



NEC's UA2/UB2 relay is a new generation slim package Miniature Signal Relay for use in high density applications.

FEATURES

- Small mounting size for high density applications
- Bellcore (2500 V surge coil to contacts) and FCC (1500 V) surge capability.
- IEC950/UL1950/EN60950 spacing and high breakdown voltage. (Basic insulation class on 200 V working voltage)
- Low power consumption 140 mW

APPLICATIONS

Electronic switching systems, PBX, terminal equipment, telephone system, test equipment.

PERFORMANCE CHARACTERISTICS (Community)

Initial Contact Resistance 70 mOhm typ. (Initial)	Contact Form		2 Form c		
Voltage Maximum Switching 1 A	Contact Ratings		30 W (resistive)	37.5 VA (resistive)	
Current Maximum Carrying 1 A			110 Vdc	125 Vac	
Minimum Contact Ratings 10 mV.dc, 10 μA * 4 Initial Contact Resistance 70 mOhm typ. (Initial) Contact Material Silver alloy with gold alloy overlay Nominal Operating Power Non-Latch Type 140mW (230 mW fro 24V) Single Coil Latch Type 100 to 140 mW Operate Time (Excluding Bounce) Approximately 2 ms Release Time (Excluding Bounce) Approximately 1 ms without diode Insulation Resistance 1000 MOhm at 500 Vdc Between Open Contacts 1000 Vac for one minute (1500 V surge, 10 x 160 μs ' 1) Shock Resistance 735 m / s² (75 G) (misoperating) 980 m / s² (100 G) (destructive failure) Vibration Resistance 10 to 55 Hz, adouble amplitude of 3 mm (20 G) (misoperating) 10 to 55 Hz, adouble amplitude of 5 mm (30 G) (Destructive failure) Ambient Temperature 40 to +85°C Coil Temperature Rise 18 degrees at nominal coil voltage (140 mW) Running specifications No-load 50 Vdc 0.1 A (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶			1 A	Ĭ	
Initial Contact Resistance 70 mOhm typ. (Initial)			1 A	Ĭ	
Contact Material Nominal Operating Power Non-Latch Type 140mW (230 mW fro 24V) Single Coil Latch Type 100 to 140 mW Operate Time (Excluding Bounce) Approximately 2 ms Release Time (Excluding Bounce) Approximately 1 ms without diode Insulation Resistance 1000 MOhm at 500 Vdc Breakdown Voltage Between Open Contacts Between Adjacent Contacts Between Coil and 1500 Vac for one minute (1500 V surge, 10 x 160 µs * 2	Minimum Contact Ratings		10 mV.dc, 10 μA * ⁴		
Nominal Operating Power Non-Latch Type 140mW (230 mW fro 24V) Single Coil Latch Type 100 to 140 mW Operate Time (Excluding Bounce) Approximately 2 ms Release Time (Excluding Bounce) Approximately 1 ms without diode Insulation Resistance 1000 MOhm at 500 Vdc Breakdown Voltage Between Open Contacts Between Adjacent Contacts 1) Between Coil and Contact 1500 Vac for one minute (1500 V surge, 10 x 160 µs x 2 1 1 1500 Vac for one minute (2500 V surge, 2 x 10 µs x 2 Shock Resistance 735 m/s² (75 G) (misoperating) 980 m/s² (100 G) (destructive failure) Vibration Resistance 10 to 55 Hz at double amplitude of 3 mm (20 G) (misoperating) 10 to 55 Hz, double amplitude of 5 mm (30 G) (Destructive failure) Ambient Temperature -40 to +85°C Coil Temperature Rise 18 degrees at nominal coil voltage (140 mW) Running specifications No-load 5 x 10 ⁷ x 3 operations (Non-latch type) 1 x 10 ⁷ operations (Latch type) Load 50 Vdc 0.1 A (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C	Initial Contact Resistance		Υ		
Single Coil Latch Type 100 to 140 mW	Contact Material		Silver alloy with gold alloy overlay		
Operate Time (Excluding Bounce) Approximately 2 ms Release Time (Excluding Bounce) Approximately 1 ms without diode Insulation Resistance 1000 MOhm at 500 Vdc Breakdown Voltage Between Open Contacts	Nominal Operating Power	Non-Latch Type	140mW (230 mW fro 24V)		
