
Electric meter, Gas meter and other meters.

*Does not support automotive application.

TYPES

Type	Output rating*1		Part No. (Tape and reel packing style)*2		Packing quantity in the tape and reel
	Load voltage	Load current	Picked from the 1 and 2-pin side	Picked from the 3 and 4-pin side	
AC/DC dual use	30 V	0.75 A	AQY2C1R6PX	AQY2C1R6PZ	3,500 pcs.
	40 V	0.3 A	AQY2C1R2PX	AQY2C1R2PZ	

Notes: *1. Indicate the peak AC and DC values.
*2. Only tape and reel package is available.
For space reasons, only "1R6" or "1R2" is marked on the product as the part number.

RATING

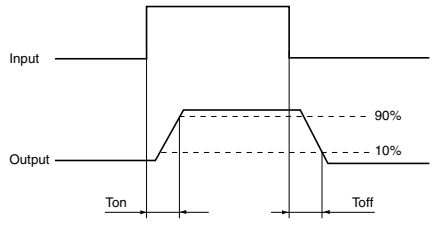
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQY2C1R6P	AQY2C1R2P	Remarks
Input side	Input voltage	V_{IN}	5.5 V		
	Input reverse voltage	V_{RIN}	0.2 V		
	Power dissipation	P_{in}	1.2 mW		
Output side	Load voltage (peak AC)	V_L	30 V	40 V	
	Continuous load current	I_L	0.75 A	0.3 A	Peak AC, DC
	Peak load current	I_{peak}	1.5 A	0.75 A	100 ms (1shot), V_L = DC
	Power dissipation	P_{out}	250 mW		
Total power dissipation		P_T	250 mW		
I/O isolation voltage		V_{iso}	200 Vrms		
Ambient temperature	Operating	T_{opr}	–40 to +105°C –40 to +221°F		(Non-icing at low temperatures)
	Storage	T_{stg}	–40 to +125°C –40 to +257°F		

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

Item			Symbol	AQY2C1R6P	AQY2C1R2P	Condition
Input	Operate voltage	Typ.	V_{Fon}	1.7 V	1.8 V	$\triangle V_{IN}/\triangle t \geqq 100$ mV/ms AQY2C1R6P: I_L = 100 mA AQY2C1R2P: I_L = Max.
		Max.		2.5 V		
	Turn off voltage	Min.	V_{Foff}	0.5 V		$\triangle V_{IN}/\triangle t \geqq 100$ mV/ms AQY2C1R6P: I_L = 100 mA AQY2C1R2P: I_L = Max.
		Typ.		1.5 V	1.4 V	
	Input current	Typ.	I_{IN}	0.04 mA		V_{IN} = 3.3 V
		Max.		0.1 mA		
		Typ.		0.09 mA		V_{IN} = 5 V
		Max.		0.2 mA		
Output	On resistance	Typ.	R_{on}	0.22 Ω	0.9 Ω	V_{IN} = 3.3 V, I_L = Max.
		Max.		—	—	
		Typ.		0.2 Ω	0.8 Ω	V_{IN} = 5 V, I_L = Max.
		Max.		0.4 Ω	1.5 Ω	
	Output capacitance	Typ.	C_{out}	40 pF	14.5 pF	V_{IN} = 0 V, f = 1 MHz, V_B = 0 V
		Max.		100 pF	18 pF	
	Off state leakage current	Max.	I_{Leak}	10 nA		V_{IN} = 0 V, V_L = Max.
Transfer characteristics	Turn on time*	Typ.	T_{on}	0.25 ms	0.15 ms	V_{IN} = 3.3 V, V_L = 10 V, R_L = 100 Ω
		Max.		1 ms		
		Typ.		0.12 ms	0.06 ms	V_{IN} = 5 V, V_L = 10 V, R_L = 100 Ω
		Max.		0.5 ms		
	Turn off time*	Typ.	T_{off}	0.06 ms	0.04 ms	V_{IN} = 3.3 V, V_L = 10 V, R_L = 100 Ω
		Max.		0.2 ms		
		Typ.		0.1 ms	0.06 ms	V_{IN} = 5 V, V_L = 10 V, R_L = 100 Ω
		Max.		0.5 ms		
	I/O capacitance	Typ.	C_{iso}	1.2 pF		f = 1 MHz, V_B = 0 V
		Max.		3 pF		

