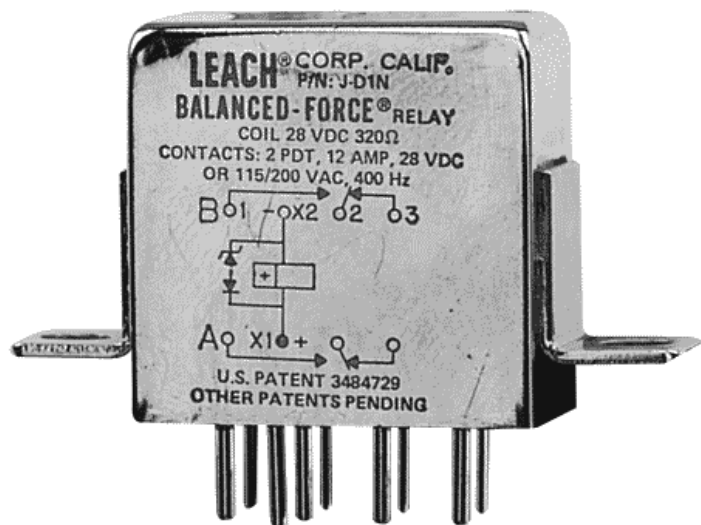


# ENGINEERING DATA SHEET

# SERIES J

RELAY - NONLATCH  
2 PDT, 12 AMPS



**APPLICATION NOTES:**  
[023](#)

**APPLICABLE SOCKET:**  
[SO-1049-8309/8987](#)  
[SO-SSL](#)

All welded construction  
Contact arrangement **2 PDT**  
Qualified at 10 Amps to **MIL-PRF-83536**

## PRINCIPLE TECHNICAL CHARACTERISTICS

Contacts rated at **28 Vdc; 115 Vac, 400 Hz, 1 phase and 115/200 Vac, 400 Hz, 3 phases**

Weight **0.088lb max**

Dimensions of case **1.01in x .51in x 1.00in**

Special models available upon request.  
Hermetically sealed, corrosion resistant metal can.  
Contact factory for information on MIL-qualified part numbers.

## CONTACT ELECTRICAL CHARACTERISTICS

| Contact rating per pole and load type [1] | Load current in Amps |                 |                          |                             |
|---|----------------------|-----------------|--------------------------|-----------------------------|
|   | @28 Vdc              | @115 Vac 400 Hz | @115/200 Vac, 400 Hz, 3Ø | @115/200 Vac, 60 Hz, 3Ø [2] |
| Resistive                                 | 12                   | 12              | 12                       | 2.5                         |
| Inductive [3]                             | 8                    | 8               | 8                        | 2.5                         |
| Motor                                     | 4                    | 4               | 4                        | 2                           |
| Lamp                                      | 2                    | 2               | 2                        | -                           |
| Overload                                  | 40                   | 60              | 60                       | N/A                         |
| Rupture                                   | 50                   | 80              | 80                       | N/A                         |



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Data sheets are for initial product selection and comparison. Contact Esterline Power Systems prior to choosing a component.

**COIL CHARACTERISTICS (Vdc)****SERIES J**

| CODE   | A    | B     | C   | M    | N [4] | R [4] | V [4] |
|--|------|-------|-----|------|-------|-------|-------|
| Nominal operating voltage  | 28   | 12    | 6   | 48   | 28    | 12    | 6     |
| Maximum operating voltage  | 29   | 14.5  | 7.3 | 50   | 29    | 14.5  | 7.3   |
| Maximum pickup voltage   |      |       |     |      |       |       |       |
| - Cold coil at +125° C   | 18   | 9     | 4.5 | 36   | 18    | 9     | 4.5   |
| - During high temp test at +125° C   | 19.8 | 9.9   | 5   | 38   | 19.8  | 9.9   | 5     |
| - During continuous current test at +125° C  | 22.5 | 11.25 | 5.7 | 42   | 22.5  | 11.25 | 5.7   |
| Maximum drop-out voltage   | 7    | 4.5   | 2.5 | 14   | 7     | 4.5   | 2.5   |
| Coil resistance $\Omega$ $\pm 10\%$ at +25° C, except types "C" and "V" +20%, -10% | 320  | 80    | 20  | 1000 | 320   | 80    | 20    |

