

Selector Chart

• Type of relay		Power PhotoMOS Type								Power PhotoMOS with internal varistor Type					
		1a Type				1b Type				1a Type					
		AC/DC Type		DC Type		AC/DC Type		AC/DC Type		AC/DC Type		AC/DC Type			
mm inch															
		• High capacity PhotoMOS Relay in a compact and slim 4-pin SIL								• High Capacity type • Compact Slim-type 4-pin SIL					
• Features		Part No.	AQZ202	AQZ205	AQZ207	AQZ204	AQZ102	AQZ105	AQZ107	AQZ104	AQZ404	AQZ202V	AQZ205V	AQZ207V	AQZ204V
• Output	Load voltage*	Peak AC	60 V	100 V	200 V	400 V	—	—	—	—	400 V	17 V**	30 V**	60 V**	140 V**
		DC	60 V	100 V	200 V	400 V	60 V	100 V	200 V	400 V	400 V	22 V	38 V	85 V	180 V
• Output	Continuous load current	3 A	3 A	2 A	1 A	0.5 A	4 A	2.6 A	1.3 A	0.7 A	0.5 A	3 A	2 A	1 A	0.5 A
		1 A	9.0 A	6.0 A	3.0 A	1.5 A	9.0 A	6.0 A	3.0 A	1.5 A	1.5 A	9.0 A	6.0 A	3.0 A	1.5 A
Peak load current			9.0 A	6.0 A	3.0 A	1.5 A	9.0 A	6.0 A	3.0 A	1.5 A	1.5 A	9.0 A	6.0 A	3.0 A	1.5 A
Power dissipation*			1.6 W				1.35 W				1.6 W	1.6 W			
• Input	ON resistance	Typical	0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω	0.05 Ω	0.081 Ω	0.34 Ω	1.06 Ω	2.8 Ω	0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω
		Maximum	0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω	0.09 Ω	0.17 Ω	0.55 Ω	1.6 Ω	4.0 Ω	0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω
Output capacitance (Typical)			1,400 pF		600 pF		1,700 pF		900 pF		2,000 pF	2,200 pF		800 pF	700 pF
Off state leakage current (Max.)			10 μA				10 μA				10 μA	1 mA			
LED forward current*			50 mA				50 mA				50 mA	50 mA			
LED reverse voltage*			3 V				3 V				3 V	3 V			
Peak forward current			1 A				1 A				1 A	1 A			
Power dissipation*			75 mW				75 mW				75 mW	75 mW			
• Input	LED operate current [LED operate (OFF) current]	Typical	1.0 mA				1.0 mA				1.0 mA	1.0 mA			
		Maximum	3.0 mA				3.0 mA				3.0 mA	3.0 mA			
• Input	LED turn off current [LED reverse (ON) current]	Typical	0.4 mA				0.4 mA				0.4 mA	0.4 mA			
		Maximum	0.9 mA				0.9 mA				0.9 mA	0.9 mA			
LED dropout voltage (I _f = 50 mA)		Typical	1.25 V				1.25 V				1.25 V	1.25 V			
		Maximum	1.5 V				1.5 V				1.5 V	1.5 V			
• Switching speed	Turn on time [Operate (OFF) time]	Typical	2.46 ms	2.40 ms	1.12 ms	1.65 ms	1.66 ms	1.89 ms	0.83 ms	1.01 ms	3.9 ms	2.46 ms	2.40 ms	1.12 ms	1.65 ms
		Maximum	5.0 ms	5.0 ms	5.0 ms	5.0 ms	5.0 ms	5.0 ms	5.0 ms	5.0 ms	7.5 ms	5.0 ms	5.0 ms	5.0 ms	5.0 ms
• Switching speed	Turn off time [Reverse (ON) time]	Typical	0.22 ms	0.21 ms	0.10 ms	0.08 ms	0.15 ms	0.19 ms	0.10 ms	0.08 ms	0.8 ms	0.22 ms	0.21 ms	0.10 ms	0.08 ms
		Maximum	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms
Total power dissipation*			1.6 W				1.35 W				1.6 W	1.6 W			
I/O isolation voltage*			2,500 V AC				2,500 V AC				2,500 V AC	2,500 V AC			
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F			
	Storage*		-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F			
• I/O capacitance	Typical		0.8 pF				0.8 pF				0.8 pF	0.8 pF			
		Maximum	1.5 pF				1.5 pF				1.5 pF	1.5 pF			
Initial I/O isolation resistance			Min. 1,000 MΩ				Min. 1,000 MΩ				Min. 1,000 MΩ	Min. 1,000 MΩ			
• Terminal layout (.100, inch grid)															
mm inch		Tolerance: ±0.1 ±.004													
• Standards		UL (E43149), CSA (LR26550), TÜV						UL (E43149), CSA (LR26550), TÜV				UL (E43149), CSA (LR26550), TÜV			
• Mounting method															
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Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

*The values are absolute maximum ratings (25°C 77°F). [] : Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		Power PhotoMOS voltage-sensitive Type									
		1a Type									
		AC/DC Type				DC Type					
mm inch											
		<ul style="list-style-type: none"> • Low on-resistance • Control with an input current of 10 mA 									
• Features		Part No.	AQZ202D	AQZ205D	AQZ207D	AQZ204D	AQZ102D	AQZ105D	AQZ107D	AQZ104D	
• Output	Load voltage*	Peak AC	60 V	100 V	200 V	400 V	—	—	—	—	
		DC	60 V	100 V	200 V	400 V	60 V	100 V	200 V	400 V	
	Continuous load current	3 A									
		1 A									
	Peak load current		9.0 A	6.0 A	3.0 A	1.5 A	9.0 A	6.0 A	3.0 A	1.5 A	
	Power dissipation*		1.6 W				1.35 W				
	ON resistance	Typical Maximum		0.066 Ω 0.18 Ω	0.180 Ω 0.34 Ω	0.64 Ω 1.1 Ω	2.4 Ω 3.2 Ω	0.033 Ω 0.09 Ω	0.090 Ω 0.17 Ω	0.33 Ω 0.55 Ω	1.23 Ω 1.6 Ω
			Output capacitance (Typical)	1,400 pF				600 pF			
	Off state leakage current		10 μA				10 μA				
	• Input	Input voltage		30 V				30 V			
Input reverse voltage			3 V				3 V				
Peak forward current			—				—				
Power dissipation*			300 mW				300 mW				
Operate voltage		Typical Maximum		1.4 V 4 V				1.4 V 4 V			
			Turn off voltage	Minimum Typical	0.8 V 1.3 V				0.8 V 1.3 V		
Input current		Typical	6.5 mA				6.5 mA				
• Switching speed	Turn on time [Operate (OFF) time]	Typical	5.8 ms	4.2 ms	2.7 ms	2.3 ms	3.3 ms	2.2 ms	1.5 ms	1.2 ms	
		Maximum	10.0 ms	10.0 ms	10.0 ms	10.0 ms	10.0 ms	10.0 ms	10.0 ms	10.0 ms	
	Turn off time [Reverse (ON) time]	Typical	0.2 ms	0.2 ms	0.1 ms	0.1 ms	0.2 ms	0.2 ms	0.1 ms	0.1 ms	
		Maximum	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	3.0 ms	
• Total power dissipation*			1.6 W				1.35 W				
• I/O isolation voltage*			2,500 V AC				2,500 V AC				
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F (4 V<V _{IN} ≤6 V) -40°C to +75°C -40°F to +167°F (6 V<V _{IN} ≤15 V) -40°C to +60°C -40°F to +140°F (15 V<V _{IN} ≤30 V)				-40°C to +85°C -40°F to +185°F (4 V<V _{IN} ≤6 V) -40°C to +75°C -40°F to +167°F (6 V<V _{IN} ≤15 V) -40°C to +60°C -40°F to +140°F (15 V<V _{IN} ≤30 V)				
	Storage*		-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F				
• I/O capacitance	Typical Maximum		0.8 pF 1.5 pF				0.8 pF 1.5 pF				
		• Initial I/O isolation resistance		1,000 MΩ				1,000 MΩ			
• Terminal layout (.100, inch grid)											
mm inch			Tolerance: ±0.1 ±.004								
• Standards			UL (E43149), CSA (LR26550), TÜV								
• Mounting method											
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Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

