

INCH-POUND

MS25321P  
 05 October 2020  
 SUPERSEDING  
 MS25321N  
 27 November 2003

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 5 AMPERES,  
 2 PDT, TYPE I, SOCKET MOUNTED,  
 MECHANICALLY SEALED

INACTIVE FOR NEW DESIGN AFTER 5 JUNE 87. NO  
 SUPERSEDING SPECIFICATION.  
 (FOR NEW DESIGN USE MIL-PRF-83536/1 OR MIL-PRF-83536/2).

This specification is approved for use by all Departments  
 and Agencies of the Department of Defense.

The requirements for acquiring the relay described herein shall  
 consist of this specification and the latest issue of MIL-PRF-6106.

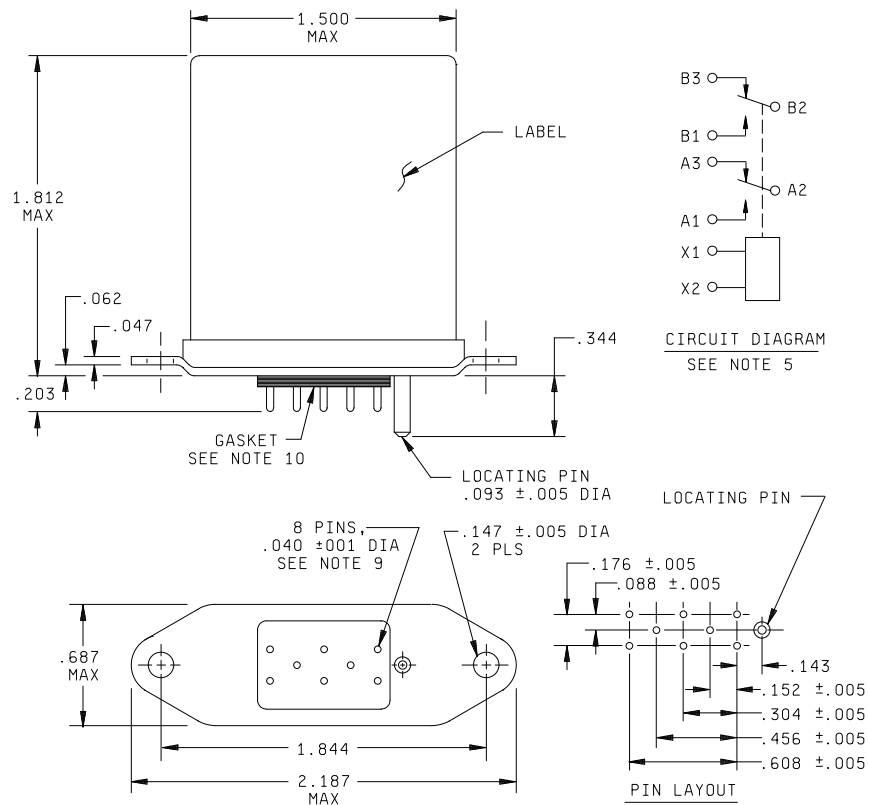


FIGURE 1. Design, dimensions, and circuit diagram.



## MS25321P

Inches	mm	Inches	mm
.001	0.03	.176	4.47
.005	0.13	.203	5.16
.010	0.25	.304	7.72
.040	1.02	.344	8.74
.047	1.19	.456	11.58
.062	1.57	.608	15.44
.075	1.91	.687	17.45
.088	2.24	1.500	38.10
.093	2.36	1.812	46.02
.143	3.63	1.844	46.84
.147	3.73	2.187	55.55
.152	3.86		

## NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is  $\pm 0.010$  (0.25 mm).
4. Terminal numbers shall not appear on relay headers. There shall be affixed to the relay a legible circuit diagram that permanently and positively identifies each term in allocation specified herein.
5. The use of diodes on ac relays is optional. Actual application shall be shown on label.
6. Pins shall be perpendicular to header surface within one degree.
7. In the event of conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.
8. Referenced Government documents of the issue listed in that issue of the Acquisition Streamlining and Standardization Information System (ASSIST) specified in the solicitation forms a part of this standard to the extent specified herein.
9. Socket pin terminals shall provide the operational, environmental, and interface characteristics to provide a reliable interconnect to gold-plated contacts. Terminals shall be gold plated. One system for gold plating that may be used is ASTM B488, type 3, class 1.25 with a nickel underplate of 50 to 150 microinches thick. The gold plating system shall enable the product to meet the performance requirements of this specification and shall be approved by the qualifying activity.
10. Gasket shall provide a reliable seal between the relay and mating socket that will meet the environmental, operational, and interface requirements of the relay with the mating socket. The gasket shall have shore hardness  $20 \pm 5$ , thickness  $.075 \pm .005$  recessed  $.047$  into bracket. Gasket material according to [SAE-AMS3332](#) has been considered acceptable.

