

INCH-POUND

MS27401X
 30 November 1994
 SUPERSEDING
 MS27401W
 10 September 1992

MILITARY SPECIFICATION SHEET

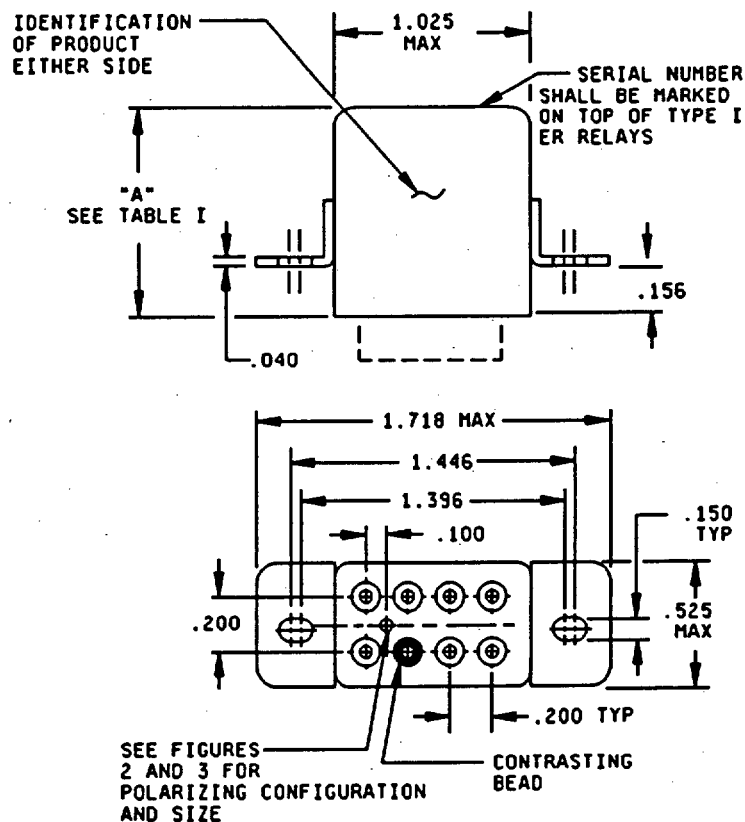
RELAYS, ELECTROMAGNETIC, TYPE 1, (INCLUDING ESTABLISHED RELIABILITY (ER) TYPES),
 PERMANENT MAGNETIC DRIVE, 10 AMPERES, 2PDT, HERMETICALLY SEALED

(X)

INACTIVE FOR NEW DESIGN AS OF 30 NOVEMBER 1994. THIS SPECIFICATION AND ITS ASSOCIATED QUALIFIED PARTS LIST ARE SCHEDULED FOR CANCELLATION IN OCTOBER 1995. REFER TO TABLE IX AND MIL-R-83536 FOR SUPERSESSON DATA.

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

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-R-6106



CONFIGURATION A

FIGURE 1. Dimensions and configurations.

