

SIP SERIES REED RELAYS

MVS4 ■ MSS4



DESCRIPTION

ClareREMtech offers a large selection of molded SIP relays to meet customer applications. The high performance MVS4 and MSS4 models provide bounce free operation and offer a more durable contact when switching capacitive or inductive loads. Both are capable of switching loads up to 50 watts.

FEATURES

- High reliability switching
- Long operating life at low levels (>1 billion operations)
- Capable of switching up to 1000V
- High isolation between input and output (2500V)
- Optional internal diode & N.C. option
- High density board mounting
- Automatic insertion design
- State-of-the-art capsule designs
- Epoxy molded single-in-line package
- FCC68 compatible on MSS4 model

APPLICATIONS

- ATE
 - Functional board testers
 - Integrated circuit testers
 - Bare board testers
- Telecom
- Matrix requirements
- Instrumentation
- Data acquisition

RATINGS (@ 25° C)

Parameter	Min	Typ	Max	Unit
Switching voltage				
MSS4			500	Volts
MVS4			1000	Volts
Switching current				
MVS4/MSS4			2	Amps
Carry current				
MSS4/ MVS4			3	Amps
Switching frequency				
MVS4/MSS4			200	Hz
Contact resistance				
MVS4/MSS4			100	mΩ

(See detailed specifications for more information.)

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SPECIFICATIONS

Mercury-Wetted Reed Relays

All parameters at 25°C unless otherwise stated.

MVS4
High Power/Reliability
Position-Sensitive⁽³⁾
Hg-Wetted

MSS4
Non-Position-Sensitive
Hg-Wetted

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	MIN	TYP	MAX	UNITS
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	VL	-	-	1000 ⁽¹⁾	-	-	500	Volts
Switching Current	Max DC/PeakAC Resistive	IL	-	-	2	-	-	2	Amps
Carry Current	Max DC/PeakAC Resistive	Ic	-	-	3	-	-	3	Amps
Contact Rating	Max DC/PeakAC Resistive	-	-	-	50 ⁽⁴⁾	-	-	50	Watts
Life Expectancy	Signal Level 1.0V 10mA	-	-	1000	-	-	200	-	x10 ⁶ Ops
	50V, 1A	-	-	2	-	-	-	-	x10 ⁶ Ops
	500V, 100mA	-	-	50	-	-	-	-	x10 ⁶ Ops
	Rated Loads	-	-	7 ⁽²⁾	-	-	7	-	x10 ⁶ Ops
Static Contact Resistance	50mV, 10mA	CR	-	-	100	-	-	100	mΩ
Contact Material	-	-	-	Hg	-	-	Hg	-	-
Hg Content	-	-	-	40	-	-	16	-	mggram
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10 ¹⁰	10 ¹²	-	10 ⁸	10 ¹⁰	-	Ω
Capacitance	Across Open Contacts	-	-	0.8	-	-	-	2	pF
	Upper Contact to Coil	-	-	2.2	-	-	-	4	pF
	Closed Contact to Coil	-	-	3.3	-	-	-	-	pF
Dielectric Strength	Between Contacts	I/O	2000	-	-	2000	-	-	VDC/Peak AC
	Contacts to Coil	I/O	2500	-	-	1400	-	-	VDC/Peak AC
Operate Time, no bounce	At Nominal Coil Voltage 10Hz Square Wave	TOP	-	-	2.5	-	-	1.75	ms
Release Time	Zener-Diode Suppression	TREL	-	-	2.5	-	-	1.5	ms
Environmental Ratings									
Storage Temperature		TA	-40	-	+105	-40	-	+105	°C
Operating Temperature		TO	-38	-	+85	-38	-	+75	°C
Soldering Temperature	Applied to pins, 10 sec. max.	-	-	-	+260	-	-	+260	°C
Vibration Resistance (Survival)	10Hz - 500Hz	G	-	-	10	-	-	10	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	30	-	-	30	Gs
Weight		-	-	2.2	-	-	2.4	-	grams

⁽¹⁾ Current limited up to 5mA, typical 20 million operations; for further life information, consult factory.

⁽²⁾ Refer to MVS4 life graph.