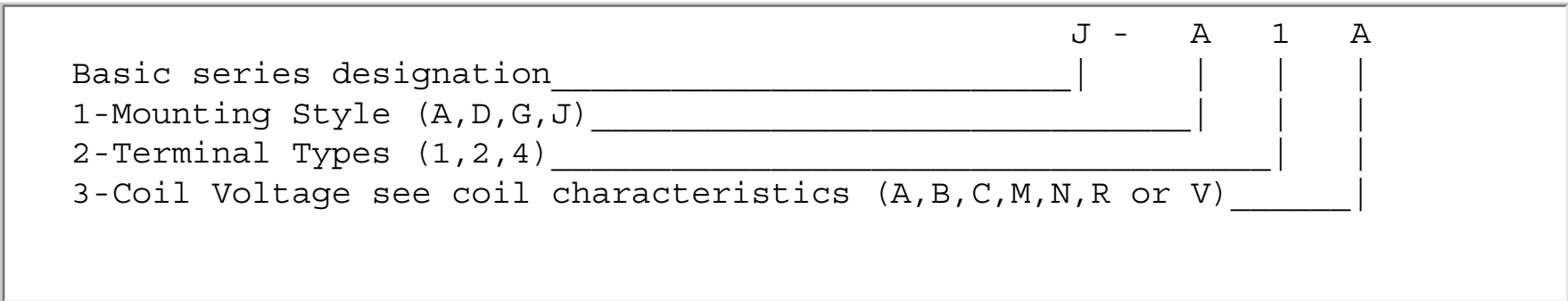
**GENERAL CHARACTERISTICS**

|  |  |
|--|--|
| Temperature range  | -70°C to +125°C                              |
| Minimum operating cycles (life) at rated load                                    | 100,000                                      |
| Minimum operating cycles (life) at 25% rated load                                | 400,000                                      |
| Dielectric Strength at sea level - All circuits to ground and circuit to circuit | 1250 Vrms                                    |
| Dielectric Strength at sea level - Coil to ground                                | 1000 Vrms                                    |
| Dielectric Strength at altitude 80,000 ft  | 500 Vrms [5]                                 |
| Insulation resistance - Initial (500 Vdc)  | 100 M $\Omega$ min                           |
| Insulation resistance - After environmental tests (500 Vdc)                      | 50 M $\Omega$ min                            |
| Sinusoidal vibrations (A, D and J mounting)                                      | 0.12DA / 10 to 70 Hz<br>30 g / 70 to 3000 Hz |
| Sinusoidal vibrations (G mounting)   | 0.12DA / 10 to 57 Hz<br>20g / 57 to 3000 Hz  |
| Random vibrations  |  |
| - Applicable specification   | MIL-STD-202                                  |
| - Method   | 214  |
| - Test condition - A, D and J Mounting   | 1G (0.4g <sup>2</sup> /Hz, 50 to 2000 Hz)    |
| - Test condition - G Mounting (E in Track)                                       | 1E (0.2g <sup>2</sup> /Hz, 50 to 2000 Hz)    |
| - Duration   | 15 minutes each plane                        |
| Shocks (A, D and J mounting)   | 200 g / 6 ms                                 |
| Shocks (G mounting)  | 100 g / 6 ms                                 |
| Maximum contact opening time under vibrations and shocks                         | 10 $\mu$ s                                   |
| Operate time at nominal voltage@25°C   | 10 ms max                                    |
| Release time at nominal voltage@25°C   | 10 ms max                                    |
| Contact make bounce at nominal voltage@25°C                                      | 1 ms max                                     |
| Contact release break bounce at nominal voltage@25°C                             | 0.1 ms max [6]                               |
| Weight maximum   | 0.088lb                                      |

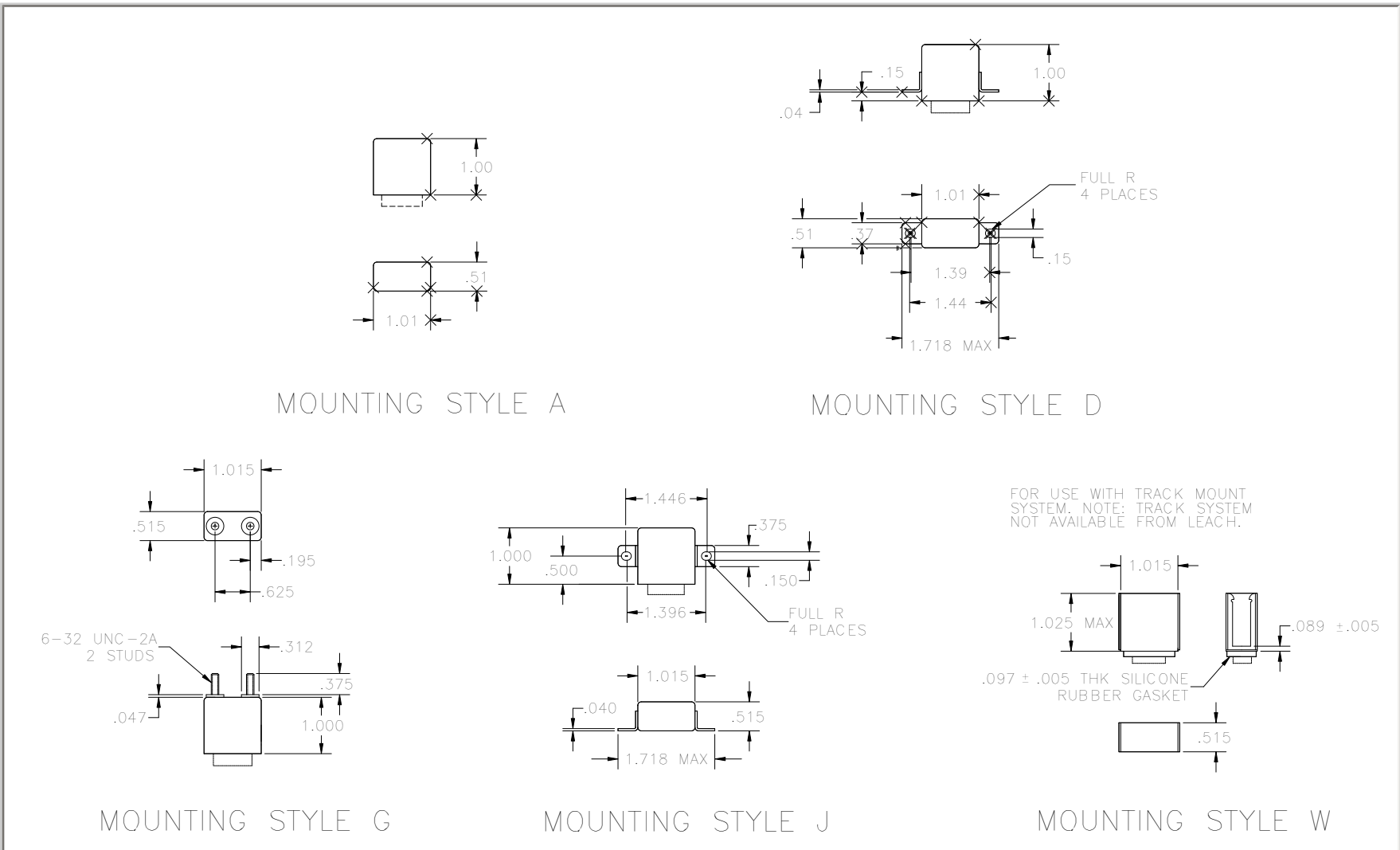
Unless otherwise noted, the specified temperature range applies to all relay characteristics.

