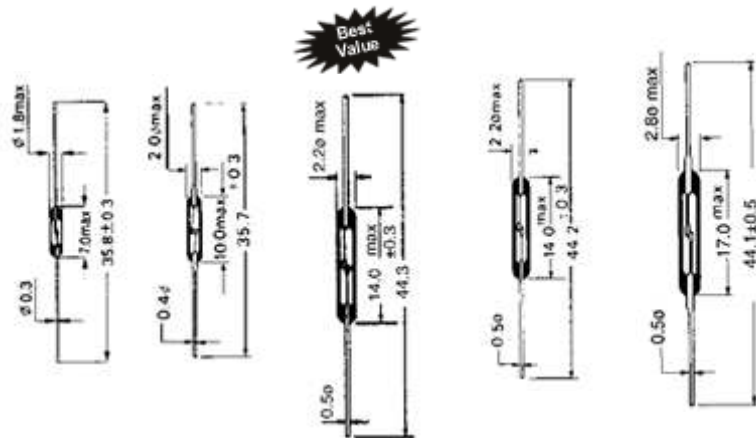


SPECIFICATIONS

UL File E70063

See following pages for technical quality control support (or reliability data).

Actual dimensions
All dimensions are in mm.



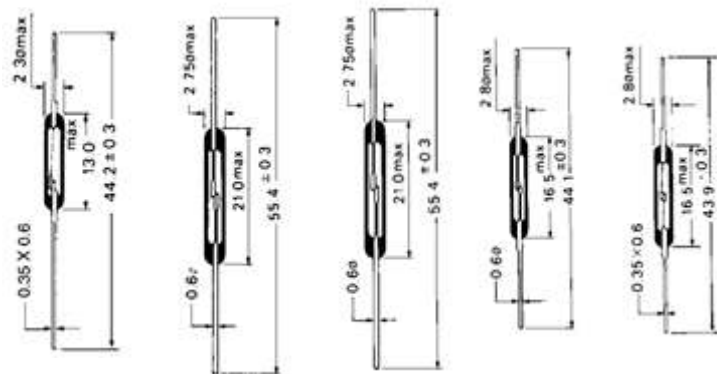
		ORD213	ORD211	ORD9216	ORD228	ORD9215
Electrical	Contact	1A	1A	1A	1A	1A
Characteristics	Pull-in Available in ± 5 AT ranges	10 ~ 40	10 ~ 40	10 ~ 50	10 ~ 50	10 ~ 50
	Drop-out [AT]	5 min.	5 min.	5 min.	5 min.	4 min.
	Contact resistance (Initial) [mOhms]	200 max.	100 max.	100 max.	100 max.	150 max.
	Breakdown voltage [DCV]	150 min.	150 min.	200 min.	200 min.	200 min.
	Insulation resistance [Ohms]	10^9 min.	10^9 min.	10^9 min.	10^9 min.	10^9 min.
	Electrostatic capacitance [pF]	0.4 max.	0.2 max.	0.3 max.	0.3 max.	0.3 max.
	Contact rating [VA, W]	1.0	1.0	10	10	10
	Maximum switching voltage [V]	AC24 / DC24	AC24 / DC24	AC 100 / DC 100	AC100 / DC100	AC100 / DC100
	Maximum switching current [A]	DC 0.1	DC 0.1	DC 0.5	DC 0.4	0.3
	Maximum carry current [A]	0.3	0.3	1.0	1.0	1.0
Operating	Operating time [ms]	0.3 max.	0.3 max.	0.3 max.	0.3 max.	0.4 max.
Characteristics	Bounce time [ms]	0.3 max.	0.3 max.	0.3 max.	0.3 max.	0.4 max.
	Release time [ms]	0.05 max.	0.05 max.	0.05 max.	0.05 max.	0.05 max.
	Resonant frequency [Hz]	1100 ± 500	7500 ± 500	5000 ± 400	5300 ± 300	3700 ± 300
	Maximum operating frequency [Hz]	500	500	500	500	500
Standard coil	Coil resistance [Ohms]	600	600	450	450	450
	No. of turns [T]	5000	5000	5000	5000	5000
	Dimensions [mm]	$3.3\phi \times 10$	$3.3\phi \times 10$	$3.7\phi \times 15$	$3.7\phi \times 15$	$3.7\phi \times 15$
	Type No.	8	8	6	6	6
Features (Contact material)		Ultra-miniature (Rh)	Ultra-miniature (Rh)	General purpose miniature (Rh)	General purpose miniature (Rh)	General purpose miniature (Rh)

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Actual dimensions
All dimensions are in mm.



