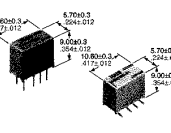
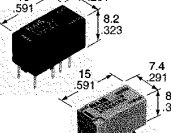
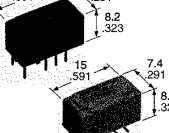
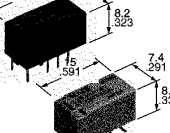
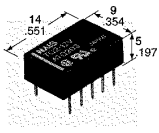
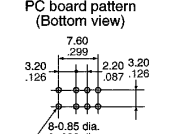
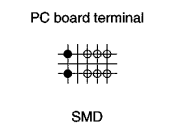
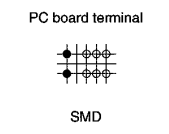
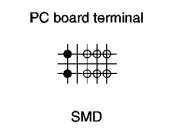
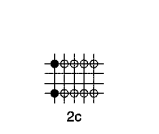
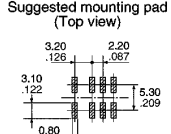
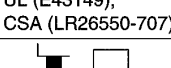
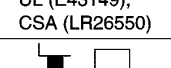
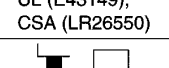
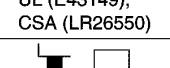
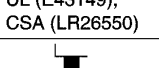


• Products	Ultra-Small Package		T-SERIES		
	AGN-RELAY	TX-RELAY(SMD)	TX-D-RELAY(SMD)	TX-S-RELAY(SMD)	TQ-RELAY
• Type of relay					
mm inch					
• Features	• Compact, slim body saves space (5.7mmW x 10.6mmL x 9.0mmH) • 2500V surge withstand • Increased packaging density	• Surge withstand: 2,500V • High contact capacity: 2 A 30 V DC • Breakdown voltage between contacts and coil: 2,000 V • 3 types of surface-mount terminal available	• High-insulation relay that conforms to the supplementary insulation level provided for in EN41003/EN60950 • 3 types of surface-mount terminal available	• High sensitivity • 50 mW nominal operating power • 1,500 V FCC • 3 types of surface-mount terminal available	• Ultra-small size • 1,500V FCC • 4 pole model available
• Sealed types availability	●	●	●	●	●
• Latching types availability	●	●	●	●	●
• Contact material (Optional material)	Stationary: AgPd + Au clad Movable: AgPd	Gold-clad silver	Gold-clad silver	Gold-clad silver	Gold-clad silver (Silver palladium)
• Contact rating chart (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A				
Minimum	1 mA 100 μA 10 μA				
• Max. switching voltage	110V DC, 125V AC	220V DC	220V DC	110V DC	110V DC, 125V AC
• Contact arrangement	2c	2c	2c	2c	2c, 4c
• Life (Min. operation)	Electrical	10 ⁷ (at 1 A 30 V DC) 10 ⁷ (at 0.3 A 30 V DC)	10 ⁷ (at 2 A 30 V DC) 2 × 10 ⁶ (at 1 A 30 V DC)	10 ⁷ (at 2 A 30 V DC) 2 × 10 ⁶ (at 1 A 30 V DC)	2 × 10 ⁵
	Mechanical	5 × 10 ⁷	10 ⁸	10 ⁸	10 ⁸
• Break-down voltage	Between open contacts	750Vrms	1,000Vrms	1,000Vrms	750Vrms
	Between contact sets	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
	Between contacts and coil	1,000Vrms	2,000Vrms	2,000Vrms	1,000Vrms
	Between live parts and ground	—	—	—	—
• Surge withstand voltage	2,500V Bellcore	2,500V Bellcore	2,500V Bellcore	1,500V FCC	1,500V FCC
• Coil voltage	(DC) 1.5, 3, 4.5, 6, 9, 12, 24	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 6, 9, 12, 24V	(DC) 3, 4.5, 5, 6, 9, 12, 24, 48V
• Nominal operating power	(Single) 140mW (Up to 12V DC) 230mW (24V DC)	(Single) 140mW (Up to 24V DC) 270mW (48V DC)	(Single) DC1.5~12V: 200mW DC24V : 230mW	(Single) DC1.5~12V: 50mW DC24V : 70mW	(Single)(Up to 12V DC) (2c) 140 mW (4c) 280 mW
• Terminal layout (Bottom View)	PC board pattern (Bottom view)	PC board terminal	PC board terminal	PC board terminal	
					
• coil terminal (.100 inch grid)					
mm inch					
• Standards	UL (E43149), CSA (LR26550-707)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

AGN-RELAY

Ex. AGN 2 0 0 A 1 H Z

Contact arrangement	Operating function	Type of operation	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	0: Single side stable 1: 1 coil latching	0: Standard type (B.B.M.)	Nil: Standard PC board terminal A: Standard surface-mount terminal type	1H: 1.5V 03: 3V 4H: 4.5V 06: 6V 09: 9V 12: 12V 24: 24V	Nil: Tube packing Z: Tape and reel packing (picked from 5/6/7/8 pin side)

TX-RELAY

Ex. TX 2 SA - L - H - 3V - Z

Contact arrangement	Surface-mount availability	Operating function	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	Nil: Standard PC board terminal type or self-clinching terminal type SA: Standard surface-mount terminal type SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard PC board terminal or surface-mount terminal H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24, 48* V	Nil: Tube packing Z: Tape and reel packing (picked from the 8/9/10/12-pin side)

Notes: 1. Tape and reel (picked from 1/3/4/5-pin side) is also available by request. Part number suffix "-X" is needed when ordering.
(ex.) TX2SA-3 V-X
2. Tape and reel packing symbol "-Z" or "-X" are not marked on the relay.

*48 V coil type: Single side stable only

TXD-RELAY

Ex. TXD 2 SA - L - - 4.5V - Z

Contact arrangement	Surface-mount availability	Operating function	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	Nil: Standard PC board terminal or self-clinching terminal SA: Standard surface-mount terminal SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	Nil: Single side stable L: 1 coil latching	Nil: Standard PC board terminal or surface-mount type H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24 V	Nil: Tube packing Z: Tape and reel packing (Picked from the 8/9/10/12-pin side)

Notes: 1. Tape and reel (picked from 1/3/4/5-pin side) is also available by request. Part number suffix "-X" is needed when ordering.
(ex.) TXS2SA-3 V-X
2. Tape and reel symbol "-Z" or "-X" are not marked on the relay.

M.B.B. contact types are available (contact Aromat for more information)

TXS-RELAY

Ex. TXS 2 SA - L - H - 3V - Z

Contact arrangement	Surface-mount availability	Operating function	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	Nil: Standard PC board terminal type or self-clinching terminal type SA: Standard surface-mount terminal type SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard PC board terminal or surface-mount terminal H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24 V	Nil: Tube packing Z: Tape and reel packing (picked from the 8/9/10/12-pin side)

Notes: 1. Tape and reel (picked from 1/3/4/5-pin side) is also available by request. Part number suffix "-X" is needed when ordering.
(ex.) TXS2SA-3 V-X
2. Tape and reel symbol "-Z" or "-X" are not marked on the relay.

TQ-RELAY

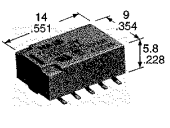
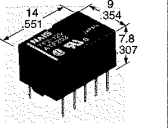
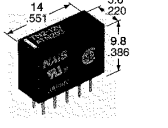
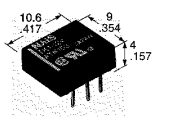
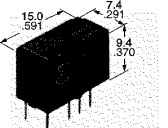
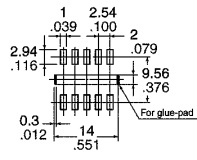
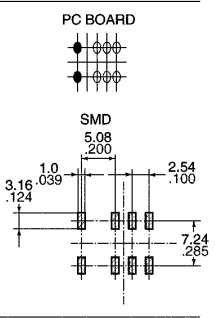
EX. TQ 2 H - L2 - 2M - 3V

Contact arrangement	Terminal shape	Operating function	MBB function	Coil voltage (DC)
2: 2 Form C 4: 4 Form C	Nil: Standard PC board terminal H: Self-clinching terminal	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard (B.B.M.) type 2M: 2M.B.B. type	3, 4.5, 5, 6, 9, 12, 24, 48* V

*48 V coil type: Single side stable only

Notes:

- AgPd stationary contact types available for high resistance against contact sticking.
- When ordering, please add suffix "-3" like TQ2-12V-3.
- M.B.B. contact types are available only for TQ2 type.

• Products	T-SERIES					Compact & Slim 2c Non-polarized Relay
	TQ-SMD-RELAY	TF-RELAY	TN-RELAY	TK-RELAY	HX-RELAY	HX-RELAY
• Type of relay						
mm inch						
• Features	- Ultra low profile: 5.8mm .228inch - Surge withstand: 2,500V 3 types of surface-mount terminal available	- High sensitivity - Nominal operating power, 80mW 1,500V FCC	- Ultra-slim size 1,500V FCC	- Low profile 4 mm .157 inch - High contact capacity: 2 A - Surge withstand voltage between contact and coil: 2,500 V	- Ultra compact size 1,500V FCC - High-density mounting is possible - Surface mount available	
• Sealed types availability	●	●	●	●	●	●
• Latching types availability	●	●	●	●	●	●
• Contact material (Optional material)	Gold-clad silver alloy	Gold-clad silver (Silver palladium)	Gold-clad silver	Gold-clad silver nickel	Gold-clad silver	
• Contact rating chart (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A 	1A 30V DC 	1A 30V DC 	2A 30V DC 	1A 30V DC 	
Minimum	1 mA 100 μA 10 μA					1mA 1V DC
• Max. switching voltage	220V DC, 125V AC	110V DC, 125V AC	110V DC, 125V AC	220V DC	110V DC, 125V AC	
• Contact arrangement	2c	2c	2c	1c	2c	
• Life (Min. operation)	Electrical	10 ⁵ (at 2 A 30 V DC) 2 × 10 ⁵ (at 1 A 30 V DC)	2 × 10 ⁵	2 × 10 ⁵	10 ⁵	10 ⁵
	Mechanical	10 ⁸	10 ⁸	10 ⁸	10 ⁸	10 ⁷
• Break-down voltage	Between open contacts	1,000Vrms	750Vrms	750Vrms	750Vrms	750Vrms
	Between contact sets	1,500Vrms	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
	Between contacts and coil	1,500Vrms	1,000Vrms	1,000Vrms	1,500Vrms	1,000Vrms
	Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	2,500V Bellcore	1,500V FCC	1,500V FCC	2,500V Bellcore	1,500V FCC	
• Coil voltage	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	
• Nominal operating power	(Single) 140mW (Up to 12V DC) 200mW (24V DC) 300mW (48V DC)	(Single) 80mW (Up to 12V DC) 140mW (24V DC) 260mW (48V DC)	(Single) 140mW (Up to 12V DC) 200mW (24V DC) 300mW (48V DC)	(Single) 140mW (Up to 12V DC) 200mW (24V DC) 270mW (24V DC)	320mW	
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)						
mm inch						
• Standards	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43149), CSA (LR26550)	
• Mounting method						

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

TQ-SMD-RELAY

Ex. TQ 2 SA - L - 3V - Z

Contact arrangement	Surface-mount types	Operating function	Coil voltage (DC)	Packing style
2: 2 Form C	SA: Standard surface-mount terminal type SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	1.5, 3, 4.5, 5, 6, 9, 12, 24, 48* V	Nil: Tube packing Z: Tape and reel packing (picked from the 6/7/8/9/10-pin side)

*48 V coil type: Single side stable only

Notes: 1. Tape and reel (picked from 1/2/3/4/5-pin side) is also available by request. Part No. suffix "-X" is needed when ordering. (ex.) TQ2SA-3V-X
2. Tape and reel symbol "-Z" or "-X" are not marked on the relay.