(X) denotes changes

MS27401X

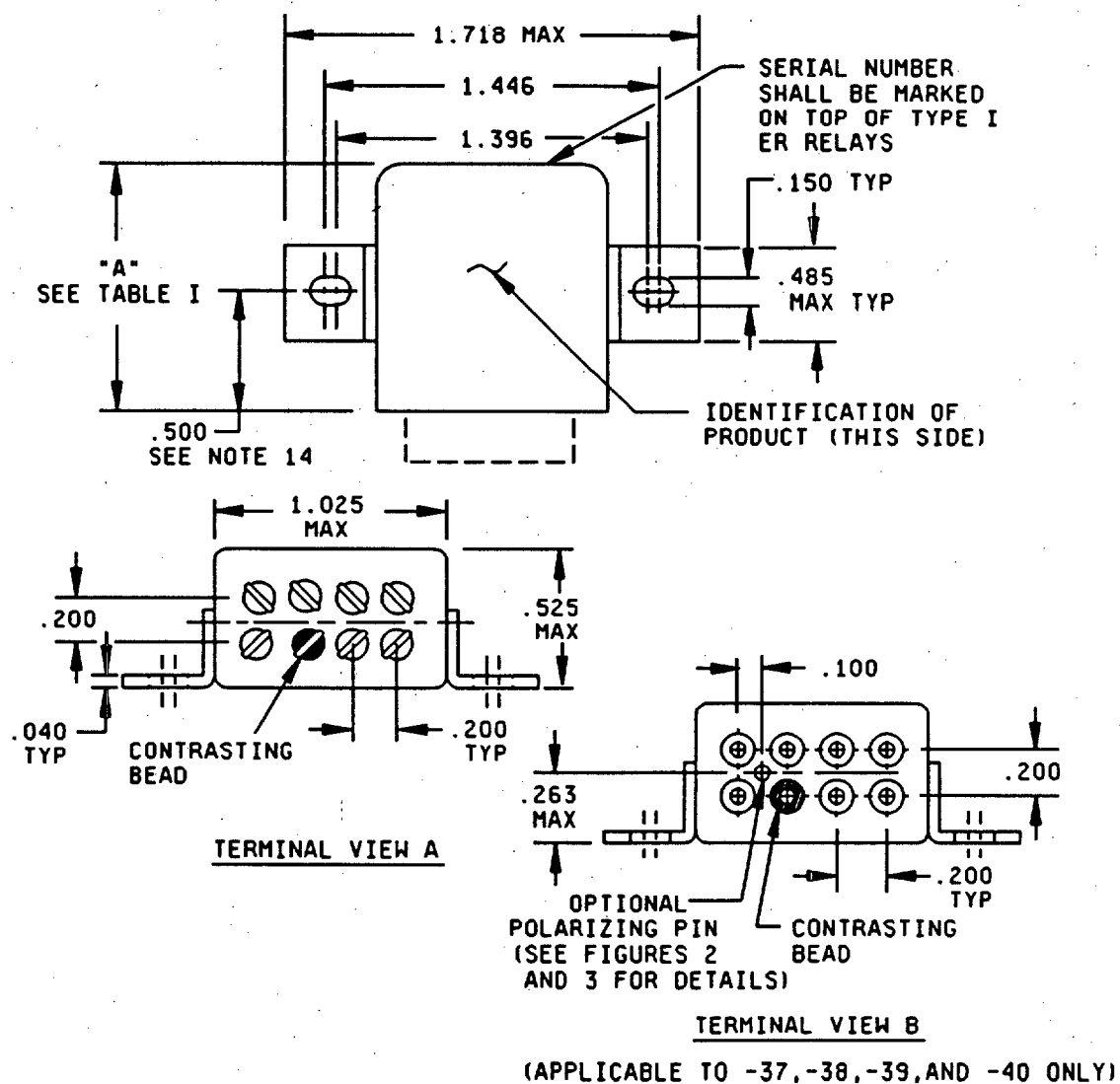
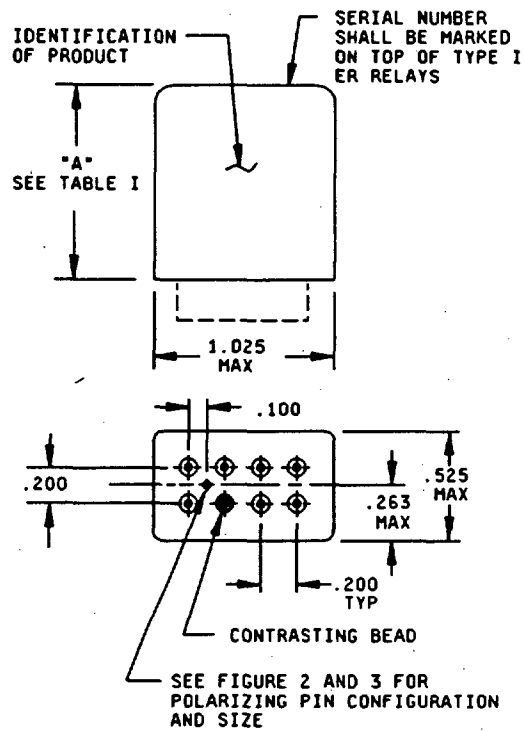


FIGURE 1. Dimensions and configurations - Continued.

MS27401X



CONFIGURATION C

Inches	mm	Inches	mm	Inches	mm	Inches	mm
.001	0.03	.040	1.02	.172	4.37	.525	13.34
.002	0.05	.050	1.27	.200	5.08	.550	13.97
.003	0.08	.062	1.57	.263	6.86	.562	14.27
.005	0.13	.070	1.78	.281	7.14	1.025	26.04
.006	0.15	.100	2.54	.300	7.62	1.062	26.97
.010	0.25	.115	2.92	.310	7.87	1.396	35.46
.027	0.69	.150	3.81	.330	8.38	1.406	35.71
.030	0.76	.156	3.96	.485	12.32	1.446	36.73
				.500	12.70	1.718	43.64

FIGURE 1. Dimensions and configurations - Continued.

MS27401X

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.010 (0.25 mm).
4. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.
5. 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 standard to the extent specified herein.
6. Terminal numbers do not appear on the relay header. There shall be affixed to the relay a legible circuit diagram that identifies each terminal location specified. The circuit diagrams shown on figure 4 are terminal views.
7. See table I for applicable circuit diagram references for ac coils. Coil polarity is not applicable to ac coils.
8. DC versions of this relay must not operate or be damaged by reverse polarity. Semiconductors shall not be used for this purpose.
9. Permanent magnet drive consists of permanent magnet with its flux path switched and combined with the electromagnetic flux.
10. Silicone rubber gasket, AMS3332, shore hardness 20 ± 5 .
11. Finish shall be gold plate in accordance with MIL-G-45204, type II, class I. Nickel under-plating shall be 50 to 150 microinches thick.
12. Finish shall be tin plate or gold plate. For outline details, see figure 3.
13. CAUTION: Due to possible interaction of relay magnetic fields, the following spacing requirements, as a minimum, shall be considered in dense packaging situations:
 - a. Row to row assisting fields, .125 inch (3.18 mm).
 - b. Row to row opposing fields, .188 inch (4.78 mm).
 - c. Side to side alternating fields, .062 inch (1.57 mm).
 - d. Side to side like fields, .125 inch (3.18 mm).
14. This dimension shall be .550 maximum for -22, -24, -29, and -35.

