

**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



Featuring **LEACH**® power and control solutions  
[www.esterline.com](http://www.esterline.com)

**AMERICAS**  
 6900 Orangethorpe Ave.  
 P.O. Box 5032  
 Buena Park, CA 90622

**EUROPE**  
 2 Rue Goethe  
 57430 Sarralbe  
 France

**ASIA**  
 Units 602-603 6/F Lakeside 1  
 No.8 Science Park West Avenue  
 Phase Two, Hong Kong Science Park  
 Pak Shek Kok, Tai Po, N.T.  
 Hong Kong  
 Tel: (852) 2 191 3830  
 Fax: (852) 2 389 5803

Tel: (01) 714-736-7599  
 Fax: (01) 714-670-1145

Tel: (33) 3 87 97 31 01  
 Fax: (33) 3 87 97 96 86

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

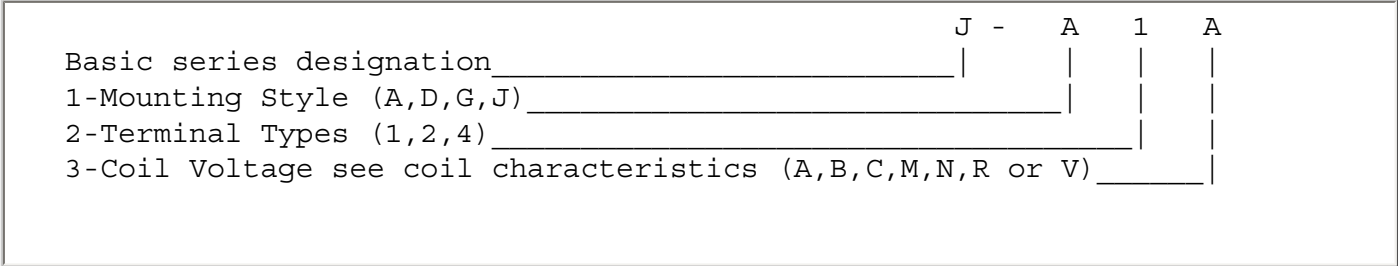
**GENERAL CHARACTERISTICS**

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 30 g / 70 to 3000 Hz
Sinusoidal vibrations (G mounting)	0.12DA / 10 to 57 Hz 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

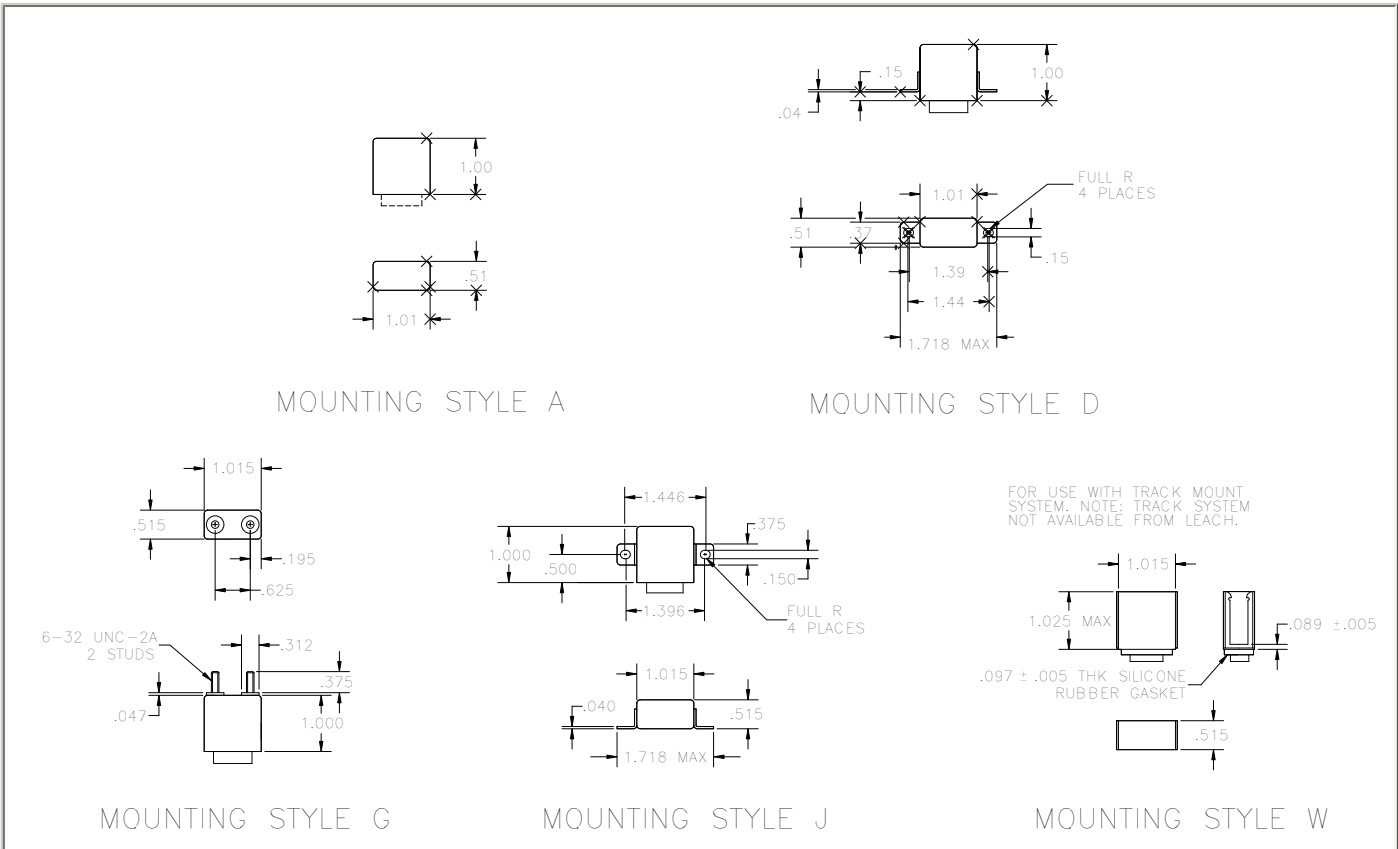
Unless otherwise noted, the specified temperature range applies to all relay characteristics.