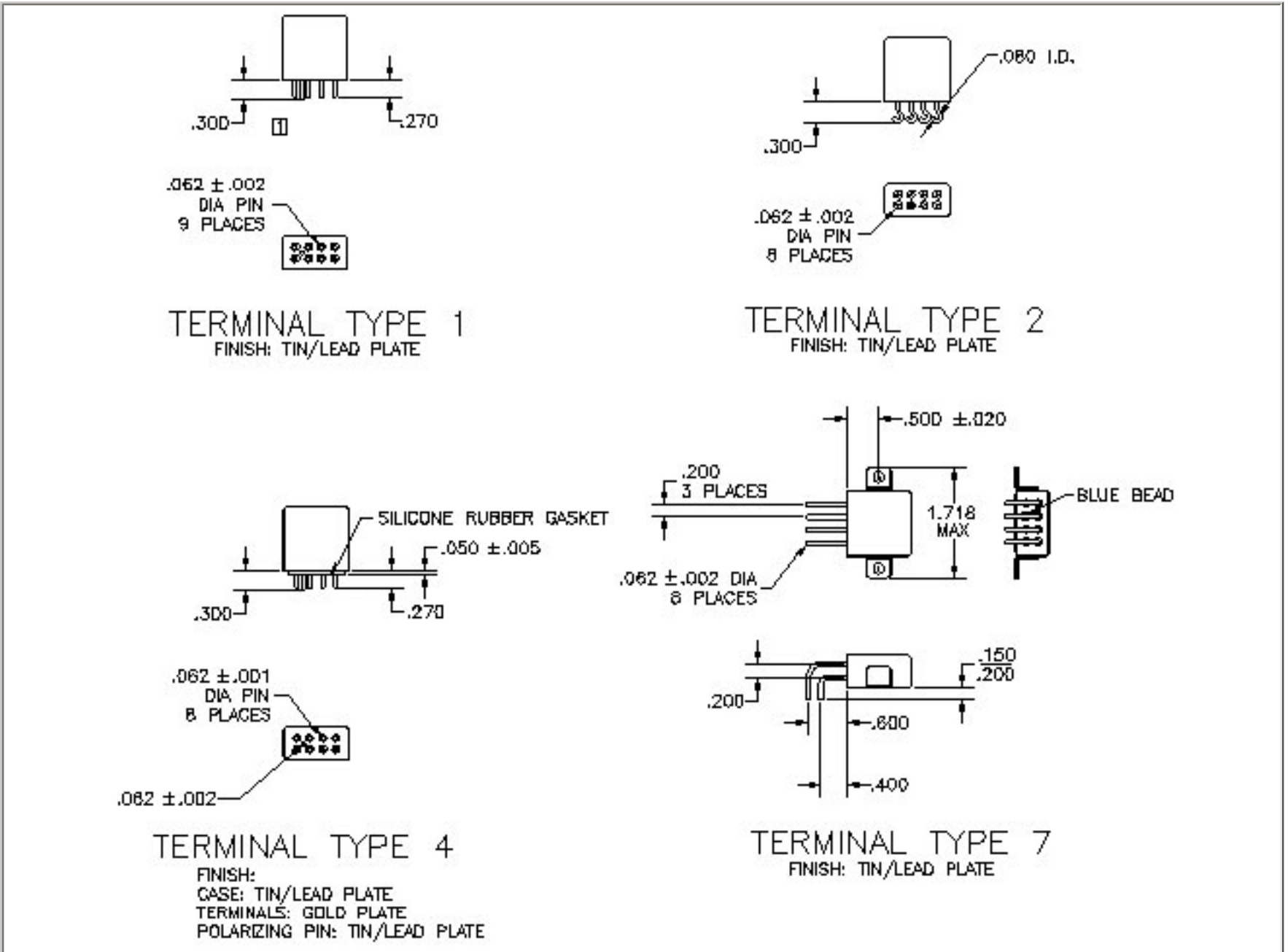
- [1] Standard Intermediate current test applicable.
- [2] 60 Hz load life, 10,000 cycles.
- [3] Inductive load life, 20,000 cycles.
- [4] "N" R & V coils have back EMF suppression to 42 volts maximum.
- [5] 500 Vrms with silicone gasket compressed, 350 Vrms all other conditions.
- [6] Applicable to suppressed coils only.
- 7. Applicable military specification: MIL-PRF-83536.
- 8. Special models available: Dry circuit, established reliability testing, etc.
- 9. Time current relay characteristics per MIL-PRF-83536.
- 10. Relay will not operate, but will not be damaged by application of reverse polarity to coil.

