

INCH-POUND

MS25457H  
 27 November 2003  
 SUPERSEDING  
 MS25457G  
 20 January 1989

## DETAIL SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 10 AMPERES,  
 2 PDT, TYPE I, MAGNETIC LATCH, SOCKET MOUNTED,  
 HERMETICALLY SEALED

INACTIVE FOR NEW DESIGN AFTER 5 JUNE 1987. NO  
 SUPERSEDING SPECIFICATION. (FOR NEW DESIGN USE  
 MIL-PRF-83536/12, MIL-PRF-83536/13, MIL-PRF-83536/14)

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.

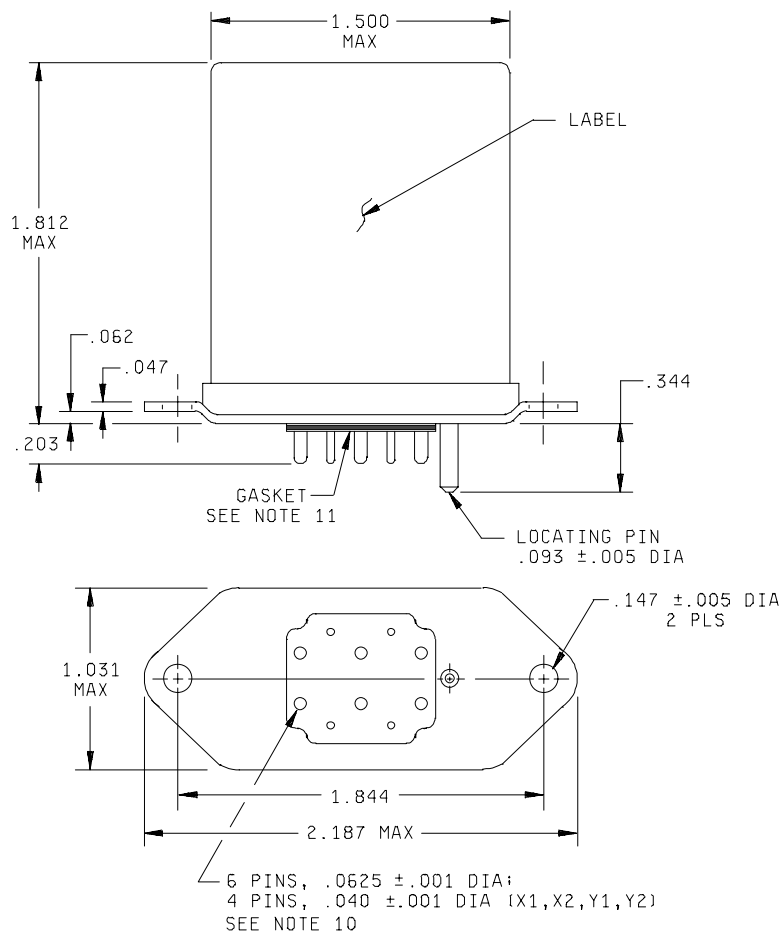
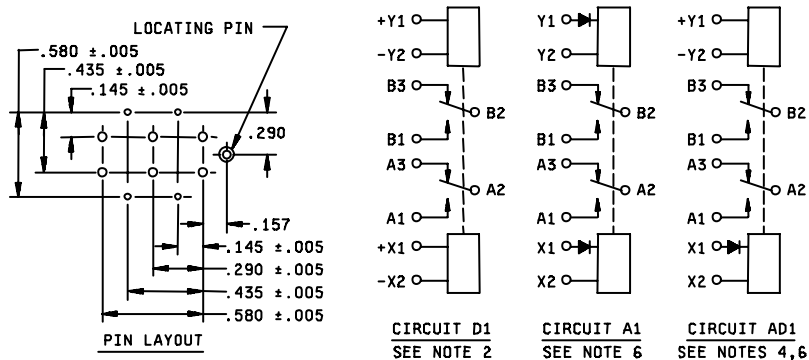


FIGURE 1. Dimensions and configurations.

