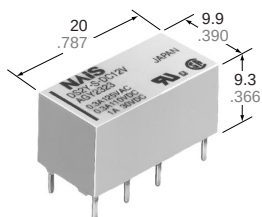


# NAIS

## MINIATURE RELAY

# DS2Y-RELAYS



mm inch

## FEATURES

- 2 Form C contact
- High sensitivity-200 mW nominal operating power
- High breakdown voltage  
1500 V FCC surge between open contacts
- DIP-2C type matching 16 pin IC socket
- Sealed construction

## SPECIFICATIONS

### Contact

|                                                                  |                        |                    |                   |
|------------------------------------------------------------------|------------------------|--------------------|-------------------|
| Arrangement                                                      | 2 Form C               |                    |                   |
| Initial contact resistance, max.<br>(By voltage drop 6 V DC 1 A) | 50 mΩ                  |                    |                   |
| Contact material                                                 | Gold-clad silver       |                    |                   |
| Rating<br>(resistive)                                            | Max. switching power   | 60 W, 62.5 VA      |                   |
|                                                                  | Max. switching voltage | 220 V DC, 250 V AC |                   |
|                                                                  | Max. switching current | 2 A                |                   |
|                                                                  | Max. carrying current  | 3 A                |                   |
| Expected life (min. operations)                                  | Mechanical             | 1×10 <sup>8</sup>  |                   |
|                                                                  | Electrical             | 1 A 30 V DC        | 5×10 <sup>5</sup> |
|                                                                  |                        | 2 A 30 V DC        | 1×10 <sup>5</sup> |

### Coil (polarized) (at 20°C 68°F)

|                    |                             |                                  |
|--------------------|-----------------------------|----------------------------------|
| Single side stable | Minimum operating power     | Approx. 98 mW<br>(147 mW: 48 V)  |
|                    | Nominal operating power     | Approx. 200 mW<br>(300 mW: 48 V) |
| 2 coil latching    | Minimum set and reset power | Approx. 88 mW<br>(177 mW: 48 V)  |
|                    | Nominal set and reset power | Approx. 180 mW<br>(360 mW: 48 V) |

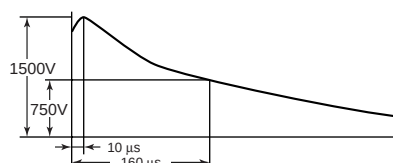
### Remarks

- \* Specifications will vary with foreign standards certification ratings.  
 \*<sup>1</sup> Measurement at same location as "Initial breakdown voltage" section  
 \*<sup>2</sup> Detection current: 10mA  
 \*<sup>3</sup> Excluding contact bounce time  
 \*<sup>4</sup> Half-wave pulse of sine wave: 11ms, detection time: 10μs  
 \*<sup>5</sup> Half-wave pulse of sine wave: 6ms  
 \*<sup>6</sup> Detection time: 10μs  
 \*<sup>7</sup> Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61).