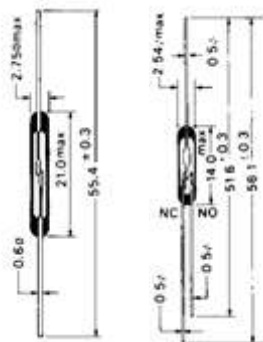
		ORD221	ORD229	ORD2210	ORD2211	ORD2212
Electrical	Contact	1A (offset)	1A	1A	1A	1A
Characteristics	Pull-in Available in ± 5 AT ranges	1 ~ 40	15 ~ 60	15 ~ 60	15 ~ 60	15 ~ 45
	Drop-out [AT]	5 min.	6 min.	7 min.	8 min.	RLS/OP>0.8
	Contact resistance (Initial) [mOhms]	100 max.	100 max.	100 max.	100 max.	100 max.
	Breakdown voltage [DCV]	200 min.	600 min.	250 min.	200 min.	150 min.
	Insulation resistance [Ohms]	10^9 min.	10^{10} min.	10^{10} min.	10^9 min.	10^9 min.
	Electrostatic capacitance [pF]	0.3 max.	0.5 max.	0.5 max.	0.3 max.	0.5 max.
	Contact rating [VA, W]	10	50	AC70(VA) / DC50(W)	50	10
	Maximum switching voltage [V]	AC100 / DC100	AC300 / DC350	AC150 / DC200	AC100 / DC100	AC100 / DC100
	Maximum switching current [A]	DC 0.3	DC 0.5	AC0.7 / DC1.0	0.5 In rush 3A	DC 0.2
	Maximum carry current [A]	1.0	2.5	2.5	2.5	0.5
Operating	Operating time [ms]	0.3 max.	0.6 max.	0.5 max.	0.6 max.	0.4 max.
Characteristics	Bounce time [ms]	0.5 max.	0.5 max.	0.5 max.	0.4 max.	1.0 max.
	Release time [ms]	0.5 max.	0.05 max.	0.05 max.	0.05 max.	0.05 max.
	Resonant frequency [Hz]	2750 ± 250	2500 ± 250	2500 ± 250	4600 ± 500	4200 ± 300
	Maximum operating frequency [Hz]	500	500	500	500	500
Standard coil	Coil resistance [Ohms]	450	500	500	450	450
	No. of turns [T]	5000	5000	5000	5000	5000
	Dimensions [mm]	$3.7\phi \times 15$	$4.6\phi \times 21$	$4.6\phi \times 21$	$3.7\phi \times 15$	$3.7\phi \times 15$
	Type No.	6	3	3	6	6
Features (Contact material)		Miniature offset (Rh)	High breakdown voltage (Rh)	High power (Rh)	Lamp load (Rh) 3.4W Low sound (Rh)	Closed differential type

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Actual dimensions
All dimensions are in mm.



		ORD2210V	ORT551
Electrical	Contact	1A	1C
Characteristics	Pull-in Available in ± 5 AT ranges	20 ~ 60	10 ~ 30
	Drop-out [AT]	7 min.	5 min.
	Contact resistance (Initial) [mOhms]	100 max.	100 max.
	Breakdown voltage [DCV]	1000 min.*	200 min.
	Insulation resistance [Ohms]	10^{10} min.	10^9 min.
	Electrostatic capacitance [pF]	0.5 max.	1.5 max.
	Contact rating [VA, W]	100	3
	Maximum switching voltage [V]	AC300 / DC350	AC30 / DC30
	Maximum switching current [A]	DC 1.0 max	DC 0.2
	Maximum carry current [A]	2.5 max	0.5
Operating	Operating time [ms]	0.5 max.	1.0 max.
Characteristics	Bounce time [ms]	0.5 max.	(NC) 1.5 max. / (NO) 1.0 max.
	Release time [ms]	0.05 max.	0.5 max.
	Resonant frequency [Hz]	2500 ± 250	6000 ± 4000
	Maximum operating frequency [Hz]	500	200
Standard coil	Coil resistance [Ohms]	450	550
	No. of turns [T]	5000	5000
	Dimensions [mm]	$3.7\phi \times 15$	$4.6\phi \times 10$
	Type No.	6	10
Features (Contact material)		Vacuum	Ultra-miniature transfer (Rh)
* Magnets also available		Available Cut and Bent as Well as on Reed.	