TF-RELAY

Ex. TF 2 - L - H - 3V

Contact arrangement	Operating function	Terminal shape	Coil voltage(DC)
2:2 Form C	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard PC board terminal H: Self-clinching terminal	3,4.5,5,6,9,12, 24,48* V

*48 V coil type: Single side stable only

Note: AgPd stationary contact types available for high resistance against contact sticking.
When ordering, please add suffix "-3" like TF2-12V-3.

TN-RELAY

Ex. TN 2 - L2 - H - 12V

Contact arrangement	Operating function	Terminal shape	Coil voltage(DC)
2: 2 Form C	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard PC board terminal H: Self-clinching terminal	3,4.5,5,6,9,12, 24,48*V

*48 V coil type: Single side stable only

Note: AgPd stationary contact types available for high resistance against contact sticking.
When ordering, please add suffix "-3" like TN2-12V-3.

TK-RELAY

EX. TK 1 - L2 - H - 12V

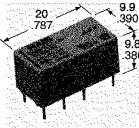
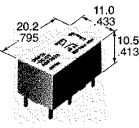
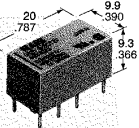
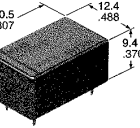
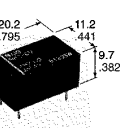
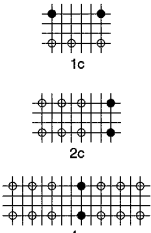
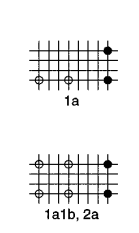
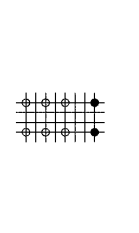
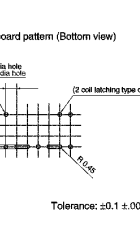
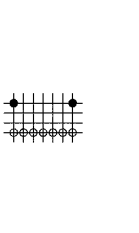
Contact arrangement	Operating function	Terminal shape	Coil voltage (DC)
1: 1 Form C	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	Nil: Standard PC board terminal H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24V

HX-RELAY

Ex. HX 2 SA - 3V - Z

Contact arrangement	Surface-mount availability	Coil voltage(DC)	Packing style
2: 2 Form C	SA: Standard surface-mount terminal type	1.5, 3, 4.5, 5, 6, 9, 12, 24 V	Z: Tape and reel packing (picked from the 8/9/10/12-pin side) (Nil: Tube packing; See Note 3.)

Notes: 1. Tape and reel (picked from 1/3/4/5-pin side) is also available by request. Part number suffix "-X" is needed when ordering.

• Products	High Breakdown Voltage Capacity	Miniature DIL Power	2c, 200mW Sensitive Miniature Relay	Small Microwave Relay	High Frequency
	DS-RELAY	DSP-RELAY	DS2Y-RELAY	RX-RELAY	RK-RELAY
• Type of relay					
mm inch					
• Features	1,500V FCC surge satisfied - High switching power	- High switching capacity - High contact welding resistance - High breakdown voltage	- High sensitivity 2 Form C contact 1,500V FCC - Sealed construction	- Excellent high frequency 300Khz or 2.5Ghz, Impedance 50 ohm - High sensitivity in small size	- Excellent high frequency characteristics - Isolation: 60dB or more at 1.8Ghz - High sensitivity in small size
• Sealed types availability	●	●	●	●	●
• Latching types availability	●	●	●	●	●
• Contact material (Optional material)	Gold-clad silver (Silver palladium)	Gold-flash over silver alloy	Gold-clad silver	Gold	Gold-clad silver
• Contact rating chart Maximum (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A	8A 250V AC 5A 30V DC 1a 5A 250V AC 5A 30V DC 1a1b, 2a	1A 30V DC	5A 30V DC	0.01A 24V DC
Minimum	1 mA 100 μA 10 μA		10 μA 10mV DC		
• Max. switching voltage	220V DC, 250V AC	125V DC, 380V AC	220V DC, 250V AC	30V DC	30V DC
• Contact arrangement	1c, 2c, 4c	1a, 1a1b, 2a	2c	1c	1c
• Life (Min. operation)	Electrical: 5×10^5 Mechanical: 10^8	Electrical: 10^5 Mechanical: 5×10^7	Electrical: 5×10^5 Mechanical: 10^8	Electrical: 10^5 Mechanical: 5×10^5	Electrical: 3×10^5 Mechanical: 5×10^5
• Break-down voltage	Between open contacts: 1,000Vrms (500Vrms for DS1-S) Between contact sets: 1,000Vrms Between contacts and coil: 1,500Vrms (1,000Vrms for DS1-S) Between live parts and ground: —	1,000Vrms 2,000Vrms 3,000Vrms —	750Vrms 1,000Vrms 1,000Vrms —	500Vrms — 1,000Vrms 500Vrms	500Vrms — 1,000Vrms 500Vrms
• Surge withstand voltage	1,500V FCC	5,000V surge	1,500V FCC	—	—
• Coil voltage	(DC) 1.5, 3, 5, 6, 9, 12, 24, 48V	(DC) 3, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 5, 6, 9, 12, 24, 48V	(DC) 3, 4.5, 6, 9, 12, 24	(DC) 3, 5, 6, 9, 12, 24V
• Nominal operating power	M type (Single) 400mW (-L2) 360mW S type (Single) 200mW (-SL2) 180mW	(Single) 300mW (-L) 150mW (-L2) 300mW	(Single) 200mW (300mW: 48V) (-L2) 180mW (360mW: 48V)	(Single) 200mW (-L) 200mW (-L2) 400mW	(Single) 200mW (-L) 200mW (-L2) 400mW
• Terminal layout (Bottom View) * coil terminal (.100 inch grid)					
mm inch					
• Standards	UL (E43149), CSA (LR26550)	UL (E43028), TÜV, CSA (LR26550)	UL (E43149), CSA (LR26550)	—	—
• Mounting method					

Note: Meaning of symbol marks  : PC board terminal;  : Plug-in;  : Top-mounting;  : Top-mounting with PC board terminals;  : Surface-mounting

Ordering Information

DS-RELAY

Ex DS 2 E — M L2 — DC 48 V — R *

Contact arrangement	Classification of type	Sensitivity	Operating function	Coil voltage
1: 1 Form C 2: 2 Form C 4: 4 Form C	E: Amber sealed type	M: 400 mW nominal operating power S: 200 mW nominal operating power	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	DC 1.5, 3, 5, 6, 9, 12, 24, 48 V

*Reverse polarity types available (add suffix-R). Standard packing: Carton: 50 pcs.; Case: 500 pcs.

DSP-RELAY

Ex. DSP 1 — L — DC12V — R

Contact arrangement	Operating function	Coil voltage	Polarity
1: 1a1b 1a: 1a 2a: 2a	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	DC: 3, 5, 6, 9, 12, 24 V	Nil: Standard polarity R: Reverse polarity

(Note) Standard packing—Carton: 50 pcs.; Case: 500 pcs.

DS2Y-RELAY

Ex DS2Y-S L2 — DC12 V — R

Operating function	Coil voltage	Polarity
Nil: Single side stable L2: 2 coil latching	DC 1.5, 3, 5, 6, 9, 12, 24, 48 V	Nil: Standard polarity R: Reverse polarity

Note: Standard packing; Carton: 50 pcs. Case: 500 pcs.

RX-RELAY

Ex. A RX 1 0 12

Product name	Contact arrangement	Operating function	Coil voltage, V DC
RX	1: 1 Form C	0: Single side stable 1: 1 coil latching 2: 2 coil latching	03: 3 09: 9 4H: 4.5 12: 12 06: 6 24: 24

Note: Standard packing; Carton: 50 pcs. Case: 500 pcs.

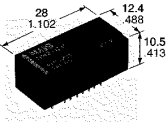
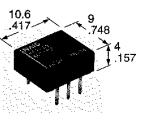
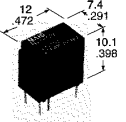
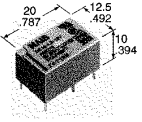
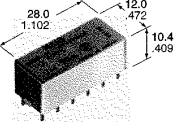
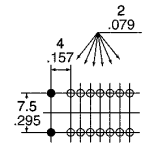
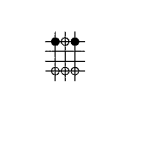
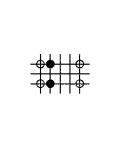
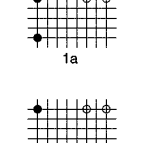
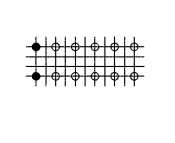
RK-RELAY

Ex. RK 1 — L2 — 24V

Contact arrangement	Operating function	Coil voltage, DC
1: Standard type 1R: R type	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	3, 4.5, 5, 6, 9, 12, 24 V

Note: Standard packing; Carton: 50 pcs. Case 500 pcs.