FIGURE 1. Dimensions and configurations - Continued.

MS27401X

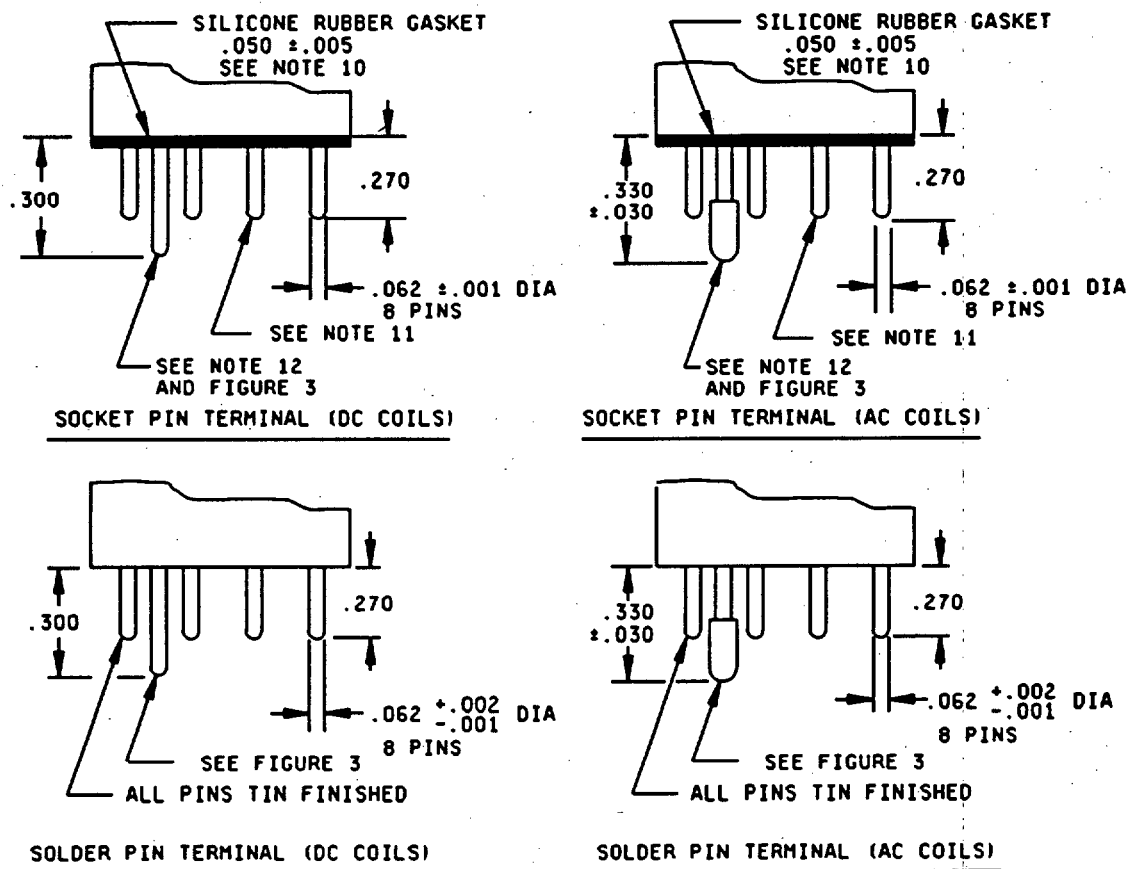
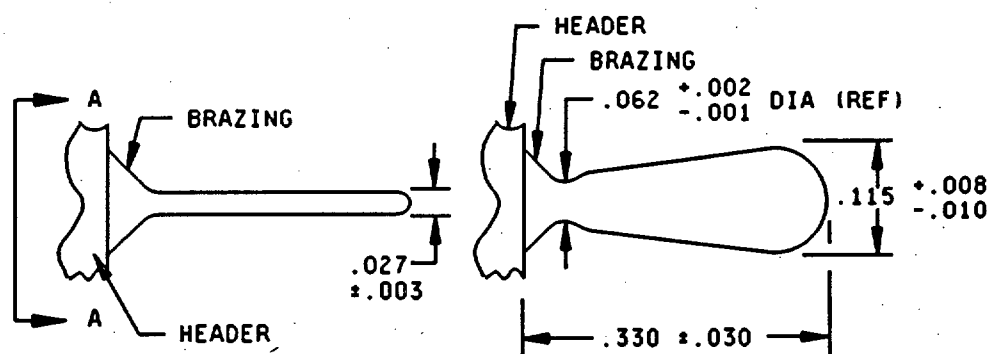