### Characteristics (at 20°C 68°F)

|                                                                                                                   |                           |                                                                              |
|-------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------|
| Initial insulation resistance* <sup>1</sup>                                                                       |                           | Min. 100 MΩ (at 500 V DC)                                                    |
| Initial breakdown voltage* <sup>2</sup>                                                                           | Between open contacts     | 750 Vrms                                                                     |
|                                                                                                                   | Between contact sets      | 1,000 Vrms                                                                   |
|                                                                                                                   | Between contact and coil  | 1,000 Vrms                                                                   |
| FCC surge voltage between contacts and coil                                                                       |                           | 1,500 V                                                                      |
| Operate time* <sup>3</sup> (at nominal voltage)                                                                   |                           | Approx. 4 ms                                                                 |
| Release time* <sup>3</sup> (at nominal voltage)                                                                   |                           | Approx. 3 ms                                                                 |
| Set time* <sup>3</sup> (latching) (at nominal voltage)                                                            |                           | Approx. 3 ms                                                                 |
| Reset time* <sup>3</sup> (latching) (at nominal voltage)                                                          |                           | Approx. 3 ms                                                                 |
| Temperature rise                                                                                                  |                           | Max. 65°C with nominal voltage across coil and at nominal switching capacity |
| Shock resistance                                                                                                  | Functional* <sup>4</sup>  | Min. 490 m/s <sup>2</sup> {50 G}                                             |
|                                                                                                                   | Destructive* <sup>5</sup> | Min. 980 m/s <sup>2</sup> {100 G}                                            |
| Vibration resistance                                                                                              | Functional* <sup>6</sup>  | 10 to 55 Hz at double amplitude of 3.3 mm                                    |
|                                                                                                                   | Destructive               | 10 to 55 Hz at double amplitude of 5 mm                                      |
| Conditions for operation, transport and storage* <sup>7</sup><br>(Not freezing and condensing at low temperature) | Ambient temp.             | −40°C to +70°C<br>−40°F to +158°F                                            |
|                                                                                                                   | Humidity                  | 5 to 85% R.H.                                                                |
| Unit weight                                                                                                       |                           | Approx. 4 g .14 oz                                                           |

FCC (Federal Communication Commission) requests following standard as Breakdown Voltage specification.



## TYPICAL APPLICATIONS

- Telecommunication equipment
- Office equipment
- Computer peripherals
- Security alarm systems
- Medical equipment

## ORDERING INFORMATION

Ex DS2Y-S [L2] — [DC12 V] — [R]

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

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

DS2Y

TYPES AND COIL DATA (at 20°C 68°F)

Single side stable

| Nominal voltage, V DC | Part No.      | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Nominal operating current mA (±10%) | Coil resistance, Ω (±10%) | Nominal operating power mW | Maximum allowable voltage, V DC (at 50°C 122°F ) |
|-----------------------|---------------|------------------------------|-------------------------------|-------------------------------------|---------------------------|----------------------------|--------------------------------------------------|
| 1.5                   | DS2Y-S-DC1.5V | 1.05                         | 0.15                          | 132.7                               | 11.3                      | 200                        | 3                                                |
| 3                     | DS2Y-S-DC3V   | 2.10                         | 0.3                           | 66.7                                | 45                        | 200                        | 6                                                |
| 5                     | DS2Y-S-DC5V   | 3.5                          | 0.5                           | 40                                  | 125                       | 200                        | 10                                               |
| 6                     | DS2Y-S-DC6V   | 4.2                          | 0.6                           | 33.3                                | 180                       | 200                        | 12                                               |
| 9                     | DS2Y-S-DC9V   | 6.3                          | 0.9                           | 22.2                                | 405                       | 200                        | 18                                               |
| 12                    | DS2Y-S-DC12V  | 8.4                          | 1.2                           | 16.7                                | 720                       | 200                        | 24                                               |
| 24                    | DS2Y-S-DC24V  | 16.8                         | 2.4                           | 8.3                                 | 2,880                     | 200                        | 48                                               |
| 48                    | DS2Y-S-DC48V  | 33.6                         | 4.8                           | 6.3                                 | 7,680                     | 300                        | 86                                               |