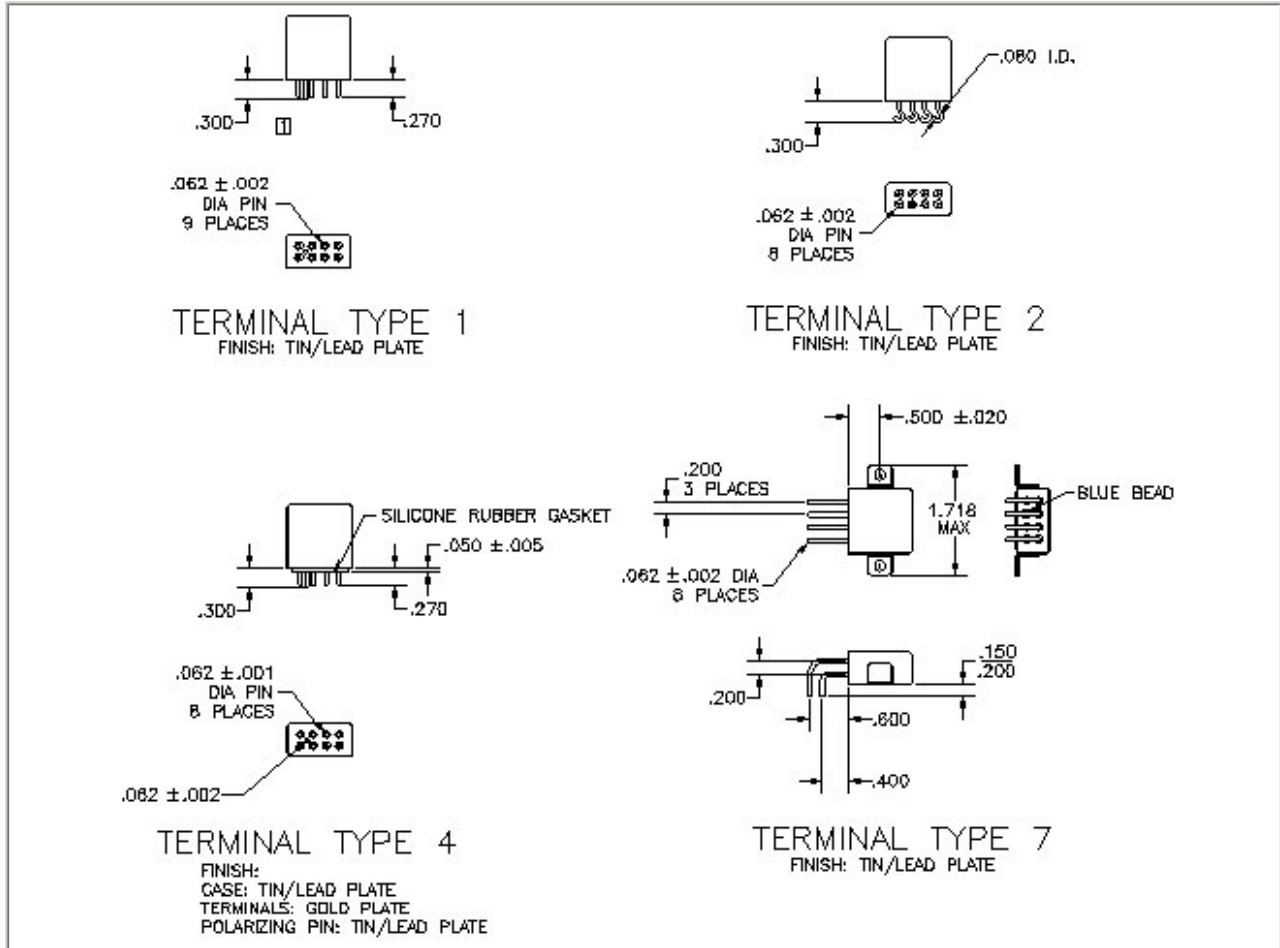
- [1] Standard Intermediate current test applicable.
- [2] 60 Hz load life, 10,000 cycles.
- [3] Inductive load life, 20,000 cycles.
- [4] "N" R & V coils have back EMF suppression to 42 volts maximum.
- [5] 500 Vrms with silicone gasket compressed, 350 Vrms all other conditions.
- [6] Applicable to 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**