NUMBERING SYSTEM

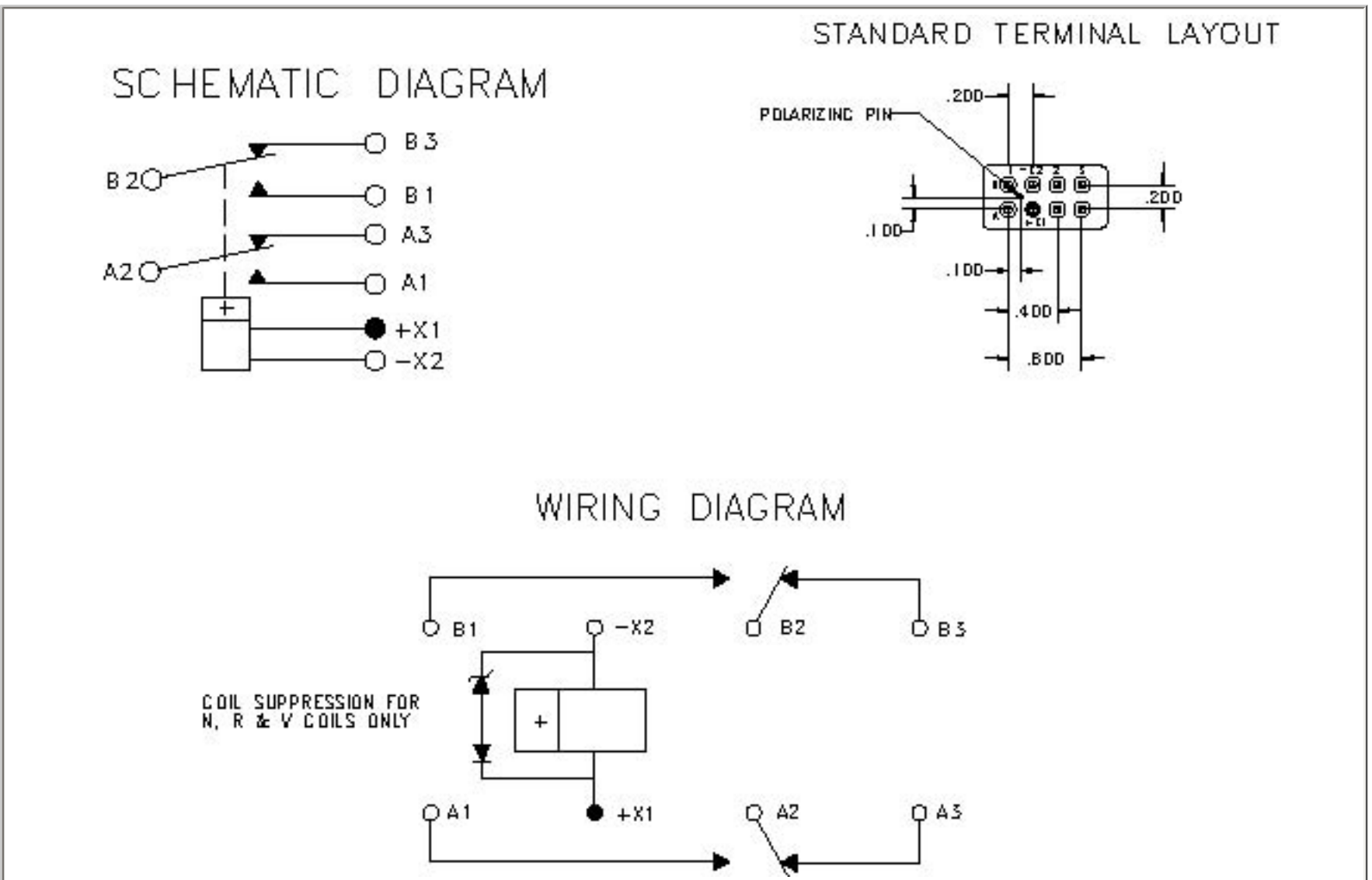


MOUNTING STYLES





Standard Tolerance: ± .010 1. Insulator P/N RC-RP800060-5 or RC-RP920060-1 available from Cornucopia Plastics, Paso Robles, CA.



STANDARD TOL: ±.010

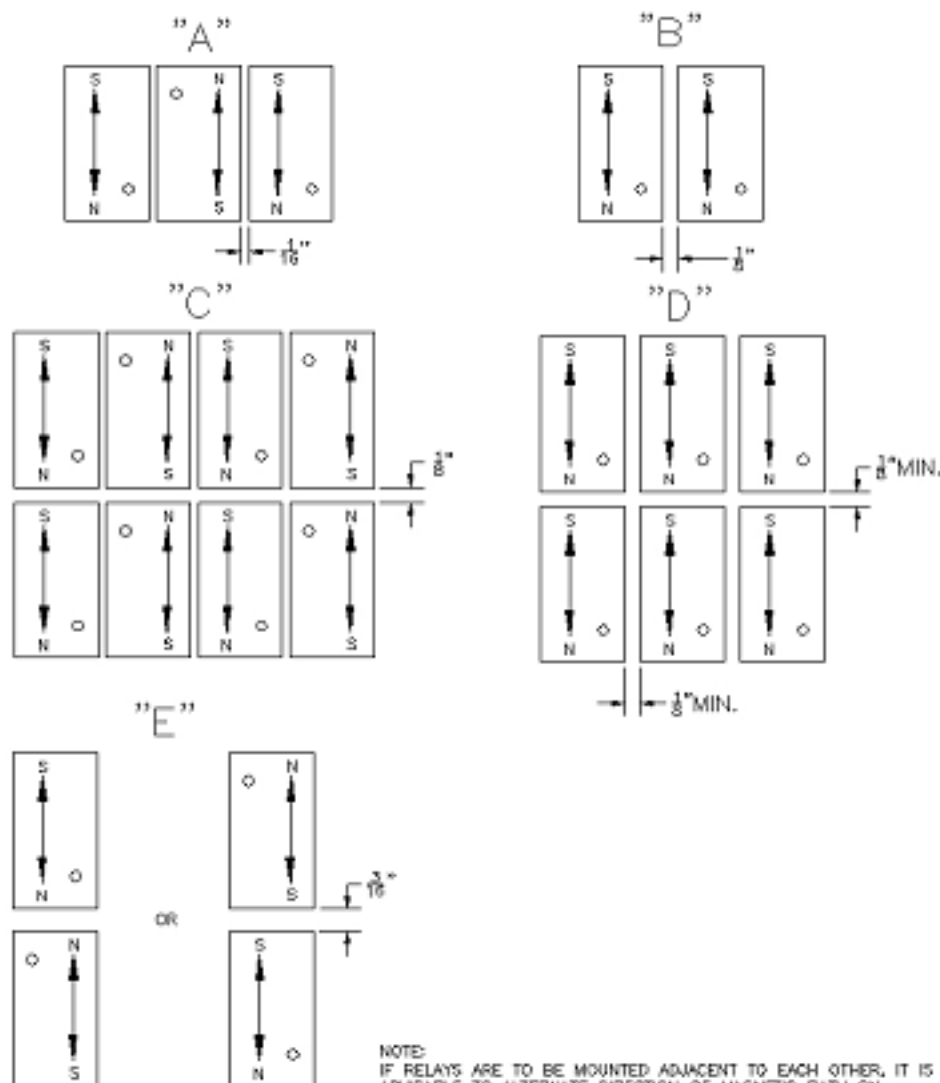
**MOUNTING DISTANCE BETWEEN RELAYS**  
**Applicable to XL, X, XA, XCL, XC,**  
**YL, Y, YA, YCL, YC, YCA,**  
**JS/JSA, JA, JL, J,**  
**KA, KL, K**

**Definition and applicability**

This application note defines the minimum distance between relays to insure relay performance as specified in our data sheets.