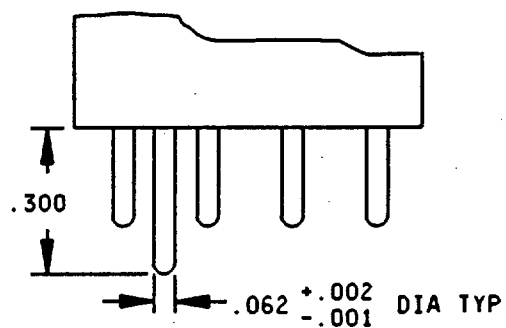
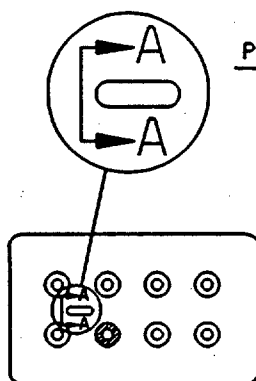
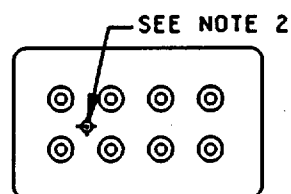
FIGURE 2. Terminal types.



MS27401X

POLARIZING PIN DETAILS FOR AC COILSFINISH: TIN PLATE OR GOLD PLATE

SEE NOTE 1

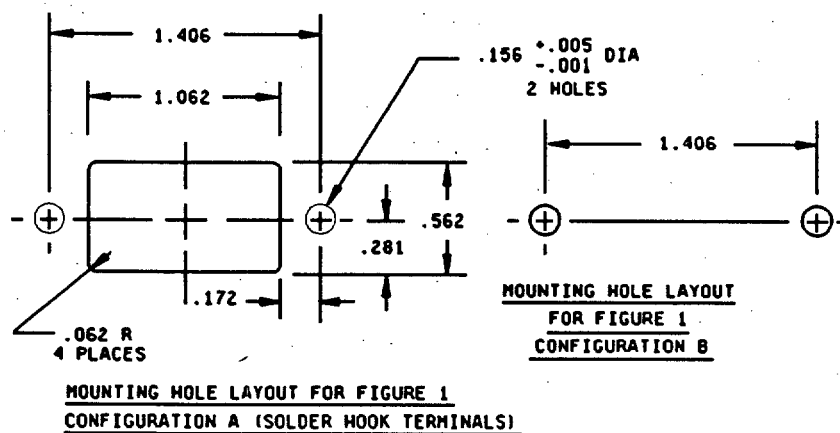
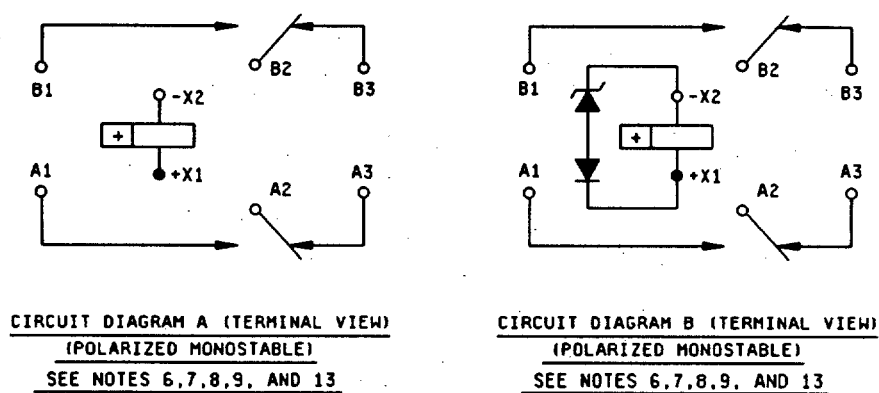
POLARIZING PIN DETAILS FOR DC COILSFINISH: TIN PLATETERMINAL LAYOUT FOR AC COILSTERMINAL LAYOUT FOR DC COILS
SUPPLIED WITH STRAIGHT PINS

NOTES:

- (X) 1. Shape of pin is optional within the dimensions shown.
 2. Polarizing pin is optional for -37, -38, -39, and -40 (see figure 1, configuration B).

FIGURE 3. Terminal and mounting hole layouts.

MS27401X

FIGURE 3. Terminal and mounting hole layouts - Continued.

**OPTIONAL INTERNAL DIODE CONFIGURATION
(POLARIZED MONOSTABLE)
SEE NOTES 6,7,8,9, AND 13**

FIGURE 4. Circuit diagrams.

MS27401X

REQUIREMENTS:

Dimensions and configurations: See figure 1.

Terminal types: See figure 2.

Terminal and mounting hole layouts: See figure 3.

Circuit diagrams: See figure 4.

Dash numbers 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: DC: 40 amperes; AC: 60 amperes.

Rupture current: DC: 50 amperes; AC: 80 amperes.

Time current characteristics: See table III.

Coil data: See table IV.

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): See table V.

Dielectric strength (altitude): See table VI.

