

DESCRIPTION

The new NEC EX2/EX1 series is PC-board mount type and the most suitable for various motor and heater controls in the automobiles which require high quality and high performance.

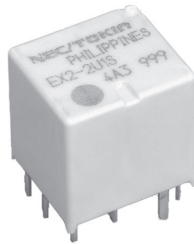
The EX2 series is succeeding in about 60% of miniaturization in comparison with the ET2 series. The EX1 series is succeeding in about 50% of miniaturization in comparison with the ET1 series.

FEATURES

- PC-board mounting
- Lead free solder is used
- Approx. 75% relay volume of ET2
- Approx. 60% relay space of ET2
- Approx. 88% relay weight of ET2
- Approx. 65% relay volume of ET1
- Approx. 50% relay space of ET1
- Approx. 78% relay weight of ET1

APPLICATIONS

- Motor control
- Solenoid control



EX2 SERIES



EX1 SERIES

For Proper Use of Miniature Relays**DO NOT EXCEED MAXIMUM RATING**

Do not use relay under excessive conditions such as over ambient temperature, over voltage and over current. Incorrect use could result in abnormal heating and damage to the relay or other parts.

READ CAUTIONS IN THE SELECTION GUIDE

Read the cautions described in NEC's "Miniature Relays" (ER0046EJ*) before dose designing your relay applications.

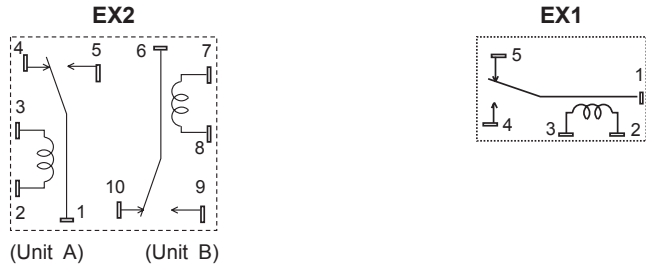
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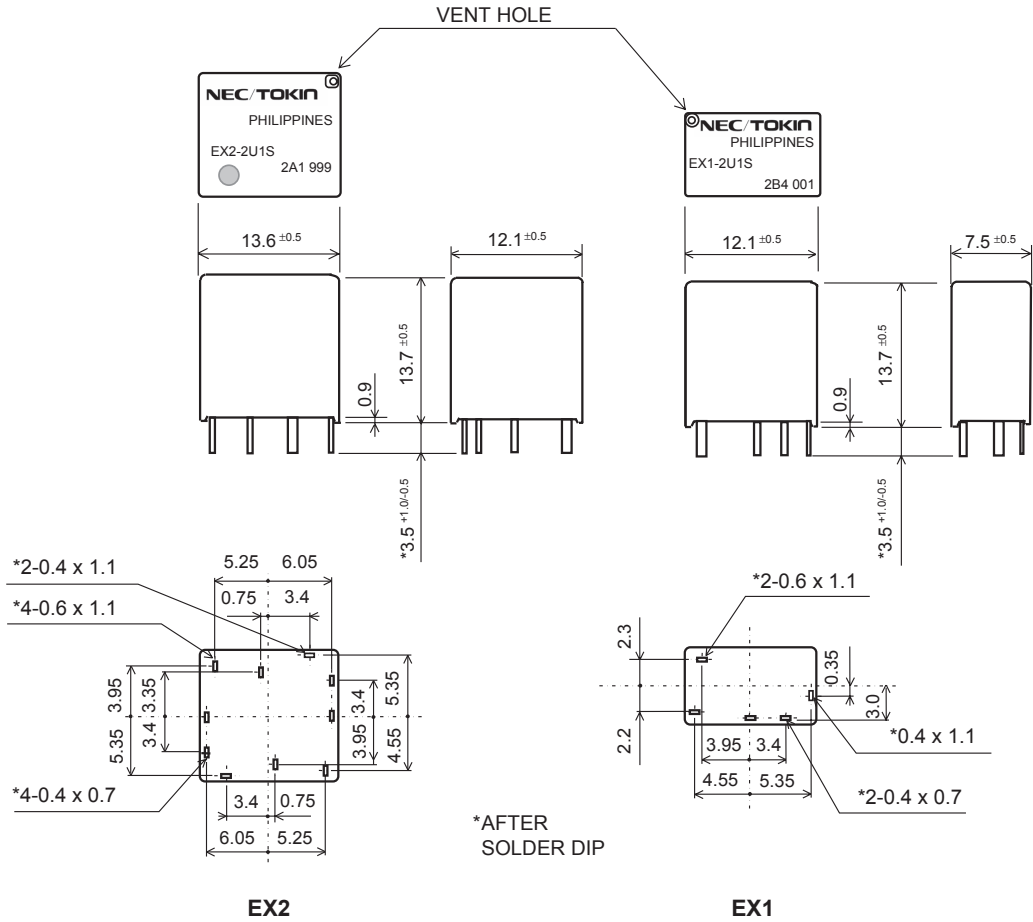