• Type of relay		Power PhotoMOS High capacity Type		GU SOP Type									
		1a Type		1a Types									
		AC/DC Type		AC/DC Type									
				4-Pin				6-Pin					
mm inch													
• Features		<ul style="list-style-type: none"> High capacity Low on-resistance Controls low-level input signals 		<ul style="list-style-type: none"> Super miniature design SOP (1 Form A) 4-pin type 				<ul style="list-style-type: none"> Ultra small size SOP (1 Form A) 6-pin type 					
		Part No.	AQZ262	AQZ264	AQY210S	AQY214S	AQV212S	AQV215S	AQV217S	AQV210S	AQV214S	AQV216S	
• Output		Load voltage*	Peak AC	60 V	400 V	350 V	400 V	60 V	100 V	200 V	350 V	400 V	600 V
			DC	60 V	400 V	350 V	400 V	60 V	100 V	200 V	350 V	400 V	600 V
		Continuous load current	6 A	6.0 A									
			1 A	1.0 A	0.12 A	0.1 A	0.35 A	0.3 A	0.16 A	0.12 A	0.1 A	0.04 A	
		Peak load current		10.0 A	3.0 A	0.3 A	0.24 A	1.0 A	0.9 A	0.48 A	0.3 A	0.3 A	0.12 A
		Power dissipation*		3.0 W		300 mW		450 mW					
		ON resistance	Typical	0.036 Ω	1.0 Ω	17 Ω	25 Ω	0.83 Ω	2.3 Ω	11 Ω	23 Ω	30 Ω	70 Ω
			Maximum	0.05 Ω	1.4 Ω	25 Ω	35 Ω	2.5 Ω	4.0 Ω	15 Ω	35 Ω	50 Ω	120 Ω
		Output capacitance (Typical)		1,400 pF	600 pF	45 pF		150 pF	110 pF	70 pF	45 pF	45 pF	45 pF
		Off state leakage current		10 μA		Max. 1 μA		Max. 1 μA					
• Input		LED forward current*		50 mA		50 mA		50 mA					
		LED reverse voltage*		3 V		3 V		3 V					
		Peak forward current		1 A		1 A		1 A					
		Power dissipation*		75 mW		75 mW		75 mW					
		LED operate current [LED operate (OFF) current]	Typical	1.0 mA		0.9 mA		0.7 mA					
			Maximum	3.0 mA		3 mA		3.0 mA					
		LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA		0.4 mA		0.4 mA					
			Typical	0.9 mA		0.85 mA		0.65 mA					
		LED dropout voltage (I _F = 5 mA)	Typical	1.25 V		1.14 V		1.14 V					
			Maximum	1.5 V		1.5 V		1.5 V					
• Switching speed		Turn on time [Operate (OFF) time]	Typical	5 ms	4 ms	0.23 ms	0.21 ms	0.65 ms	0.60 ms	0.25 ms	0.25 ms	0.25 ms	0.28 ms
			Maximum	10 ms	10 ms	0.5 ms	0.5 ms	2 ms	2 ms	1 ms	0.5 ms	0.5 ms	0.5 ms
		Turn off time [Reverse (ON) time]	Typical	0.32 ms	0.14 ms	0.04 ms		0.08 ms	0.06 ms	0.05 ms	0.05 ms	0.05 ms	0.04 ms
			Maximum	3.0 ms	3.0 ms	0.2 ms		0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms
		Total power dissipation*		3.0 W		350 mW		500 mW					
		I/O isolation voltage*		1,500 V AC		1,500 V AC		1,500 V AC					
• Temperature limits		Operating*		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F					
		Storage*		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F					
• I/O capacitance		Typical		2.0 pF		-		0.8 pF					
		Maximum		4.0 pF		1.5 pF		1.5 pF					
• Initial I/O isolation resistance				Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ					
• Terminal layout (.100, inch grid)		Mounting hole location (Bottom view)		Recommended mounting pad (Top view)				Recommended mounting pad (Top view)					
		mm inch											
		Tolerance: ±0.1 ±.004											
• Standards		—		UL (E43149), CSA (LR26550), TÜV, BSI				UL (E43149), CSA (LR26550), TÜV					
• Mounting method													
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*The values are absolute maximum ratings (25°C 77°F). [] : Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		GU SOP Type									
		1b Types		1b Types		2a Types		2a: MOSFET & optocoupler			
		AC/DC Type		AC/DC Type		AC/DC Type		AC/DC Type			
		4-Pin		6-Pin							
mm inch											
						Relay portion		Detector portion			
• Features		• Super miniature design • SOP (1 Form B) 4-pin type		• Ultra small size • SOP (1 Form B) 6-pin type		• 2-channel in SO package		• 2-channel (MOSFET & optocoupler type)			
Part No.		AQY414S		AQV414S		AQW210S AQW214S		AQW210TS			
• Output	Load voltage*	Peak AC	400 V		400 V		350 V	400 V	350 V	BV _{CEC}	30 V
		DC	400 V		400 V		350 V	400 V	350 V		
	Continuous load current	1 A									
		0.5 A									
	Peak load current		0.1 A	0.1 A	0.1 A	0.08 A	0.12 A		CTR value	Min. 33% Typ. 100%	
	Power dissipation*		0.24 A	0.3 A	0.3 A	0.24 A	0.36 A				
	ON resistance	Typical	26 Ω		26 Ω		16 Ω	30 Ω	16 Ω	Saturation voltage	0.08 V
		Maximum	35 Ω		50 Ω		35 Ω	50 Ω	35 Ω		0.5 V
Output capacitance (Typical)		100 pF		100 pF		45 pF		45 pF	6 pF		
Off state leakage current		Max. 1 μA		Max. 1 μA		Max. 1 μA		Max. 1 μA	Max. 500 nA		
• Input	LED forward current*	50 mA		50 mA		50 mA		50 mA			
	LED reverse voltage*	3 V		3 V		3 V		3 V			
	Peak forward current	1 A		1 A		1 A		1 A			
	Power dissipation*	75 mW		75 mW		75 mW		75 mW		75 mW	
	LED operate current [LED operate (OFF) current]	Typical	0.9 mA		0.6 mA		0.9 mA		0.9 mA		2 mA
		Maximum	3.0 mA		3.0 mA		3.0 mA		3.0 mA		6 mA
LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA		0.4 mA		0.4 mA		0.4 mA		5 μA	
	Typical	0.85 mA		0.55 mA		0.8 mA		0.8 mA		35 μA	
LED dropout voltage (I _f = 5 mA)	Typical	1.14 V		1.14 V		1.14 V		1.14 V			
	Maximum	1.5 V		1.5 V		1.5 V		1.5 V			
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.47 ms		0.47 ms		0.23 ms	0.21 ms	0.23 ms	0.01 ms	
	Maximum	1.0 ms		1 ms		0.5 ms	0.5 ms	0.5 ms	—		
Turn off time [Reverse (ON) time]	Typical	0.28 ms		0.28 ms		0.04 ms		0.04 ms		0.03 ms	
	Maximum	1.0 ms		1 ms		0.2 ms		0.2 ms		—	
• Total power dissipation*	350 mW		500 mW		650 mW		650 mW				
• I/O isolation voltage*	1,500 V AC		1,500 V AC		1,500 V AC		1,500 V AC (Between input and output/ between contact sets)				
• Temperature limits	Operating*	-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F			
	Storage*	-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F			
• I/O capacitance	Typical	—		0.8 pF		0.8 pF		0.8 pF		0.8 pF	
Maximum	1.5 pF		1.5 pF		1.5 pF		1.5 pF		1.5 pF		
• Initial I/O isolation resistance	Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ				
• Terminal layout (.100, inch grid)	Recommended mounting pad (Top view)		Recommended mounting pad (Top view)		Recommended mounting pad (Top view)						
mm inch											
• Standards	UL (E43149), CSA (LR26550), TÜV, BSI		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV, BSI						
• Mounting method											
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Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