Environmental characteristics:

Operating temperature range: -70°C to $+125^{\circ}\text{C}$.

Maximum altitude rating: 300,000 feet.

Shock G-level: 200 g's, except that -9 through -12 shall be 500 g's.

Duration: 6 ms, except that -9 through -12 shall be 1 ms.

Maximum duration contact opening: 10 μs .

Vibration (sinusoidal): 30 g's, except that -9 through -12 shall be 50 g's.

Vibration (random): MIL-STD-202, method 214, test condition IG (0.4 g^2/Hz power spectral density), 15 minutes each plane. For -9 through -12, test condition IH, except that power spectral density shall be 0.65 G^2/Hz , 15 minutes each plane.

MS27401X

Frequency range: 10 to 3,000 Hz.

Acceleration: 15 g's.

Qualification by similarity: See table VII.

PHYSICAL DATA:

Seal: Hermetic; relays are sealed by welding (laser, tungsten inert gas, or other suitable means as approved by the qualifying activity).

Construction (internal and external): All welded, except that coil magnet wire to coil lead wire shall be soldered.

Weight: 0.10 pound (46 grams) maximum.

(X) Identification of product: Applicable.

Part or Identifying Number (PIN):

Type I relays: MS27401- (plus a dash number from table I). PIN example: MS27401-9.

Type I ER relays: MS27401- (plus a dash number and suffix letter designating failure rate level from table I). PIN MS27401-5P.

Cross-reference for Government logistical support: See table VIII.

Supersession data: See table IX.

Quality conformance inspection: Performance of Group C inspection for Type I and Type I-ER relays is not required. Performance of Retention of Qualification for Type I-ER relays is not required, provided the manufacturer possesses and maintains a current qualification to MIL-R-83536.

MS27401X

TABLE I. Dash numbers and general characteristics.

PIN MS27401- 1/	Mounting configur- ation (see figure 1)	Dimension A maximum (see figure 1)	Terminal type (see figures 2 and 3)	Circuit diagram (see figure 4)	Rated coil voltage (and frequency when applicable) 2/	Coil suppression (transient voltage, back EMF) 3/ 4/	5/ Mating socket M12883/ 41-
Type I unsuppressed dc coils							
6/ 9	A	1.010	Solder hook	A	28 V dc	N/A	N/A
6/ 10	A	1.010	Socket pin	A	28 V dc	N/A	01, 06
8/ 13	A	1.010	Solder hook	A	28 V dc	N/A	N/A
8/ 14	A	1.010	Socket pin	A	28 V dc	N/A	01, 06
8/ 41	A	1.010	Solder pin	A	28 V dc	N/A	N/A
8/ 23	B	1.010	Solder hook	A	28 V dc	N/A	N/A
8/ 37	B	1.010	Solder pin	A	28 V dc	N/A	N/A
7/ 8/ 46	C	1.010	Solder hook	A	28 V dc	N/A	N/A
8/ 47	C	1.010	Solder pin	A	28 V dc	N/A	N/A
Type I suppressed dc coils							
8/ 25	A	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
8/ 27	A	1.010	Socket pin	B	28 V dc	42 V dc max	01, 06
8/ 43	A	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
8/ 26	B	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
8/ 39	B	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
7/ 8/ 48	C	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
8/ 49	C	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
Type I ER unsuppressed dc coils							
5	A	1.010	Solder hook	A	28 V dc	N/A	N/A
6	A	1.010	Socket pin	A	28 V dc	N/A	01, 06
42	A	1.010	Solder pin	A	28 V dc	N/A	N/A
21	B	1.010	Solder hook	A	28 V dc	N/A	N/A
38	B	1.010	Solder pin	A	28 V dc	N/A	N/A
7/ 50	C	1.010	Solder hook	A	28 V dc	N/A	N/A
51	C	1.010	Solder pin	A	28 V dc	N/A	N/A
58	B	1.010	90° solder pin	A	28 V dc	N/A	N/A
Type I ER suppressed dc coils							
31	A	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
33	A	1.010	Socket pin	B	28 V dc	42 V dc max	01, 06
44	A	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
32	B	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
40	B	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
7/ 52	C	1.010	Solder hook	B	28 V dc	42 V dc max	N/A
53	C	1.010	Solder pin	B	28 V dc	42 V dc max	N/A
59	B	1.010	90° solder pin	B	28 V dc	42 V dc max	N/A

See footnotes at end of table.

MS27401X

TABLE I. Dash numbers and general characteristics - Continued.