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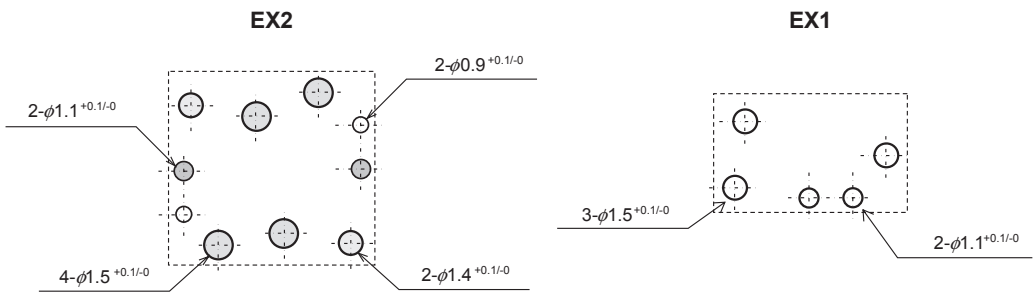
SCHEMATIC (BOTTOM VIEW)



DIMENSIONS [mm]



PCB PAD LAYOUT [mm] (BOTTOM VIEW)



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SPECIFICATION

(at 20 °C)

| Items | | Specifications | |
|---------------------------------|--------------------------|--|--------------------------------|
| | | EX2 | EX1 |
| Contact Form | | 1c x 2 (Separate) | 1c |
| Contact Rating | Max. Switching Voltage | 16Vdc | |
| | Max. Switching Current | 30A (at16Vdc) | |
| | Min. Switching Current | 1A (5Vdc) | |
| | Max. Carrying Current | 35A (2minutes max. 12Vdc at 25°C) 30A (2minutes max. 12Vdc at 85°C) 20A (2minutes max. 12Vdc at 125°C) | |
| | Contact Resistance | 4mΩ typical (measured at 7A) initial | |
| Contact Material | | Silver oxide complex alloy | |
| Operate Time (Excluding Bounce) | | 2.5ms typical (at nominal voltage) | |
| Release Time (Excluding Bounce) | | 3ms typical (at nominal voltage with diode) | |
| Nominal Operate Power | | 900mW | |
| Insulation Resistance | | 100MΩ at 500Vdc | |
| Withstand Voltage | Between Open Contact | 500Vac min. (for 1minute) | |
| | Between Contact and Coil | 500Vac min. (for 1minute) | |
| Shock Resistance | Misoperation | 98m/s ² | |
| | Destructive Failure | 980m/s ² | |
| Vibration Resistance | Misoperation | 10 to 300Hz, 43m/s ² | |
| | Destructive Failure | 10 to 500Hz 43m/s ² , 200hour | |
| Ambient Temperature | | -40 to +125 °C | |
| Coil Temperature Rise | | 70°C / W (without contact carrying current) | |
| Life Expectancy | Mechanical | 1 x 10 ⁶ operations | |
| | Electrical | P/W motor lock (14Vdc, 25A) | 100x10 ³ operations |
| | | P/W motor free (14Vdc, 25A/7A) | 100x10 ³ operations |
| Weight | | Approx. 6.4g | Approx. 3.5g |