FIGURE 1. Design, dimensions, and circuit diagram - Continued.

## MS25321P

## REQUIREMENTS:

Design, dimensions, and circuit diagram: See [figure 1](#).

Part or Identifying Numbers (PIN's) and general characteristics: See [table I](#).

## Contact data:

Load ratings: See [table II](#).

Maximum contact drop:

Initial: 0.150 volt.

After life test: 0.175 volt.

Overload current: 20 amperes.

Rupture current: 25 amperes.

Coil data: See [table III](#).

Duty rating: Continuous.

RFI specification: [MIL-STD-461](#) (applicable to coil circuits of ac operated relays).

## Electrical data:

Minimum insulation resistance:

Initial: 100 megohms.

After life or environmental test: 50 megohms.

## Dielectric strength (sea level):

	<u>Initial</u>	<u>After life tests</u>
Coil to case	1,000 V rms	750 V rms
Aux contacts	N/A	N/A
All other points	1,000 V rms	1,000 V rms

## Dielectric strength (80,000 ft):

	<u>Initial</u>	<u>After life tests</u>
Coil to case	250 V rms	N/A
Aux contacts	N/A	N/A
All other points	250 V rms	N/A

## Environmental characteristics:

Temperature range: -70° to +125°C.

Maximum altitude rating: 80,000 feet.

Shock g-level: 50 g's.

Duration: 6 ms.

Max duration contact opening: 100 μs.

## MS25321P

Vibration (sinusoidal):

G-level: 10 g's.

Frequency range: 5 - 1,500 Hz.

Acceleration: 15 g's.

Performance of groups B and C tests is not applicable.

Part or Identifying Number (PIN): MS25321 - (plus dash number from [table I](#)).

Qualification by similarity: See [MIL-PRF-6106](#).

TABLE I. Dash numbers and general characteristics.

PIN MS25321-	Type	Coil	Terminal type	Maximum weight pounds
D2	I	dc	Plug in	0.18
A2	I	ac	Plug in	0.20
A3	I	ac	Plug in	0.20

TABLE II. Rated contact load (amperes per pole) (case grounded). [1/](#)

Type of load	Life operat ing cycles $\times 10^3$	28 V dc				115 V ac, 1 phase				115/200 V ac, 3 phase				See notes
		Main		Aux		Main		Aux		Main		Aux		
		NO	NC	NO	NC	400 Hz	60 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	
Resistive	100	5	5			5	4							
	100													
Inductive	20	3	3			3	2							
Motor	100	1.5	1.5			1.5	1							
Lamp	100	0.8	0.8			0.8	0.6							
Transfer load														<a href="#">2/</a>
Mechanical life reduced current	400	1.25	1.25			1.25	1							
Mixed loads		Applicable per <a href="#">MIL-PRF-6106</a>												

[1/](#) Absence of value indicates parameter is not applicable to this specification.

[2/](#) Transfer load indicates relay is suitable for transfer between unsynchronized ac power supplies at rating indicated.

## MS25321P

TABLE III. Operating characteristics.

PIN MS25321 -	Coil data										Time - milliseconds max <u>2/</u>						
	Coil	Rated			Max		Max pick-up voltage			Hold voltage <u>2/</u>	Drop out voltage <u>2/</u>	Oper-ate <u>3/</u>	Re-lease <u>4/</u>	Contact Bounce			
		Volts <u>1/</u>	Freq Hz	Res $\Omega$	Volts	Amp	Normal <u>2/</u>	High temp test	Cont current test					Main		Aux	
														NO	NC	NO	NC
D2	X1, X2	28	dc	N/A	29	0.15	18	19.8	22.5	7.0	1.5	20	20	2	2	N/A	N/A
A2	X1, X2	115	400	N/A	122	0.06	90	95	103	35	5.0	25	50	2	2	N/A	N/A
A3	X1, X2	115	50/ 60	N/A	122	0.07	90	95	103	35	5.0	25	50	2	2	N/A	N/A

1/ CAUTION: Use of any coil voltage less than rated coil voltage will compromise the operation of the relay.

2/ Over the temperature range.

3/ With rated coil voltage.

4/ From rated coil voltage.

5/ Absence of value indicates parameter is not applicable to this specification.

Referenced documents. In addition to [MIL-PRF-6106](#), this document references the following:

[MIL-STD-461](#)      [SAE-AMS3332](#)      [ASTM-B488](#)

## Custodians:

Navy - AS  
Air Force - 85  
DLA - CC

## Preparing activity:

DLA - CC

(Project 5945-2020-054)

## Review activities:

Navy - EC

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.