SRC DEVICES

DIP 14 SERIES REED RELAYS

MSS2 ■ MSS7 ■ PRMA ■ DSS7 ■ PRME ■ MVS2 ■ MVS7

DESCRIPTION

SRC Device's epoxy molded DIP 14 Series offers a variety of contacts and schematics to meet the needs of a wide range of applications. It features the MVS2/MVS7 models designed for high reliability. The MSS2/7 DIPs are 1-Form-A relays equipped with the MYAD® all-position mounting switch. With switching up to 50 Watts and a 4000V isolation option, the DIP 14 Series is a relay package that allows for automatic insertion directly on PCBs as well as insertion into standard 14 Pin DIP sockets.

FEATURES

- All position mercury contacts on some models
- Stable contact resistance over life
- 4000 Vac input-output isolation
- Bounce free operation
- High insulation resistance
- Switching speed of 300Hz
- Long life > 1 billion operations
- Epoxy molded for automatic board processing
- FCC68 compatible (MSS2 & MSS7)

APPLICATIONS

- Automatic test equipment
- Process control
- Industrial
- Telecom
- Datacom
- High-end security systems
- Signaling
- Metering

APPROVALS

- UL approval (DSS7 & PRMA)
- EN 60950 certified (MVS7, DSS7 & MSS7)
- CSA approval (PRMA)

RATINGS (@ 25° C)

Parameter	Min	Typ	Max	Unit
Switching Voltage				
PRMA/PRME/DSS7			200	Volts
PRMA Form C			100	Volts
MSS2/MSS7			500	Volts
MVS2/MVS7			1000	Volts
Switching Current				
PRMA/PRME/DSS7			0.5	Amps
PRMA Form C			0.25	Amps
MSS2/MSS7/MVS2/MVS7			2	Amps
Carry Current				
PRMA/PRME/DSS7			2	Amps
PRMA Form C			0.4	Amps
MSS2/MSS7			3	Amps
MVS2/MVS7			3	Amps
Switching Frequency				
PRMA/PRME/DSS7			500	Hz
PRMA Form C			50	Hz
MSS2/MSS7/MVS2/MVS7			200	Hz
Contact Resistance				
PRMA/PRME/DSS7			150	mΩ
PRMA Form C			200	mΩ
MSS2/MSS7/MVS2/MVS7			100	mΩ

(See detailed specifications for more information.)

SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

			MSS2 Molded 8 Pin All position Wetted contacts			**MSS7** Molded 4 Pin All position Wetted contacts			
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V_L	-	-	500	-	-	500	Volts
Switching Current	Max DC/PeakAC Resistive	I_L	-	-	2	-	-	2	Amps
Carry Current	Max DC/PeakAC Resistive	I_C	-	-	3	-	-	3	Amps
Contact Rating	Max DC/PeakAC Resistive		-	-	50	-	-	50	Watts
Life Expectancy	Signal Level 1.0 V 10mA Related Loads(1)		-	200	-	-	200	-	$x10^6$ Ops
Static Contact Resistance	50mV, 10mA	CR	-	40	100	-	65	100	mΩ
Dynamic Contact Resistance	.5V, 50mA at 100Hz, 1.5 msec	DCR	-	N/A	-	-	N/A	-	mΩ
Contact Material			-	Hg	-	-	Hg	-	
Hg Content			-	16	-	-	16	-	mgrams
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10^8	10^{10}	-	10^8	10^{10}	-	Ω
Capacitance	Across Open Contacts		-	1.5	2	-	1.2	2	pF
	Open Contact to Coil			3	4	-	3	4	pF
Dielectric Strength	Between Contacts		1400	-	-	2000	-	-	VDC/Peak AC
	Contacts to Coil	I/O	1400	-	-	5600	-	-	VDC/Peak AC
Operate Time, including bounce	At Nominal Coil Voltage 10Hz Square Wave	T_{OP}	-	1.2	1.75	-	1.2	1.75	ms
Release Time	Zener-Diode Suppression	T_{REL}	-	1	1.50	-	1	1.50	ms
Environmental Ratings									
Storage Temperature		T_A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T_O	-38	-	+75	-38	-	+75	°C
Soldering Temperature	Applied to pins, 5 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			-	2.3	-	-	2.3	-	grams