COIL RATING

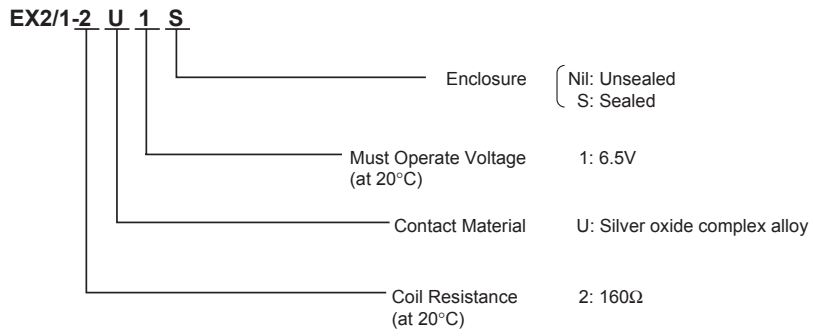
(at 20 °C)

| Part Numbers | Nominal Voltage (Vdc) | Coil Resistance (Ω)+/-10% | Must Operate Voltage (Vdc) | Must Release Voltage (Vdc) |
|---------------------------|-----------------------|---------------------------|----------------------------|----------------------------|
| EX2/1-2U1S (Sealed type) | 12 | 160 | 6.5 | 0.9 |
| EX2/1-2U1 (Unsealed type) | 12 | 160 | 6.5 | 0.9 |



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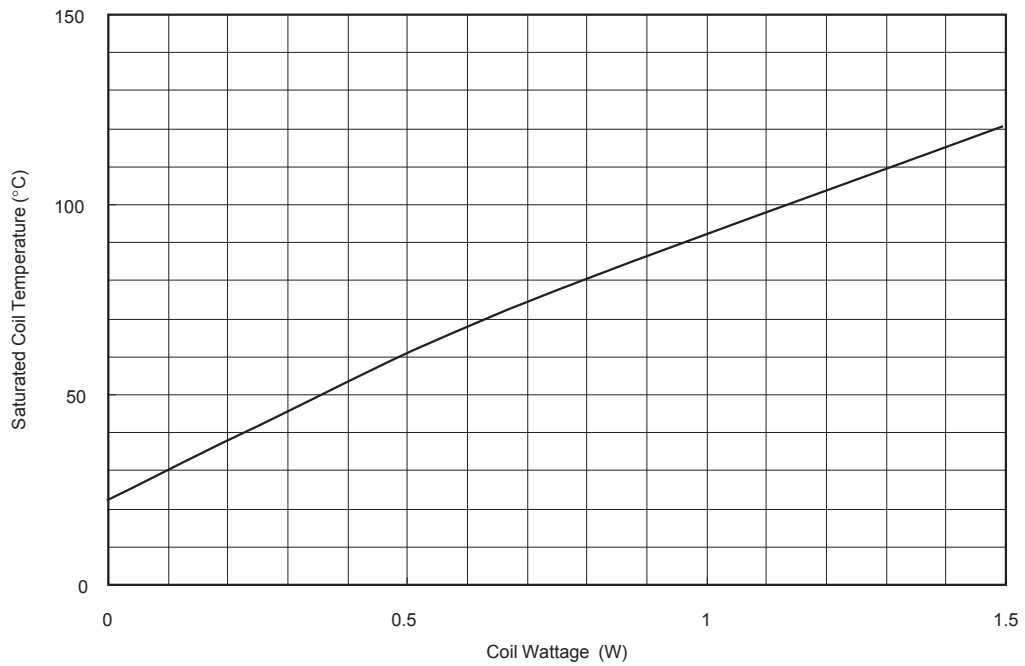
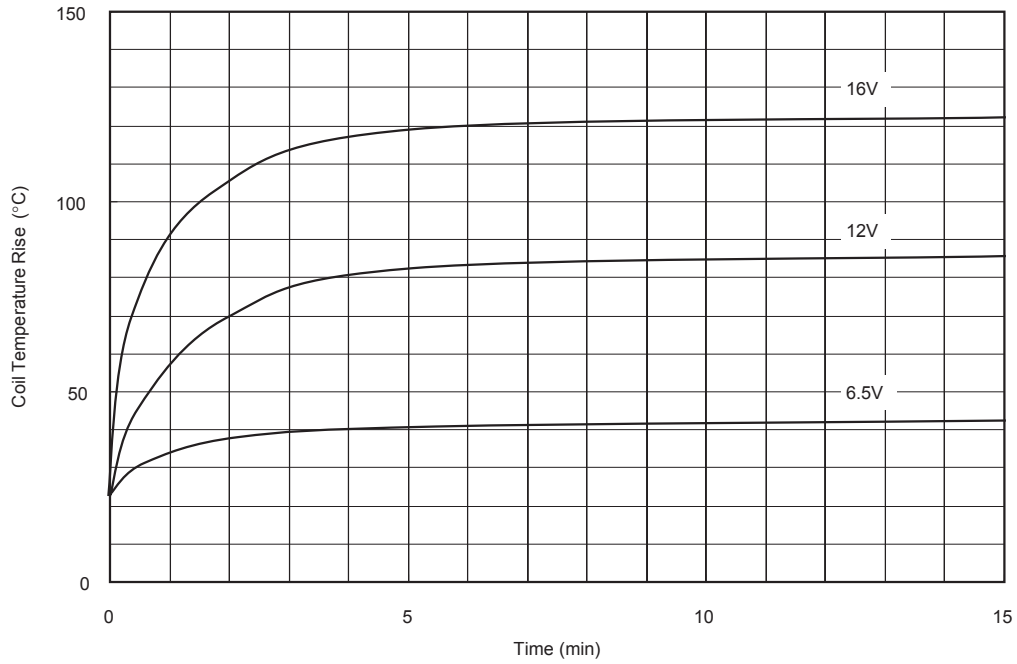
NUMBERING SYSTEM



