NOTICE

1. The specifications described in this catalogue were established in line with standard operating and measurement conditions for product. Therefore, when actually using product, perform circuit/mounting design taking into account mechanical characteristics and environmental characteristics.
2. When implementing design, please use product within guaranteed range for electrical characteristics, environmental characteristics, operating characteristics and service life characteristics, etc. Please be aware that Oki Sensor Device Corporation (hereinafter, OSDC) bears no responsibility for results attributable to use outside of the guaranteed range, or other mistaken or improper use of product.
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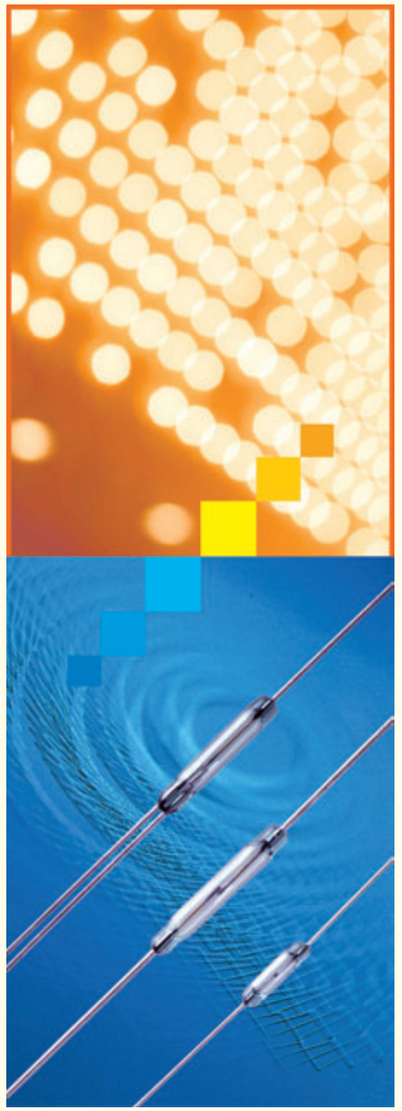
REED SWITCHES

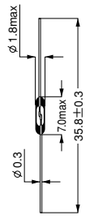


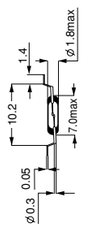
Oki Sensor Device Corporation

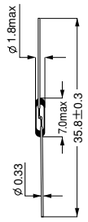
Reed Switches

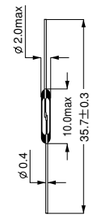
Specifications

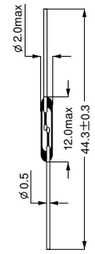
Actual dimensions
All dimensions in mm.

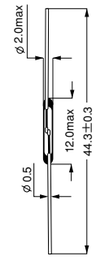


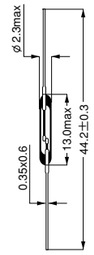


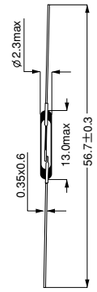












		ORD213	ORD213S-1	ORD311	ORD211	ORD219	ORD312	ORD221	ORD2221	Notes
Electrical Characteristics	Contact	1A	1A	1A	1A	1A	1 A	1A (OFF SET)	1A (OFF SET)	
	Pull-in [AT]	10～40	10～40*	10～40	10～40	10～40	10～40	10～30	10～30	1
	Drop-out [AT]	5min	5min*	5min	5min	5min	5min	5min	5min	
	Contact resistance (Initial) [mΩ]	200max	200max*	200max	100max	100max	100max	100max	100max	2
	Breakdown voltage [DCV]	150min	150min	250min	150min	200min (PI≧20)	250min	200min (PI≧20)	200min (PI≧20)	3
	Insulation resistance [Ω]	10^9min	10^9min	10^9min	10^9min	10^9min	10^9min	10^9min	10^9min	4
	Electrostatic capacitance [pF]	0.4max	0.4max	0.4max	0.2max	0.3max	0.3max	0.3max	0.3max	5
	Contact rating [VA,W]	1.0	1.0	10	1.0	10	30	10	10	
	Maximum carry current [A]	0.3	0.3	1.0	0.3	1.0	1.0	1.0	1.0	6
	Maximum switching voltage [V]	DC24/AC24	DC24/AC24	DC100/AC100	DC24/AC24	DC100/AC100	DC200/AC100	DC100/AC100	DC100/AC100	
	Maximum switching current [A]	DC0.1	DC0.1	DC0.5	DC0.1	DC0.5	DC0.5	DC0.3	DC0.3	
Operating Characteristics	Operate time [ms]	0.3max	0.3max	0.3max	0.3max	0.4max	0.4max	0.4max	1.0max	7
	Bounce time [ms]	0.3max	0.3max	0.3max	0.3max	0.3max	0.3max	0.5max	1.0max	8
	Release time [ms]	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	9
	Resonant frequency [Hz]	11000±2000	11000±2000	13000±2000	7500±500	5900±400	5900±400	2750±250	2750±250	10
	Maximum operating frequency[Hz]	500	500	500	500	500	500	500	500	
Standard Coil	Type No.	8	8	8	8	6	6	6	6	
Contact Material	Rh: Rhodium Ir: Iridium	Rh	Rh	Ir	Rh	Rh	Ir	Rh	Rh	
Features		Super ultra-miniature	Super ultra-miniature SMD	Super ultra-miniature long-life	Ultra-miniature	Miniature high-performance	High-power long-life	Miniature offset-type	Miniature offset-type long lead	