*Turn on/Turn off time



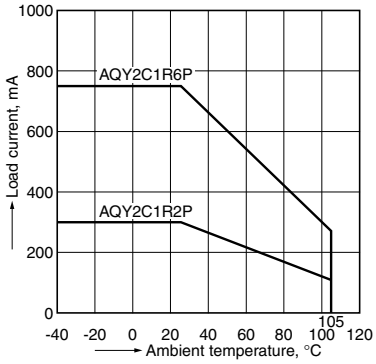
3. Recommended operating conditions (Ambient temperature: 25°C 77°F)
Please use under recommended operating conditions to obtain expected characteristics.

Item		Symbol	Min.	Max.	Unit
Input voltage		V_{IN}	3	5	V
AQY2C1R6P	Load voltage (Peak AC)	V_L	—	15	V
	Continuous load current	I_L	—	0.75	A
AQY2C1R2P	Load voltage (Peak AC)	V_L	—	15	V
	Continuous load current	I_L	—	0.3	A

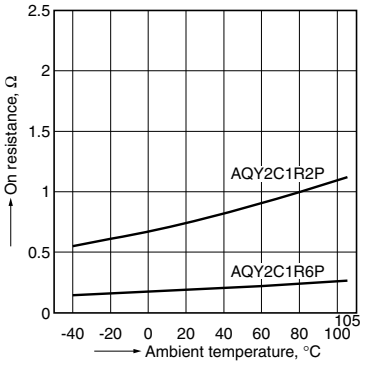
■ **These products are not designed for automotive use.**
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

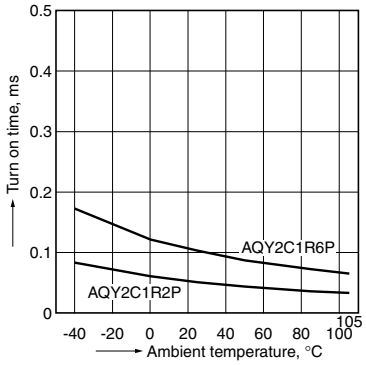
1. Load current vs. ambient temperature characteristics
Allowable ambient temperature: –40 to +105°C
–40 to +221°F



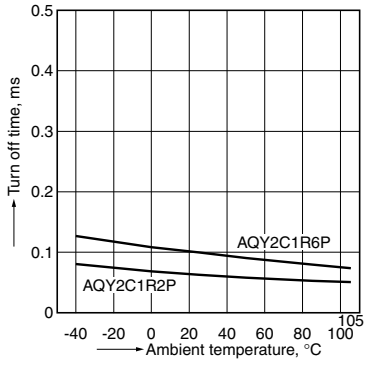
2. On resistance vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4,
Input voltage: 5V
Load voltage: 10V (DC)
Continuous load current: 750mA (DC) AQY2C1R6P
300mA (DC) AQY2C1R2P



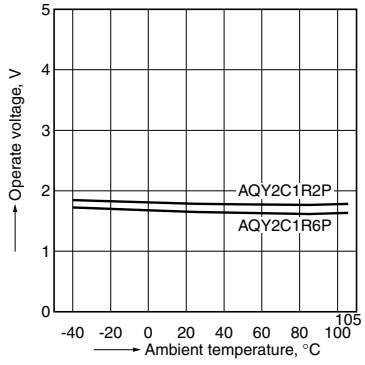
3. Turn on time vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4,
Input voltage: 5V
Load voltage: 10V (DC)
Continuous load current: 100mA