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TECHNICAL DATA

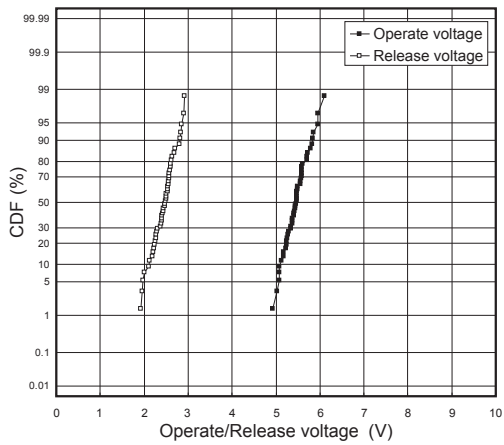
Coil Temperature Rise



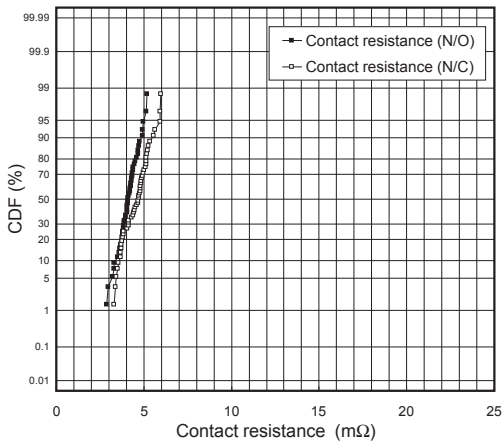
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RELAY CHARACTERISTICS DISTRIBUTION (INITIAL, n = 25 pcs., at 20°C)