* Pre-forming

Table 1

★ Please request a copy of our "Reed Switch Databook" to obtain more detailed information on reed switch characteristics, applications and so forth.

★ Please contact us if you wish to inquire about topics beyond pull-in values noted above.

Environmental Characteristics

Table 2

	Characteristics (common to all types)	Test Conditions	Remarks
Shock	Will operate normally with shock of up to 30G (11 msec)	MIL-STD-202G METHOD 213B-J	(a)
Vibration	Will operate normally with vibration of up to 20G (10-2000Hz)	MIL-STD-202G METHOD 204D-D	(b)
Temperature range	Will operate normally between temperatures of -40℃ ~ +125℃		(c)
Lead tensile strength	Will withstand 2kg static load (*ORD213 and ORD213S-1=1.5kg)	MIL-STD-202G METHOD 211A	

(a) If shock in excess of 30G is applied to a reed switch the pull-in value is subject to change from standard specifications.

(b) Due to resonant frequency a reed switch may not operate properly if vibration is applied in excess of 2KHz (even minute acceleration).

(c) Although a reed switch can operate beyond its specified range, mounting conditions need to be verified. Demagnetization may also occur due to temperature characteristics of permanent magnets (even at lower temperature ranges).

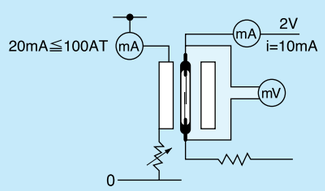
UL Recognition E70063

Notes

1 Values measured using OSDC standard coils. Pull-in value is measured with tolerance of ±2AT. (Fig. 1)
2 Measurements are made adopting a four-terminal voltage reduction method applying 10mA current wit100AT excitation using standard coils to close contacts. (Fig. 1)
3 Values vary depending on pull-in value (contact gap). (MIL-STD-202G METHOD 301)
4 Values measured using DC 100V insulation resistance meter. (MIL-STD-202G MET-HOD 302)
5 Values shown in 1MHz.
6 Values obtained from dry test under continuous current flow.
7 Operate time refers to the time taken until the first bounce after applying voltage to a standard coil. (shown as T-op in Fig. 2)
8 An effect resulting from contact closure, bounce time refers to the period contacts continue to open and close before completely closing. (shown as T-bounce in Fig. 2)
9 Release time refers to the time taken for the contacts to open after voltage applied to the test coil is removed. (shown as T-ris in Fig. 2)
10 Resonant frequency is a vibrating frequency inherent to a reed switch. Avoid applications verging on noted resonant frequency range as misoperation may occur.

Fig.1

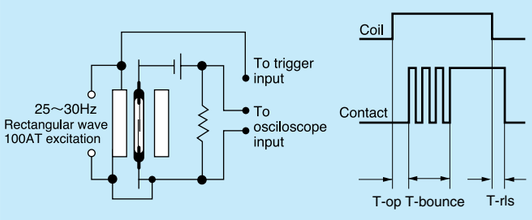
pull-in, drop-out, contact resistance and measurement circuit



Note 1: In order to minimize the effects of terrestrial magnetism,measurements are taken so that reed switch contacts are aligned to the center of the test coil.

Note 2: The soak current (100AT) is first applied, then it reverts to 0AT and a measurement is taken with the current flowing in the same direction as the soak current. The polarity of the electric current applied to the coil must be situated in such a way that the orientation of the field of excitation coincides with that of the terrestrial magnetism (the leader line at the upper section of the coil should be positive).