Release Time (Excluding Bounce) Insulation Resistance Breakdown Voltage Between Open Contacts Between Adjacent Contacts Between Coil and Contact Between Coil and Contact Between Coil and Contact Between Coil and Contact Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (2500 V surge, 2 x 10 µs * 2 Too Vac for one minute (1500 V surge, 10 x 160 µs * 2 Too Vac for one minute (150		Single Coil Latch Type	100 to 140 mW		
Distriction Resistance Between Open Contacts Between Adjacent Contacts Between Coil and Contact District Contact D	Operate Time (Excluding Bounce)		Approximately 2 ms		
Between Open Contacts Between Adjacent Contacts Between Coil and Contact Shock Resistance Total and Contact Shock Resistance Total and Contact Total and Contac	Release Time (Excluding Bounce)		Approximately 1 ms without diode		
Between Adjacent Contacts Between Coil and Contact 1 500 Vac for one minute (2500 V surge, 2 x 10 μ s * 2 Shock Resistance 735 m / s² (75 G) (misoperating) 980 m / s² (100 G) (destructive failure) Vibration Resistance 10 to 55 Hz at double amplitude of 3 mm (20 G) (misoperating) 10 to 55 Hz, double amplitude of 5 mm (30 G) (Destructive failure) Ambient Temperature -40 to +85°C Coil Temperature Rise 18 degrees at nominal coil voltage (140 mW) S x $10^{7 * 3}$ operations (Non-latch type) 1 x 10^{7} operations (Latch type) Load 50 Vdc 0.1 A (resistive), 1 x 10^{6} operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10^{6} operations at 85°C	Insulation Resistance		1000 MOhm at 500 Vdc		
	Breakdown Voltage	Between Open Contacts			
Shock Resistance					
Vibration Resistance		·	1500 Vac for one minute	(2500 V surge, 2 x 10 μs * ²)	
Vibration Resistance	Shock Resistance		735 m / s ² (75 G) (misoperating)		
Vibration Resistance 10 to 55 Hz at double amplitude of 3 mm (20 G) (misoperating) 10 to 55 Hz, double amplitude of 5 mm (30 G) (Destructive failure)Ambient Temperature -40 to $+85^{\circ}$ CCoil Temperature Rise 18 degrees at nominal coil voltage (140 mW)Running specificationsNo-load $5 \times 10^{7 * 3}$ operations (Non-latch type) 1×10^{7} operations (Latch type)Load $50 \text{ Vdc } 0.1 \text{ A (resistive)}, 1 \times 10^{6} \text{ operations at } 85^{\circ}\text{C}$ $10 \text{ Vdc } 10 \text{ mA (resistive)}, 1 \times 10^{6} \text{ operations at } 85^{\circ}\text{C}$					
Coil Temperature Rise 18 degrees at nominal coil voltage (140 mW) 5 x 10 ^{7 * 3} operations (Non-latch type) 1 x 10 ⁷ operations (Latch type) Load 50 Vdc 0.1 A (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C	Vibration Resistance		10 to 55 Hz at double amplitude of 3 mm (20 G) (misoperating) 10 to 55 Hz, double amplitude of 5 mm (30 G)		
Running specifications No-load $5 \times 10^{7 * 3}$ operations (Non-latch type) 1×10^{7} operations (Latch type) Load $50 \text{ Vdc } 0.1 \text{ A (resistive)}, 1 \times 10^{6} \text{ operations at } 85^{\circ}\text{C}$ $10 \text{ Vdc } 10 \text{ mA (resistive)}, 1 \times 10^{6} \text{ operations at } 85^{\circ}\text{C}$	Ambient Temperature		−40 to +85°C		
Load S x 10 Operations (Non-latch type)	Coil Temperature Rise		18 degrees at nominal coil voltage (140 mW)		
Load 50 Vdc 0.1 A (resistive), 1 x 10 ⁶ operations at 85°C 10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C	Running specifications	No-load	5 x 10 ⁷ * ³ operations (Non-latch type)		
10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C			1 x 10 ⁷ operations (Latch type)		
		Load	50 Vdc 0.1 A (resistive), 1 x 10 ⁶ operations at 85°C		
Weight Approximately 1 gram			10 Vdc 10 mA (resistive), 1 x 10 ⁶ operations at 85°C		
- PPT of the state	Weight		Approximately 1 gram		