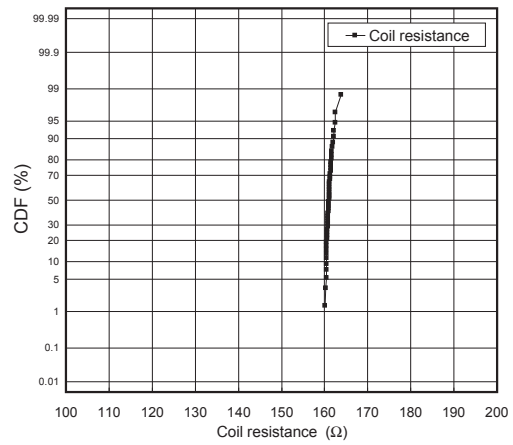
Operate/Release Voltage



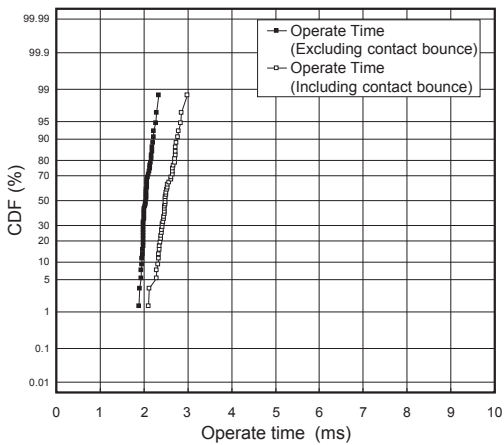
Contact Resistance



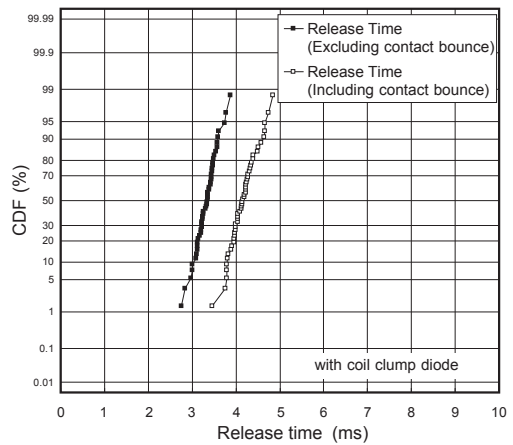
Coil Resistance



Operate Time



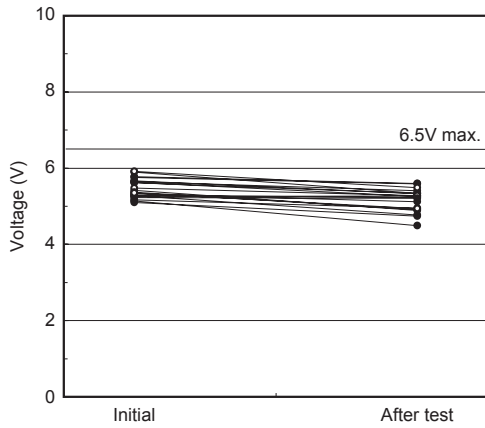
Release Time



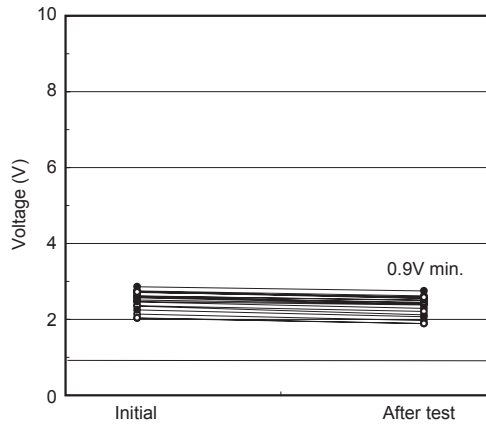
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ELECTRICAL LIFE TEST (14Vdc-25A, P/W motor, Lock)

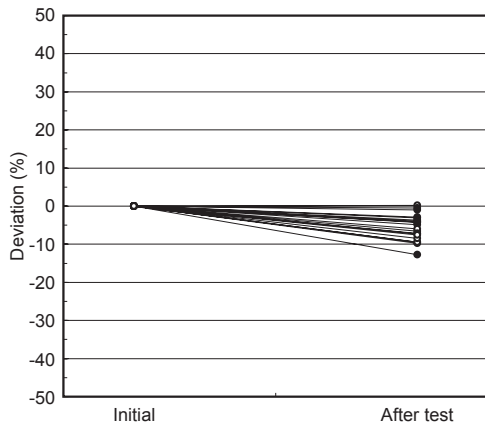
| Test items | Test conditions | Samples |
|--|---|--------------------|
| 1. Operate voltage 2. Release voltage 3. Contact resistance 4. Coil resistance 5. Operate time 6. Release time (with coil clump diode) | Temperature :20°C Frequency :0.2s ON, 9.8s OFF, 0.1Hz Contact load :14Vdc-25A, P/W motor, Lock Number of operations :100 x 10 ³ | EX2-2U1S 10 pcs |