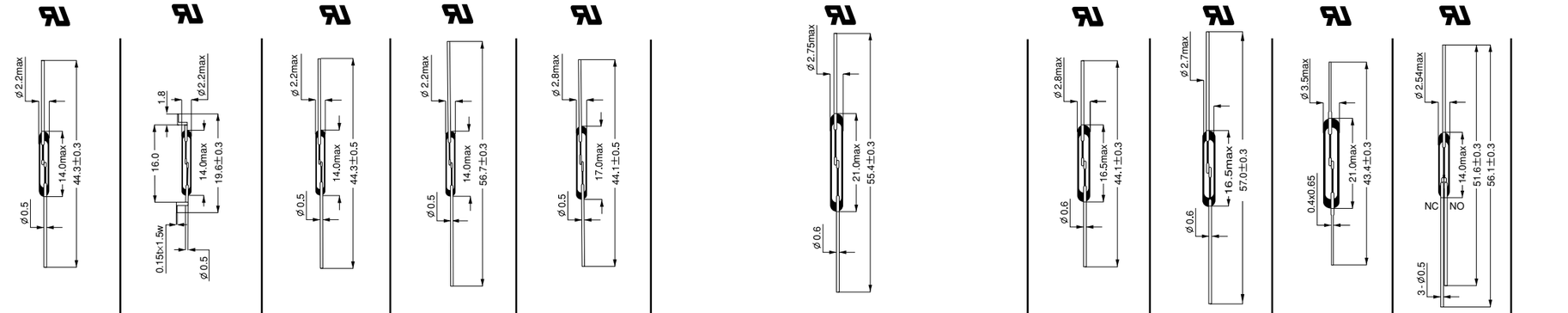
Fig.2



Reed Switches

Specifications

Actual dimensions
All dimensions in mm.



		ORD228VL	ORD228S-1	ORD324	ORD324H	ORD325	ORD229	ORD2210	ORD2210V	ORD2211	ORD2211H	ORD234	ORT551	Notes
Electrical Characteristics	Contact	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A	1C	
	Pull-in [AT]	10～40	10～40*	10～40	10～40	10～40	20～60	15～60	20～60	20～40	20～40	15～50	10～30	1
	Drop-out [AT]	5min	5min*	4min	3min	4min	6min	7min	7min	8min	8min	6min	4min	
	Contact resistance (Initial) [mΩ]	100max	100max*	100max	100max	100max	100max	100max	100max	100max	100max	100max	100max	2
	Breakdown voltage [DCV]	200min (PI≧20)	200min (PI≧20)	250min	250min	250min	600min (PI≧35)	250min (PI≧20)	1000min	200min (PI≧20)	200min (PI≧20)	250min (PI>20)	200min (PI>20)	3
	Insulation resistance [Ω]	10^9min	10^9min	10^{10}min	10^{10}min	10^{10}min	10^{10}min	10^{10}min	10^{10}min	10^9min	10^9min	10^9min	10^9min	4
	Electrostatic capacitance [pF]	0.3max	0.3max	0.3max	0.3max	0.3max	0.5max	0.5max	0.5max	0.3max	0.3max	0.5max	1.5max	5
	Contact rating [VA,W]	10	10	10	10	10	DC50(W)/AC70(VA)	DC50(W)/AC70(VA)	100	50(12V-3.4WLamp)	50(12V-3.4WLamp)	10	3	
	Maximum carry current [A]	1.0	1.0	1.0	1.0	1.0	2.5	2.5	2.5	2.5	2.5	2.0	0.5	6
	Maximum switching voltage [V]	DC100/AC100	DC100/AC100	DC200/AC150	DC200/AC150	DC200/AC150	DC350/AC300	DC200/AC150	DC350/AC300	DC100/AC100	DC100/AC100	DC200/AC100	DC30/AC30	
	Maximum switching current [A]	DC0.5	DC0.5	DC0.5	DC0.5	DC0.5	DC0.7/AC0.5	DC1.0/AC0.7	DC1.0	0.5 Inrush 3A	0.5 Inrush 3A	DC0.5	DC0.2	
Operating Characteristics	Operate time [ms]	0.4max	0.4max	0.4max	0.4max	0.4max	0.6max	0.6max	0.6max	0.6max	0.6max	0.5max	1.0max	7
	Bounce time [ms]	0.3max	0.3max	0.3max	0.3max	0.4max	0.5max	0.5max	0.5max	0.4max	0.4max	0.5max	NO1.0, NC1.5max	8
	Release time [ms]	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.05max	0.5max	9
	Resonant frequency [Hz]	5000±400	5000±400	5000±400	5000±400	3700±300	2500±250	2500±250	2500±250	4600±400	4600±400	2200±300	6000±4000	10
	Maximum operating frequency [Hz]	500	500	500	500	500	500	500	500	500	500	500	200	
Standard Coil	Type No.	6	6	6	6	6	3	3	3	6	6	3	10	
Contact Material	Rh: Rhodium Ir: Iridium	Rh	Rh	Ir	Ir	Ir	Rh	Rh	Rh	Rh	Rh	Rh	Rh	
Features		Miniature high-performance	Super ultra-miniature SMD	General purpose miniature-type	General purpose miniature-type, long lead	General purpose miniature-type	High breakdown Voltage	High power	Vacuum High power	Lamp load	Lamp load long lead	Long life	Ultra-miniature transfer	