• Type of relay		GU SOP Type														
		3a: MOSFET & 2 optocoupler			DAA			2 MOSFET & 1 optocoupler			1 MOSFET & 2 optocoupler					
		AC/DC Type			AC/DC Type			AC/DC Type			AC/DC Type					
mm inch																
		Relay portion	Detector portion		Relay portion	Detector portion		Relay portion	Detector portion		Relay portion	Detector portion				
• Features		• 3-channel (MOSFET & 2 optocouplers type)			• DAA (Data Access Arrangement) circuit package			• SO package 16-pin type in super miniature design			• SO package 16-pin type in super miniature design					
Part No.		AQW210T2S			AQS210PS			AQS210TS			AQS210T2S					
Load voltage	Peak AC	350 V	BV	30 V	350 V	BV	30 V	350 V	BV	30 V	350 V	BV	30 V			
	DC	350 V	CEC		350 V	CEC		350 V	CEC		350 V	CEC				
Continuous load current	1 A	-----			-----			-----			-----					
	0.5 A	-----			-----			-----			-----					
Peak load current	0.12 A	CTR	Min. 33%	Typ. 100%	0.12 A	CTR	Min. 33%	Typ. 100%	0.1 A	CTR	Min. 33%	Typ. 100%	0.12 A	CTR	Min. 33%	Typ. 100%
	0.36 A	—			0.36 A	—			0.36 A	—			0.36 A	—		
Power dissipation*		400 mW	100 mW		400 mW	150 mW		600 mW	150 mW		400 mW	100 mW				
ON resistance	Typical	16 Ω	Saturation	0.08 V	18 Ω	Saturation	0.08 V	17 Ω	Saturation	0.08 V	17 Ω	Saturation	0.08 V			
	Maximum	35 Ω	voltage	0.5 V	25 Ω	voltage	0.5 V	25 Ω	voltage	0.5 V	25 Ω	voltage	0.5 V			
Output capacitance (Typical)		45 pF		6 pF		45 pF		6 pF		45 pF		6 pF				
Off state leakage current		Max. 1 μA		Max. 500 nA		Max. 1 μA		Max. 500 nA		Max. 1 μA		Max. 500 nA				
• Input	LED forward current*		50 mA		50 mA		50 mA		50 mA		50 mA					
	LED reverse voltage*		3 V		3 V		3 V		3 V		3 V					
	Peak forward current		1 A		1 A		1 A		1 A		1 A					
	Power dissipation*		75 mW	75 mW		75 mW	75 mW		75 mW	75 mW		75 mW	75 mW			
	LED operate current [LED operate (OFF) current]	Typical	0.9 mA	2 mA		0.9 mA	2 mA		0.9 mA	2 mA		0.9 mA	2 mA			
		Maximum	3.0 mA	6 mA		3.0 mA	6 mA		3.0 mA	6 mA		3.0 mA	6 mA			
	LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA	5 μA		0.4 mA	5 μA		0.4 mA	5 μA		0.4 mA	5 μA			
Typical		0.8 mA	35 μA		0.8 mA	35 μA		0.8 mA	35 μA		0.8 mA	35 μA				
LED dropout voltage (I _F = 5 mA)	Typical	1.14 V		1.14 V		1.14 V		1.14 V		1.14 V		1.14 V				
	Maximum	1.5 V		1.5 V		1.5 V		1.5 V		1.5 V		1.5 V				
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.23 ms	0.01 ms	0.23 ms	0.01 ms	0.23 ms	0.01 ms	0.23 ms	0.01 ms	0.23 ms	0.01 ms				
	Maximum	0.5 ms	—		2.0 ms	—		1.0 ms	—		1.0 ms	—				
Turn off time [Reverse (ON) time]	Typical	0.04 ms	0.03 ms		0.04 ms	0.03 ms		0.04 ms	0.03 ms		0.04 ms	0.03 ms				
	Maximum	0.2 ms	—		1.0 ms	—		0.2 ms	—		0.2 ms	—				
• Total power dissipation*		650 mW			650 mW			650 mW			650 mW					
• I/O isolation voltage*		1,500 V AC (Between input and output/ between contact sets)			1,500 V AC (Between input and output/ between contact sets)			1,500 V AC (Between input and output/ between contact sets)			1,500 V AC (Between input and output/ between contact sets)					
• Temperature limits	Operating*	-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F				
	Storage*	-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F				
• I/O capacitance	Typical	0.8 pF		0.8 pF		0.8 pF		0.8 pF		0.8 pF		0.8 pF				
	Maximum	1.5 pF		1.5 pF		1.5 pF		1.5 pF		1.5 pF		1.5 pF				
• Initial I/O isolation resistance		Min. 1,000 MΩ			Min. 1,000 MΩ			Min. 1,000 MΩ			Min. 1,000 MΩ					
• Terminal layout (.100, inch grid)	Recommended mounting pad (Top view)			Recommended mounting pad (Top view)												
• Standards		UL (E43149), CSA (LR26550), TÜV, BSI			UL (E43149), CSA (LR26550), BSI											
• Mounting method																
• Page		73			77			82								

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		RF C × R 20 Type	RF SOP Low on resistance Type				PD Type						
		1a Type	1a Type				1a Type						
		AC/DC Type	AC/DC Type				AC/DC Type						
• Features		• Low output capacitance between output terminals and low ON-resistance	• High frequency type in SO package				• High capacity • High sensitivity						
		Part No.	AQY221N1S	AQV225NS	AQV227NS	AQV224NS	AQY272	AQY275	AQY277	AQY274			
• Output	Load voltage*	Peak AC	40 V	80 V	200 V	400 V	60 V	100 V	200 V	400 V			
		DC	40 V	80 V	200 V	400 V	60 V	100 V	200 V	400 V			
	Continuous load current	1 A					2.0 A	1.3 A					
		0.5 A							0.65 A		0.35 A		
	Peak load current			0.12 A	0.12 A	0.05 A	0.04 A	6.0 A	4.0 A	2.0 A	1.0 A		
	Power dissipation*			300 mW	450 mW		700 mW						
	ON resistance	Typical		9.8 Ω	7 Ω	30 Ω	70 Ω	0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω		
		Maximum		12.5 Ω	10 Ω	50 Ω	100 Ω	0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω		
Output capacitance (Typical)			2.0 pF	10 pF		1,400 pF		600 pF					
Off state leakage current			10 nA	Max. 10 nA		Max. 10 μA							
• Input	LED forward current*		50 mA	50 mA				50 mA					
	LED reverse voltage*		3 V	3 V				3 V					
	Peak forward current		1 A	1 A				1 A					
	Power dissipation*		75 mW	75 mW				75 mW					
	LED operate current [LED operate (OFF) current]	Typical		0.9 mA	0.7 mA		1.0 mA						
		Maximum		3 mA	3 mA		3.0 mA						
LED turn off current [LED reverse (ON) current]	Minimum		0.4 mA	0.4 mA		0.4 mA							
	Typical		0.85 mA	0.65 mA		0.9 mA							
LED dropout voltage (I _f = 5 mA)	Typical		1.14 V	1.14 V		1.25 V							
	Maximum		1.5 V	1.5 V		1.5 V							
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.04 ms	0.25 ms		2.46 ms	2.40 ms	1.12 ms	1.65 ms				
		Maximum	0.5 ms	0.5 ms		5.0 ms	5.0 ms	5.0 ms	5.0 ms				
Turn off time [Reverse (ON) time]	Typical	0.06 ms	0.08 ms		0.22 ms	0.21 ms	0.10 ms	0.08 ms					
	Maximum	0.2 ms	0.2 ms		3.0 ms	3.0 ms	3.0 ms	3.0 ms					
• Total power dissipation*			350 mW	500 mW		750 mW							
• I/O isolation voltage*			1,500 V AC	1,500 V AC		2,500 V AC							
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F							
	Storage*		-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F							
• I/O capacitance	Typical		0.8 pF	0.8 pF		0.8 pF							
	Maximum		1.5 pF	1.5 pF		1.5 pF							
• Initial I/O isolation resistance			Min. 1,000 MΩ	Min. 1,000 MΩ		Min. 1,000 MΩ							
• Terminal layout (.100, inch grid)	Recommended mounting pad (Top view)		Recommended mounting pad (Top view)				Through hole terminal (Bottom view)	Recommended mounting pad (Top view)					
							Tolerance: ±0.1 ±.004						
• Standards			(UL, CSA, TÜV)	UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV							
• Mounting method													
• Page			86	90		94							

Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

• Type of relay		PD Type				HF Type										
		2a Type				1a Type										
		AC/DC Type				DC Type										
		mm inch														
• Features		<ul style="list-style-type: none"> Flat-Packaged type High sensitivity 				<ul style="list-style-type: none"> Low on-resistance Control with an input current of 10 mA 										
		Part No.	AQW272	AQW275	AQW277	AQW274	AQV101	AQV102	AQV103	AQV104						
• Load voltage*	Peak AC		60 V	100 V	200 V	400 V	—	—	—	—						
	DC		60 V	100 V	200 V	400 V	40 V	60 V	250 V	400 V						
• Output	Continuous load current	1 A	1.8 A	1.1 A	0.55 A	0.3 A	0.7 A	0.6 A	0.3 A	0.18 A						
		0.5 A														
Peak load current			6.0 A	4.0 A	2.0 A	1.0 A	1.8 A	1.5 A	0.6 A	0.5 A						
Power dissipation*			1,100 mW				360 mW									
• ON resistance	Typical		0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω	0.3 Ω	0.37 Ω	2.7 Ω	6.3 Ω						
	Maximum		0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω	0.5 Ω	0.7 Ω	4 Ω	8 Ω						
Output capacitance (Typical)			1,400 pF		600 pF		600 pF		300 pF							
Off state leakage current			Max. 10 μA				Max. 1 μA									
• Input	LED forward current*		50 mA				50 mA									
	LED reverse voltage*		3 V				6 V									
	Peak forward current		1 A				1 A									
	Power dissipation*		75 mW				150 mW									
	LED operate current [LED operate (OFF) current]	Typical Maximum		1.0 mA 3.0 mA				2.3 mA 5 mA								
	LED turn off current [LED reverse (ON) current]	Minimum Typical		0.4 mA 0.9 mA				0.8 mA 2.2 mA								
LED dropout voltage (I _f = 5 mA)	Typical Maximum		1.25 V 1.5 V				2.3 V 3 V									
• Switching speed	Turn on time [Operate (OFF) time]	Typical Maximum	2.46 ms 5.0 ms	2.40 ms 5.0 ms	1.12 ms 5.0 ms	1.65 ms 5.0 ms	0.23 ms 1 ms	0.22 ms 1 ms	0.13 ms 1 ms	0.09 ms 1 ms						
	Turn off time [Reverse (ON) time]	Typical Maximum	0.22 ms 3.0 ms	0.21 ms 3.0 ms	0.10 ms 3.0 ms	0.08 ms 3.0 ms	0.07 ms 1 ms	0.07 ms 1 ms	0.07 ms 1 ms	0.08 ms 1 ms						
• Total power dissipation*			1,100 mW				410 mW									
• I/O isolation voltage*			2,500 V AC				1,500 V AC									
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F									
	Storage*		-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F									
• I/O capacitance	Typical		0.8 pF				1.3 pF									
	Maximum		1.5 pF				3 pF									
• Initial I/O isolation resistance			Min. 1,000 MΩ				Min. 1,000 MΩ									
• Terminal layout (.100, inch grid)	Through hole terminal (Bottom view)				Recommended mounting pad (Top view)				Through hole terminal (Bottom view)				Surface mount terminal recommended mounting pad (Top view)			
		mm inch	Tolerance: ±0.1 ±.004				Tolerance: ±0.1 ±.004									
• Standards			UL (E43149), CSA (LR26550), TÜV				UL (E43149), CSA (LR26550), TÜV									
• Mounting method																
• Page			98				102									

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		HF Type				HE Type																			
		1a Type				1a Type																			
		AC/DC Type				AC/DC Type																			
mm inch																Standard I/O isolation type					Reinforced I/O isolation type				
• Features		<ul style="list-style-type: none"> Low on-resistance Control with an input current of 10 mA 				<ul style="list-style-type: none"> High sensitivity and low on-resistance 																			
		Part No.	AQV201	AQV202	AQV203	AQV204	AQV251	AQV252	AQV255	AQV257	AQV253	AQV254	AQV259	AQV258	AQV253H	AQV254H									
• Output	Load voltage*	Peak AC	40 V	60 V	250 V	400 V	40 V	60 V	100 V	200 V	250 V	400 V	1,000 V	1,500 V	250 V	400 V									
		DC	40 V	60 V	250 V	400 V	40 V	60 V	100 V	200 V	250 V	400 V	1,000 V	1,500 V	250 V	400 V									
	Continuous load current	1 A	0.5 A				0.5 A				0.5 A				0.5 A										
		0.5 A	0.4 A				0.4 A				0.35 A				0.2 A										
	Peak load current		1.8 A	1.5 A	0.6 A	0.5 A	1.8 A	1.5 A	1.0 A	0.75 A	0.6 A	0.5 A	0.09 A	0.06 A	0.6 A	0.5 A									
	Power dissipation*		360 mW				360 mW																		
	ON resistance	Typical	0.6 Ω	0.74 Ω	5.5 Ω	12.4 Ω	0.6 Ω	0.74 Ω	1.8 Ω	2.6 Ω	5.5 Ω	12.4 Ω	85 Ω	345 Ω	5.5 Ω	12.4 Ω									
		Maximum	1 Ω	1.4 Ω	8 Ω	16 Ω	1.0 Ω	1.4 Ω	2.5 Ω	4.0 Ω	8.0 Ω	16 Ω	200 Ω	500 Ω	8 Ω	16 Ω									
Output capacitance (Typical)		350 pF		170 pF		350 pF		170 pF		80 pF		170 pF													
Off state leakage current		Max. 1 μA				Max. 1 μA				Max. 10 μA		Max. 1 μA													
• Input	LED forward current*	50 mA				50 mA																			
	LED reverse voltage*	6 V				3 V																			
	Peak forward current	1 A				1 A																			
	Power dissipation*	150 mW				75 mW																			
	LED operate current [LED operate (OFF) current]	Typical	2.4 mA				0.9 mA				1.4 mA														
		Maximum	5 mA				3.0 mA				3.0 mA														
LED turn off current [LED reverse (ON) current]	Minimum	0.8 mA				0.4 mA				0.4 mA															
	Typical	2.2 mA				0.8 mA				1.3 mA															
LED dropout voltage (I _f = 5 mA)	Typical	2.3 V				1.14 V																			
	Maximum	3 V				1.5 V																			
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.38 ms	0.41 ms	0.21 ms	0.18 ms	1.7 ms	1.4 ms	0.9 ms	1.5 ms	0.8 ms	0.6 ms	0.35 ms	2.4 ms	1.8 ms										
	Maximum	1 ms	1 ms	1 ms	1 ms	3.0 ms	3.0 ms	2 ms	3 ms	2.0 ms	1.0 ms	1 ms	4 ms	3.0 ms											
	Turn off time [Reverse (ON) time]	Typical	0.08 ms	0.08 ms	0.07 ms	0.07 ms	0.07 ms	0.09 ms	0.1 ms	0.06 ms	0.05 ms	0.04 ms	0.04 ms	0.06 ms	0.05 ms										
	Maximum	1 ms	1 ms	1 ms	1 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms											
• Total power dissipation*		410 mW				410 mW																			
• I/O isolation voltage*		1,500 V AC				1,500 V AC										5,000 V AC									
• Temperature limits	Operating*	-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F																			
	Storage*	-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F																			
• I/O capacitance	Typical	1.3 pF				1.3 pF																			
	Maximum	3 pF				3 pF																			
• Initial I/O isolation resistance		Min. 1,000 MΩ				Min. 1,000 MΩ																			
• Terminal layout (.100, inch grid)	Through hole terminal (Bottom view)				Surface mount terminal recommended mounting pad (Top view)																				
		Tolerance: ±0.1 ±.004																							
• Standards	UL (E43149), CSA (LR26550), TÜV				UL (E43149), CSA (LR26550), TÜV										UL (E43149), CSA (LR26550), TÜV, BSI, VDE										
• Mounting method																									
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Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