7 RELAYS

• Products		High Frequency Signal (4 GHz) Switchable	Ultra Low Profile High Frequency	High Sensitivity 1 Form C Relay	Miniature Power	4 gap balance armature
		RM-RELAY	RP-RELAY	HY-RELAY	DK-RELAY	S-RELAY
• Type of relay						
	mm inch					
• Features		- Excellent high frequency - Isolation: 40dB or more at 4Ghz - High sensitivity	- High frequency with the low profile of 4 mm .157inch - High sensitivity - Isolation: 10dB or more at 1.8Ghz	- High sensitivity: 150mW/200mW - A wide range of ambient temperature: -40°C to +70°C -40°F to +158°F	- Large capacity in small size - High sensitivity - High breakdown voltage	- High vibration and shock resistance - Low thermal electromotive force (3 MV)
• Sealed types availability		●	●	●	●	●
• Latching types availability		●			●	●
• Contact material (Optional material)		Gold-clad silver alloy	Gold-clad silver alloy	Gold-clad silver	Gold-flash over silver alloy	Gold-clad silver alloy
• Contact rating chart Maximum (cos φ = 1)		15 A 10 A 8 A 5 A 3 A 2 A 1 A			10A 250V AC 10A 30V DC 8A 250V AC 8A 30V DC	4A 250V AC
Minimum		1 mA 100 μA 10 μA		1A 30V DC 1mA 1V DC		100μA 100mV
• Max. switching voltage		—	—	60V DC	125V DC, 380V AC	48V DC, 250V AC
• Contact arrangement		2c	1c	1c	1a, 1a1b, 2a	2a2b, 3a1b, 4a
• Life (Min. operation)	Electrical	3 × 10 ⁵	10 ⁵	10 ⁵	10 ⁵	10 ⁵
	Mechanical	5 × 10 ⁶	5 × 10 ⁶	10 ⁷	5 × 10 ⁷	10 ⁸
• Break-down voltage	Between open contacts	500Vrms	750Vrms	500Vrms	1,000Vrms	750Vrms
	Between contact sets	—	—	—	4,000Vrms	1,000Vrms
	Between contacts and coil	1,000Vrms	1,500Vrms	1,000Vrms	4,000Vrms	1,500Vrms
	Between live parts and ground	—	—	—	—	—
• Surge withstand voltage		—	—	—	10,000V surge	—
• Coil voltage		(DC) 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 3, 5, 6, 9, 12, 24V	(DC) 3, 5, 6, 12, 24, 48V
• Nominal operating power		(Single) 360mW (-L) 250mW (-L2) 500mW	140mW (Up to 12 V) 270mW (24 V)	Standard: 200mW High sensitivity: 150mW	200mW	192 to 355mW
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)						
		mm inch				
• Standards		—	—	UL (E43149), CSA (LR26550)	UL (E43028), CSA (LR26550)	UL (E43028), CSA (LR26550)
• Mounting method						

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

RM-RELAY

Ex. RM 2 — L2 — 24V

Contact arrangement	Operating function	Coil voltage (DC)
2:2 Form C	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	3, 4.5, 5, 6, 9, 12, 24 V

Note: Standard packing; Carton: 20 pcs. Case 200 pcs.

RP-RELAY

Ex. RP 1 — H — 3V

Contact arrangement	Terminal shape	Coil voltage (DC)
1:1 Form C	Nil: Standard PC board terminal H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24 V

Note: Standard packing; Carton: 50 pcs. Case 1,000 pcs.

HY-RELAY

Ex. HY 1 Z — 3V

Contact arrangement	Sensitivity	Coil voltage (DC)
1: 1 Form C	Nil: High sensitivity 150 mW Z: Standard 200 mW	1.5, 3, 4.5, 5, 6, 9, 12, 24 V

Standard packing; Carton: 100 pcs. Case 500 pcs.

DK-RELAY

Ex. DK 1a — L2 — 12V

Contact arrangement	Operating function	Coil voltage
1a: 1 Form A 2a: 2 Form A 1a1b: 1 Form A 1 Form B	Nil: Single side stable L2: 2 coil latching	3, 5, 6, 9, 12, 24V

Note: Standard packing Carton: 50 pcs.; Case: 500 pcs.

S-RELAY

Ex. S 2 EB — L2 — 48V

Contact arrangement	Classification of type	Operating function	Coil voltage (DC)
2: 2 Form A 2 Form B 3: 3 Form A 1 Form B 4: 4 Form A	EB: Amber sealed type	Nil: Single side stable L2: 2 coil latching	3, 5, 6, 12, 24, 48 V

(Notes) 1. Standard packing Carton: 50 pcs. Case: 500 pcs.

2. 1 coil latching also available as option. Contact our sales office for details.

7 RELAYS

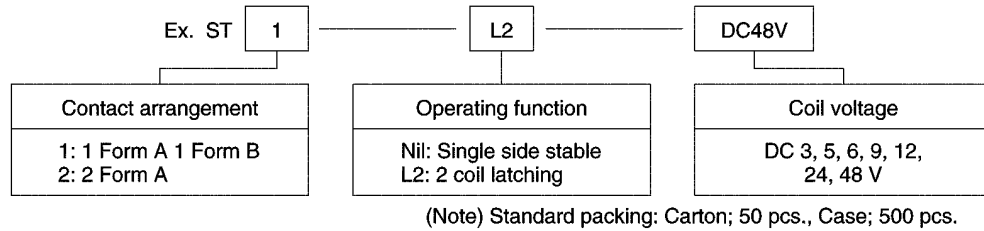
• Products	Field Switching Power ST-RELAY	Compact Power Sensitive SP-RELAY	High Inrush Current Capability LK-RELAY	High Sensitivity LK-S-RELAY	High Switching Capacity LK-P-RELAY
• Type of relay mm inch					
• Features	• Large capacity in small size • High inrush capability	• High sensitivity • High vibration and shock resistance • Wide switching range	• High inrush current capability • High insulation resistance between contact and coil	• High sensitivity 250 mW • High inrush current capability • High insulation resistance	• High switching capacity 10A 277 VAC • High inrush current capability • High insulation resistance
• Sealed types availability	●				
• Latching types availability	●	●			
• Contact material (Optional material)	Gold-flash over silver alloy	Silver alloy/gold-plated silver alloy	Silver alloy	Silver alloy	Silver alloy
• Contact rating chart Maximum (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A 	15A 250V AC 10A 250V AC 	5A 277V AC 5A 30V DC 	5A 30V C 	5A: 30V AC 10A: 277V AC
Minimum	1 mA 100 μA 10 μA	1mA 1V 1mA 10V 1mA 10V			
• Max. switching voltage	380V AC	30V DC, 250V AC	30V DC, 277V AC	277V AC	277V AC, 30V DC
• Contact arrangement	1a1b, 2a	2c,4c	1a	1a	1a
• Life (Min. operation)	Electrical 10 ⁵ Mechanical 10 ⁷	Electrical 10 ⁵ Mechanical 5 × 10 ⁷	Electrical 10 ⁵ Mechanical 2 × 10 ⁶	Electrical 10 ⁵ Mechanical 10 ⁵	Electrical 10 ⁵ Mechanical 2x10 ⁶
• Break-down voltage	Between open contacts 1,200Vrms Between contact sets 2,000Vrms Between contacts and coil 3,750Vrms Between live parts and ground	1,500Vrms 3,000Vrms 3,000Vrms —	1,000Vrms — 4,000Vrms —	1,000Vrms — 4,000Vrms —	1,000Vrms — 4,000Vrms —
• Surge withstand voltage	6,000V surge		10,000V surge	10,000V Bellcore	10,000V Bellcore
• Coil voltage	(DC) 3, 5, 6, 9, 12, 24, 48V	(DC) 3, 5, 6, 12, 24, 48V	(DC) 12, 24V	(DC) 5, 9, 12, 24V	(DC) 12, 24V
• Nominal operating power	240mW	300mW	530mW	250mW	530mW
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)					
mm inch					
• Standards	UL (E43028), VDE, CSA (LR26550)	UL (E43028), CSA (LR26550)	UL (E43028), CSA (LR26650), TV rating	UL CSA	UL CSA
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

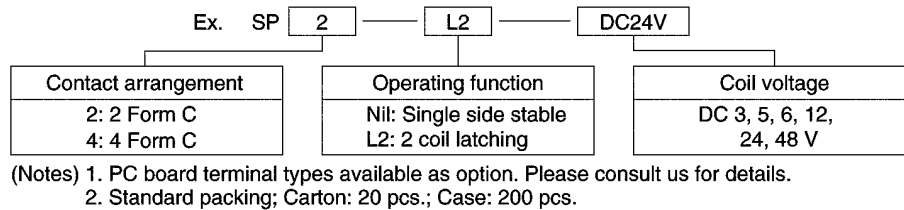
Ordering Information

7 RELAYS

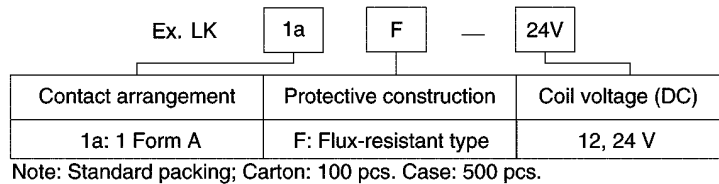
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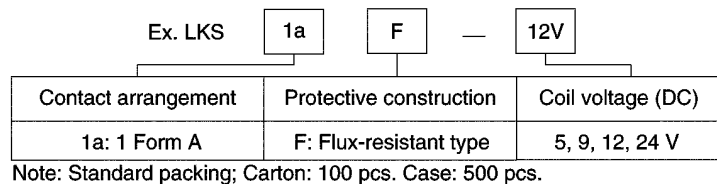
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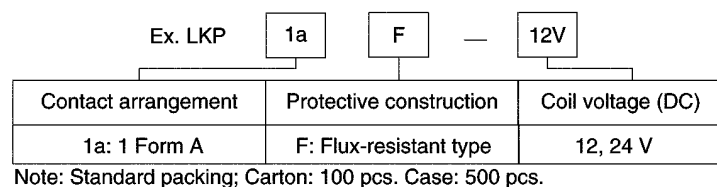
LK-RELAY