(1) Refer to life graphs

SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

PARAMETER	CONDITIONS	SYMBOL	PRMA Molded 8 Pin Form-C Dry Reed MIN	TYP	MAX	PRMA Molded 8 Pin Form-A&B Dry Reed MIN	TYP	MAX	UNITS
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V_L	-		100	-	-	200	Volts
Switching Current	Max DC/PeakAC Resistive	I_L	-		0.25	-	-	0.5	Amps
Carry Current	Max DC/PeakAC Resistive	I_C	-		0.4	-	-	2	Amps
Contact Rating	Max DC/PeakAC Resistive		-		3	-	-	10	Watts
Life Expectancy	Signal Level 1.0V 10mA Related Loads[1]		-	20	-	300	500	-	x10^6 Ops
Static Contact Resistance	50mV, 10mA	CR	-		200	-	-	150	mΩ
Dynamic Contact Resistance	.5V, 50mA at 100Hz, 1.5 msec	DCR	-	N/A	-	-	N/A	-	mΩ
Contact Material			-	Rh	-	-	Ru	-	
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10^9	10^{10}	-	10^{10}	10^{12}	-	Ω
Capacitance	Across Open Contacts		-	2.5	3	-	0.7	1	pF
	Open Contact to Coil			3	3	-	1.5	2	pF
Dielectric Strength	Between Contacts		250	-	-	250	-	-	VDC/Peak AC
	Contacts to Coil	I/O	1400	-	-	1400	-	-	VDC/Peak AC
Operate Time, including bounce	At Nominal Coil Voltage 10Hz Square Wave	T_{OP}	-	1.5	2	-	.25	0.5	ms
Release Time	Zener-Diode Suppression	T_{REL}	-	1.5	3	-	.25	0.5	ms
Environmental Ratings									
Storage Temperature		T_A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T_O	-40	-	+80	-40	-	+80	°C
Soldering Temperature	Applied to pins, 5 sec. max.		-	260	-	-	-	260	°C
Vibration Resistance[2] (Survival)	10 Hz - 500 Hz for PRMA Form A&B 5Hz - 500Hz for PRMA Form C	G	-	-	10	-	-	20	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	50	-	-	100	Gs
Weight			-	1.5	-	-	1.5	-	grams

(1) Refer to life graphs
(2) Use caution not to exceed vibration resistance limits while ultrasonically cleaning relays with DYAD switches. Contact SRC Devices Engineering for more details/recommendations.

SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

			DSS7 Molded 4 Pin Dry Reed			PRME Molded 8 Pin Low profile Dry Reed			
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V_L	-	-	200	-		200	Volts
Switching Current	Max DC/PeakAC Resistive	I_L	-	-	0.5	-		0.5	Amps
Carry Current	Max DC/PeakAC Resistive	I_C	-	-	2	-		2	Amps
Contact Rating	Max DC/PeakAC Resistive		-	-	10	-		10	Watts
Life Expectancy	Signal Level 1.0 V 10mA Related Loads(1)		300	500	-	300	500	-	x10^6 Ops
Static Contact Resistance	50mV, 10mA	CR	-	-	150	-		150	mΩ
Dynamic Contact Resistance	.5V, 50mA at 100Hz, 1.5 msec	DCR	-	N/A	-	-	N/A	-	mΩ
Contact Material			-	Ru	-	-	Ru	-	
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10^{10}	10^{12}	-	10^{10}	10^{12}	-	Ω
Capacitance	Across Open Contacts		-	0.7	1	-	0.8	1	pF
	Open Contact to Coil			1.5	2		1.5	2	pF
Dielectric Strength	Between Contacts		250	-	-	250	-	-	VDC/Peak AC
	Contacts to Coil	I/O	5600			1000			VDC/Peak AC
Operate Time,	At Nominal Coil Voltage	T_{OP}	-	0.25	0.5	-	0.25	1	ms
including bounce	10Hz Square Wave								
Release Time	Zener-Diode Suppression	T_{REL}	-	0.25	0.5	-	0.25	0.5	ms
Environmental Ratings									
Storage Temperature		T_A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T_O	-40	-	+80	-40	-	+80	°C
Soldering Temperature	Applied to pins, 5 sec. max.		-	-	260	-	-	260	°C
Vibration Resistance(2) (Survival)	5Hz - 500Hz	G	-	-	20	-	-	20	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	100	-	-	100	Gs
Weight			-	1.5	-	-	1.5	-	grams

(1) Refer to life graphs
(2) Use caution not to exceed vibration resistance limits while ultrasonically cleaning relays with DYAD switches. Contact SRC Devices Engineering for more details/recommendations.

SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

PARAMETER	CONDITIONS	SYMBOL	MVS2 8 Pin DIP Wetted Contacts[3] MIN	TYP	MAX	MVS7 4 Pin DIP Wetted Contacts[3] MIN	TYP	MAX	UNITS
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V_L	-	-	1000[1]	-	-	1000[1]	Volts
Switching Current	Max DC/PeakAC Resistive	I_L	-	-	2	-	-	2	Amps
Carry Current	Max DC/PeakAC Resistive	I_C	-	-	3	-	-	3	Amps
Contact Rating	Max DC/PeakAC Resistive		-	-	50	-	-	50	Watts
Life Expectancy	Signal Level 1.0 V 10mA		1000	-	-	1000	-	-	$x10^6$ Ops
	50V, 1A		-	2	-	-	2	-	$x10^6$ Ops
	500V, 100mA Related Loads[2]		-	50	-	-	50	-	$x10^6$ Ops
Static Contact Resistance	50mV, 10mA	CR	-	-	100	-	-	100	mΩ
Contact Material			-	Hg	-	-	Hg	-	
Hg Content			-	40	-	-	40	-	mgrams
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10^{10}	10^{12}	-	10^{10}	10^{12}	-	Ω
Capacitance	Across Open Contacts		-	0.7	-	-	0.7	-	pF
	Upper Contact to Coil		-	1.2	-	-	1.5	-	pF
	Closed Contact to Coil		-	3.2	-	-	2.5	-	pF
Dielectric Strength	Open Contacts		1400	-	-	2000	-	-	VDC/Peak AC
	Contacts to Coil	I/O	1400	-	-	5600	-	-	VDC/Peak AC
Operate Time	At Nominal Coil Voltage 10Hz Square Wave	T_{OP}	-	1.5	2.5	-	1.5	2.5	ms
Release Time	Zener-Diode Suppression	T_{REL}	-	1	2.5	-	1	2.5	ms
Environmental Ratings									
Storage Temperature		T_A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T_O			+260			+260	°C
Soldering Temperature	Applied to pins, 5 sec. max.		-38	-	+85	-38	-	+85	°C
Vibration Resistance[2] (Survival)	10Hz - 500Hz	G	-	-	10	-	-	10	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	30	-	-	30	Gs
Weight			-	2.1	-	-	2.1	-	grams

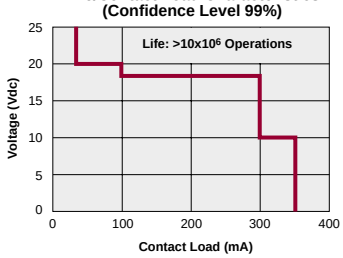
(1) Current limited up to 5mA, minimum 20 million operations; for further information, consult factory
(2) Refer to life graphs
(3) Relay contains mercury welted contacts and must be mounted vertically. Pin 1 is up.