PIN MS27401- 1/	Mounting configur- ation (see figure 1)	Dimension A maximum (see figure 1)	Terminal type (see figures 2 and 3)	Circuit diagram (see figure 4)	Rated coil voltage (and frequency when applicable) 2/	Coil suppression (transient voltage, back EMF) 3/ 4/	5/ Mating socket M12883 41-
Type I ac coils							
6/ 11	A	1.125	Solder hook	A	115 V ac, 400 Hz	N/A	N/A
6/ 12	A	1.125	Socket pin	A	115 V ac, 400 Hz	N/A	02, 07
8/ 15	A	1.125	Solder hook	A	115 V ac, 400 Hz	N/A	N/A
8/ 16	A	1.125	Socket pin	A	115 V ac, 400 Hz	N/A	02, 07
8/ 28	A	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
8/ 30	A	1.125	Socket pin	A	115 V ac, 50/60/400 Hz	N/A	02, 07
45	A	1.125	Solder pin	A	115 V ac, 50/60/400 Hz	N/A	N/A
8/ 24	B	1.125	Solder hook	A	115 V ac, 400 Hz	N/A	N/A
8/ 29	B	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
7/ 8/ 54	C	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
8/ 55	C	1.125	Solder pin	A	115 V ac, 50/60/400 Hz	N/A	N/A
Type I ER ac coils							
7	A	1.125	Solder hook	A	115 V ac, 400 Hz	N/A	N/A
8	A	1.125	Socket pin	A	115 V ac, 400 Hz	N/A	02, 07
34	A	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
36	A	1.125	Socket pin	A	115 V ac, 50/60/400 Hz	N/A	02, 07
22	B	1.125	Solder hook	A	115 V ac, 400 Hz	N/A	N/A
35	B	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
7/ 56	C	1.125	Solder hook	A	115 V ac, 50/60/400 Hz	N/A	N/A
57	C	1.125	Solder pin	A	115 V ac, 50/60/400 Hz	N/A	N/A

- 1/ Part or Identifying Number (PIN). The term PIN is equivalent to the term Part Number which was previously used in this document: Type I relays shall be identified as MS27401 and a dash number from table I. Type I ER relays shall be identified as MS27401, a dash number from table I, and a suffix letter (M, U, X, or P) designating failure rate level. Failure rate level (percent per 10,000 cycles): M, 1 percent; U, 0.5 percent; X, 0.3 percent; and P, 0.1 percent.
- 2/ CAUTION: The use of any coil voltage less than the rated coil voltage will compromise the operation of the relay.
- 3/ JANTX or equivalent screened semiconductors shall be used in type I ER relays with internal coil suppression or ac coil ratings after 30 December 1980.
- 4/ Diodes shall have a peak inverse voltage of 600 V dc minimum when used.
- 5/ Consideration should be given to ambient temperature and current requirements when using wire barrels, size 20.
- 6/ Dash numbers -9, -10, -11, and -12 are rated for high shock and high vibration (see environmental characteristics for ratings).
- 7/ Caution should be exercised to ensure configuration C relays with solder hooks meet the environmental characteristics of the system. Environmental characteristics can be adversely affected by mounting means.
- 8/ Type I relays are inactive for new design after 21 Dec 1990. See table VIII for cross-reference data.

MS27401X

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

Type of load	Life operating cycles x 10 ³	28 V dc				115 V ac, 1 phase						115/200 V ac, 3 phase				See appro- priate notes		
		Main		Aux		NO	NC	NO	NC	400 Hz	50/60 Hz	400 Hz	60 Hz	400 Hz	50/60 H		400 Hz	60 Hz
Resistive	100	NO	NC	NO	NC	10		10		2/ 2.5				10	2/ 2.5			
Inductive	10									2/ 2.5					2/ 2.5			
Inductive	20	8	8				8							8			3/	
Motor	100	4	4				4			2/ 2.0				4	2/ 2.0			
Lamp	100	2	2				2			2/ 1.0								
Transfer load																	4/	
Mechanical life reduced current	400	2.5	2.5				2.5							2.5				
Intermediate current		Applicable in accordance with MIL-R-6106.																

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

2/ For 50/60 Hz rating, rupture and overload are not applicable and life shall be 10,000 cycles.

3/ MS27401-7, -8, -15, -16, -22, -24, -28, -29, -30, -34, -35, -36, -45, -54, -55, -56, and -57 for 28 V dc inductive rating life is 10 x 10³ cycles.

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

MS27401X

TABLE III. Time current characteristics at 25°C. 1/ 2/

Number of test cycles	Current	Duration
1	15A	1 hour
2	50A	5.0 seconds
3	100A	1.2 seconds
4	250A	0.2 second
5	350A	0.1 second

- 1/ CAUTION: Compare with time current characteristics of the associated circuit protective device.
- 2/ Relays shall sustain five applications (make and carry only) of power concurrently on adjacent poles at each of five different current levels for the time durations in table III. Separate relays shall be tested at 28 V dc and 115/200 V dc, 400 Hz, 3 phase. Cooling time between successive applications shall be 30 minutes. The test shall be performed on both normally open and normally closed contacts of each relay. There shall be no failures or evidence of welding or sticking and the relay shall pass contact voltage drop at conclusion.

MS27401X

TABLE IV. Operating characteristics.