Notes:

- Pull-in & drop-out were measured by using OKI standard coil. * This value of drop-out is prescribed when pull-in is over 20AT. When pull-in is less than 20AT, drop-out are 5 MIN & RLS/OP > 0.7. Tolerance at measurement is ± 2 AT. (Fig.1)
- Measurements are made by the four-terminal voltage reduction method where the 100AT excitation is given to the switch using the OKI standard coil to close the contacts, and 10 mA current is applied.
- This value varies depending on the pull-in value (contact gap). In this measurement, the pull-in value is about 20AT. (MIL-STD-202D METHOD 301)
- Measurement is made by using a DC 100 V super megger. (MIL-STD-202D METHOD 302)
- The values show those at MHz.
- The value is obtained from the dry test under continuous current flow.
- The value shows the time required for the contacts to cause the first contact bounce after applying the voltage to the OKI standard test coil. The time is shown at Top in Fig. 2
- Bouncing is caused when the contact close. Bounce time means the time when opening and closing of the contacts are being repeated before the contacts are completely closed. Shown by Tbounce.
- Release time means the time from the moment the voltage applied to the test coil as removed to the moment the contacts open. Shown by Tris.
- Resonant frequency is a vibrating frequency inherent to the reed switch. Avoid application of vibration at this frequency to the switch, otherwise it will cause misoperation.
- The reed switch can be operated with a frequency higher than the maximum operating frequency. However, operation with such a frequency will often cause an endless chattering at the time of ON operation. It is recommended for the designer to take the maximum operating frequency into consideration when designing systems and circuits.
- Dimensions of standard coil.
A: Inner diameter of standard coil.
B: Length of standard coil.
- If a shock of more than 30G is applied to a reed switch, the pull-in value of the switch will be often caused to change from the standard specification. Therefore, it is recommended not to use the reed switch which has been given such a shock.
- If a vibration of more than 1 kHz is applied to a reed switch, even a very small acceleration to it will easily cause the switch to misoperate to close due to its resonant frequency.
- In practice the reed switch can operate beyond the specified range. In case of magnet driving, however, some magnets show decrease of magnetic flux even at the lowest temperature of the range depending on their temperature characteristics. Therefore, it is recommended to consider the range as a general guide line.
- The actual tensile strength is more than 5 kg (breakdown). However, considering the lead not to get out of position, the value for the static load is shown here.

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Test Procedure (1)
for pull-in, drop-out and contact resistance

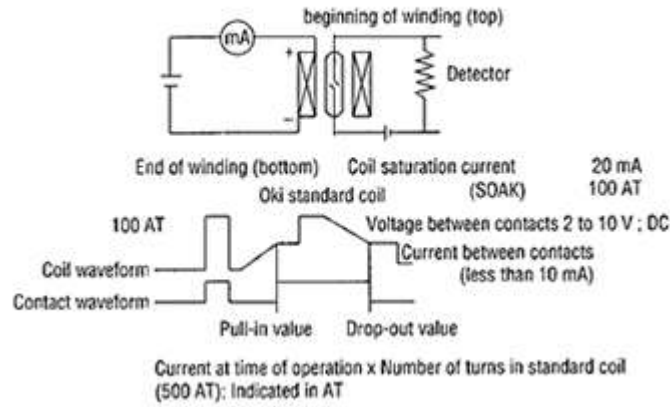
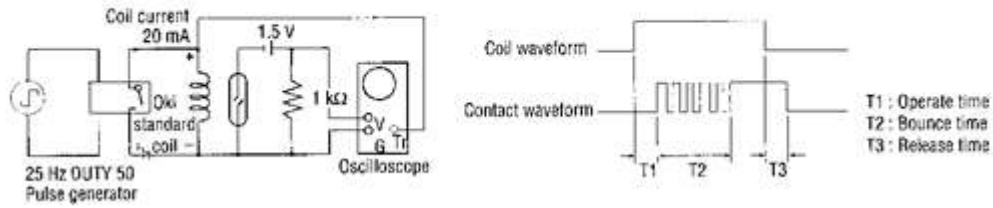


Fig. 2

Test Procedure (2)
for operate, release and bounce time



Environmental Characteristics Table 2

	Characteristics (Common to All Types)	Test Conditions	Notes
Shock	Shall not misoperate with shock of 30G (11 msec) applied	MIL-STD-202E METHOD 213B	13
Vibration	Shall not misoperate with max. 20G (10-55Hz)	MIL-STD-202E METHOD 210A	14
Temperature range	Shall be operational in the range of -40 to 125°C	MIL-STD-202E METHOD 107D	15
Lead tensile strength	Shall withstand against 2 kg static load	MIL-STD-202E METHOD 211A	16

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