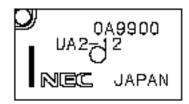
^{*1} rise time :10 µs, fall time : 160 µs *2 rise time :2 µs, fall time : 10 µs *3 Number of operations without mechanical failure. Note, the number of operations under which steady

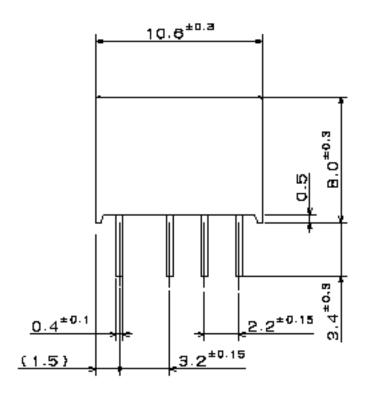
electrical characteristics are maintained is 1 x 10⁷ operations *4 This value is a reference value based upon a resistive load. Minimum contact ratings change based upon switching frequency / drive characteristics, ambient temperature and load.

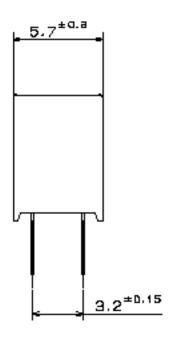
DIMENSIONS

mm

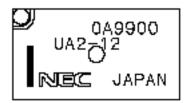
UA2

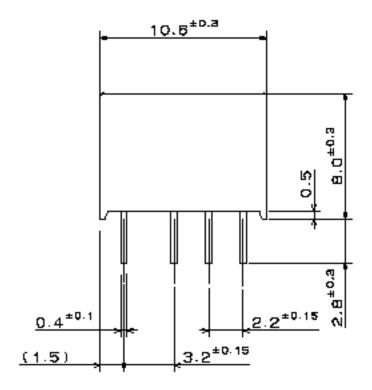


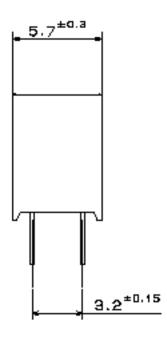




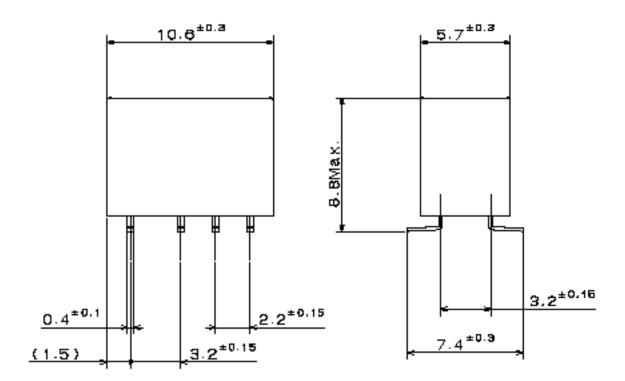
UA2-NJ





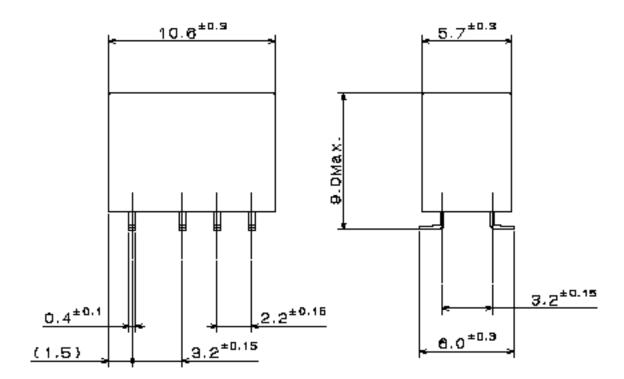






UB2-N

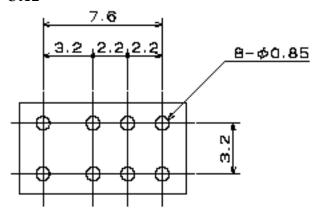




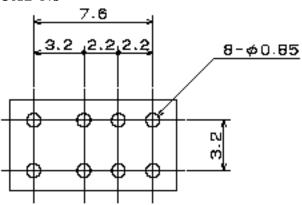
RECOMMENDED PAD LAYOUT

(bottom view) mm

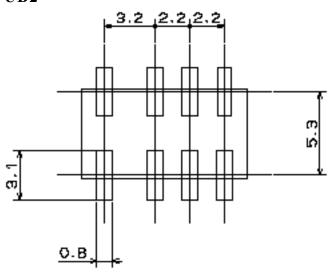
UA2



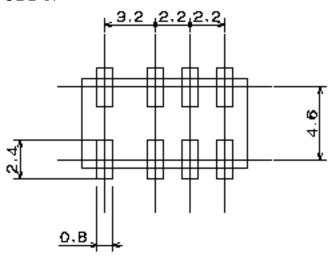
UA2-NJ



UB2



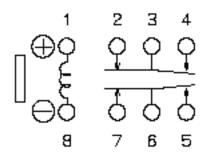
UB2-N



SCHEMATICS

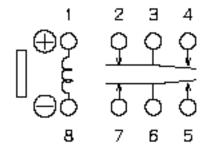
(bottom view)

UA2

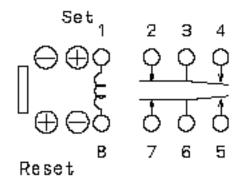


Non-latch type (not energized position)

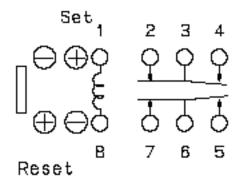
UA2-NJ



Non-latch type (not energized position)

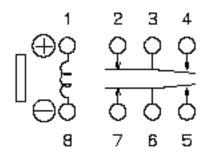


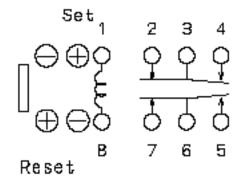
Single coll latch type (reset position)