**Phenomenon analysis**

Each relay generates a magnetic field either when the relay is de-energized because of the permanent magnet or in the energized position because of permanent magnet and coil. The magnetic field generated by one relay could affect the performance of another relay when the below minimum distance between relays is not respected. If the relays are mounted adjacent to each other, it is advisable to alternate direction of magnetic path on every other unit and to keep a 1/16-inch space between relays (figure "A"). Or when mounted in the same direction, separate each relay from the other by 1/8 inch (figure "B"). If two or more rows of relays are installed, allow clearance of 1/8 inch between rows, (figures "C" and "D"). Provide 3/16-inch space between relays if used in opposition (figure "E").



NOTE:  
 IF RELAYS ARE TO BE MOUNTED ADJACENT TO EACH OTHER, IT IS ADVISABLE TO ALTERNATE DIRECTION OF MAGNETIC PATH ON EVERY OTHER UNIT AND TO KEEP A 1/16" SPACE BETWEEN RELAYS, FIGURE "A". OR, WHEN MOUNTED IN SAME DIRECTION SEPARATE EACH RELAY FROM THE OTHER BY 1/8 INCH MINIMUM, "B". IF TWO OR MORE ROWS OF RELAYS ARE TO BE INSTALLED, ALLOW CLEARANCE OF 1/8 INCH MINIMUM IN BETWEEN ROWS, "C" AND "D". PROVIDE FOR 3/16" SPACE BETWEEN RELAYS IF USED IN OPPOSING MAGNETIC DIRECTION, "E". REASONABLE CHANGE IN OPERATE VALUES MAY OCCUR IF INSTRUCTIONS ARE NOT FOLLOWED.

# SO-1049-8309/8987

## ENGINEERING DATA SHEET

RELAY SOCKET  
12 AMP



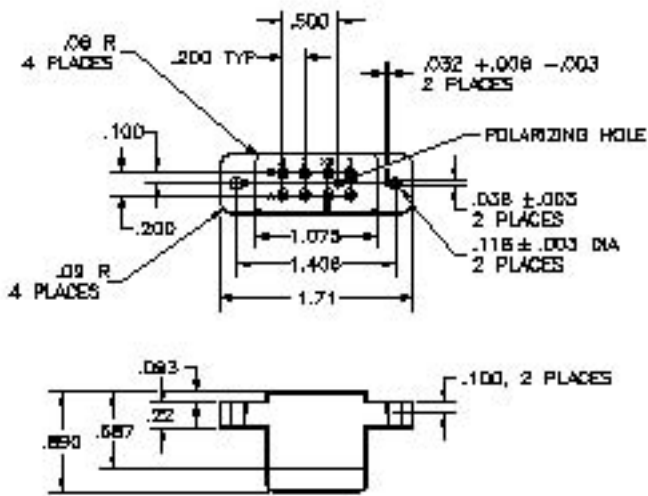
BASIC SOCKET SERIES DESIGNATION FOR:

**Series J**

MEETS THE REQUIREMENTS OF:

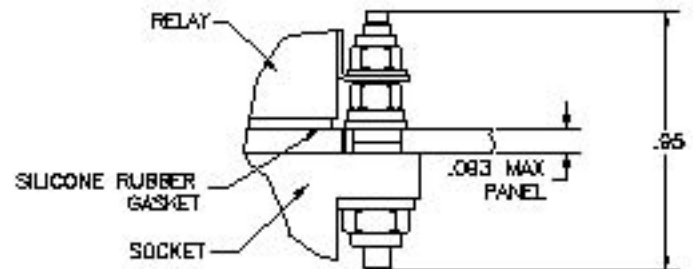
**MIL-DTL-12883**

### SOCKET DRAWING

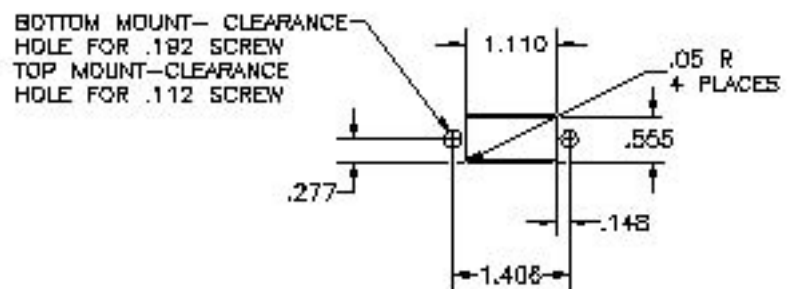


### HARDWARE MOUNTING

#### MOUNTING DETAIL



### MOUNTING DIMENSIONS



## GENERAL CHARACTERISTICS

1. Supplied with mounting hardware and No. 16 contacts, No. 16 crimp (see socket drawing illustration SO-1049-8309); No. 16 contacts, No. 20 crimp for SO-1049-8987 (not illustrated)

2. Standard tolerances

.xx  $\pm$  .01; xxx  $\pm$  .005

3. Weight

.073 lb. max

4. Temperature range

-70° C to +125° C



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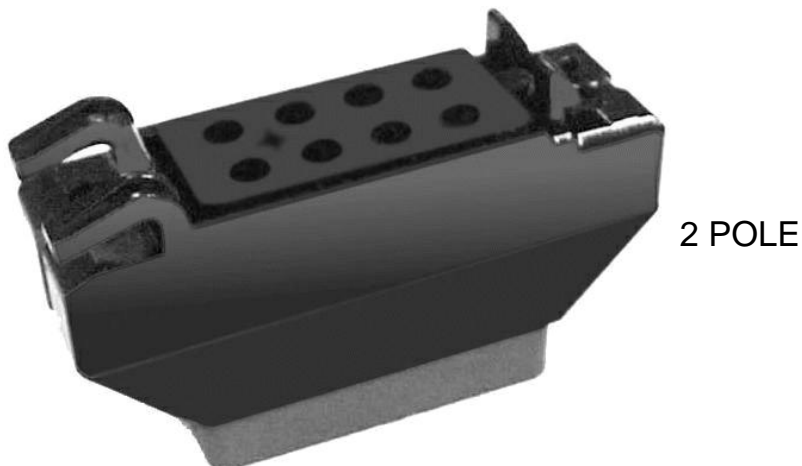
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2 POLE



