

INCH-POUND

MS27742E  
 27 November 2003  
 SUPERSEDING  
 MS27742D(USAF)  
 31 Jan 1992

## DETAIL SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, TYPE I, MAGNETIC LATCH,  
 25 AMPERES, 3 PDT, ALL WELDED,  
 HERMETICALLY SEALED

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.

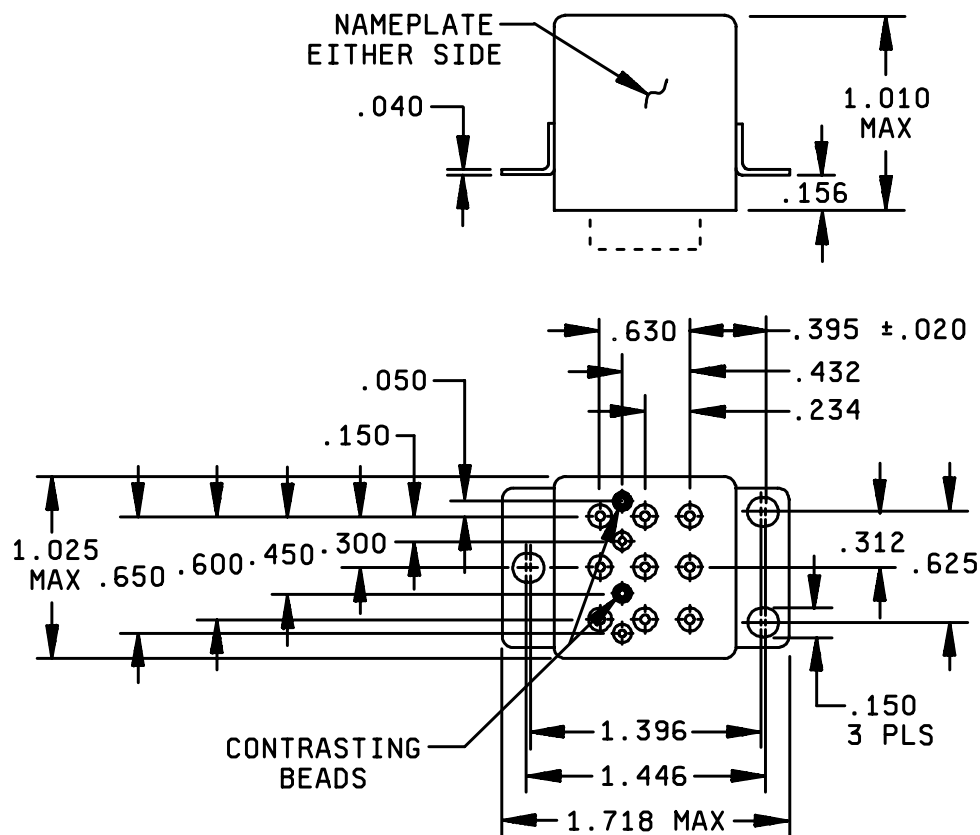


FIGURE 1. Dimensions and configuration.