Coil data										Time (milliseconds maximum)						
PIN MS27401-	Rated			Maximum		Max pickup voltage		Hold voltage 3/	Drop- out voltage 3/	Operate 4/	Release 5/	Contact bounce		Break bounce NO only		
	Volts 1/	Freq. Hz	Res. Ω $\pm 10\%$ 25°C	Volts 2/	Ampere	Normal 3/	High temp test					Cont. current test	Main		Aux.	
Unsuppressed dc coils																
5 6 9 10	28	N/A	320	29	0.11	18 V dc	19.8 V dc	22.5 V dc	7.0 V dc	1.5 V dc	10	1	1	N/A	N/A	N/A
13 14 21 23	V dc															
37 38 41 42																
46 47 50 51																
58																
Suppressed dc coils																
25 26 27 31	28	N/A	320	29	0.11	18 V dc	19.8 V dc	22.5 V dc	7.0 V dc	1.5 V dc	10	1	1	N/A	N/A	N/A
32 33 39 40	V dc			V dc												
43 44 48 49																
52 53 59																
AC coils																
7 8 11 12	115	400	N/A	122	0.04	90 V ac	95.4 V ac	105 V ac	30 V ac	5 V ac	15	1	1	N/A	N/A	N/A
15 16 22 24	V ac			V ac												
28 29 30 34	115	50/	N/A	122	0.03	95 V ac	100 V ac	105 V ac	40 V ac	5 V ac	20	1	1	N/A	N/A	0.1
35 36 45 54	V ac	60/		V ac												
55 56 57		400														

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

2/ Maximum coil voltage of +32 V dc when maximum ambient temperature does not exceed +85°C.

3/ Over the temperature range.

4/ With rated coil voltage.

5/ From rated coil voltage.

MS27401X

TABLE V. Dielectric strength (sea level).

	Initial	After life
Coil to case	1,000 V rms	1,000 V rms
Aux contact	N/A	N/A
All other points	1,250 V rms	1,000 V rms

TABLE VI. Dielectric strength (altitude). 1/

	80,000 ft	300,000 ft
Coil to case	350 V rms	500 V rms
Aux contact	N/A	N/A
All other points	350 V rms	500 V rms

1/ Dielectric may be improved by suitable insulation of terminals and wiring after installation.

MS27401X

TABLE VII. Qualification by similarity. 1/

PIN	Loads						Dynamics						Environmental		
	Basic qualification						ER						Sockets/pins		
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C
MS27401-	3/ 4/	3/ 4/	3/ 5/	3/ 4/	3/ 4/	3/ 4/ 5/	3/ 4/	DC	400	50/60/ 400	3/ 4/	3/ 4/	3/ 4/	3/ 6/	3/ 6/
	DC	400	50/60/ 400				DC	Config A	Config B	400	50/60/ 400	50/60/ 400	DC	400	50/60/ 400
5	4			3			2						4		
6				3			2						4		
7		2,3							1					2,3	
8		2,3			1,2				1					2,3	
9	4			3			2						4		
10	4			3			2						4		
11		1,2,3			1,2				1					1,2	
12		1,2,3			1,2				1					1,2,3	
13	4			3			2						4		
14	4			3			2						4		
15		1,2,3			1,2				1					1,2,3	
16		1,2,3			1,2				1					1,2,3	
21	4			3				2					4		
22		2,3			1,2					1				2,3	
23	4			3				2					4		

See footnote at end of table.

MS27401X

TABLE VII. Qualification by similarity. 1/

PIN MS27401-	Loads						Dynamics						2/ Environmental			
	Basic qualification						ER									
	A	B	C	D	E	F	A	B	C	D	E	F				
	3/ 4/	3/ 4/	3/ 5/	3/ 4/	3/ 4/	3/ 4/ 5/	3/ 4/	3/ 4/	3/ 4/	3/ 4/	3/ 4/	3/ 4/	3/ 4/	3/ 6/	3/ 6/	3/ 6/
	DC	400	50/60/ 400	DC	400	50/60/ 400	DC Config A	DC Config B	400 Config A	400 Config B	50/60/ 400 Config A	50/60/ 400 Config B	DC	400	50/60/ 400	50/60/ 400
24			1,2,3			1,2					1				1,2,3	
25	1,2,3			1,2			1						1,2,3			
26	1,2,3			1,2				1					1,2,3			
27	1,2,3			1,2			1						1,2,3			
28			1,2,3			1,2					1				1,2,3	
29			1,2,3			1,2						1			1,2,3	
30			1,2,3			1,2						1			1,2,3	
31	2,3			1,2			1						2,3			
32	2,3			1,2				1					2,3			
33	2,3			1,2			1						2,3			
34			2,3			1,2					1				2,3	
35			2,3			1,2						1			2,3	
36			2,3			1,2						1			2,3	
37	4			3				2					4			
38	4			3				2					4			2

See footnote at end of table.