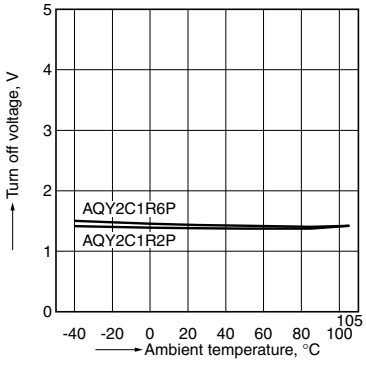
4. Turn off time vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4,
Input voltage: 5V
Load voltage: 10V (DC)
Continuous load current: 100mA



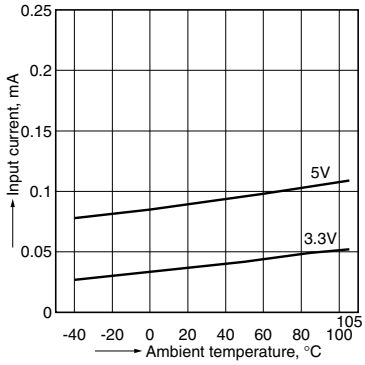
5. Operate voltage vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC)
Continuous load current: 100mA (DC) AQY2C1R6P
300mA (DC) AQY2C1R2P



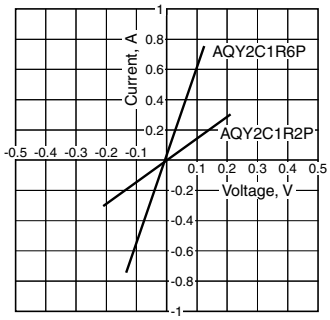
6. Turn off voltage vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC)
Continuous load current: 100mA (DC) AQY2C1R6P
300mA (DC) AQY2C1R2P



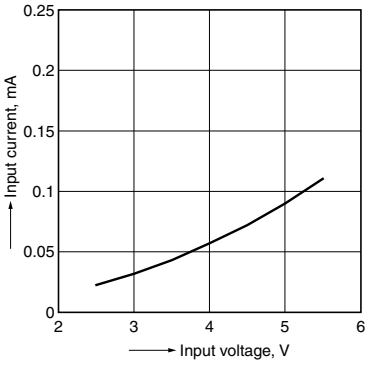
7.Input current vs. ambient temperature characteristics
Sample: All types
Input voltage: 3.3V, 5V



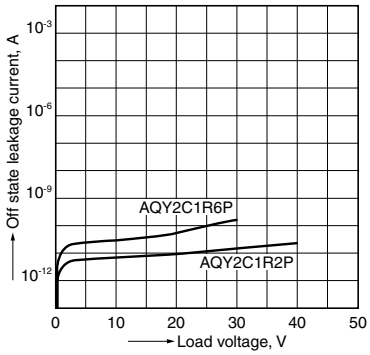
8. Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 3 and 4
Input voltage: 5V
Ambient temperature: 25°C 77°F



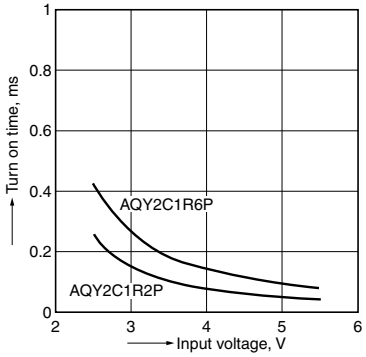
9. Input current vs. input voltage characteristics
Sample: All types
Ambient temperature: 25°C 77°F
(Recommended input voltage: 3 to 5 V)



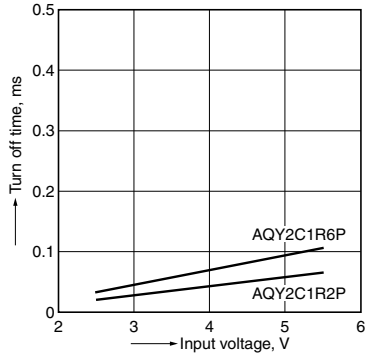
10. Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