* Pre-forming **Table 1**

★ Please request a copy of our "Reed Switch Databook" to obtain more detailed information on reed switch characteristics, applications and so forth.

★ Please contact us if you wish to inquire about topics beyond pull-in values noted above.

Cutting or Bending of Leads

Since the leads of a reed switch are part of the magnetic circuit itself, cutting them will cause the AT values (pull-in and drop-out) to increase (Fig. 3). Additionally, when adopting a permanent magnet to drive a reed switch, the extent of value change will differ depending on the shape of a magnet and its magnetic direction. As such, it is imperative to investigate and confirm the magnet to be used and the method for driving. In general, a small magnet will typically produce slighter change. As shown in Fig. 4, ensure that the portion nearest the glass tube is tightly gripped by a jig when attempting to bend the leads.

Fig.3

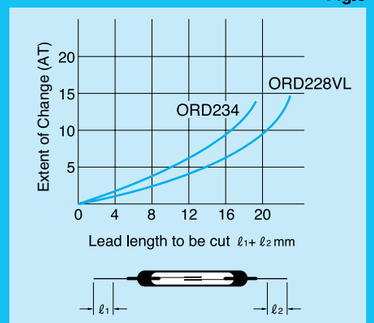
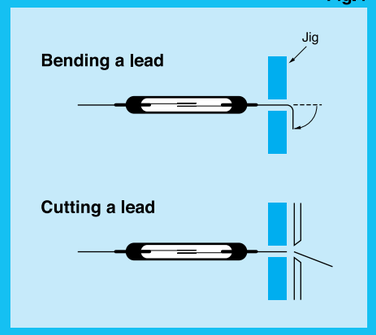


Fig.4



Correlation of Product Attributes with the Characteristic Values Provided by Other Manufacturers for their Products

As measurement conditions, including standard coils and lengths of reed switches as well as methods used to measure characteristic values differ from one manufacturer to the next, pull-in values will also differ. As such, it is also necessary to correlate values if you need to compare the characteristic values of OKI reed switches with those of other manufactures.

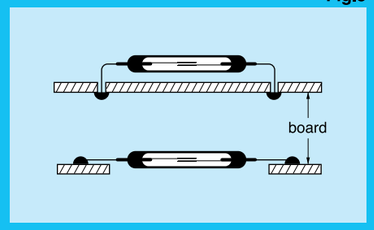
Guaranteed Characteristics Values of Reed Switches

The pull-in values (four digit numbers) indicated on the individual packaging of reed switches refers to the range values determined at the time of product sorting. The guaranteed pull-in values have a tolerance of ±2AT on these range values. For example, the guaranteed pull-in value for ORD211 (2025) is 18 to 27AT.

Installation of Reed Switches

A general purpose soldering iron can be used between 250 and 300 ℃ on lead terminals as they are processed with tin plating. Please make sure that soldering is performed at least 1mm away from the edge of the glass. Please try to minimize the amount of processing as prolonged application with a soldering iron may damage the lead seals. When installing on a printed circuit board, either elevate the reed switch above the board surface or drill holes in the board to ensure that the glass does not come into contact with the board (Fig. 5).

Fig.5



Dropping Reed Switches

It is absolutely imperative that reed switches are not dropped. Dropping a reed switch onto a hard surface from a height exceeding 30cm can result in the costly alteration of its characteristics. Please take care when handling reed switches. Further care should be taken when machine processing reed switches as shock generated from such tasks can also cause damage.