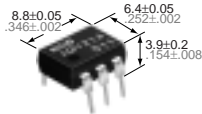
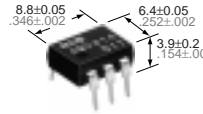
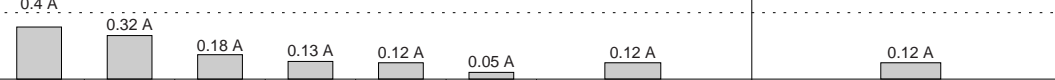
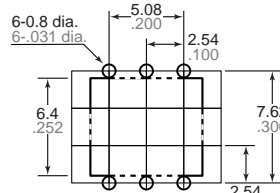
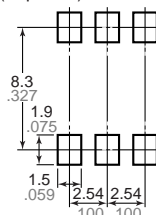
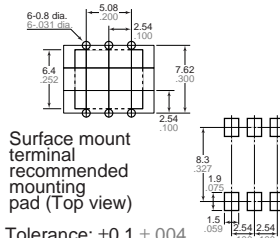

• Type of relay		HE Type			HE LED Display Type	HE Soft-ON/OFF Type	
		1b Type			1a Type	1a Type	
		AC/DC Type			AC/DC Type	AC/DC Type	
mm inch							
		Standard I/O isolation type		Reinforced I/O isolation type			
• Features		<ul style="list-style-type: none"> High sensitivity and low on-resistance Normally closed type 			<ul style="list-style-type: none"> Low on resistance and LED display 	<ul style="list-style-type: none"> High sensitive and low on-resistance 	
		Part No.	AQV453	AQV454	AQV454H	AQV254R	AQV257M
• Output	Load voltage*	Peak AC	250 V	400 V		400 V	200 V
		DC	250 V	400 V		400 V	200 V
	Continuous load current	1 A					
		0.5 A					
	Peak load current		0.2 A	0.15 A	0.15 A	0.15 A	0.25 A
	Power dissipation*		360 mW			360 mW	360 mW
	ON resistance	Typical	5.5 Ω	10.5 Ω		12.4 Ω	2.6 Ω
		Maximum	8.0 Ω	16 Ω		16 Ω	4 Ω
Output capacitance (Typical)		350 pF	170 pF		170 pF	170 pF	
Off state leakage current		Max. 1 μA		Max. 10 μA	Max. 1 μA	Max. 1 μA	
• Input	LED forward current*		50 mA			25 mA	50 mA
	LED reverse voltage*		3 V			3 V	3 V
	Peak forward current		1 A			60 mA	1 A
	Power dissipation*		75 mW			90 mW	75 mW
	LED operate current [LED operate (OFF) current]	Typical	1.0 mA	0.9 mA	1.4 mA	1.0 mA	0.6 mA
		Maximum	3.0 mA	3.0 mA	3 mA	3 mA	2.0 mA
LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA	0.4 mA	0.4 mA	0.4 mA	0.2 mA	
	Typical	0.9 mA	0.8 mA	1.3 mA	0.9 mA	0.5 mA	
LED dropout voltage (I _F = 5 mA)	Typical	1.14 V			2.8 V	1.14 V	
	Maximum	1.5 V			3.5 V	1.5 V	
• Switching speed	Turn on time [Operate (OFF) time]	Typical	1.52 ms	1.2 ms	1.8 ms	0.8 ms	5.1 ms (Rise time: typical 2.2 ms)
		Maximum	3 ms	2 ms	3 ms	2 ms	15 ms (Fall time: min. 1.0 ms)
	Turn off time [Reverse (ON) time]	Typical	0.4 ms	0.36 ms	0.4 ms	0.05 ms	3.2 ms (Rise time: typical 1.3 ms)
		Maximum	1 ms	1 ms	1 ms	0.2 ms	10 ms (Fall time: 0.6 ms)
• Total power dissipation*			410 mW			410 mW	410 mW
• I/O isolation voltage*			1,500 V AC	5,000 V AC		1,500 V AC	1,500 V AC
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F			-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F
	Storage*		-40°C to +100°C -40°F to +212°F			-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F
• I/O capacitance	Typical Maximum		1.3 pF	3 pF		1.3 pF	0.8 pF
• Initial I/O isolation resistance			Min. 1,000 MΩ			1,000 MΩ	Min. 1,000 MΩ
• Terminal layout (.100, inch grid)		Through hole terminal (Bottom view)			Surface mount terminal recommended mounting pad (Top view)		
	mm inch						
Tolerance: ±0.1 ±.004							
• Standards		UL (E43149), CSA (LR26550), TÜV, UL (E43149), CSA (LR26550), BSI			UL (E43149), CSA (LR26550), TÜV, UL (E43149), CSA (LR26550), TÜV		
• Mounting method							
• Page		111			114		
					117		

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

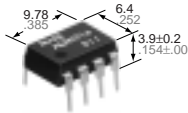
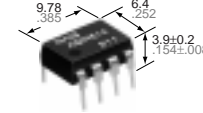
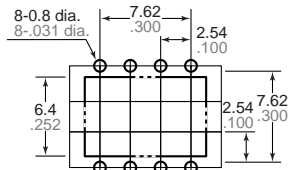
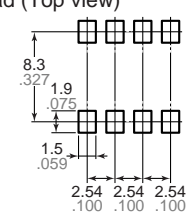


• Type of relay		HE Type			
		2a Type	1a1b Type	2b Type	
		AC/DC Type	AC/DC Type	AC/DC Type	
mm inch					
		<ul style="list-style-type: none"> • High sensitivity and low on-resistance • 2 Form A type 			
• Features		<ul style="list-style-type: none"> • High sensitivity and low on-resistance • 1 Form A 1 Form B type 			
		Part No.	AQW254	AQW654	AQW454
• Output	Load voltage*	Peak AC	400 V	400 V	400 V
		DC	400 V	400 V	400 V
• Output	Continuous load current	1 A			
		0.5 A			
	Peak load current	0.12 A	0.12 A	0.12 A	
	Peak load current	0.36 A	0.36 A	0.36 A	
	Power dissipation*	800 mW	800 mW	800 mW	
	ON resistance	Typical Maximum	12.4 Ω 16 Ω	10 Ω (N.O.), 11 Ω (N.C.) 16 Ω (N.O.), 16 Ω (N.C.)	11 Ω 16 Ω
	Output capacitance (Typical)		170 pF	170 pF	170 pF
Off state leakage current		Max. 1 μA	Max. 1 μA	Max. 1 μA	
• Input	LED forward current*		50 mA	50 mA	50 mA
	LED reverse voltage*		3 V	3 V	3 V
	Peak forward current		1 A	1 A	1 A
	Power dissipation*		75 mW	75 mW	75 mW
	LED operate current [LED operate (OFF) current]	Typical Maximum	0.9 mA 3.0 mA	0.9 mA 3.0 mA	0.9 mA 3.0 mA
	LED turn off current [LED reverse (ON) current]	Minimum Typical	0.4 mA 0.8 mA	0.4 mA 0.8 mA	0.4 mA 0.8 mA
LED dropout voltage (I _f = 5 mA)	Typical Maximum	1.14 V 1.5 V	1.14 V 1.5 V	1.14 V 1.5 V	
• Switching speed	Turn on time [Operate (OFF) time]	Typical Maximum	0.8 ms 2 ms	0.8 ms (N.O.), 1.2 ms (N.C.) 2.0 ms	1.2 ms 2.0 ms
	Turn off time [Reverse (ON) time]	Typical Maximum	0.05 ms 0.2 ms	0.04 ms (N.O.), 0.36 ms (N.C.) 1.0 ms	0.36 ms 1.0 ms
• Total power dissipation*			850 mW	850 mW	850 mW
• I/O isolation voltage*			1,500 V AC	1,500 V AC	1,500 V AC
• Temperature limits	Operating*		-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F
	Storage*		-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F
• I/O capacitance	Typical Maximum		0.8 pF 1.5 pF	0.8 pF 1.5 pF	0.8 pF 1.5 pF
• Initial I/O isolation resistance			Min. 1,000 MΩ	Min. 1,000 MΩ	Min. 1,000 MΩ
• Terminal layout (.100, inch grid)	Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)		
mm inch		Tolerance: ±0.1 ±.004			
• Standards		UL (E43149), CSA (LR26550), TÜV			
• Mounting method					
• Page		121	124	127	

Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

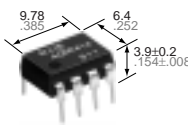
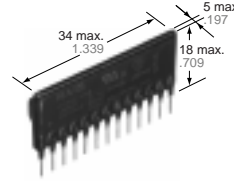
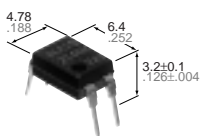
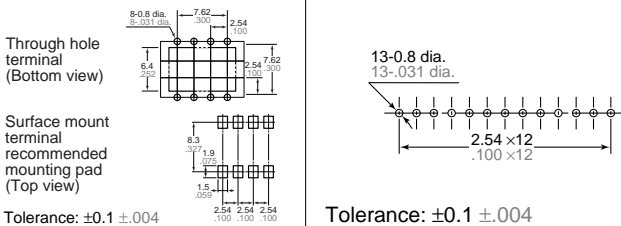
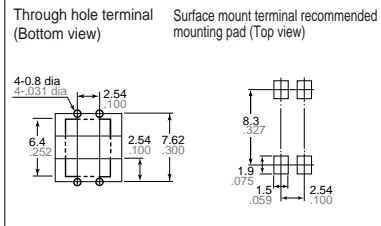
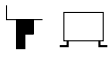

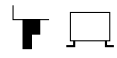
• Type of relay		GU Type									
		1a Type					1b Type				
		AC/DC Type					AC/DC Type				
											
		Standard I/O isolation type					Reinforced I/O isolation type				
• Features		• General use							• Normally-closed type (1 From B)		
		Part No.	AQV212	AQV215	AQV217	AQV210	AQV214	AQV216	AQV214H	AQV414	
Load voltage		Peak AC	60 V	100 V	200 V	350 V	400 V	600 V	400 V	400 V	
		DC	60 V	100 V	200 V	350 V	400 V	600 V	400 V	400 V	
• Output		Continuous load current									
			Peak load current	1.2 A	0.96 A	0.54 A	0.4 A	0.3 A	0.15 A	0.3 A	0.3 A
		Power dissipation*	500 mW							500 mW	
ON resistance		Typical Maximum	0.83 Ω	2.3 Ω	11 Ω	23 Ω	30 Ω	70 Ω	30 Ω	26 Ω	
			2.5 Ω	4 Ω	15 Ω	35 Ω	50 Ω	120 Ω	50 Ω	50 Ω	
Output capacitance (Typical)		150 pF	110 pF	70 pF	45 pF				100 pF		
Off state leakage current		Max. 1 μA							Max. 1 μA		
• Input		LED forward current*	50 mA							50 mA	
		LED reverse voltage*	3 V							3 V	
		Peak forward current	1 A							1 A	
		Power dissipation*	75 mW							75 mW	
		LED operate current [LED operate (OFF) current]	Typical Maximum	1 mA					1.3 mA		1 mA
				3 mA					3 mA		3 mA
LED turn off current [LED reverse (ON) current]	Minimum Typical	0.4 mA					0.4 mA		0.4 mA		
		0.79 mA					1.2 mA		0.95 mA		
LED dropout voltage (I _F = 5 mA)	Typical Maximum	1.14 V							1.14 V		
		1.5 V							1.5 V		
• Switching speed		Turn on time [Operate (OFF) time]	Typical	0.65 ms	0.60 ms	0.25 ms	0.25 ms	0.21 ms	0.28 ms	0.6 ms	0.47 ms
			Maximum	2 ms	2 ms	1 ms	0.5 ms	0.5 ms	0.5 ms	0.8 ms	1 ms
		Turn off time [Reverse (ON) time]	Typical	0.08 ms	0.06 ms	0.05 ms	0.05 ms	0.05 ms	0.04 ms	0.05 ms	0.28 ms
			Maximum	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms
• Total power dissipation*		550 mW							550 mW		
• I/O isolation voltage*		1,500 V AC					5,000 V AC		1,500 V AC		
• Temperature limits		Operating*	-40°C to +85°C -40°F to +185°F							-40°C to +85°C -40°F to +185°F	
		Storage*	-40°C to +100°C -40°F to +212°F							-40°C to +100°C -40°F to +212°F	
• I/O capacitance		Typical Maximum	0.8 pF							0.8 pF	
			1.5 pF							1.5 pF	
• Initial I/O isolation resistance		Min. 1,000 MΩ							Min. 1,000 MΩ		
• Terminal layout (.100, inch grid)		Through hole terminal (Bottom view)			Surface mount terminal recommended mounting pad (Top view)			Through hole terminal (Bottom view)			
											
		Tolerance: ±0.1 ±.004						Tolerance: ±0.1 ±.004			
• Standards		UL (E43149), CSA (LR26550), TÜV					UL (E43149), CSA (LR26550), TÜV, BSI, VDE		UL (E43149), CSA (LR26550), TÜV		
• Mounting method											
• Page		130							135		

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		GU Type							
		2a Type				1a1b Type			
		AC/DC Type				AC/DC Type			
mm inch									
• Features		<ul style="list-style-type: none"> • 2 Form A type • Approx. 1/2 smaller compared with proximity mounting of two 1 Form A units 				<ul style="list-style-type: none"> • 1 Form A 1 Form B type 			
		Part No.	AQW212	AQW215	AQW217	AQW210	AQW214	AQW216	AQW614
• Output	Load voltage	Peak AC	60 V	100 V	200 V	350 V	400 V	600 V	400 V
		DC	60 V	100 V	200 V	350 V	400 V	600 V	400 V
	Continuous load current	1 A							
		0.5 A							
	Peak load current		1.0 A	0.9 A	0.48 A	0.36 A	0.3 A	0.12 A	0.3 A
	Power dissipation*		800 mW						800 mW
	ON resistance	Typical	0.83 Ω	2.3 Ω	11 Ω	23 Ω	30 Ω	70 Ω	27 Ω
		Maximum	2.5 Ω	4 Ω	15 Ω	35 Ω	50 Ω	120 Ω	50 Ω
	Output capacitance (Typical)		150 pF	110 pF	70 pF	45 pF	45 pF	45 pF	45 pF (N.O.), 100 pF (N.C.)
	Off state leakage current		Max. 1 μA						Max. 1 μA
• Input	LED forward current*		50 mA					50 mA	
	LED reverse voltage*		3 V					3 V	
	Peak forward current		1 A					1 A	
	Power dissipation*		75 mW					75 mW	
	LED operate current [LED operate (OFF) current]	Typical	0.9 mA				1 mA	0.9 mA	0.7 mA (N.O.) 0.9 mA (N.C.)
		Maximum	3 mA				3 mA	3 mA	3 mA
LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA				0.4 mA	0.4 mA	0.4 mA	
	Typical	0.8 mA				0.79 mA	0.8 mA	0.7 mA (N.O.) 0.8 mA (N.C.)	
LED dropout voltage (If = 5 mA)	Typical	1.14 V					1.14 V		
	Maximum	1.5 V					1.5 V		
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.65 ms	0.60 ms	0.25 ms	0.25 ms	0.31 ms	0.28 ms	0.28 ms (N.O.) 0.43 ms (N.C.)
		Maximum	2 ms	2 ms	1.0 ms	0.5 ms	0.5 ms	0.5 ms	1 ms
	Turn off time [Reverse (ON) time]	Typical	0.08 ms	0.06 ms	0.05 ms	0.05 ms	0.05 ms	0.04 ms	0.04 ms (N.O.) 0.3 ms (N.C.)
		Maximum	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	0.2 ms	1 ms
• Total power dissipation*		850 mW						850 mW	
• I/O isolation voltage*		1,500 V AC						1,500 V AC	
• Temperature limits	Operating*	-40°C to +85°C -40°F to +185°F						-40°C to +85°C -40°F to +185°F	
	Storage*	-40°C to +100°C -40°F to +212°F						-40°C to +100°C -40°F to +212°F	
• I/O capacitance	Typical	0.8 pF						0.8 pF	
	Maximum	1.5 pF						1.5 pF	
• Initial I/O isolation resistance		Min. 1,000 MΩ						Min. 1,000 MΩ	
• Terminal layout (.100, inch grid)	Through hole terminal (Bottom view)				Surface mount terminal recommended mounting pad (Top view)				
									
mm inch		Tolerance: ±0.1 ±.004							
• Standards		UL (E43149), CSA (LR26550), TÜV							
• Mounting method		 							
• Page		139						142	