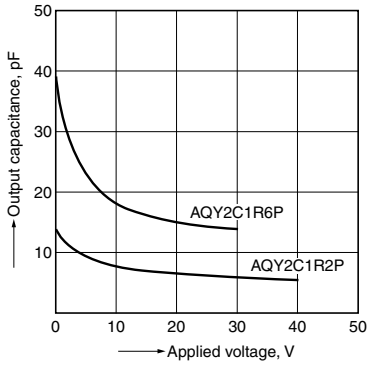
11. Turn on time vs. input voltage characteristics
Measured portion: between terminals 3 and 4,
Load voltage: 10V (DC)
Continuous load current: 100mA (DC)
Ambient temperature: 25°C 77°F



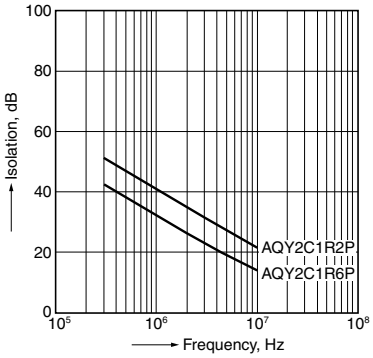
12. Turn off time vs. input voltage characteristics
Measured portion: between terminals 3 and 4,
Load voltage: 10V (DC)
Continuous load current: 100mA (DC)
Ambient temperature: 25°C 77°F



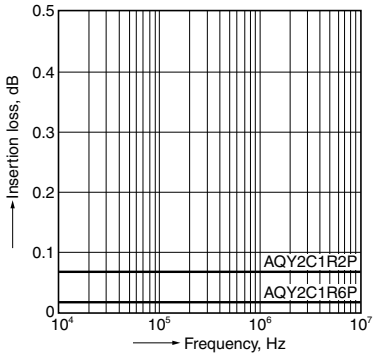
13. Output capacitance vs. applied voltage characteristics
Measured portion: between terminals 3 and 4
Frequency: 1MHz (30mVrms),
Ambient temperature: 25°C 77°F



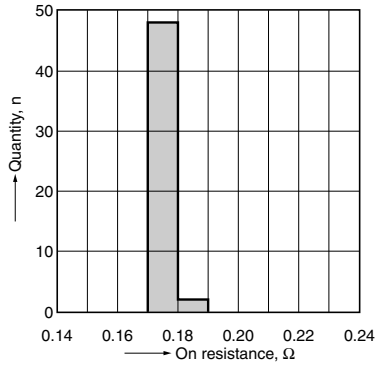
14. Isolation vs. frequency characteristic (50Ω impedance)
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



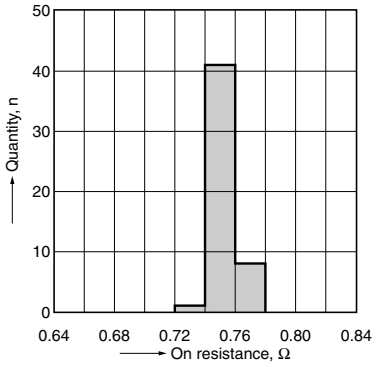
15. Insertion loss vs. frequency characteristic (50Ω impedance)
Measured portion: between terminals 3 and 4,
Input voltage: 5V
Ambient temperature: 25°C 77°F



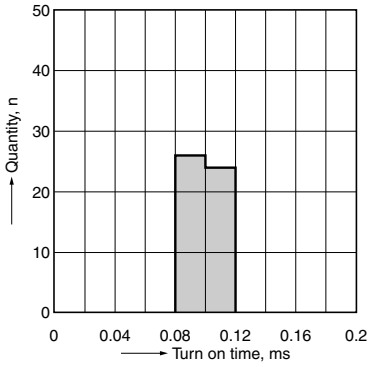
16.-(1) On resistance distribution
Sample: AQY2C1R6P,
Measured portion: between terminals 3 and 4
Input voltage: 5V,
Continuous load current: 750mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