4

POLE

SNAP AND LOCK SOCKET SERIES DESIGNATION FOR:

**SERIES J, JA, K, KA, KL, TDX**

MEETS THE REQUIREMENTS OF:

2-pole, 10A relays **MIL-PRF-12883/41**  
Mates with **M83536, M83726 and MS27709**  
4-pole, 10A relays **MIL-PRF-12883/40**  
Mates with **M83536**

**FEATURES**

Low profile  
Bottom panel mount  
Snaps into panel  
Other models available

**MATERIALS**

Socket body **Polyetherimide per MIL-P-46184**  
Grommet **Silicone rubber per ZZ-R-765**  
Hardware **Stainless Steel**  
Contacts **Copper alloy, hard gold plated per MIL-G-45204**  
Contact retainers **Beryllium copper**

**GENERAL CHARACTERISTICS**

|                                 |  |
|---------------------------------|--|
| Insulation resistance           | 1000 M $\Omega$ min.                       |
| Dielectric withstanding voltage | 1500 VRMS sea level; 500 VRMS at 80,000 ft |
| Weight                          | 15.3g max.                                 |
| Temperature range               | -65°C to +125°C                            |
| Vibration                       | MIL-STD-202, Method 204, Test Condition G  |
| Shock                           | MIL-STD-202, Method 213, Test Condition C  |

This socket is designed to snap and lock into a panel to reduce hardware requirement and mounting time. Contacts and hardware are provided disassembled in a plastic bag. Standard tolerances are .xx= $\pm$ .01; .xxx= $\pm$ .005 unless otherwise noted.



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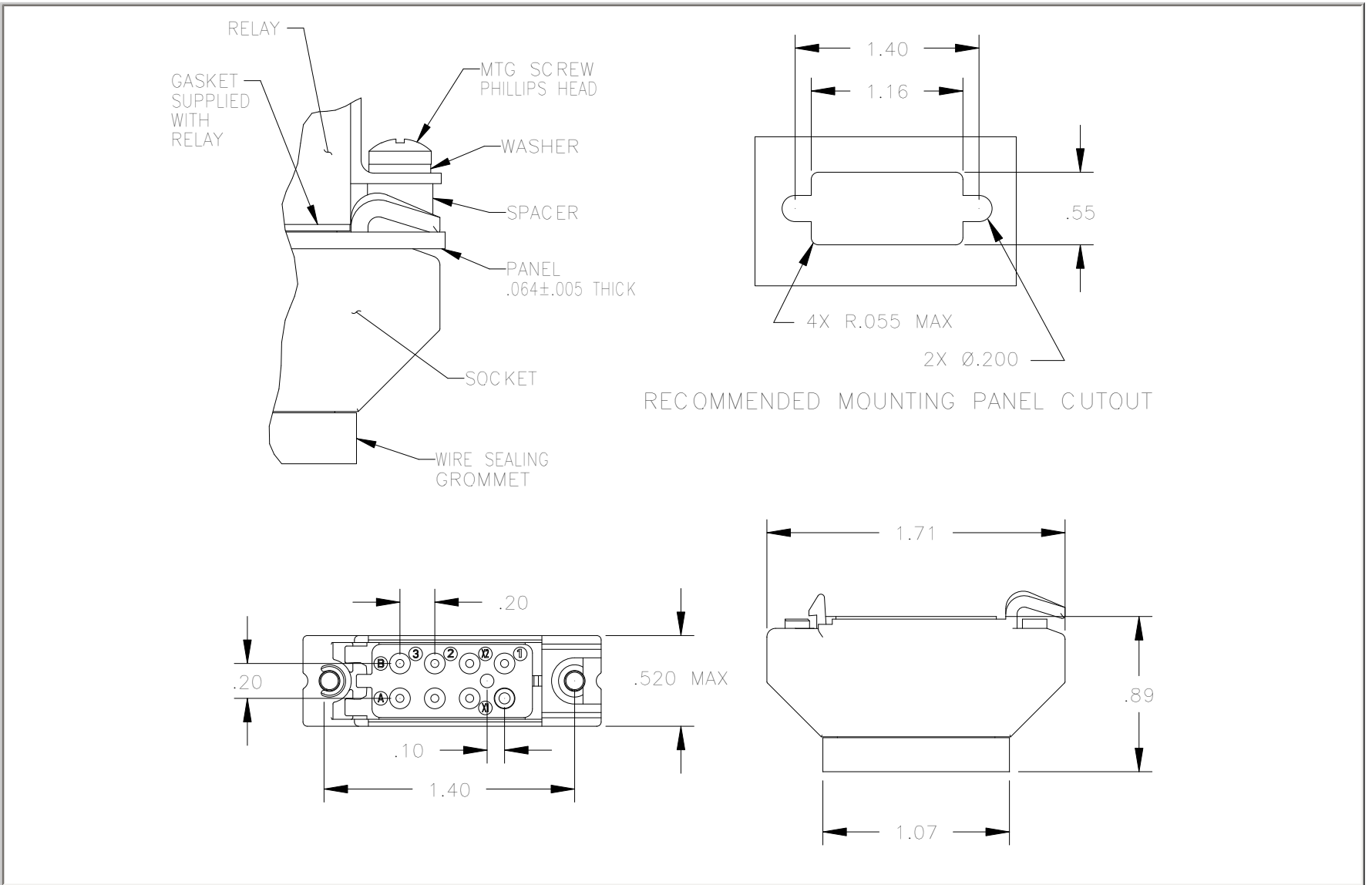
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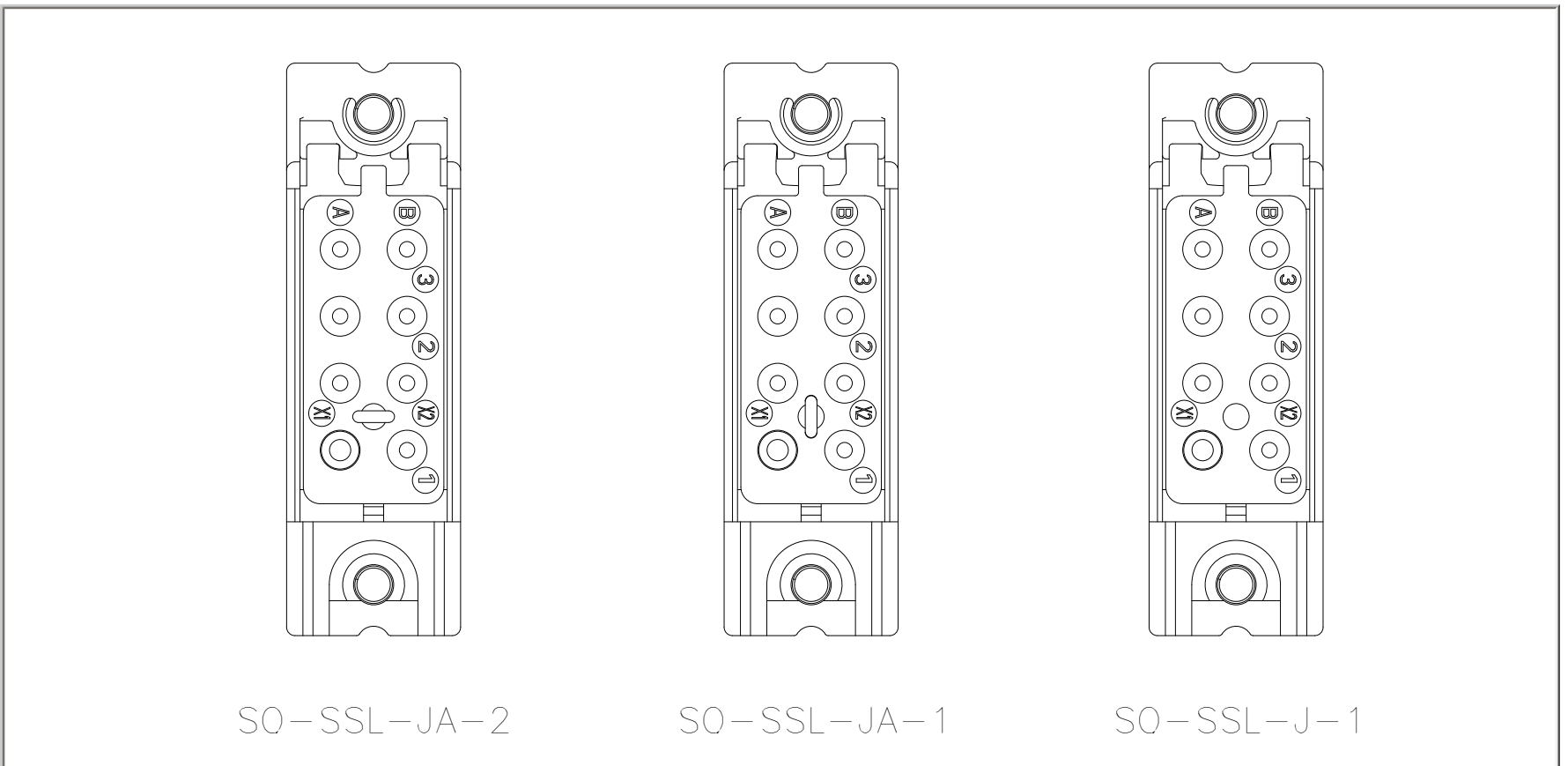
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**SOCKET DIMENSIONS**