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

2 coil latching

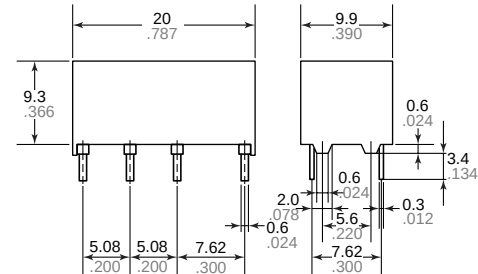
| Nominal voltage, V DC | Part No.        | Reset set, V DC (max.) | Nominal operating current mA (±10%) |       | Coil resistance, Ω (±10%) |       | Nominal operating power, mW |       | Maximum allowable voltage, V DC (at 50°C 122°F ) |
|-----------------------|-----------------|------------------------|-------------------------------------|-------|---------------------------|-------|-----------------------------|-------|--------------------------------------------------|
|                       |                 |                        | Set                                 | Reset | Set                       | Reset | Set                         | Reset |                                                  |
| 1.5                   | DS2Y-SL2-DC1.5V | 1.05                   | 120                                 | 120   | 12.5                      | 12.5  | 180                         | 180   | 3                                                |
| 3                     | DS2Y-SL2-DC3V   | 2.1                    | 60                                  | 60    | 50                        | 50    | 180                         | 180   | 6                                                |
| 5                     | DS2Y-SL2-DC5V   | 3.5                    | 36                                  | 36    | 139                       | 139   | 180                         | 180   | 10                                               |
| 6                     | DS2Y-SL2-DC6V   | 4.2                    | 30                                  | 30    | 200                       | 200   | 180                         | 180   | 12                                               |
| 9                     | DS2Y-SL2-DC9V   | 6.3                    | 20                                  | 20    | 450                       | 450   | 180                         | 180   | 18                                               |
| 12                    | DS2Y-SL2-DC12V  | 8.4                    | 15                                  | 15    | 800                       | 800   | 180                         | 180   | 24                                               |
| 24                    | DS2Y-SL2-DC24V  | 16.8                   | 7.5                                 | 7.5   | 3,200                     | 3,200 | 180                         | 180   | 48                                               |
| 48                    | DS2Y-SL2-DC48V  | 33.6                   | 7.5                                 | 7.5   | 6,400                     | 6,400 | 360                         | 360   | 72                                               |

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

DIMENSIONS

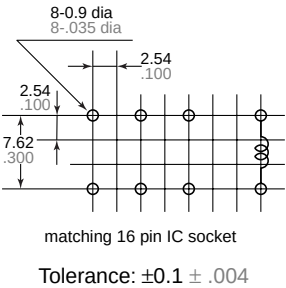
mm inch

Single side stable

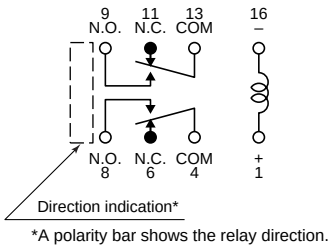


General tolerance: ±0.3 ± .012

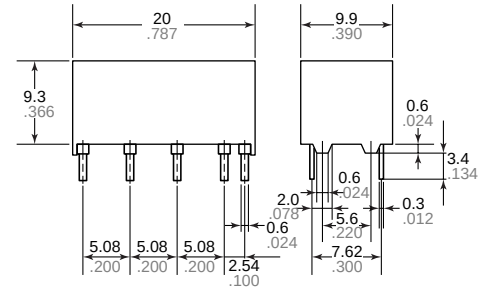
PC board pattern (Copper-side view)



Schematic (Bottom view) (Deenergized position)

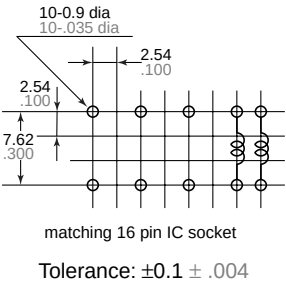


2 coil latching

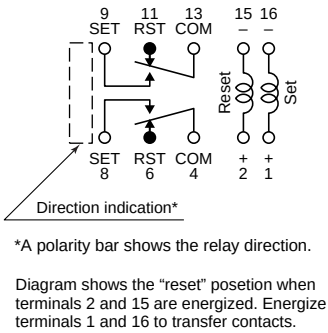


General tolerance: ±0.3 ± .012

PC board pattern (Copper-side view)

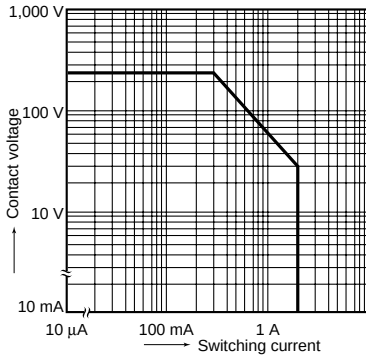


Schematic (Bottom view) (Reset position)