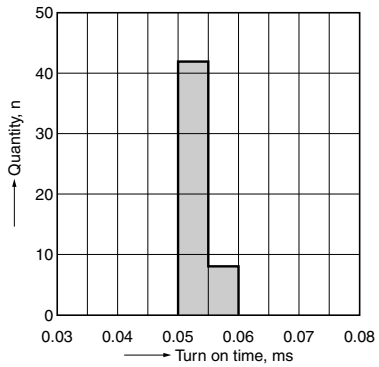
16.-(2) On resistance distribution
Sample: AQY2C1R2P,
Measured portion: between terminals 3 and 4
Input voltage: 5V,
Continuous load current: 300mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



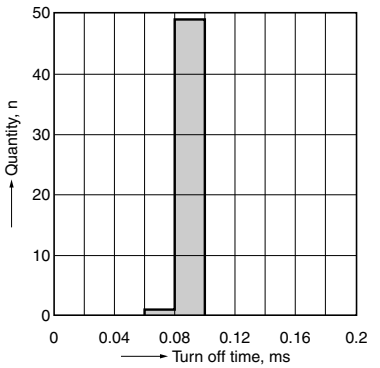
17.-(1) Turn on time distribution
Sample: AQY2C1R6P, Input voltage: 5V
Load voltage: 10V (DC),
Continuous load current: 100mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



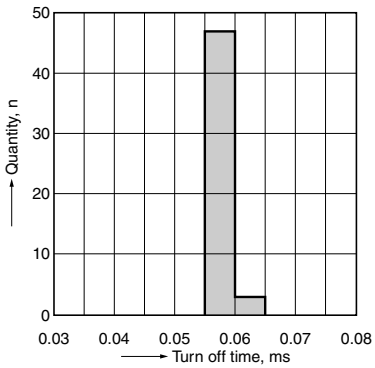
17.-(2) Turn on time distribution
Sample: AQY2C1R2P, Input voltage: 5V
Load voltage: 10V (DC),
Continuous load current: 100mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



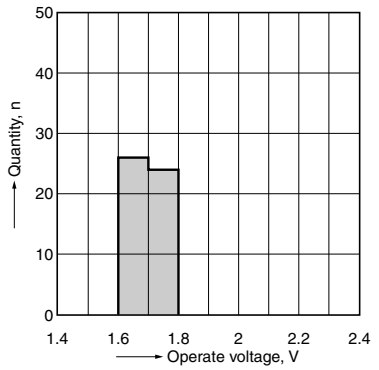
18.-(1) Turn off time distribution
Sample: AQY2C1R6P, Input voltage: 5V
Load voltage: 10V (DC),
Continuous load current: 100mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



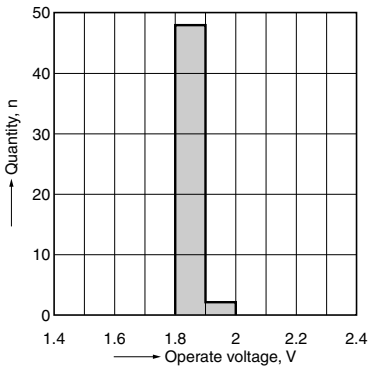
18.-(2) Turn off time distribution
Sample: AQY2C1R2P, Input voltage: 5V
Load voltage: 10V (DC),
Continuous load current: 100mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



19.-(1) Operate voltage distribution
Sample: AQY2C1R6P, Load voltage: 10V (DC)
Continuous load current: 100mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



19.-(2) Operate voltage distribution
Sample: AQY2C1R2P, Load voltage: 10V (DC)
Continuous load current: 300mA (DC)
n: 50 pcs., Ambient temperature: 25°C 77°F



Please contact .....

Panasonic Corporation
Electromechanical Control Business Division
■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industrial.panasonic.com/ac/e/

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