LK-S-RELAY



LK-P-RELAY



• Products	High Insulation Resistance LA-RELAY	1 Form A Slim Power LD-RELAY	Slim Power PA-RELAY	High Electrical & Mechanical Noise Immunity Relay JQ-RELAY	30 A, DC Coil PC Board Relay JT-N•JT-RELAY
• Type of relay mm inch					
• Features	• 3A type + 5A TV-3 type • High insulation resistance	• Small load switching of home appliances • Low operating power 200mW • High shock resistance	• Slim size permits higher density mounting • Wide switching capacity • High surge voltage: 4,000V • High breakdown voltage: 2,000V	• High electrical noise immunity • High switching capacity • High surge voltage: 8,000V	• High switching capacity • Open, Dust cover, Sealed types available
• Sealed types availability			●	●	●
• Latching types availability					
• Contact material (Optional material)	3A - Gold-clad silver alloy SATU-3 Silver alloy	Silver alloy	Gold-clad silver	Silver alloy	Silver alloy
• Contact rating chart (cos φ = 1)					
• Minimum	1 mA 100 μA 10 μA				
• Max. switching voltage	3A - 125V AC 5A - 277V AC	277V AC, 30V DC	110V DC, 250V AC	110V DC, 250V AC	30V DC, 277V AC
• Contact arrangement	2a	1a	1a	1a, 1c	1a, 1c
• Life (Min. operation)	Electrical: 5×10^4 Mechanical: 10^6	Electrical: 2×10^5 Mechanical: 5×10^5	Electrical: 10^5 Mechanical: 2×10^7	Electrical: 5×10^4 Mechanical: 10^7	Electrical: 10^5 Mechanical: 10^7
• Break-down voltage	Between open contacts: 750Vrms Between contact sets: 1,000Vrms Between contacts and coil: 4,000Vrms Between live parts and ground: —	750Vrms — 4,000Vrms —	1,000Vrms — 2,000Vrms —	1a: 1,000Vrms 1c: 750Vrms 4,000Vrms —	1,500Vrms — 1,500Vrms —
• Surge withstand voltage	10,000V FCC	10,000V (initial)	4,000V surge	8,000V surge	—
• Coil voltage	(DC) 12, 24V	4.5, 5, 6, 9, 12, 18, 24	(DC) 5, 6, 9, 12, 18, 24V	(DC) 3, 5, 6, 9, 12, 18, 24, 48V	(DC) 5, 6, 9, 12, 15, 18V
• Nominal operating power	530mW	200mW	120mW (5 to 18V) 180mW (24V)	1a: 200mW 1c: 400mW	890m W
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)	 Tolerance : $\pm 0.1 \pm .004$	 Tolerance : $\pm 0.1 \pm .004$			
mm inch					
• Standards	UL (E43149), CSA (LR26550)	UL (E43028), CSA (LR26550)	UL (E43149), CSA (LR26550)	UL (E43028), CSA (LR26550)	UL (E57520), CSA (LR68004)
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

LA-RELAY

Ex. A LA 2 P F 12

Product name	Contact arrangement	Contact capacity	Protective construction	Coil voltage(V DC)
LA	2: 2 Form A	Nil: 3A P: 5A TV-3	F: Flux-resistant type	12, 24

Notes: 1. Standard packing Carton: 100 pcs. Case: 500 pcs.
2. 4.5V, 5V, 9V and 18V DC types are also available. Please consult us for details.

LD-RELAY

Ex. A LD 1 12

Product name	Contact arrangement	Coil voltage(V DC)
LD	1: 1 Form A	4H: 4.5, 09: 9, 24: 24 05: 5, 12: 12 06: 6, 18: 18

Note: Standard packing; Tube: 50 pcs. Case: 1,000 pcs.

PA-RELAY

Ex. PA 1a — 12V

Contact arrangement	Coil voltage (DC)
1a: 1 Form A	5, 6, 9, 12, 18, 24V

Note: Standard packing; Tube: 25 pcs.; Case: 1,000 pcs.

JQ-RELAY

Ex. JQ 1a P — 12 V

Contact arrangement	Contact capacity	Coil voltage (DC)
1a: 1 Form A 1: 1 Form C	Nil: Standard P: High capacity	3, 5, 6, 9, 12, 18, 24, 48* V

* Available only for 1 Form C type

JT-N/JT-RELAY

JTN	1a	E	TMP	F	DC12V
Contact arrangement	Protective construction	Mounting classification	Coil insulation	Coil voltage	
1a: 1 Form A 1: 1 Form C	G: Dust cover type E: Sealed type	PA: PCB type (UL508) TMP: TMP type (UL508)	F: Class F	DC 5, 6, 9, 12, 15, 18, 24 V	

JT	1a	DC12V
Contact arrangement	Coil voltage	
1a: 1 Form A 1: 1 Form C	DC 5, 6, 9, 12, 15, 18, 24 V	

Note: DC rating is available for class A type. For the class A type, please consult us.

7 RELAYS

• Products	Ultra-Miniature PC Board Type Power Relay	Compact PC Board Power Relay	Automotive Ultra-Miniature Power Relay	Half-size Automotive Relay	High Power Automotive
	JS-RELAY	JW-RELAY	JSM-RELAY	JJM-RELAY	CB-RELAY
• Type of relay					
mm inch					
• Features	- Ultra-miniature size with universal terminal footprint - High switching capacity 10A	- High dielectric withstanding for transient protection - Class B coil insulation types available	- Designed for automotive applications - Low pick-up voltage for high ambient use	- Compact (half-size) - Perfect for automobile electrical systems	40 A rating at 85°C 185°F - ISO type terminals - High shock resistance for drop test requirements - Low temperature rise
• Sealed types availability	●	●	●	●	●
• Latching types availability					
• Contact material (Optional material)	Silver alloy	Silver alloy	Silver alloy	Silver alloy	Silver alloy
• Contact rating chart Maximum (cos φ = 1)					
Minimum	1 mA 100 μA 10 μA				
• Max. switching voltage	24V DC, 125V AC	30V DC, 250V AC	16V DC	16V DC	75V DC
• Contact arrangement	1a, 1c	Standard: 1a, 1c, 2a, 2c High capacity: 1a, 1c	1a, 1c	1a, 1c	1a, 1c
• Life (Min. operation)	Electrical: 10 ⁵ Mechanical: 10 ⁷	Electrical: 10 ⁵ Mechanical: 5 × 10 ⁶	Standard: 10 ⁵ High capacity: 10 ⁵ (N.O.) Mechanical: 10 ⁷	2 × 10 ⁵ 10 ⁶	10 ⁵ 10 ⁶
• Break-down voltage	Between open contacts: 750Vrms Between contact sets: — Between contacts and coil: 1,500Vrms Between live parts and ground: —	Between open contacts: 1,000Vrms Between contact sets: — Between contacts and coil: 5,000Vrms Between live parts and ground: —	Between open contacts: 750Vrms Between contact sets: — Between contacts and coil: 1,500Vrms Between live parts and ground: —	Between open contacts: 500Vrms Between contact sets: 500Vrms Between contacts and coil: — Between live parts and ground: —	Between open contacts: 500Vrms Between contact sets: — Between contacts and coil: 500Vrms Between live parts and ground: —
• Surge withstand voltage	—	10,000V surge	—	—	—
• Coil voltage	(DC) 5, 6, 9, 12, 18, 24, 48V	(DC) 5, 6, 9, 12, 24, 48V	(DC) 9, 12V	(DC) 12V	(DC) 12, 24V
• Nominal operating power	360mW	530 mW	640mW	(1a) 640mW (1c) 640mW	1.4W
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)					
mm inch					
• Standards	UL (E43028), VDE, TÜV, CSA (LR26550), TV rating	UL (E43028), TÜV, VDE, CSA (LR26550) TV rating	—	—	—
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

JS-RELAY

Ex. JS 1a — B — 12V

Contact arrangement	Coil insulation class	Coil voltage (DC)
1: 1 Form C 1a: 1 Form A	Nil: Class A insulation B: Class B insulation	5, 6, 9, 12, 18, 24, 48 V

Notes: 1. Standard packing: Carton: 100 pcs. Case: 500 pcs.
2. When ordering TV rated (TV-5) types, add suffix -TV.

JW-RELAY

Ex. JW 1 F S N B DC5V

Contact arrangement	Contact capacity	Protective construction	Pick-up voltage	Coil insulation class	Coil voltage
1: 1 Form C 1a: 1 Form A 2: 2 Form C 2a: 2 Form A	Nil: Standard (5 A)** F: High capacity (10 A)*	S: Sealed type	N: 70% of nominal voltage	Nil: Class A insulation B: Class B insulation	DC 5, 6, 9, 12, 18, 24, 48 V

*Only for 1 Form A and 1 Form C type **Only for 2 Form A and 2 Form C types
Notes: 1. When ordering TV rated (TV-5) types, add suffix-TV (available only for 1 Form A type).
2. Standard packing: Carton: 100 pcs. Case: 500 pcs.

JSM-RELAY

Ex. JSM 1a F — 12V — 4

Contact arrangement	Protective construction	Coil voltage (DC)	Contact material
1a: 1 Form A 1: 1 Form C	Nil: Sealed construction F: Flux-resistant type	9, 12 V	4: Standard type (10 A) 5: High capacity type (15 A)

Note: Standard packing: Carton: 100 pcs. Case: 500 pcs.

JJM-RELAY

Ex. JJM 1a — 12 V

Contact arrangement	Coil voltage(DC)
1a: 1 Form A 1: 1 Form C	12 V

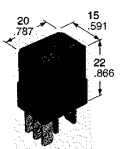
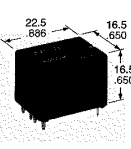
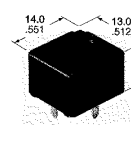
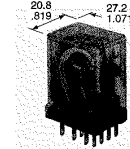
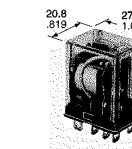
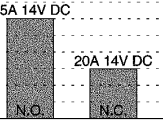
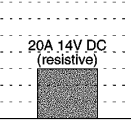
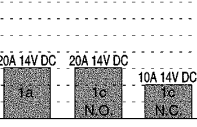
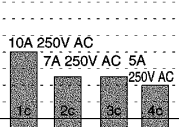
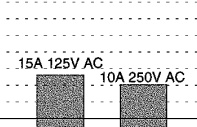
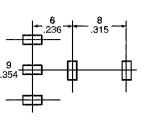
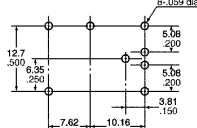
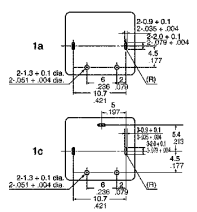
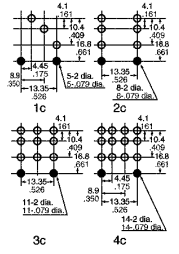
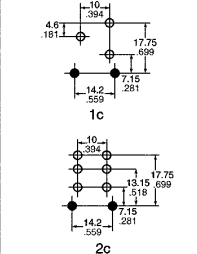
(Note) Standard packing: Carton: 50 pcs.; Case: 1,000 pcs.

CB-RELAY

Ex. CB 1 F — R P — 12 V

Contact arrangement	Protective construction	Classification of types	Mounting classification	Coil voltage (DC)
1a: 1 Form A 1: 1 Form C	Nil: Sealed type F: Flux-resistant type	Nil: Standard type D: with diode inside R: with resistor inside	Nil: Quick connect type P: PC board type M: Bracket type SM: Shrouded type with bracket WM: Weatherproof type with bracket	12, 24 V

Note: Bulk package: 50 pcs.; 200 pcs.