⁽³⁾ Vertical mounting required. Pin #1 is up.

⁽⁴⁾ Derate to 5 watts when switching voltages >500V.

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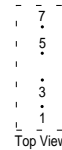
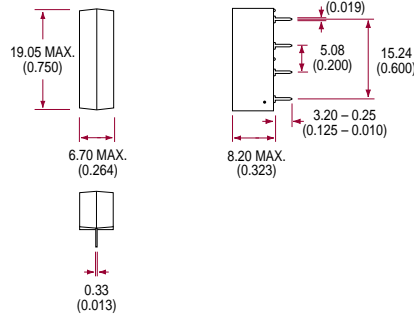
COIL SPECIFICATIONS

	Contact Form	Coil Voltage			Coil Resistance			Operate Voltage			Release Voltage			Nominal Input Power		
Units		Volts			Ω			Volts			Volts			mW		
Conditions					+/- 10% (25°C)			Must operate by (25°C)			Must release by (25°C)					
Part #		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
MVS41A05(B)	1-Form-A		5	7	94.5	105	116			3.75	0.5					238
MVS41A12(B)	1-Form-A		12	15	450	500	550			9	1					288
MVS41A24(B)	1-Form-A		24	30	1935	2150	2365			18	2.0					268
MSS41A05	1-Form-A		5	10	126	140	154			3.75	0.5					179
MSS41A12	1-Form-A		12	16	450	500	550			9	1					288
MSS41A24	1-Form-A		24	30	1935	2150	2365			18	2					268

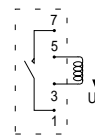
MECHANICAL DIMENSIONS

DIMENSIONS
mm
(inches)

VS4/MSS4



VS4/MSS4 Pinout



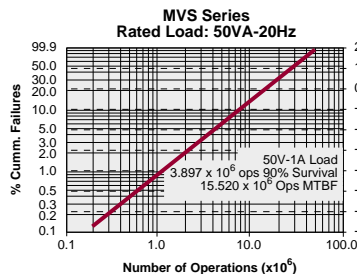
Top View

* MVS4 only must be mounted vertically with pin #1 up.

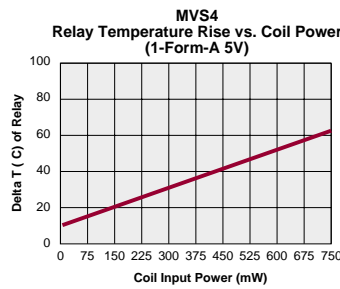
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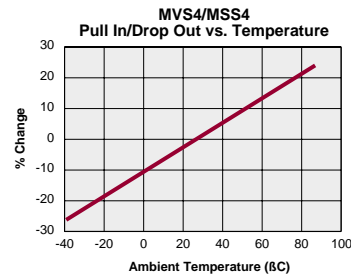
PERFORMANCE GRAPHS



Relay Internal Temperature Rise vs. Power



Pull In/Drop Out vs. Temperature



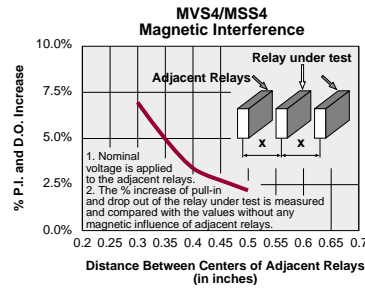
MAGNETIC INTERFERENCE

If relays are inserted in close proximity, the pickup and dropout voltages will be affected by the magnetic flux produced when the coils are energized.

In general, worst-case magnetic interaction conditions for pull-in voltage in a matrix exist when all relay fields have the same polarity and all of the fields are from adjacent relays (See figure).

The direction of the parameter shift is determined by whether the stray flux aids or bucks the flux produced by the coil of the relay under consideration.

To calculate the change in pull-in voltage and dropout voltage, multiply the percent change shown by the relay's nominal voltage. For example, if the percent change in pull-in voltage is 14% for a 5V nominal relay, the pull-in voltage will increase by 0.7 volts.



ORDERING INFORMATION

A complete part number is represented by the digits below.