COIL SPECIFICATIONS

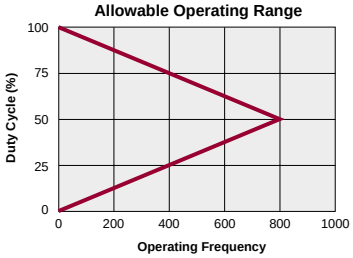
	Contact Form	Coil Voltage			Coil Resistance			Operate Voltage			Release Voltage			Nominal Input Power		
Units		Volts			Ω			Volts			Volt			mW		
Conditions					+/- 10% (25°C)			Must operate by (25°C)			Must release by (25°C)					
Part #		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
MSS2 1A05	1-Form-A		5	11	126	140	154			3.75	0.5				179	
MSS2 1A12	1-Form-A		12	21	450	500	550			9	1				288	
MSS2 1A24	1-Form-A		24	44	1935	2150	2365			18	2				268	
MSS7 1A05	1-Form-A		5	11	126	140	154			3.75	0.5				179	
MSS7 1A12	1-Form-A		12	21	450	500	550			9	1				288	
MSS7 1A24	1-Form-A		24	43	1935	2150	2365			18	2				268	
PRMA 1A05	1-Form-A		5	21	450	500	550			3.75	0.8				50	
PRMA 1A12	1-Form-A		12	30	900	1000	1100			9	1				144	
PRMA 1A24	1-Form-A		24	44	1935	2150	2365			18	2				268	
PRMA 1B05	1-Form-B		5	6	450	500	550			3.75	0.8				50	
PRMA 1B12	1-Form-B		12	14.5	900	1000	1100			9	1				144	
PRMA 1B24	1-Form-B		24	29	1935	2150	2365			18	2				268	
PRMA 1C05	1-Form-C		5	12	180	200	220			3.75	0.8				125	
PRMA 1C12	1-Form-C		12	18	450	500	550			9	1				288	
PRMA 1C24	1-Form-C		24	32	1935	2150	2365			18	2				268	
PRMA 2A05	2-Form-A		5	11	126	140	154			3.75	0.8				179	
PRMA 2A12	2-Form-A		12	21	450	500	550			9	1				288	
PRMA 2A24	2-Form-A		24	44	1935	2150	2365			18	2				268	
PRMA 10037	1-Form-A		5	15	342	380	418			3.75	0.8				66	
PRMA 10038	1-Form-A		12	19	477	530	583			9	1				272	
PRMA 10039	1-Form-A		24	32	1800	2000	2200			18	2				288	
DSS7 1A05	1-Form-A		5	21	450	500	550			3.75	0.8				50	
DSS7 1A12	1-Form-A		12	30	900	1000	1100			9	1				144	
DSS7 1A24	1-Form-A		24	44	1935	2150	2365			18	2				268	
PRME 25005	1-Form-A		5	19	450	500	550			3.8	0.8				50	
PRME 15005	1-Form-A		5	15	342	380	418			3.5	1				66	
PRME 15002	1-Form-A		12	19	477	530	583			8	1				272	
PRME 15003	1-Form-A		24	32	1800	2000	2200			16	2				288	
MVS2 1A05(A,B)	1-Form-A		5	7	94.5	105	116			3.75	0.5				238	
MVS2 1A12(A,B)	1-Form-A		12	15	450	500	550			9	1				288	
MVS2 1A24(A,B)	1-Form-A		24	30	1935	2150	2365			18	2				268	
MVS7 1A05(S)	1-Form-A		5	7	94.5	105	116			3.75	0.5				238	
MVS7 1A12(S)	1-Form-A		12	15	450	500	550			9	1				288	
MVS7 1A24(S)	1-Form-A		24	30	1935	2150	2365			18	2				268	

PERFORMANCE GRAPHS

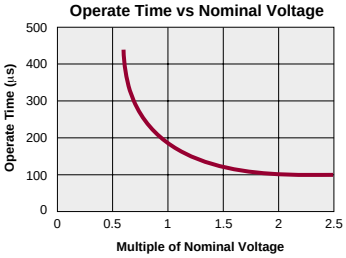
PRMA
Life/Contact Load Characteristics
(Confidence Level 99%)



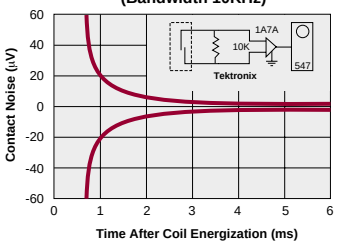
PRMA
Allowable Operating Range



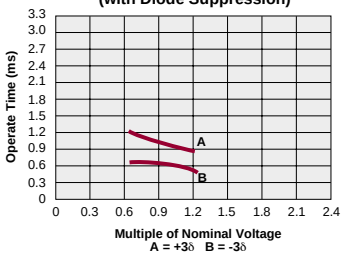
PRMA
Operate Time vs Nominal Voltage



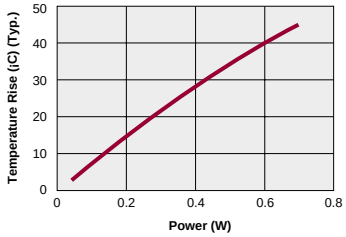
PRMA
Contact Noise Envelope
(Bandwidth 10KHz)