Single coll latch type (reset position)



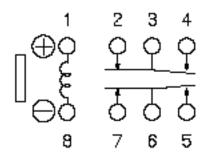


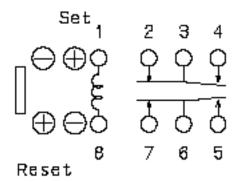


Non-latch type (not energized position)

Single coll latch type (reset position)

UB2-N





Non-latch type (not energized position)

Single coil latch type (reset position)

PART NUMBER SYSTEM

UA2-3 SNU
① ②③ ④

① Series

UA2 : Through-hole UB2 : Surface Mount

2 Nominal coil voltage (See Nominal Lineup)

3 Latch type

Nil: Non-latch type S: Single coil latch type

4 NU:

Standard type (NJ: trimmed lead type UA2)(NUN: Minimum footprint UB2)

NOMINAL LINEUP

Non-latch Type at 20°C

Nominal Coil Voltage (Vdc)	Coil Resistance (Ohm) ±10%	Must Operate Voltage (Vdc)	Must Release Voltage (Vdc)	Nominal operate power (mW)
1.5	16	1.13	0.15	140
3	64.3	2.25	0.3	140
4.5	145	3.38	0.45	140
5	178	3.75	0.5	140
6	257	4.5	0.6	140
9	579	6.75	0.9	140
12	1028	9.0	1.2	140
24	2504	18.0	2.4	230

Single-Coil Latch Type at 20°C

Nominal Coil Voltage (Vdc)	Coil Resistance (Ohm) ±10%	Must Operate Voltage (Vdc)	Must Release Voltage (Vdc)	Nominal operate power (mW)
1.5	22.5	1.13	1.2	100
3	90	2.25	2.4	100
4.5	202.5	3.38	3.6	100
5	250	3.75	4	100
6	360	4.5	4.8	100
9	810	6.75	7.2	100
12	1440	9.0	9.6	100
24	4800	18.0	19.2	120

SAFETY STANDARD AND RATING

UL Recognized (UL508)* File No. E73266 CSA Certified (CSA C22.2 No. 14) File No. LR46266

30 Vdc, 2A (Resistive) 110 Vdc, 0.6 A (Resistive) 125 Vac, 0.5 A (Resistive)

* Spacing: UL114, UL478

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