MS27401X

TABLE VII. Qualification by similarity. 1/

PIN	Loads						Dynamics						Environmental		
	Basic qualification						ER						Sockets/pins		
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C
MS27401-	3/ 4/	3/ 4/	3/ 5/	3/ 4/	3/ 4/	3/ 4/ 5/	3/ 4/	DC Config A	400 Config A	400 Config B	3/ 4/	3/ 4/	3/ 6/	3/ 6/	3/ 6/
39	1,2,3												DC	400	50/60/400
40	2,3			1,2				1					2,3		
41	4			3			2						4		
42	4			3			2						4		
43	1,2,3			1,2			1						1,2,3		
44	2,3			1,2			1						2,3		
45			1,2,3								1				1,2,3
46	4			3			2						4		
47	4			3			2						4		
48	1,2,3			1,2			1						1,2,3		
49	1,2,3			1,2			1						1,2,3		
50	4			3			2						4		
51	4			3			2						4		
52	2,3			1,2			1						2,3		
53	2,3			1,2			1						2,3		

MS27401X

TABLE VII. Qualification by similarity. 1/

PIN MS27401-	Loads						Dynamics						Environmental		
	Basic qualification			ER			Sockets/pins								
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C
	3/ 4/	3/ 4/	3/ 5/	3/ 4/	3/ 4/	3/ 4/ 5/	3/ 4/	3/ 4/	3/ 4/	3/ 4/	3/ 5/	3/ 4/	3/ 6/	3/ 6/	3/ 6/
	DC	400	50/60/400	DC	400	50/60/400	DC Config A	DC Config B	400 Config A	400 Config B	50/60/400 Config A	50/60/400 Config B	DC	400	50/60/400
54			1,2,3			1,2					1				1,2,3
55			1,2,3			1,2					1				1,2,3
56			2,3			1,2					1				2,3
57			2,3			1,2					1				2,3
58	4			3		1,2			2				4		
59	2,3			1,2					1				2,3		

1/ Reference amendment 1, MIL-R-6106, for guidelines on grouping and ranking relays within each subgroup.

2/ EMI test must be performed on each type of ac network.

3/ Coils (dc suppressed and ac networks). Discretes qualify only discretes. Hybrids qualify only hybrids. DC standard coils can be qualified by suppress coils.

4/ Terminals: Socket pin type terminals are considered worst case. Solder pins and hooks may be qualified by similarity.

5/ Universal ac coils (50/400 Hz). Test at 50 Hz and 400 Hz during initial qualification. Alternate between 50 Hz and 400 Hz for qualification retention. 60 Hz testing may be used in lieu of 50 Hz.

6/ Socket pins (with gasket seals), are considered nonsimilar to solder pins and hooks and each must be tested.

MS27401X

(X) TABLE VIII. Cross-reference for Government logistic support.

PIN MS27401-	Support with PIN M83536/	PIN MS27401-	Support with PIN M83536/
1	9-023	31	10-023
2	9-024	32	10-026
3	11-001	33	10-024
4	11-002	34	11-007
5	9-023	35	11-009
6	9-024	36	11-007
7	11-001	37	9-025
8	11-002	38	9-025
9	9-028	39	10-025
10	9-029	40	10-025
11	11-003	41	9-022
12	11-004	42	9-022
13	9-023	43	10-022
14	9-024	44	10-022
15	11-001	45	11-005
16	11-002	46	9-020
17	Cancelled/No repl.	47	9-019
18	Cancelled/No repl.	48	10-020
19	Cancelled/11-006	49	10-019
20	Cancelled/11-007	50	9-020
21	9-026	51	9-019
22	11-008	52	10-020
23	9-026	53	10-019
24	11-008	54	11-011
25	10-023	55	11-010
26	10-026	56	11-011
27	10-024	57	11-010
28	11-006	58	9-027
29	11-009	59	10-027
30	11-007		

MS27401X

(X) TABLE IX. Supersession data.

Superseded PIN MS27401-	Replacement PIN M83536/	Superseded PIN MS27401-	Replacement PIN M83536/
1	9-023	31	10-023
2	9-024	32	10-026
3	11-001	33	10-024
4	11-002	34	11-006
5	9-023	35	11-009
6	9-024	36	11-007
7	11-001	37	9-025
8	11-002	38	9-025
9	9-028	39	10-025
10	9-029	40	10-025
11	11-003	41	9-022
12	11-004	42	9-022
13	9-023	43	10-022
14	9-024	44	10-022
15	11-001	45	11-005
16	11-002	46	9-020
17	Cancelled/No repl.	47	9-019
18	Cancelled/No repl.	48	10-020
19	Cancelled/11-006	49	10-019
20	Cancelled/11-007	50	9-020
21	9-026	51	9-019
22	11-008	52	10-020
23	9-026	53	10-019
24	11-008	54	11-011
25	10-023	55	11-010
26	10-026	56	11-011
27	10-024	57	11-010
28	11-006	58	9-027
29	11-009	59	10-027
30	11-007		

MS27401X

CONCLUDING MATERIAL

Custodians:

Army - ER
Navy - EC
Air Force - 85

Review activities:

Army - AR, MI
Navy - AS, EC, OS
Air Force - 99
DLA - ES

Preparing activity:

Air Force - 85

Agent:

DLA - ES

(Project 5945-0941)