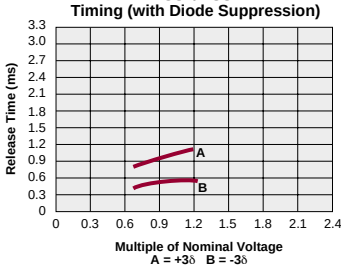
MSS2/MSS7
Operate Time vs Nominal Voltage
(with Diode Suppression)



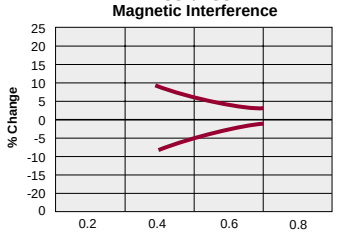
MVS7/MSS7
Relay Internal Temperature Rise vs. Power



MSS2/MSS7
Timing (with Diode Suppression)



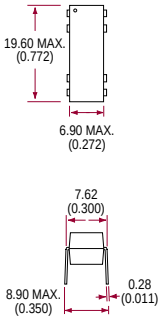
MSS2/MSS7
Magnetic Interference

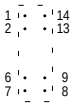


DIMENSIONS
mm
(inches)

MECHANICAL DIMENSIONS

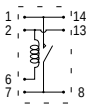
PRMA





Top View

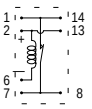
PRMA 1A



Top View

Options:
Diode - pin #2 is positive
Electrostatic shield - pin 9

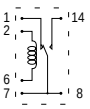
PRMA 1B



Top View

Options:
Diode - pin #2 is positive
Electrostatic shield - pin 9

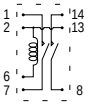
PRMA 1C



Top View

Options:
Diode - pin #2 is positive
Electrostatic shield - pin 9

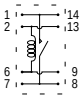
PRMA 2A



Top View

Options:
Diode - pin #2 is positive
Electrostatic shield - pin 9

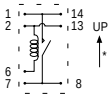
PRMA 10037/10038/10039



Top View

Options:
Diode - pin #2 is positive
Electrostatic shield - pin 9

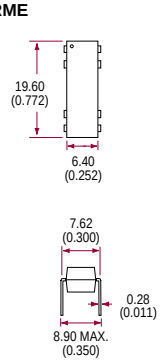
MVS2/MSS2

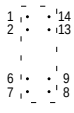


Top View

* MVS2 only must be mounted vertically with pin #1 UP.

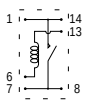
PRME





Top View

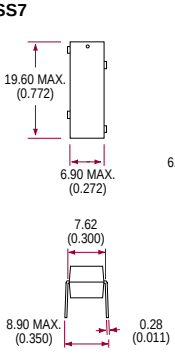
PRME

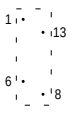


Top View

Options:
Diode - pin #13 is positive
Electrostatic shield - pin 9

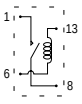
DSS7





Top View

DSS7

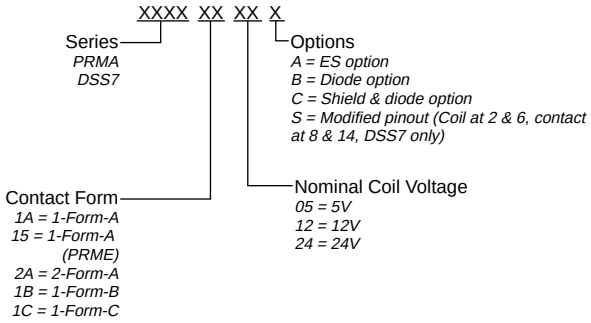


Top View

MSV must be mounted vertically. Pin #1 is up.

ORDERING INFORMATION

A complete part number is represented by the digits below. For example, the PRMA1A05 is a model 2 PRMA relay with a 1-Form A contact form, a nominal voltage of 5V and no extra options.



Ordering Information
Special Schematics

PRME 25005
PRME 15005
PRME 15002
PRME 15003

PRMA 10037
PRMA 10038
PRMA 10039

These represent full part numbers.