• Products	Compact, Space-Saving Automotive Relay	Dual Power Automotive	Ultra-Miniature, Low-Profile Automotive	Miniature Power	Compact Power
	CM-RELAY	CF-RELAY	CP-RELAY	HC-RELAY	HL-RELAY
• Type of relay					
mm inch					
• Features	• Half the Size, Replace Mini-ISO Relay	• 7 Amp steady/30 Amp Inrush current capability • Simple footprint enables ease of PC board layout	• Ultra-Miniature • Low-Profile • High capacity continuous current of 30A (1 hr.) • Simple footprint enables ease of PC Board layout	• Wide applications • Versatile range • Foot print compatible with competitive types	• Large capacity • Compact size • Foot print compatible with competitive types
• Sealed types availability	●	●	●	●	
• Latching types availability			—	●	
• Contact material (Optional material)	Silver alloy	Silver alloy	Silver alloy	Gold-flashed silver alloy	Silver alloy
• Contact rating chart Maximum (cos φ = 1)					
Minimum	1 mA 100 μA 10 μA			1mA 0.1V	1mA 1V 1mA 1V
• Max. switching voltage	16V DC	—	16V DC	250V AC	30V DC, 250V AC
• Contact arrangement	1a, 1c	1c × 2	1a, 1c	1c 2c 3c 4c	1c 2c
• Life (Min. operation)	Electrical: 10 ⁵ Mechanical: 10 ⁶	2 × 10 ⁵ 10 ⁷	10 ⁵ (at rated load) / 2x10 ⁵ (14VDC N.O.: 5A, Inrush 25A) N.C.: 20A Brake 10 ⁷	2 × 10 ⁵ (DC) 10 ⁵ (AC) 5 × 10 ⁷	5 × 10 ⁵ (DC) 10 ⁵ (AC) 5 × 10 ⁷
• Break-down voltage	Between open contacts: 500Vrms Between contact sets: — Between contacts and coil: 500Vrms Between live parts and ground: —	1,000Vrms — 1,000Vrms —	500Vrms — 500Vrms —	700Vrms 700Vrms 2,000Vrms —	1,000Vrms 1,500Vrms 2,000Vrms —
• Surge withstand voltage	—	—	—	—	—
• Coil voltage	(DC) 12V	(DC) 12V	(DC) 12V	(DC) 6, 12, 24, 48 110V (AC) 6, 12, 24, 48 120, 240V	(DC) 6, 12, 24, 48 110V (AC) 6, 12, 24, 48 120, 240V
• Nominal operating power	1.5W	640m W	640m W	(DC) 0.9W (AC) 1.2VA	(DC) 0.9 to 1.0W (AC) 1.2 to 1.3VA
• Terminal layout (Bottom View) • coil terminal (.100 inch grid)					
mm inch					
• Standards	—	—	—	UL (E43028), VDE, CSA (LR26550), TV rating	UL (E43028), TV rating CSA (LR26550)
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; : Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Ordering Information

CM-RELAY

Ex. CM 1 F — R — P — 12V

Contact arrangement	Protective construction	Classification of types	Mounting classification	Coil voltage (DC)
1a: 1 Form A 1: 1 Form C	Nil: Sealed type F: Flux-resistant type	Nil: Standard type D: with diode inside R: with resistor inside	Nil: Quick connect type P: PC board type	12 V

Note: Bulk package: 50 pcs.; Case: 200 pcs.

CF-RELAY

Ex. CF2 Q — 12V

Type classification
Nil: Standard type Q: Quiet type

(Note) Standard packing: Carton: 35 pcs.; Case: 700 pcs.

CP-RELAY

Ex. CP 1a — 12 V

Contact arrangement	Coil voltage(DC)
1a: 1 Form A 1: 1 Form C	12 V

HC-RELAY

Ex. HC 4 D — H — AC 240 V

Contact arrangement	Type classifications	Terminal arrangement	Coil voltage
1: 1 Form C 2: 2 Form C 3: 3 Form C 4: 4 Form C	Nil: Standard type D: Bifurcated contact type (HC4D only.) K: Latching relay type (HC2K only.)	H: Plug-in HP: PC board terminal HTM: Top mounting HL: Light emitting diode wired, plug-in HPL: Light emitting diode wired, PC board	AC 6, 12, 24, 48, 120, 240 V DC 6, 12, 24, 48, 110 V

Notes:

1. When ordering VDE recognized types, add suffix VDE.
2. HC3 (3 Form C) series are not approved by VDE.
3. AC 48 V type is not available for LED wiring.

HL-RELAY

Ex. HL 2 — H — AC240V

Contact arrangement	Terminal arrangement	Coil voltage
1: 1 Form C 2: 2 Form C	H: Plug-in HP: PC board HTM: Top mounting L: Light emitting diode wired, plug-in PL: Light emitting diode wired, PC board	AC 6, 12, 24, 48, 120, 240 V DC 6, 12, 24, 48, 110 V

Note: Standard packing Carton: 20 pcs.; Case: 200 pcs.

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							
mm/inch															
Features		• High capacity PhotoMOS Relay in a compact and slim 4-pin SIL								• High Capacity type • Compact Slim-type 4-pin SIL					
Load voltage*	Part No.	AQZ202	AQZ205	AQZ207	AQZ204	AQZ102	AQZ105	AQZ107	AQZ104	AQZ404	AQZ202V	AQZ205V	AQZ207V	AQZ204V	
	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														
	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				
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				
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	1.0 mA				1.0 mA				1.0 mA	1.0 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	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
	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)															
Tolerance: ±0.1 ±0.004															
Standards		UL (E43149), CSA (LR26550), TÜV						UL (E43149), CSA (LR26550), TÜV			UL (E43149), CSA (LR26550), TÜV				
Mounting method															

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.

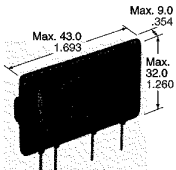
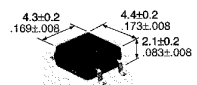
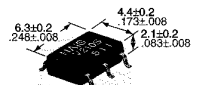
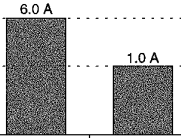
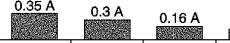
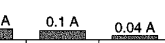
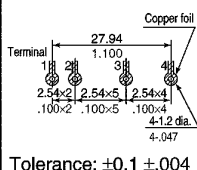
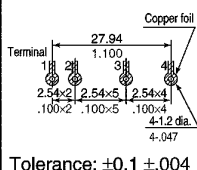
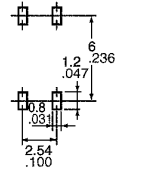
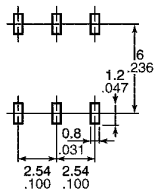
PhotoMOS

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			Power PhotoMOS voltage-sensitive Type								
			1a Type								
			AC/DC Type				DC Type				
• Type of relay											
			mm inch								
• Features			• Low on-resistance • Control with an input current of 10 mA								
• Output	Load voltage*	Part No.	AQZ202D	AQZ205D	AQZ207D	AQZ204D	AQZ102D	AQZ105D	AQZ107D	AQZ104D	
		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	0.066 Ω	0.180 Ω	0.64 Ω	2.4 Ω	0.033 Ω	0.090 Ω	0.33 Ω	1.23 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	
	Output capacitance (Typical)		1,400 pF		600 pF		1,700 pF		900 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	1.4 V				1.4 V				
		Maximum	4 V				4 V				
Turn off voltage		Minimum	0.8 V				0.8 V				
		Typical	1.3 V				1.3 V				
Input current		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*	Storage*	-40°C to +85°C -40°F to +185°F (4 V≤V _{IN} ≤6 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 +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 +60°C -40°F to +140°F (15 V<V _{IN} ≤30 V)				
			-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			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											

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

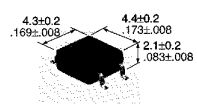
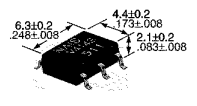
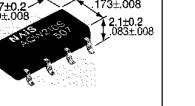
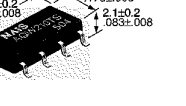
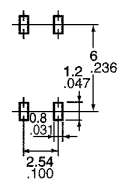
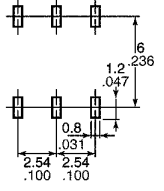
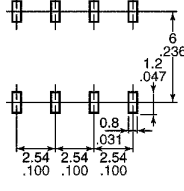
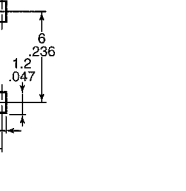
PhotoMOS

			Power PhotoMOS High capacity Type		GU SOP Type									
			1a Type		1a Types									
			AC/DC Type		AC/DC Type									
• Type of relay					4-Pin					6-Pin				
														
• Features			• High capacity • Low on-resistance • Controls low-level input signals		• Super miniature design • SOP (1 Form A) 4-pin type					• Ultra small size • SOP (1 Form A) 6-pin type				
Part No.			AQZ262	AQZ264	AQY210S	AQY214S	AQV212S	AQV215S	AQV217S	AQV210S	AQV214S	AQV216S		
Load voltage*	Peak AC	DC	60 V	400 V	350 V	400 V	60 V	100 V	200 V	350 V	400 V	600 V		
	60 V	400 V	350 V	400 V	350 V	400 V	60 V	100 V	200 V	350 V	400 V	600 V		
Output	Continuous 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	Maximum	0.036 Ω	1.0 Ω	17 Ω	25 Ω	0.83 Ω	2.3 Ω	11 Ω	23 Ω	30 Ω	70 Ω		
	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	Maximum	1.0 mA	3.0 mA	0.9 mA	3 mA	0.7 mA 3.0 mA						
		Minimum	Typical	0.4 mA	0.9 mA	0.4 mA	0.85 mA	0.4 mA 0.65 mA						
	LED dropout voltage (I _F = 5 mA)	Typical	Maximum	1.25 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	5 ms 10 ms	4 ms 10 ms	0.23 ms 0.5 ms	0.21 ms 0.5 ms	0.65 ms 2 ms	0.60 ms 2 ms	0.25 ms 1 ms	0.25 ms 0.5 ms	0.25 ms 0.5 ms	0.28 ms 0.5 ms
	Turn off time (Reverse (ON) time)	Typical	Maximum	0.32 ms 3.0 ms	0.14 ms 3.0 ms	0.04 ms 0.2 ms	0.04 ms 0.2 ms	0.08 ms 0.2 ms	0.06 ms 0.2 ms	0.05 ms 0.2 ms	0.05 ms 0.2 ms	0.05 ms 0.2 ms	0.04 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	Maximum	2.0 pF 4.0 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)	Mounting hole location (Bottom view)				Recommended mounting pad (Top view)		Recommended mounting pad (Top view)							
			Tolerance: ±0.1 ±.004											
Standards			—		UL (E43149), CSA (LR26550), TÜV, BSI					UL (E43149), CSA (LR26550), TÜV				
Mounting method														