Note: Meaning of symbol marks  : PC board terminal;  : Surface-mounting

• Type of relay		GU Type		GU-E Type			
		2b Type		Multi-channel(4a) Type		1a Types	
		AC/DC Type		AC/DC Type		AC/DC Type	
						4-Pin	
mm inch							
						Reinforced I/O isolation type	
• Features		<ul style="list-style-type: none"> • 2 Form B type • Approx. 1/2 smaller compared with proximity mounting of two 1 Form B units 		<ul style="list-style-type: none"> • 4-circuit (4 Form A) type in a compact and slim 13-pin SIL 		<ul style="list-style-type: none"> • General use and economy type • DIP (1 Form A) 4-pin type 	
		Part No.	AQW414	AQX21444	AQY210EH	AQY214EH	
Load voltage		Peak AC	400 V	400 V	350 V	400 V	
		DC	400 V	400 V	350 V	400 V	
Continuous load current		1 A					
		0.5 A					
• Output			0.1 A	0.08 A	0.13 A	0.12 A	
Peak load current			0.3 A	0.3 A	0.4 A	0.3 A	
Power dissipation*			800 mW	1.45 W	500 mW		
ON resistance		Typical	26 Ω	30 Ω	18 Ω	26 Ω	
		Maximum	50 Ω	50 Ω	25 Ω	35 Ω	
Output capacitance (Typical)			100 pF	45 pF	45 pF		
Off state leakage current			Max. 1 μA	Max. 1 μA	Max. 1 μA		
• Input		LED forward current*	50 mA	50 mA	50 mA		
		LED reverse voltage*	3 V	3 V	3 V		
		Peak forward current	1 A	1 A	1 A		
		Power dissipation*	75 mW	75 mW	75 mW		
		LED operate current [LED operate (OFF) current]	Typical	0.7 mA	1.1 mA	1.2 mA	
			Maximum	3.0 mA	3 mA	3.0 mA	
LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA	0.4 mA	0.4 mA			
	Typical	0.64 mA	1.0 mA	1.1 mA			
LED dropout voltage (I _F = 5 mA)	Typical	1.14 V	1.14 V	1.14 V			
	Maximum	1.5 V	1.5 V	1.5 V			
• Switching speed		Turn on time [Operate (OFF) time]	Typical	0.46 ms	0.29 ms	0.5 ms	
		Maximum	1 ms	1 ms	2.0 ms		
		Turn off time [Reverse (ON) time]	Typical	0.40 ms	0.19 ms	0.08 ms	
		Maximum	1 ms	0.5 ms	1.0 ms		
• Total power dissipation*			850 mW	1.5 W	550 mW		
• I/O isolation voltage*			1,500 V AC	1,500 V AC	5,000 V AC		
• Temperature limits		Operating*	-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F		
		Storage*	-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F		
• I/O capacitance		Typical	0.8 pF	4.0 pF	0.8 pF		
		Maximum	1.5 pF	8.0 pF	1.5 pF		
• Initial I/O isolation resistance			Min. 1,000 MΩ	Min. 1,000 MΩ	1,000 MΩ		
• Terminal layout (.100, inch grid)							
mm inch		Tolerance: ±0.1 ±.004		Tolerance: ±0.1 ±.004			
• Standards		UL (E43149), CSA (LR26550), TÜV			UL (E43149), BSI, CSA (LR26550)		
• Mounting method							
• Page		145		148		151	

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		GU-E Type								
		1a Types				1b Types		1b Types		
		AC/DC Type				AC/DC Type		AC/DC Type		
		6-Pin				4-Pin		6-Pin		
mm inch										
		Standard I/O isolation type		Reinforced I/O isolation type		Reinforced I/O isolation type		Standard I/O isolation type	Reinforced I/O isolation type	
• Features		• General use and economy (1 Form A) type				• General use and economy type • DIP (1 Form B) 4-pin type		• General use and economy (1 Form B) type		
		Part No.	AQV210E	AQV214E	AQV210EH	AQV214EH	AQY414EH	AQV414E	AQV414EH	
• Output		Load voltage*	Peak AC	350 V	400 V	350 V	400 V	400 V	400 V	
			DC	350 V	400 V	350 V	400 V	400 V	400 V	400 V
		Continuous load current	1 A							
			0.5 A							
		Peak load current	0.4 A	0.3 A	0.4 A	0.3 A	0.3 A	0.3 A	0.3 A	
		Power dissipation*	500 mW				500 mW	500 mW		
		ON resistance	Typical	23 Ω	30 Ω	23 Ω	30 Ω	26 Ω	26 Ω	
			Maximum	35 Ω	50 Ω	35 Ω	50 Ω	35 Ω	50 Ω	
		Output capacitance (Typical)	45 pF				100 pF	100 pF		
		Off state leakage current	Max. 1 μA				Max. 10 μA	Max. 1 μA	Max. 10 μA	
• Input		LED forward current*	50 mA				50 mA	50 mA		
		LED reverse voltage*	3 V				3 V	3 V		
		Peak forward current	1 A				1 A	1 A		
		Power dissipation*	75 mW				75 mW	75 mW		
		LED operate current [LED operate (OFF) current]	Typical	1.1 mA		1.6 mA		1.3 mA	1.45 mA	1.75 mA
			Maximum	3.0 mA		3.0 mA		3.0 mA	3.0 mA	3.0 mA
LED turn off current [LED reverse (ON) current]	Typical	0.3 mA		0.4 mA		0.4 mA	0.3 mA	0.4 mA		
	Maximum	1.0 mA		1.5 mA		1.2 mA	1.40 mA	1.70 mA		
LED dropout voltage (I _f = 5 mA)	Typical	1.14 V				1.14 V	1.14 V			
	Maximum	1.5 V				1.5 V	1.5 V			
• Switching speed	Turn on time [Operate (OFF) time]	Typical	0.5 ms		0.7 ms		0.8 ms	0.7 ms	1.3 ms	
	Maximum	2.0 ms		2.0 ms		3.0 ms	2.0 ms	3.0 ms		
	Turn off time [Reverse (ON) time]	Typical	0.05 ms				0.2 ms	0.1 ms	0.3 ms	
	Maximum	1.0 ms				1.0 ms	1.0 ms	1.0 ms	1.5 ms	
• Total power dissipation*		550 mW				550 mW	550 mW			
• I/O isolation voltage*		1,500 V AC		5,000 V AC		5,000 V AC	1,500 V AC	5,000 V AC		
• Temperature limits	Operating*	-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F			
	Storage*	-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F			
• I/O capacitance	Typical	0.8 pF				0.8 pF	0.8 pF			
	Maximum	1.5 pF				1.5 pF	1.5 pF			
• Initial I/O isolation resistance		Min. 1,000 MΩ				Min. 1,000 MΩ	Min. 1,000 MΩ			
• Terminal layout (.100, inch grid)	Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)		Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)			
mm inch		Tolerance: ±0.1 ±.004								
• Standards		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV, BSI, VDE		UL (E43149), BSI, CSA (LR26550)		UL (E43149), CSA (LR26550), TÜV, UL (E43149), CSA (LR26550), TÜV, BSI, VDE		
• Mounting method										
• Page		130				154	135			