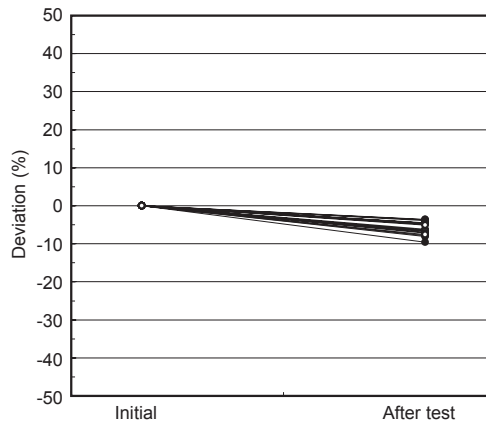
Operate voltage



Release voltage



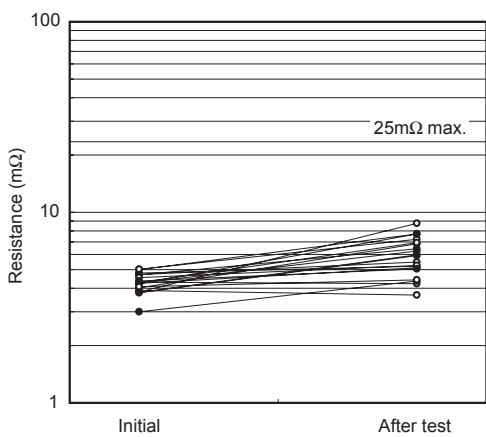
Operate voltage



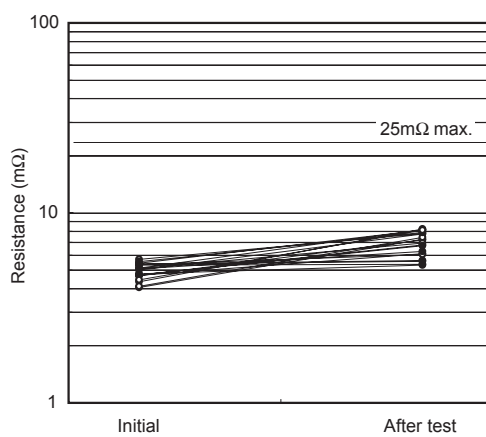
Release voltage



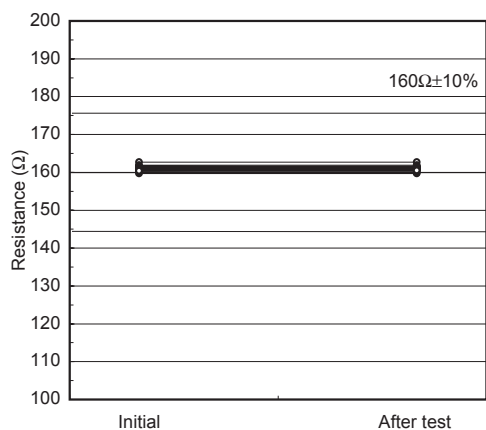
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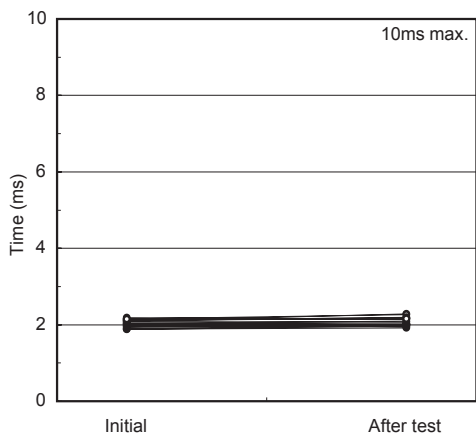
Contact resistance (N/O)



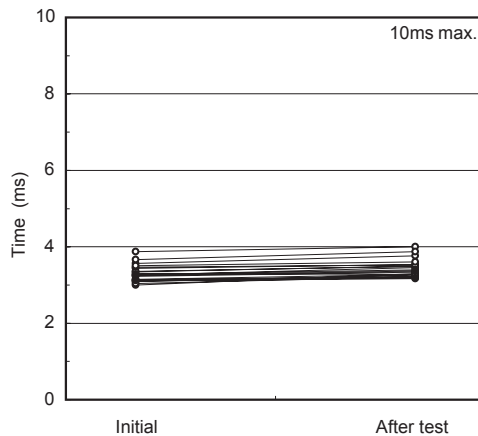
Contact resistance (N/C)



Coil resistance



Operate time



Release time



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