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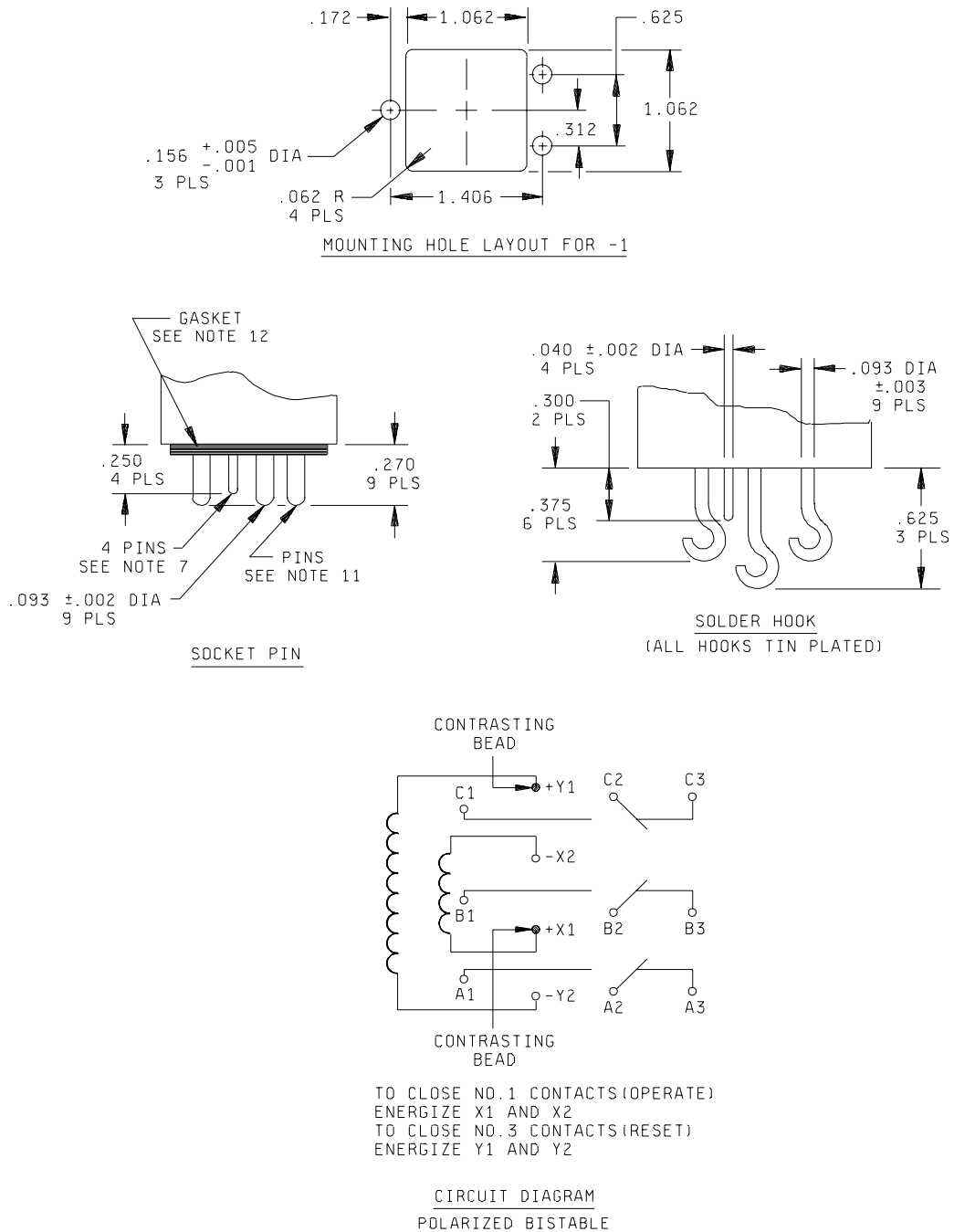


FIGURE 1. Dimensions and configurations - Continued

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Inches	mm			Inches	mm
.001	0.02	.172	4.36	.600	15.24
.002	0.05	.218	5.53	.625	15.87
.003	0.07	.234	5.94	.630	16.00
.005	0.12	.250	6.35	.650	16.51
.020	0.50	.270	6.85	1.010	25.65
.040	1.01	.300	7.62	1.025	26.03
.050	1.27	.312	7.92	1.062	26.97
.062	1.57	.375	9.52	1.396	35.45
.093	2.36	.395	10.03	1.446	36.72
.150	3.81	.432	10.97	1.718	43.63
.156	3.96	.450	11.43		

## 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. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
5. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.
6. Referenced Government documents of the issue listed in that issue of the Department of Defense Index of specifications and standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.
7. Relay is magnetically latched in both positions.
8. Note to observe polarity must appear on relays.
9. X1 and X2 diameter .062  $\pm$  .001. Y1 and Y2 diameter .040  $\pm$  .001.
10. Coils are not to be energized simultaneously.
11. 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.
12. 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 .050  $\pm$  .005. Gasket material according to AMS 3332 has been considered acceptable.

FIGURE 1. Dimensions and configurations - Continued.

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## REQUIREMENTS:

## Contact data:

Load ratings: See table I.

Initial contact voltage drop: 0.150 volt.

After life test: 0.175 V.

Overload current: 50 amperes dc; 80 amperes ac.