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

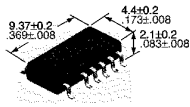
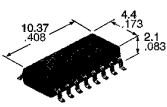
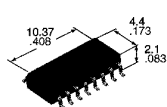
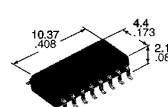
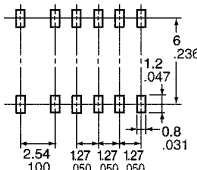
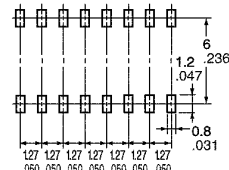
PhotoMOS

7
RELAYS

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					
									
								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*	400 V		400 V		350 V 400 V		350 V 30 V	
		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	
	Power dissipation*	300 mW		450 mW		600 mW		400 mW	
	ON resistance	26 Ω		26 Ω		16 Ω 30 Ω		16 Ω	
	Typical	35 Ω		50 Ω		35 Ω 50 Ω		35 Ω	
	Output capacitance (Typical)	100 pF		100 pF		45 pF		45 pF	
	Off state leakage current	Max. 1 μA		Max. 1 μA		Max. 1 μA		Max. 1 μA	
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		0.9 mA		0.9 mA		0.9 mA	
		Maximum		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	
Switching speed	Typical	0.85 mA		0.55 mA		0.8 mA		0.8 mA	
	Maximum	1.14 V		1.14 V		1.14 V		1.14 V	
Total power dissipation*	Typical	1.5 V		1.5 V		1.5 V		1.5 V	
	Maximum	0.47 ms		0.47 ms		0.23 ms 0.21 ms		0.23 ms	
	Turn on time (Operate (OFF) time)	Typical		1.0 ms		0.5 ms 0.5 ms		0.5 ms	
	Maximum	0.28 ms		0.28 ms		0.04 ms		0.04 ms	
I/O isolation voltage*	Typical	350 mW		500 mW		650 mW		650 mW	
	Maximum	1.0 ms		1 ms		0.2 ms		0.2 ms	
Temperature limits	Operating*	1,500 V AC		1,500 V AC		1,500 V AC		1,500 V AC	
	Storage*	−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	
I/O capacitance	Typical	−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	
	Maximum	—		0.8 pF		0.8 pF		0.8 pF	
Initial I/O isolation resistance	Typical	1.5 pF		1.5 pF		1.5 pF		1.5 pF	
	Maximum	Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ		Min. 1,000 MΩ	
Terminal layout (100 μinch grid)	Recommended mounting pad (Top view)		Recommended mounting pad (Top view)		Recommended mounting pad (Top view)				
									
Standards	UL (E43149), CSA (LR26550), TÜV, BSI		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV, BSI				
	Mounting method								

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

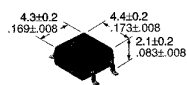
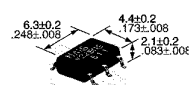
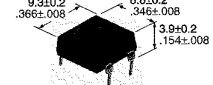
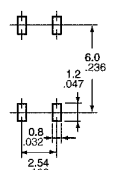
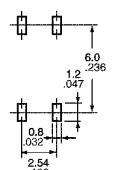
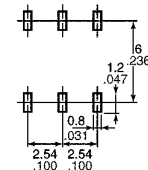
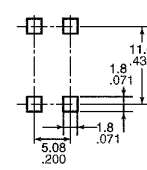
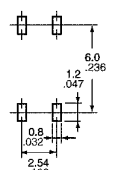
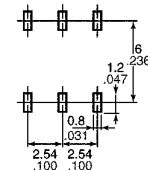
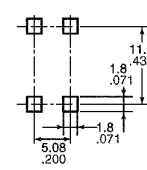
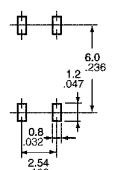
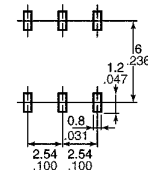
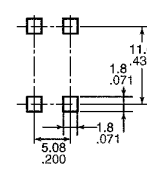
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Type of relay		GU SOP Type																	
		3a. MOSFET & 2 optocoupler			DAA			2 MOSFET & 1 optocoupler			1 MOSFET & 2 optocoupler								
		AC/DC Type			AC/DC Type			AC/DC Type			AC/DC Type								
																			
		mm inch																	
		Relay portion			Detector portion			Relay portion			Detector portion			Relay portion			Detector portion		
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			350 V			350 V			350 V			350 V		
		DC			350 V			350 V			350 V			350 V			350 V		
Continuous load current		1 A																	
		0.5 A																	
Output		0.12 A			CTR value			Min. 33%			0.12 A			CTR value			Min. 33%		
		Typ. 100%						Typ. 100%						Typ. 100%					
Peak load current		0.36 A			—			0.36 A			—			0.36 A			—		
Power dissipation*		400 mW			100 mW			400 mW			150 mW			600 mW			150 mW		
ON resistance		16 Ω			Saturation voltage			0.08 V			18 Ω			Saturation voltage			0.08 V		
Typical		35 Ω			0.5 V			25 Ω			0.5 V			17 Ω			Saturation voltage		
Maximum																			
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		
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			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		
Maximum					3.0 mA			6 mA			3.0 mA			6 mA			3.0 mA		
LED turn off current (LED reverse (ON) current)		Minimum			0.4 mA			5 μA			0.4 mA			5 μA			0.4 mA		
Typical					0.8 mA			35 μA			0.8 mA			35 μA			0.8 mA		
LED dropout voltage (I _F = 5 mA)		Typical			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		
Switching speed		Turn on time (Operate (OFF) time)			Typical			0.23 ms			0.01 ms			0.23 ms			0.01 ms		
		Maximum						0.5 ms			—			1.0 ms			—		
		Turn off time (Reverse (ON) time)			Typical			0.04 ms			0.03 ms			0.04 ms			0.03 ms		
		Maximum						0.2 ms			—			0.2 ms			—		
Total power dissipation*		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)					
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			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					
Terminal layout (.100 inch grid)		Recommended mounting pad (Top view)						Recommended mounting pad (Top view)											
		mm inch																	
Standards		UL (E43149), CSA (LR26550), TÜV, BSI																	
Mounting method																			

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

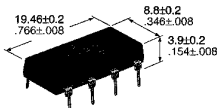
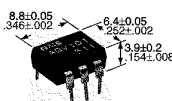
PhotoMOS

7
RELAYS

			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			
• Type of relay											
• 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	0.12 A	0.12 A	0.05 A	0.04 A	2.0 A	1.3 A	0.65 A	0.35 A
	Peak load current		0.3 A	0.36 A	0.15 A	0.12 A	6.0 A	4.0 A	2.0 A	1.0 A	
• Input	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			
	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)			
											
											
											
• Standards			(UL, CSA, TÜV)	UL (E43149), CSA (LR26550), TÜV				UL (E43149), CSA (LR26550), TÜV			
• Mounting method											

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

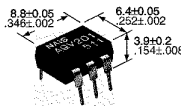
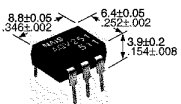
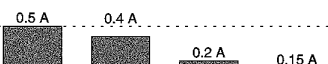
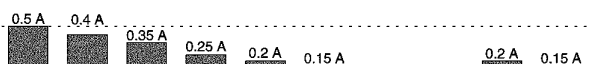
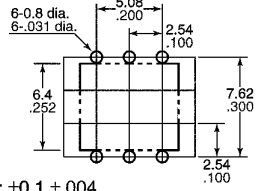
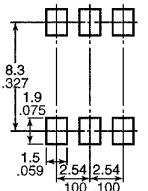
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		PD Type				HF Type				
		2a Type				1a Type				
		AC/DC Type				DC Type				
Type of relay										
Features		• Flat-Packaged type • High sensitivity				• Low on-resistance • Control with an input current of 10 mA				
Output	Load voltage*	Part No.	AQW272	AQW275	AQW277	AQW274	AQV101	AQV102	AQV103	AQV104
		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
	Continuous load current		1.8 A	1.1 A	0.55 A	0.3 A	0.7 A	0.6 A	0.3 A	0.18 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 Maximum	0.11 Ω 0.18 Ω	0.23 Ω 0.34 Ω	0.7 Ω 1.1 Ω	2.1 Ω 3.2 Ω	0.3 Ω 0.5 Ω	0.37 Ω 0.7 Ω	2.7 Ω 4 Ω	6.3 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			
Switching speed	LED dropout voltage (I _e = 5 mA)	Typical Maximum	1.25 V 1.5 V				2.3 V 3 V			
	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
Total power dissipation*	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
	I/O isolation voltage*		1,100 mW				410 mW			
Temperature limits	Operating*		2,500 V AC				1,500 V AC			
	Storage*		-40°C to +85°C -40°F to +185°F				-40°C to +85°C -40°F to +185°F			
I/O capacitance	Typical Maximum		-40°C to +100°C -40°F to +212°F				-40°C to +100°C -40°F to +212°F			
	Initial I/O isolation resistance		0.8 pF 1.5 pF				1.3 pF 3 pF			
Terminal layout (100 μinch grid)			Min. 1,000 MΩ				Min. 1,000 MΩ			
			Through hole terminal (Bottom view)				Through hole terminal (Bottom view)			
Standards			Recommended mounting pad (Top view)				Through hole terminal (Bottom view)			
			Tolerance: ±0.1 ±.004				Tolerance: ±0.1 ±.004			
Mounting method			UL (E43149), CSA (LR26550), TÜV				UL (E43149), CSA (LR26550),TÜV			

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

PhotoMOS

7
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S

			HF Type				HE Type																	
			1a Type				1a Type																	
			AC/DC Type				AC/DC Type																	
• Type of relay																								
• Features			• Low on-resistance • Control with an input current of 10 mA				• 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																						
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	Maximum	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								
			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				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	Typical	0.8 mA								0.4 mA				0.4 mA									
			2.2 mA								0.8 mA				1.3 mA									
LED dropout voltage (I _F = 5 mA)	Typical	Maximum	2.3 V								1.14 V				1.5 V									
			3 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 μm 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																	
• Mounting method							 																	