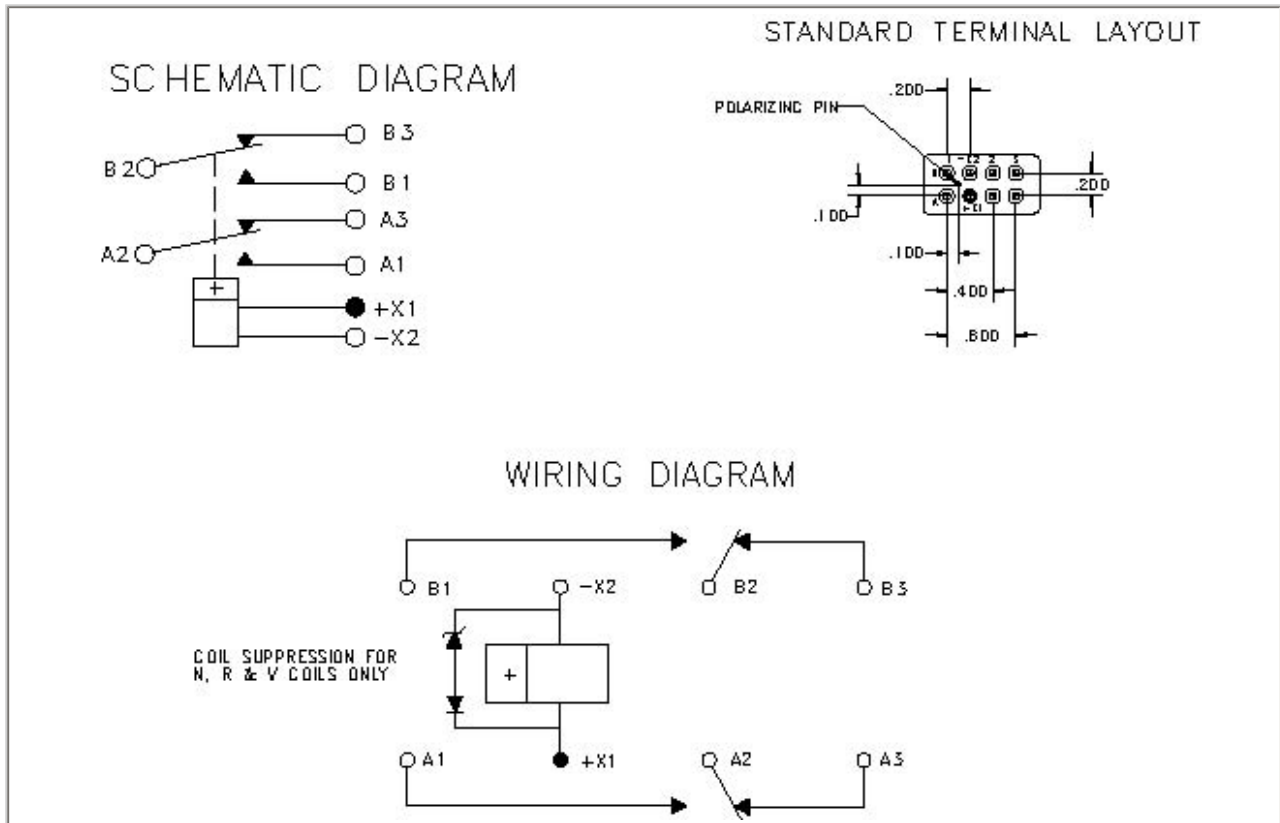


**MOUNTING STYLES**





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



STANDARD TOL:  $\pm .010$

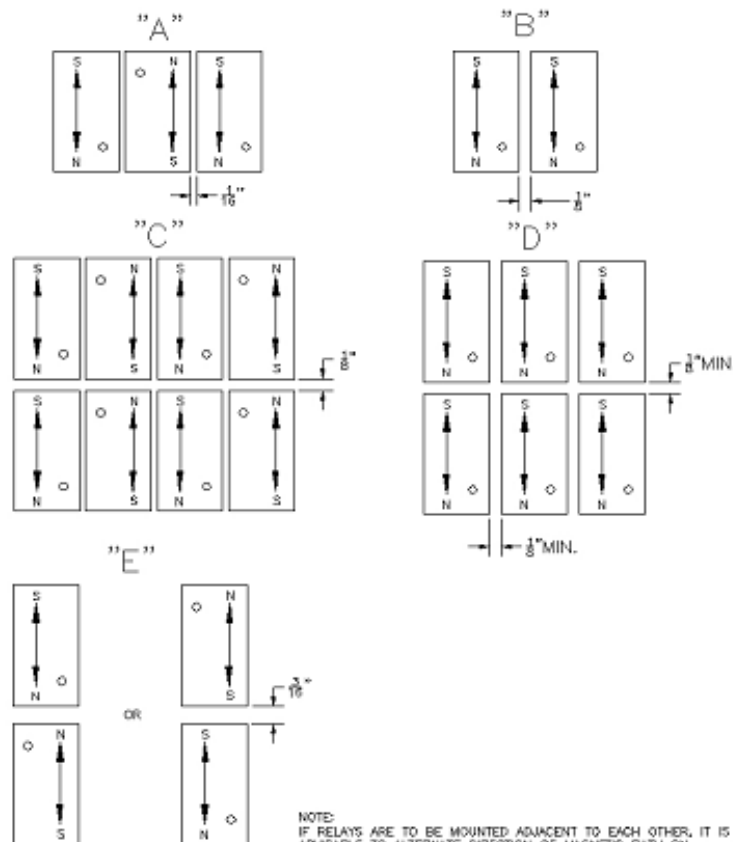
**MOUNTING DISTANCE BETWEEN RELAYS**  
**Applicable to XL, X, XA, XCL, XC,**  
**YL, Y, YA, YCL, YC, YCA,**  
**JS/JSA, JA, JL, J,**  