Rupture current: 60 amperes dc; 100 amperes ac.

## Coil data: See table II.

Duty rating: Continuous.

## Electrical data:

## Insulation resistance:

Initial: 100 megohms.

After life or environmental test: 50 megohms.

## Dielectric withstanding voltage:

## Sea level:

	<u>Initial</u>	<u>After life tests</u>
Coil to case	1,000	1,000
Aux contacts	N/A	N/A
All other points	1,250	1,000

## Altitude:

	<u>80,000 ft</u>	<u>300,000 ft</u>
Coil to case	350	500
Aux contacts	N/A	
All other points	350	500

## Environmental characteristics:

Temperature range: -70°C to +125°C.

Maximum altitude rating: 300,000 feet.

Shock g-level: 200 g's.

Duration: 6 ms.

Max duration contact opening: 10  $\mu$ s.

## Vibration - sinusoidal:

G-level 30 g's.

Frequency range 10 - 3,000 Hz.

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Vibration - random:

Applicable specification: MIL-STD-202, method 214.

Test condition: IG.

Duration: 15 minutes each plane.

Acceleration 15 g's.

Physical data:

Dimensions and configurations: See figure 1.

Weight: 0.18 pound maximum.

Part or Identifying Number (PIN): MS27742- (dash number from table II).

Qualification by similarity: See MIL-PRF-6106.

TABLE I. Rated contact load (amperes per pole) case grounded.

Type of load	Life operat ing cycles x 10 <sup>3</sup>	28 V dc				115 V ac, phase				115/200 V ac, 3 phase <u>1/</u>				See appro priate notes
		Main		Aux		Main		Aux		Main		Aux		
		NO	NC	NO	NC	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz		400 Hz	60 Hz	
Resistive <u>2/</u>	50	25	25			25				25				
Inductive	10	12	12											
Inductive	20					15				15				
Motor	50	10	10			10				10				
Lamp	50	5	5			5				5				
Transfer load	---					---				---				<u>3/</u>
Mechanical life reduced current	200	6	6			6				6				
Mixed loads	Applicable per specification													

1/ Absence of value indicates relay is not rated for 3 phase applications.

2/ For full rated load, temperature, and altitude, use number 12 wire or larger. Relays shall be mounted so that mounting bracket temperature is limited to +135°C maximum.

3/ Transfer load indicates relay is suitable for transfer between unsynchronized ac power supplies at rating indicated.

TABLE II Dash number and characteristics.

Part no. MS 27742-	Coil data									Time - (milliseconds maximum)						
	Term- inal type	Rated			Maximum At +25°C		Max pick-up voltage			Drop out voltage 2/	Oper- ate 3/	Rel- ease 4/	Contact Bounce			
		Volts 1/	Freq Hz	Ω Res	Volts	Amp	Nor- mal 2/	High temp test	Cont cur- rent test				Main		Aux	
													NO	NC	NO	NC
1	Solder hook	28	dc	---	29	.075	18	19.8	22.5	N/A	15	---	1.0	1.0	---	---
2	Socket pin	28	Dc	---	29	.075	18	19.8	22.5	N/A	15	---	1.0	1.0	---	---

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

2/ Over the temperature range..

3/ With rated coil voltage.

4/ From rated coil voltage.

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## NOTES

Referenced documents. In addition to MIL-PRF-6106, this specification sheet references the following documents. (Government documents are available on line at <http://assist.daps.dla.mil/quicksearch> or [www.dodssp.daps.mil](http://www.dodssp.daps.mil) or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094). Society of Automotive Engineers documents are available from the Society of Automotive Engineers 400 Commonwealth Drive Warrendale, Pennsylvania, United States, 15096-0001. <http://www.sae.org>

## STANDARDS

Department of Defense

MIL-STD-202 - Electronic and Electrical Component Parts

Society of Automotive Engineers (SAE)

SAE-AMS3332 - Silicone Rubber Extreme Low-Temperature Resistant, 15-30

Custodians:

Air Force - 11

DLA - CC

Preparing activity:

DLA - CC

(Project 5945-1221)

Review activities:

AF - 99

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 ASSIST Online database at [www.dodssp.daps.mil](http://www.dodssp.daps.mil).