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

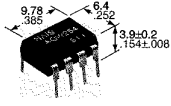
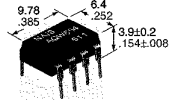
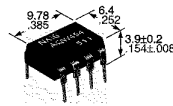
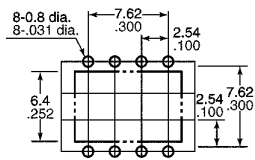
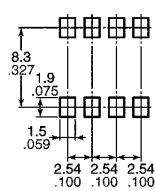
PhotoMOS

		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	
Type of relay							
	Standard I/O isolation type			Reinforced I/O isolation type			
Features		• High sensitivity and low on-resistance • Normally closed type			• Low on resistance and LED display	• 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		0.6 A	0.5 A	0.5 A	0.75 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	
Input	Off state leakage current		Max. 1 μA	Max. 10 μA	Max. 1 μA	Max. 1 μA	
	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 (If = 5 mA)	Typical	1.14 V			2.8 V	1.14 V
Switching speed		Maximum	1.5 V			3.5 V	1.5 V
	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		1.3 pF			1.3 pF	0.8 pF
	Maximum		3 pF			3 pF	1.5 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)			
Standards		UL (E43149), CSA (LR26550), TÜV	UL (E43149), CSA (LR26550), BSI			UL (E43149), CSA (LR26550), TÜV	
Mounting method							

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

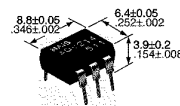
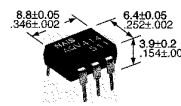
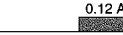
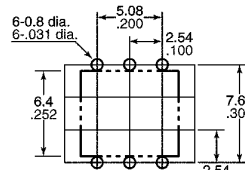
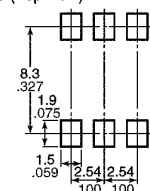
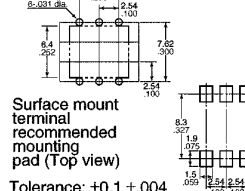
PhotoMOS

7
RELAYS

• Type of relay			HE Type		
			2a Type	1a1b Type	2b Type
			AC/DC Type	AC/DC Type	AC/DC Type
					
• Features			- High sensitivity and low on-resistance 2 Form A type	- High sensitivity and low on-resistance 1 Form A 1 Form B type	- High sensitivity and low on-resistance 2 Form B type
			Part No.	Part No.	Part No.
			AQW254	AQW654	AQW454
			Load voltage*	Load voltage*	Load voltage*
			400 V	400 V	400 V
			Peak AC	Peak AC	Peak AC
			400 V	400 V	400 V
			DC	DC	DC
			400 V	400 V	400 V
			Continuous load current	Continuous load current	Continuous load current
			0.5 A	0.5 A	0.5 A
			0.12 A	0.12 A	0.12 A
			Peak load current	Peak load current	Peak load current
			0.36 A	0.36 A	0.36 A
			Power dissipation*	Power dissipation*	Power dissipation*
			800 mW	800 mW	800 mW
			ON resistance	ON resistance	ON resistance
			Typical	Typical	Typical
			12.4 Ω	10 Ω (N.O.), 11 Ω (N.C.)	11 Ω
			Maximum	Maximum	Maximum
			16 Ω	16 Ω (N.O.), 16 Ω (N.C.)	16 Ω
			Output capacitance (Typical)	Output capacitance (Typical)	Output capacitance (Typical)
			170 pF	170 pF	170 pF
			Off state leakage current	Off state leakage current	Off state leakage current
			Max. 1 μA	Max. 1 μA	Max. 1 μA
			LED forward current*	LED forward current*	LED forward current*
			50 mA	50 mA	50 mA
			LED reverse voltage*	LED reverse voltage*	LED reverse voltage*
			3 V	3 V	3 V
			Peak forward current	Peak forward current	Peak forward current
			1 A	1 A	1 A
			Power dissipation*	Power dissipation*	Power dissipation*
			75 mW	75 mW	75 mW
			LED operate current (LED operate (OFF) current)	LED operate current (LED operate (OFF) current)	LED operate current (LED operate (OFF) current)
			Typical	Typical	Typical
			0.9 mA	0.9 mA	0.9 mA
			Maximum	Maximum	Maximum
			3.0 mA	3.0 mA	3.0 mA
			LED turn off current (LED reverse (ON) current)	LED turn off current (LED reverse (ON) current)	LED turn off current (LED reverse (ON) current)
			Minimum	Minimum	Minimum
			0.4 mA	0.4 mA	0.4 mA
			Typical	Typical	Typical
			0.8 mA	0.8 mA	0.8 mA
			LED dropout voltage (I _f = 5 mA)	LED dropout voltage (I _f = 5 mA)	LED dropout voltage (I _f = 5 mA)
			Typical	Typical	Typical
			1.14 V	1.14 V	1.14 V
			Maximum	Maximum	Maximum
			1.5 V	1.5 V	1.5 V
			Turn on time (Operate (OFF) time)	Turn on time (Operate (OFF) time)	Turn on time (Operate (OFF) time)
			Typical	Typical	Typical
			0.8 ms	0.8 ms (N.O.), 1.2 ms (N.C.)	1.2 ms
			Maximum	Maximum	Maximum
			2 ms	2.0 ms	2.0 ms
			Turn off time (Reverse (ON) time)	Turn off time (Reverse (ON) time)	Turn off time (Reverse (ON) time)
			Typical	Typical	Typical
			0.05 ms	0.04 ms (N.O.), 0.36 ms (N.C.)	0.36 ms
			Maximum	Maximum	Maximum
			0.2 ms	1.0 ms	1.0 ms
			Total power dissipation*	Total power dissipation*	Total power dissipation*
			850 mW	850 mW	850 mW
			I/O isolation voltage*	I/O isolation voltage*	I/O isolation voltage*
			1,500 V AC	1,500 V AC	1,500 V AC
			Operating*	Operating*	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*	Storage*	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	I/O capacitance	I/O capacitance
			Typical	Typical	Typical
			0.8 pF	0.8 pF	0.8 pF
			Maximum	Maximum	Maximum
			1.5 pF	1.5 pF	1.5 pF
			Initial I/O isolation resistance	Initial I/O isolation resistance	Initial I/O isolation resistance
			Min. 1,000 MΩ	Min. 1,000 MΩ	Min. 1,000 MΩ
			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	 	

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

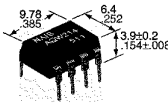
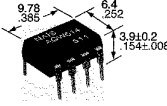
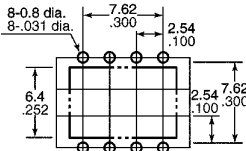
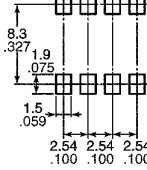
PhotoMOS

		GU Type																		
		1a Type					1b Type													
		AC/DC Type					AC/DC Type													
• Type of relay		 																		
		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									
• Output	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									
	Continuous 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	0.83 Ω	2.3 Ω	11 Ω	23 Ω	30 Ω	70 Ω	30 Ω		26 Ω									
		Maximum	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							
	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								
• Input	LED operate current (LED operate (OFF) current)	Typical	1 mA						1.3 mA		1 mA									
		Maximum	3 mA						3 mA		3 mA									
	LED turn off current (LED reverse (ON) current)	Minimum	0.4 mA						0.4 mA		0.4 mA									
		Typical	0.79 mA						1.2 mA		0.95 mA									
LED dropout voltage (I _f = 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	0.21 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		1 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		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)					Through hole terminal (Bottom view)				
																				
	Tolerance: ±0.1 ±.004										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																				

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

PhotoMOS

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			GU Type							
			2a Type						1a1b Type	
			AC/DC Type						AC/DC Type	
• Type of relay										
			mm (inch)							
• Features			• 2 Form A type • Approx. 1/2 smaller compared with proximity mounting of two 1 Form A units						• 1 Form A 1 Form B type	
• Output	Load voltage	Part No.	AQW212	AQW215	AQW217	AQW210	AQW214	AQW216	AQW614	
		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 (I _f = 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 ±0.04							
• Standards		UL (E43149), CSA (LR26550), TÜV								
• Mounting method										