Note: Meaning of symbol marks : PC board terminal; : Surface-mounting

• Type of relay		GU-E Type				RF Type			
		2a Types		1a1b Types	2b Types	1a Type			
		AC/DC Type		AC/DC Type	AC/DC Type	AC/DC Type			
mm inch									
		Reinforced I/O isolation type		Reinforced I/O isolation type	Reinforced I/O isolation type				
• Features		<ul style="list-style-type: none"> General use and economy type DIP (2 Form A) 8-pin type 		<ul style="list-style-type: none"> General use and economy type DIP (1 Form A 1 Form B) 8-pin type 	<ul style="list-style-type: none"> General use and economy type DIP (2 Form B) 8-pin type 	<ul style="list-style-type: none"> For high frequency applications High speed switching 			
		Part No.	AQW210EH	AQW214EH	AQW614EH	AQW414EH	AQV221	AQV225	
• Output		Load voltage	Peak AC	350 V	400 V	400 V	400 V	40 V	80 V
			DC	350 V	400 V	400 V	400 V	40 V	80 V
		Continuous load current	1 A						
			0.5 A						
		Peak load current	0.12 A	0.1 A	0.1 A	0.1 A	0.08 A	0.05 A	
		Power dissipation*	800 mW		800 mW	800 mW	230 mW		
		ON resistance	Typical	18 Ω	26 Ω	26 Ω	22 Ω	36 Ω	
			Maximum	25 Ω	35 Ω	35 Ω	35 Ω	50 Ω	
		Output capacitance (Typical)	45 pF		45 pF(N.O.), 100 pF(N.C.)		5.6 pF	4.8 pF	
		Off state leakage current	Max. 1 μA		Max. 1 μA(N.O.) 10 μA(N.C.)		Max. 10 nA		
• Input		LED forward current*	50 mA		50 mA	50 mA	50 mA		
		LED reverse voltage*	3 V		3 V	3 V	3 V		
		Peak forward current	1 A		1 A	1 A	1 A		
		Power dissipation*	75 mW		75 mW	75 mW	75 mW		
		LED operate current [LED operate (OFF) current]	Typical	1.2 mA		1.3 mA	1.3 mA	0.9 mA	
			Maximum	3.0 mA		3.0 mA	3.0 mA	3.0 mA	
		LED turn off current [LED reverse (ON) current]	Minimum	0.4 mA		0.4 mA	0.4 mA	0.4 mA	
Typical	1.1 mA		1.2 mA	1.2 mA	0.85 mA				
LED dropout voltage (If = 5 mA)	Typical	1.14 V		1.14 V	1.14 V	1.14 V			
	Maximum	1.5 V		1.5 V	1.5 V	1.5 V			
• Switching speed		Turn on time [Operate (OFF) time]	Typical	0.5 ms		0.5 ms(N.O.) 0.8 ms(N.C.)	0.8 ms	0.10 ms	
			Maximum	2.0 ms		3.0 ms	3.0 ms	0.3 ms	
		Turn off time [Reverse (ON) time]	Typical	0.08 ms		0.08 ms(N.O.) 0.2 ms(N.C.)	0.2 ms	0.03 ms	
			Maximum	1.0 ms		1.0 ms	1.0 ms	0.1 ms	
• Total power dissipation*		850 mW		850 mW	850 mW	280 mW			
• I/O isolation voltage*		5,000 V AC		5,000 V AC	5,000 V AC	1,500 V AC			
• Temperature limits		Operating*	-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F		
		Storage*	-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F	-40°C to +100°C -40°F to +212°F		
• I/O capacitance		Typical	0.8 pF		0.8 pF	0.8 pF	0.8 pF		
		Maximum	1.5 pF		1.5 pF	1.5 pF	1.5 pF		
• Initial I/O isolation resistance		1,000 MΩ		1,000 MΩ	1,000 MΩ	Min. 1,000 MΩ			
• Terminal layout (.100, inch grid)		Through hole terminal (Bottom view)		Mounting pad (Top view)		Through hole terminal (Bottom view)	Surface mount terminal recommended mounting pad (Top view)		
		mm inch				Tolerance: ±0.1 ±.004			
• Standards		UL (E43149), CSA (LR26550), BSI				UL (E43149), CSA (LR26550), TÜV			
• Mounting method									
• Page		157		160	163	166			

*The values are absolute maximum ratings (25°C 77°F). []: Representation in case of Form B type contact PhotoMOS Relay.

Selector Chart

• Type of relay		RF Low C and R Type		RF Low on resistance Type			HS Type								
		1a Type		1a Type		2aType	1a Type								
		AC/DC Type		AC/DC Type		AC/DC Type	AC/DC Type								
		mm inch													
• Features		• Low output capacitance between output terminals and low ON-resistance		• Low on-resistance type for high frequency application		• 2-channel type of low on-resistance type		• Highest sensitivity LED operate current: typical 0.31 mA							
		Part No.	AQV221N		AQV225N	AQV227N	AQV224N	AQW225N	AQW227N	AQW224N	AQV234				
• Output		Load voltage*	Peak AC	40 V		80 V	200 V	400 V	80 V	200 V	400 V	400 V			
			DC	40 V		80 V	200 V	400 V	80 V	200 V	400 V	400 V			
		Continuous load current		6 A		1 A									
				1 A											
		Peak load current		0.45 A		0.45 A	0.21 A	0.15 A	0.36 A	0.15 A	0.12 A	0.3 A			
		Power dissipation*		360 mW		360 mW		800 mW		500 mW					
		ON resistance		Typical		9.8 Ω		7 Ω	30 Ω	70 Ω	7 Ω	30 Ω	70 Ω	30 Ω	
				Maximum		15 Ω		10 Ω	50 Ω	100 Ω	10 Ω	50 Ω	100 Ω	50 Ω	
		Output capacitance (Typical)		3.9 pF		10 pF		10 pF		45 pF					
		Off state leakage current		Max. 10 nA		Max. 10 nA		Max. 10 nA		Max. 1 μA					
• Input		LED forward current*		50 mA		50 mA		50 mA		50 mA		50 mA			
		LED reverse voltage*		3 V		3 V		3 V		3 V		3 V			
		Peak forward current		1 A		1 A		1 A		1 A		1 A			
		Power dissipation*		75 mW		75 mW		75 mW		75 mW		75 mW			
		LED operate current [LED operate (OFF) current]		Typical		0.9 mA		0.9 mA		0.9 mA		0.31 mA		0.5 mA	
				Maximum		3 mA		3 mA		3 mA		3 mA		0.5 mA	
LED turn off current [LED reverse (ON) current]		Minimum		0.4 mA		0.4 mA		0.4 mA		0.1 mA		0.29 mA			
		Typical		0.85 mA		0.85 mA		0.8 mA		0.8 mA		0.29 mA			
LED dropout voltage (I _f = 5 mA)		Typical		1.14 V		1.14 V		1.14 V		1.1 V		1.5 V			
		Maximum		1.5 V		1.5 V		1.5 V		1.5 V		1.5 V			
• Switching speed		Turn on time [Operate (OFF) time]		Typical		0.2 ms		0.2 ms		0.2 ms		0.89 ms			
				Maximum		0.5 ms		0.5 ms		0.5 ms		2 ms			
		Turn off time [Reverse (ON) time]		Typical		0.08 ms		0.08 ms		0.08 ms		0.22 ms			
				Maximum		0.2 ms		0.2 ms		0.2 ms		1 ms			
		Total power dissipation*		410 mW		410 mW		850 mW		550 mW					
		I/O isolation voltage*		1,500 V AC		1,500 V AC		1,500 V AC		1,500 V AC					
• Temperature limits		Operating*		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F		-40°C to +85°C -40°F to +185°F			
		Storage*		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F		-40°C to +100°C -40°F to +212°F			
• I/O capacitance		Typical		0.8 pF		0.8 pF		0.8 pF		0.8 pF		0.8 pF			
		Maximum		1.5 pF		1.5 pF		1.5 pF		1.5 pF		1.5 pF			
		Initial I/O isolation resistance		Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ					
• Terminal layout (.100, inch grid)		Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)		Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)		Through hole terminal (Bottom view)		Surface mount terminal recommended mounting pad (Top view)			
		mm inch		Tolerance: ±0.1 ±.004		Tolerance: ±0.1 ±.004		Tolerance: ±0.1 ±.004		Tolerance: ±0.1 ±.004					
• Standards		UL (E43149), CSA (LR26550)		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV					
• Mounting method															
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Note: Meaning of symbol marks : PC board terminal; : Surface-mounting