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Inches	mm	Inches	mm
.001	0.03	.203	5.16
.005	0.13	.293	7.74
.040	1.02	.344	8.74
.047	1.19	.435	11.05
.062	1.57	.580	14.73
.0625	1.59	1.031	26.19
.093	2.36	1.500	38.10
.145	3.68	1.812	46.02
.147	3.73	1.844	46.84
.157	3.99	2.187	55.55

## NOTES:

- 1/ Dimensions are in inches.
- 2/ Metric equivalents are given for general information only.
- 3/ Unless otherwise specified, tolerance is  $\pm .010$  (0.25 mm).
- 4/ Relay is magnetically latched in both positions. Caution note to observe polarity must appear on relays with dc coils.
- 5/ Terminal numbers need not appear on relay headers provided there is affixed to the relay a suitable legible circuit diagram that permanently and positively identifies each terminal location specified hereon.
- 6/ The use of diodes on ac relays is optional. Actual application must be shown on label.
- 7/ Shock, vibration, and acceleration requirements application with coils de-energized.
- 8/ In the event of conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.
- 9/ 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 forms a part of this specification to the extent specified herein.
- 10/ 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.
- 11/ 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 thickness .075, recessed .047 in to bracket. Gasket material according to AMS 3332 has been considered acceptable.

FIGURE 1. Dimensions and configurations - Continued.

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TABLE I. Dash numbers and characteristics.

Dash number MS25457-	Type	Coil	Terminal type	Max weight in pounds
D1	I	dc	Plug in	0.30
A1	I	ac	Plug in	0.32
AD1	I	ac-dc	Plug in	0.32

TABLE II. Operating characteristics.

PIN MS25457-	Coil data											Time - milliseconds max				
	Coil	Rated			Max		Max pick-up voltage			Drop out vol- tage	Op- erate 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
D1	X1, X2 Y1, Y2	28	dc	N/A	29	0.17	18	18	19.8	N/A	25	N/A	2	2	N/A	N/A
A1	X1, X2 Y1, Y2	115	400 5/	N/A	122	0.07	90	90	95	N/A	25	N/A	2	2	N/A	N/A
AD1	X1, X2	115	400 5/	N/A	122	0.07	90	90	95	N/A	25	N/A	2	2	N/A	N/A
	Y1, Y2	28	dc	N/A	29	0.17	18	18	19.8	N/1	25	N/A	2	2	N/A	N/A

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

2/ Over the temperature range.

3/ With rated coil voltage.

4/ From rated coil voltage.

5/ MS25457-A1 and AD1 may be used on 60 Hz if maximum ambient temperature is +85°C (maximum coil current shall be 0.077 ampere).

TABLE III. 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, 1 phase				115/200 V ac, 3 phase 1/				See appro priate notes
		Main		Aux		Main		Aux		Main		Aux		
		NO	NC	NO	NC	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	
Resistive	100	10	10			10	6			10	6			
Inductive	100													
Inductive	20	6	6			10	4			10	4			
Motor	100	4	4			4	3			4	3			
Lamp	100	2	2			2	1.5			2	1.5			
Transfer load														2/
Mechanical life reduced current	400	2.5	2.5			2.5	2			2.5	2			
Mixed loads	Applicable per specification													

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

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

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Environmental characteristics.

Temperature range	-70°C to +125°C
Max altitude rating	80,000 ft
Shock G-level	50 g's
Duration	11 ms
Max duration contact opening	10 µs
Vibration - sinusoidal	
G-level	10 g's
Frequency range	5 - 1,500 Hz
Acceleration	15 g's

Electrical characteristics.

Insulation resistance, initial	100 megohms.
After life or environmental tests	50 megohms.

Dielectric strength (sea level).

	<u>Initial</u>	<u>After life tests</u>
Coil to case	1,000 V rms	1,000 V rms
Aux contacts		
All other points	1,500 V rms	1,125 V rms

Dielectric strength (altitude).

	(When mounted in mating socket)
	<u>80,000 ft</u>
Coil to case	500 V rms
Aux contacts	
All other points	500 V rms

Max contact drop initial	0.150 volt.
After life test	0.175 volt.
Overload current	40 amperes dc, 60 amperes ac.
Rupture current	50 amperes dc, 80 amperes ac.
Duty rating	Continuous.
RFI specification	MIL-STD-461.
(Applicable to coil circuits of ac operated relays.)	

Conformance inspection.

Group A acceptance reports shall be submitted to the preparing activity on a yearly basis in order to retain qualification for this military specification sheet.

Performance of groups B and C tests are not applicable.

Qualification by similarity: See MIL-PRF-6106.

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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-461 - Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

Society of Automotive Engineers (SAE)

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

## Custodians:

Navy - AS  
Air Force - 11  
DLA - CC

## Preparing activity:

DLA - CC

(Project 5945-1221-12)

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