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

PhotoMOS

Type of relay			GU Type		GU-E Type	
			Multi-channel(4a) Type		1a Types	
			AC/DC Type		AC/DC Type	
			4-Pin			
mm (inch)						
Features			• 2 Form B type • Approx. 1/2 smaller compared with proximity mounting of two 1 Form B units	• 4-circuit (4 Form A) type in a compact and slim 13-pin SIL	• General use and economy type • DIP (1 Form A) 4-pin type	
Load voltage	Part No.		AQW414	AQX21444	AQY210EH	AQY214EH
	Peak AC		400 V	400 V	350 V	400 V
Continuous load current	DC		400 V	400 V	350 V	400 V
	1 A <td></td> <td></td> <td></td> <td></td>					
Peak load current	0.5 A <td></td> <td></td> <td></td> <td></td>					
	0.1 A <td></td> <td></td> <td></td> <td></td>					
Power dissipation*	0.3 A <td></td> <td></td> <td></td> <td></td>					
	0.08 A <td></td> <td></td> <td></td> <td></td>					
ON resistance	0.4 A <td></td> <td></td> <td></td> <td></td>					
	0.3 A <td></td> <td></td> <td></td> <td></td>					
Output capacitance (Typical)	800 mW <td></td> <td></td> <td></td> <td></td>					
	500 mW <td></td> <td></td> <td></td> <td></td>					
Off state leakage current	26 Ω <td></td> <td></td> <td></td> <td></td>					
	30 Ω <td></td> <td></td> <td></td> <td></td>					
LED forward current*	50 Ω <td></td> <td></td> <td></td> <td></td>					
	25 Ω <td></td> <td></td> <td></td> <td></td>					
LED reverse voltage*	100 pF <td></td> <td></td> <td></td> <td></td>					
	45 pF <td></td> <td></td> <td></td> <td></td>					
Peak forward current	Max. 1 μA <td></td> <td></td> <td></td> <td></td>					
	Max. 1 μA <td></td> <td></td> <td></td> <td></td>					
Power dissipation*	50 mA <td></td> <td></td> <td></td> <td></td>					
	50 mA <td></td> <td></td> <td></td> <td></td>					
LED operate current (LED operate (OFF) current)	3 V <td></td> <td></td> <td></td> <td></td>					
	3 V <td></td> <td></td> <td></td> <td></td>					
LED turn off current (LED reverse (ON) current)	1 A <td></td> <td></td> <td></td> <td></td>					
	1 A <td></td> <td></td> <td></td> <td></td>					
LED dropout voltage (If = 5 mA)	75 mW <td></td> <td></td> <td></td> <td></td>					
	75 mW <td></td> <td></td> <td></td> <td></td>					
Turn on time (Operate (OFF) time)	0.7 mA <td></td> <td></td> <td></td> <td></td>					
	1.2 mA <td></td> <td></td> <td></td> <td></td>					
Turn off time (Reverse (ON) time)	3.0 mA <td></td> <td></td> <td></td> <td></td>					
	3.0 mA <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	0.4 mA <td></td> <td></td> <td></td> <td></td>					
	0.4 mA <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	0.64 mA <td></td> <td></td> <td></td> <td></td>					
	1.1 mA <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	1.14 V <td></td> <td></td> <td></td> <td></td>					
	1.5 V <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	0.46 ms <td></td> <td></td> <td></td> <td></td>					
	0.29 ms <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	1 ms <td></td> <td></td> <td></td> <td></td>					
	1 ms <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	0.40 ms <td></td> <td></td> <td></td> <td></td>					
	0.19 ms <td></td> <td></td> <td></td> <td></td>					
Typical Maximum	1 ms <td></td> <td></td> <td></td> <td></td>					
	0.5 ms <td></td> <td></td> <td></td> <td></td>					
Total power dissipation*	850 mW <td></td> <td></td> <td></td> <td></td>					
	1.5 W <td></td> <td></td> <td></td> <td></td>					
I/O isolation voltage*	850 mW <td></td> <td></td> <td></td> <td></td>					
	550 mW <td></td> <td></td> <td></td> <td></td>					
Temperature limits	1,500 V AC <td></td> <td></td> <td></td> <td></td>					
	1,500 V AC <td></td> <td></td> <td></td> <td></td>					
I/O capacitance	1,500 V AC <td></td> <td></td> <td></td> <td></td>					
	5,000 V AC <td></td> <td></td> <td></td> <td></td>					
Initial I/O isolation resistance	-40°C to +85°C -40°F to +185°F <td></td> <td></td> <td></td> <td></td>					
	-40°C to +85°C -40°F to +185°F <td></td> <td></td> <td></td> <td></td>					
Terminal layout (100 inch grid)	-40°C to +100°C -40°F to +212°F <td></td> <td></td> <td></td> <td></td>					
	-40°C to +100°C -40°F to +212°F <td></td> <td></td> <td></td> <td></td>					
Standards	0.8 pF <td></td> <td></td> <td></td> <td></td>					
	1.5 pF <td></td> <td></td> <td></td> <td></td>					
Mounting method	Min. 1,000 MΩ <td></td> <td></td> <td></td> <td></td>					
	Min. 1,000 MΩ <td></td> <td></td> <td></td> <td></td>					
Through hole terminal (Bottom view)	13-0.8 dia. 13-.031 dia.					
	Tolerance: ±0.1 ±.004 <td></td> <td></td> <td></td> <td></td>					
Surface mount terminal recommended mounting pad (Top view)	Tolerance: ±0.1 ±.004 <td></td> <td></td> <td></td> <td></td>					
	Tolerance: ±0.1 ±.004 <td></td> <td></td> <td></td> <td></td>					
Through hole terminal (Bottom view)	Through hole terminal (Bottom view)					
	Surface mount terminal recommended mounting pad (Top view)					
Surface mount terminal recommended mounting pad (Top view)	Surface mount terminal recommended mounting pad (Top view)					
	Surface mount terminal recommended mounting pad (Top view)					
Standards	UL (E43149), CSA (LR26550), TÜV					
	UL (E43149), BSI, CSA (LR26550)					
Mounting method	Mounting method					
	Mounting method					

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

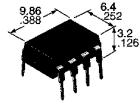
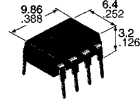
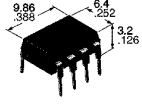
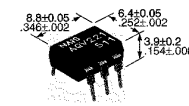
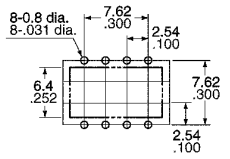
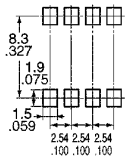
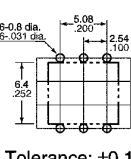
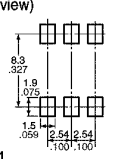
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**7
RELAYS**

			GU-E Type											
			1a Types				1b Types		1b Types					
			AC/DC Type				AC/DC Type		AC/DC Type					
			6-Pin				4-Pin		6-Pin					
• Type of relay														
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					
Load voltage*		Peak AC	350 V	400 V	350 V	400 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												
<td>0.5 A</td> <td colspan="4"></td> <td colspan="2"></td> <td colspan="3"></td>		0.5 A												
• Output														
Peak load current			0.4 A		0.3 A		0.4 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	35 Ω	26 Ω	50 Ω				
		Maximum	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	
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			
• Input		LED operate current (LED operate (OFF) current)	Typical 1.1 mA		Maximum 3.0 mA		1.3 mA 3.0 mA		1.45 mA 3.0 mA		1.75 mA 3.0 mA			
		LED turn off current (LED reverse (ON) current)	Minimum 0.3 mA		Typical 1.0 mA		0.4 mA 1.2 mA		0.3 mA 1.40 mA		0.4 mA 1.70 mA			
		LED dropout voltage (I _F = 5 mA)	Typical 1.14 V		Maximum 1.5 V		1.14 V 1.5 V		1.14 V 1.5 V					
• Switching speed		Turn on time (Operate (OFF) time)	Typical 0.5 ms		Maximum 2.0 ms		0.8 ms 3.0 ms		0.7 ms 2.0 ms		1.3 ms 3.0 ms			
		Turn off time (Reverse (ON) time)	Typical 0.05 ms		Maximum 1.0 ms		0.2 ms 1.0 ms		0.1 ms 1.0 ms		0.3 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)														
mm inch			Tolerance: ±0.1 ±.004						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														

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

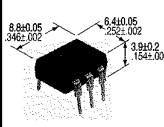
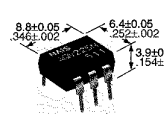
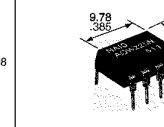
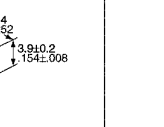
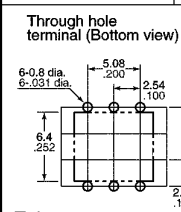
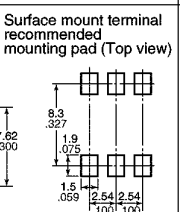
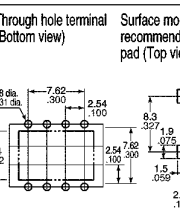
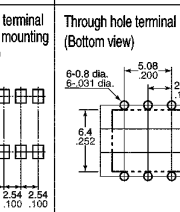
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		GU-E Type				RF Type			
		2a Types		1a1b Types	2b Types	1a Type			
		AC/DC Type		AC/DC Type	AC/DC Type	AC/DC Type			
• Type of relay									
		Reinforced I/O isolation type		Reinforced I/O isolation type	Reinforced I/O isolation type				
• Features		• General use and economy type • DIP (2 Form A) 8-pin type		• General use and economy type • DIP (1 Form A 1 Form B) 8-pin type	• General use and economy type • DIP (2 Form B) 8-pin type	• For high frequency applications • High speed switching			
• Output	Part No.	AQW210EH	AQW214EH	AQW614EH	AQW414EH	AQV221	AQV225		
	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	800 mW	230 mW			
	ON resistance	Typical	18 Ω	26 Ω	26 Ω	26 Ω	22 Ω	36 Ω	
		Maximum	25 Ω	35 Ω	35 Ω	35 Ω	35 Ω	50 Ω	
	Output capacitance (Typical)	45 pF	45 pF(N.O.), 100 pF(N.C.)	100 pF	5.6 pF	4.8 pF			
• Input	Off state leakage current	Max. 1 μA	Max. 1 μA(N.O.), 10 μA(N.C.)	Max. 10 μA	Max. 10 nA				
	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	3.0 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	0.85 mA		
		Typical	1.1 mA	1.2 mA	1.2 mA				
	LED dropout voltage (I _b = 5 mA)	Typical	1.14 V	1.14 V	1.14 V	1.14 V	1.5 V		
		Maximum	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	0.3 ms		
		Maximum	2.0 ms	3.0 ms	3.0 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	0.1 ms		
		Maximum	1.0 ms	1.0 ms	1.0 ms				
• Total power dissipation*		850 mW	850 mW	850 mW	850 mW	280 mW			
• I/O isolation voltage*		5,000 V AC	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	-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			
	Maximum	1.5 pF	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	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)		
									
						Tolerance: ±0.1 ±0.04			
• Standards		UL (E43149), CSA (LR26550), BSI				UL (E43149), CSA (LR26550), TÜV			
• Mounting method									

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

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**7
RELAYS**

			RF Low C and R Type		RF Low on resistance Type				HS Type	
			1a Type		1a Type		2a Type		1a Type	
			AC/DC Type		AC/DC Type		AC/DC Type		AC/DC Type	
• Type of relay										
• 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	
• Load voltage*	Peak AC		40 V		80 V		200 V		400 V	
	DC		40 V		80 V		200 V		400 V	
• Continuous load current	6 A									
	1 A									
• Output	0.15 A									
	0.15 A									
Peak load current			0.45 A		0.45 A		0.21 A		0.15 A	
Power dissipation*			360 mW		360 mW		800 mW		800 mW	
• ON resistance	Typical		9.8 Ω		7 Ω		30 Ω		70 Ω	
	Maximum		15 Ω		10 Ω		50 Ω		100 Ω	
Output capacitance (Typical)			3.9 pF		10 pF		10 pF		10 pF	
Off state leakage current			Max. 10 nA		Max. 10 nA		Max. 10 nA		Max. 10 nA	
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 0.9 mA Maximum 3 mA		0.9 mA 3 mA		0.9 mA 3 mA		0.9 mA 3 mA	
	LED turn off current (LED reverse (ON) current)		Minimum 0.4 mA Typical 0.85 mA		0.4 mA 0.85 mA		0.4 mA 0.8 mA		0.4 mA 0.8 mA	
• LED dropout voltage (I _L = 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 0.2 ms Maximum 0.5 ms		0.2 ms 0.5 ms		0.2 ms 0.5 ms		0.2 ms 0.5 ms	
	Turn off time (Reverse (ON) time)		Typical 0.08 ms Maximum 0.2 ms		0.08 ms 0.2 ms		0.08 ms 0.2 ms		0.08 ms 0.2 ms	
• Total power dissipation*			410 mW		410 mW		850 mW		850 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	
	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)										
• Standards			UL (E43149), CSA (LR26550)		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV		UL (E43149), CSA (LR26550), TÜV	
• Mounting method										

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