

DRY REED SWITCH

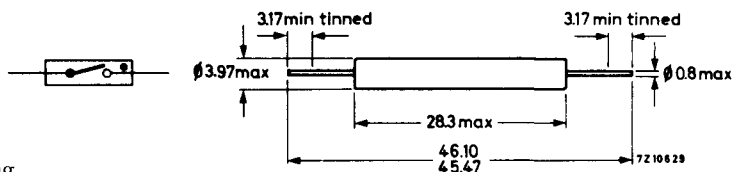
Miniature dry reed switch hermetically sealed in a gas-filled glass capsule. Single-pole, single-throw type, having normally open contacts, and containing two magnetically actuated reeds. The switch is of the double-ended type and may be actuated by means of either an electromagnet or a permanent magnet or combinations of both. The switch is intended for use in telephone equipment and other applications where exceptional reliability is required.

QUICK REFERENCE DATA

Contact	S.P.S.T. normally open
Switched power	5 W
Switched voltage	50 V
Switched current	100 mA
Failure rate	$< 5 \times 10^{-8}$

MECHANICAL DATA

Contact material	gold
Contact arrangement	normally open
Terminal finish	tinned
Resonant frequency of single reed	approx. 1650 Hz
Net weight	approx. 0.6 g
Mounting position	any



Mounting

The leads should not be bent nearer than 2 mm to the glass-to-metal seals. Stress on the glass-to-metal seals should be avoided.

The robustness of terminations is tested according to IEC Publication 68-2-1. test Ua (load 3 kg), Ub (load 1 kg, 4 bends) and Uc.

Care must be taken to prevent stray magnetic fields from influencing the operating and measuring conditions.

Data based on pre-production devices.

Soldering

The switch may be soldered direct into the circuit but heat conducted to the glass-to-metal seals should be kept to a minimum by the use of a thermal shunt.

Dip-soldering is permitted to a minimum of 4 mm from the seals at a solder temperature of 240 °C during maximum 10 s.

Solderability

Solderability is tested according to IEC Publication 68-2-20, test T, solder globule method.

CHARACTERISTICS

Non-operative

Breakdown voltage	min.	1000	V
Insulation resistance, initial (V = 100 V)	min.	10 ⁵	MΩ
Capacitance without test coil		0.70	pF
with earthed test coil		0.35	pF
Non-operative ampere turns	max.	30	A. T. ¹⁾

Operative

Operating ampere turns	max.	58	A. T. ¹⁾
Operating time, including bounce	av.	0.6	ms ¹⁾²⁾
	max.	1.0	ms ¹⁾²⁾
Switched current	max.	100	mA

Hold

Hold ampere turns	min.	27	A. T. ¹⁾
Current through closed contacts	max.	1	A
Contact resistance, initial	min.	60	mΩ ¹⁾³⁾
	max.	150	mΩ ¹⁾³⁾

Release

Release ampere turns	max.	15	A. T. ¹⁾
Release time	max.	50	μs ¹⁾²⁾
Switched current	max.	100	mA
Switched power	max.	5	W

¹⁾ Measured in a standard coil of 5000 turns of 42 SWG single enamelled copper wire on a coil former of 25.4 mm winding length and a core diameter of 8.75 mm.

²⁾ Measured with 80 A. T.

³⁾ Measured with 40 A. T.

LIMITING VALUES (Absolute max. rating system)

See also "Life expectancy and reliability"

Switched power	max.	5	W
Switched voltage	max.	65	V
Switched current	max.	100	mA
surge (T = max. 100 ns)	max.	1.5	A
Temperature, operating	min.	-55	°C
	max.	+80	°C

LIFE EXPECTANCY AND RELIABILITY

End of life is assumed to be reached when:

- the contact resistance exceeds $1\ \Omega$ for no load conditions or $2.5\ \Omega$ for loaded conditions
- the release time exceeds 1.5 ms (latching or contact sticking)

No load conditions

Life expectancy min. 10^7 operations with a failure rate of less than 5.5×10^{-9} with 90% confidence level.

Loaded conditions

Life expectancy min. 5×10^6 operations with a failure rate of less than 10^{-8} with 90% confidence level.

If inductive loads are to be interrupted, contact protection is recommended (diode or RC network).

Reliability - testing conditions

Capacitive loading resulting in a peak current of 1.4 A. $i_1/i_2 = 1.4$. $T = 80$ ns to 100 ns, see Fig. 1. Nominal switched voltage 50 V, nominal switched current 100 mA.

Under these conditions a life of more than 5×10^6 operations can be reached with a failure rate of less than 8.5×10^{-9} .

Remark

Higher loads may be switched if a reduced life expectancy and reliability are acceptable. The manufacturer should be consulted before doing so.

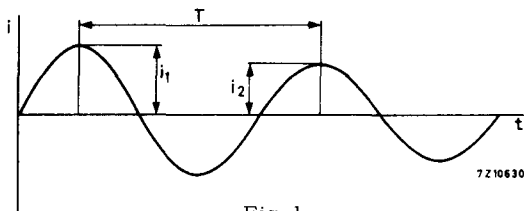


Fig. 1

SHOCK AND VIBRATION

Impact : Acceleration 50 g during 11 ms, due to a force perpendicular to the flat sides of the reeds.

Such an impact will not cause an open contact (no magnetic field present) to close, nor a contact kept closed by an 80 A.T. coil to open.

Vibration: Frequency range 50 Hz to 1500 Hz, acceleration 20 g due to a force perpendicular to the flat side of the reed.

Such a vibration will not cause an open contact (no magnetic field present) to close, nor a contact kept closed by an 80 A.T. coil to open.

PHILIPS

Data handbook



**Electronic
components
and materials**

RI12

page	sheet	date
1	1	1969.07
2	2	1969.07
3	3	1969.07
4	4	1969.07
5	FP	2001.05.18