**SO-SSL (2 POLE)**



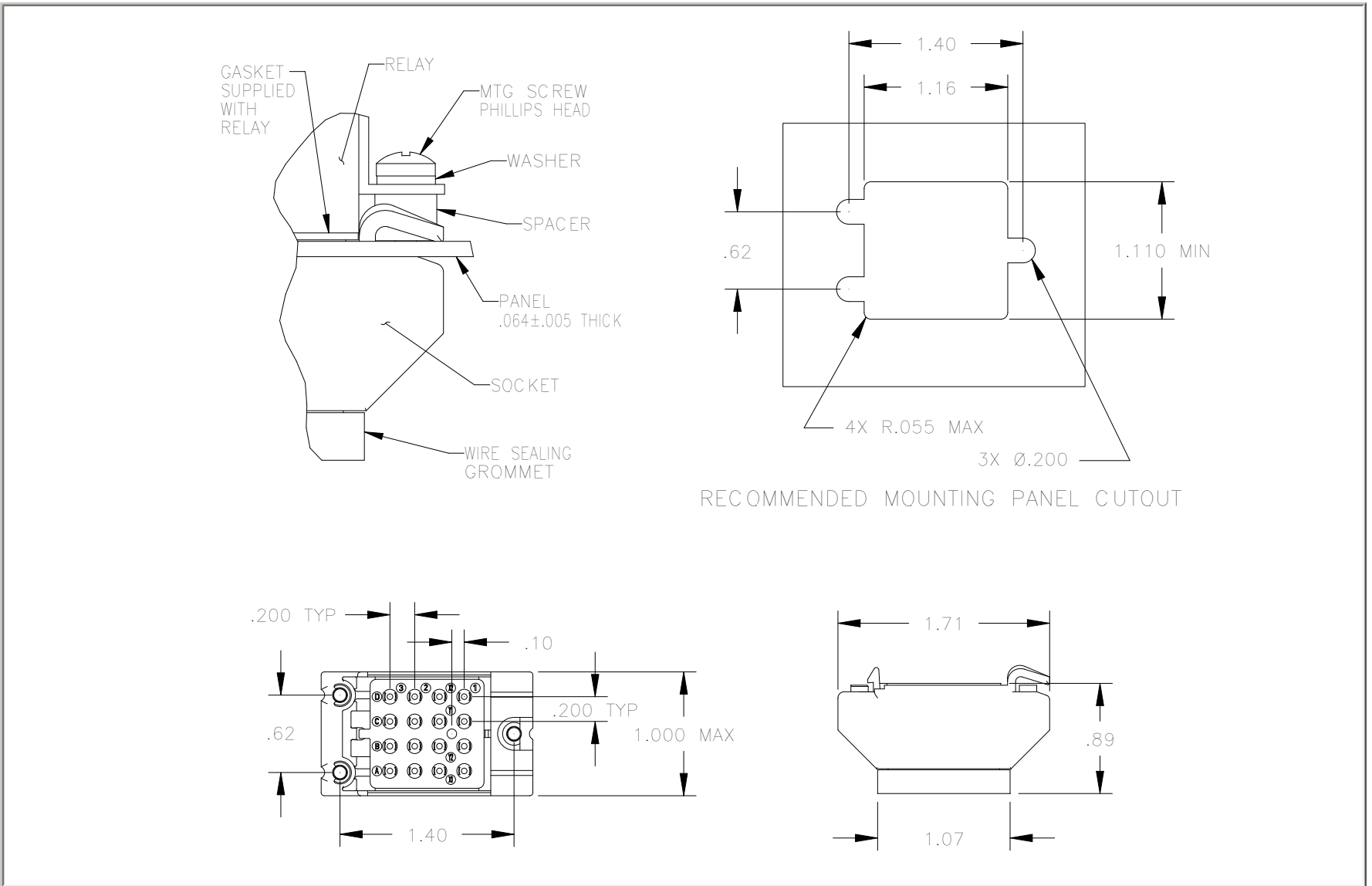
**TERMINAL LAYOUT**



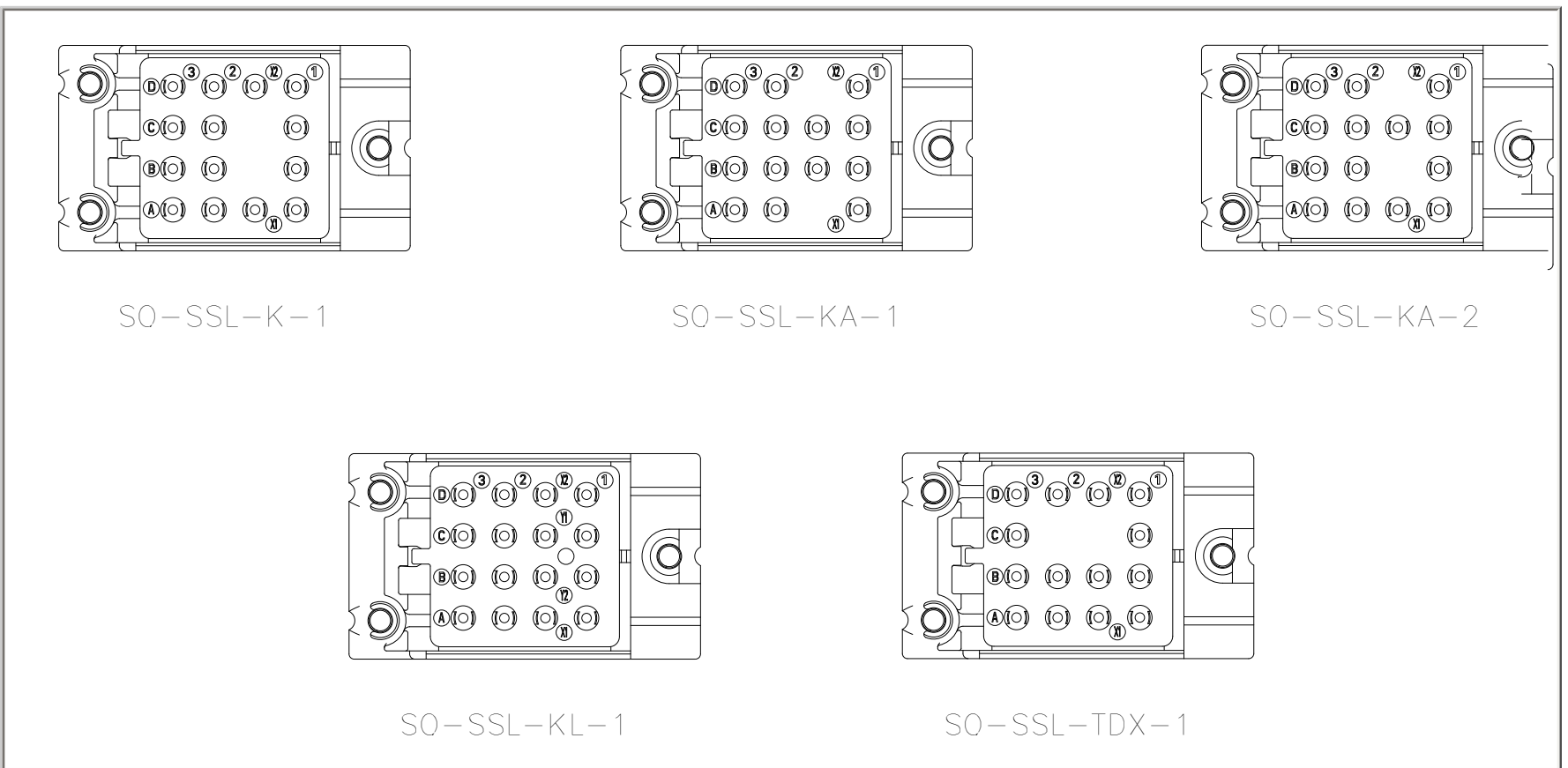


# SOCKET DIMENSIONS

# SO-SSL (4 POLE)



# TERMINAL LAYOUT



|  | SO | SSL | KA | 001 |
|--|----|-----|----|-----|
| 1-Basic socket designation_____                    |    |     |    |     |
| 2-Body style (short snap lock)_____                |    |     |    |     |
| 3-Mating relay (J, JA, K, KA, KL, TDX)_____        |    |     |    |     |
| 4-Polarization (see terminal layout)_____          |    |     |    |     |
| 5-Hardware (0=less hardware, 1=with hardware)_____ |    |     |    |     |
| 6-Contacts (0=less contacts, 1=with contacts)_____ |    |     |    |     |