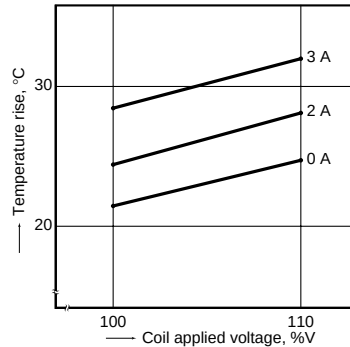
## REFERENCE DATA

### 1. Maximum switching capacity



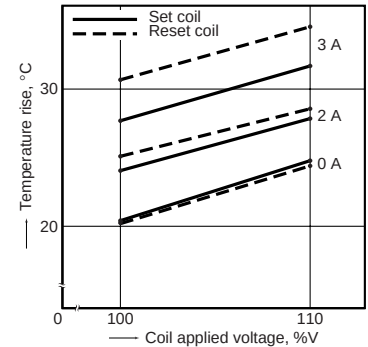
### 2-(1) Coil temperature rise (Single side stable)

Tested sample: DS2Y-S-DC12V, 5 pcs.  
Measured portion: Inside the coil  
Ambient temperature: 21°C to 25°C 70°F to 77°F



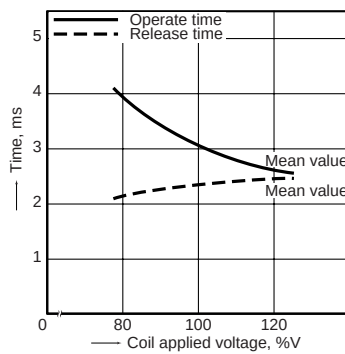
### 2-(2) Coil temperature rise 2 coil latching

Tested sample: DS2Y-SL2-DC12V, 5 pcs.  
Measured portion: Inside the coil  
Ambient temperature: 21°C to 25°C 70°F to 77°F



### 3. Operate/release time for single side stable (Without diode)

Tested sample: DS2Y-S-DC12V, 10 pcs.  
Ambient temperature: 20°C 68°F

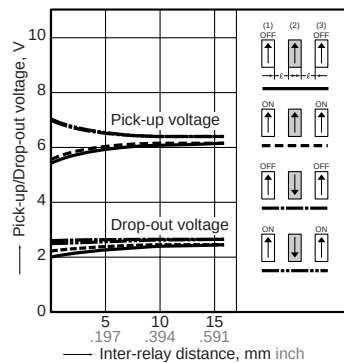


### 4-(1) Influence of adjacent mounting

Tested sample: DS2Y-S-DC12V, 10 pcs.  
Ambient temperature: 20°C 68°F

#### TEST METHOD

1. Apply nominal voltage to No. (1) and (3) DS2Y relays.
2. Measure pick-up voltage and drop-out voltage of No. (2) relay when inter-relay distance ( $\ell$ ) changes.

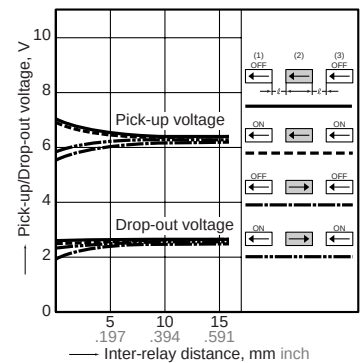


### 4-(2) Influence of adjacent mounting

Tested sample: DS2Y-S-DC12V, 10 pcs.  
Ambient temperature: 20°C 68°F

#### TEST METHOD

1. Apply nominal voltage to No. (1) and (3) DS2Y relays.
2. Measure pick-up voltage and drop-out voltage of No. (2) relay when inter-relay distance ( $\ell$ ) changes.



**For Cautions for Use, see Relay Technical Information (Page 48 to 76).**