**KA, KL, K**

**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.

# ENGINEERING DATA SHEET

# SO-1049-8309/8987

RELAY SOCKET  
12 AMP



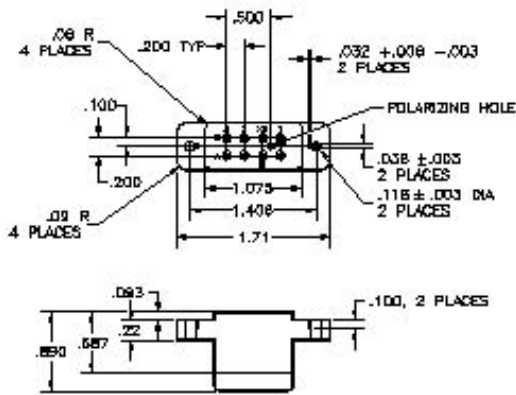
BASIC SOCKET SERIES DESIGNATION FOR:

**Series J**

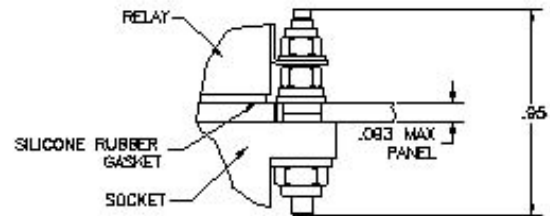
MEETS THE REQUIREMENTS OF:

**MIL-DTL-12883**

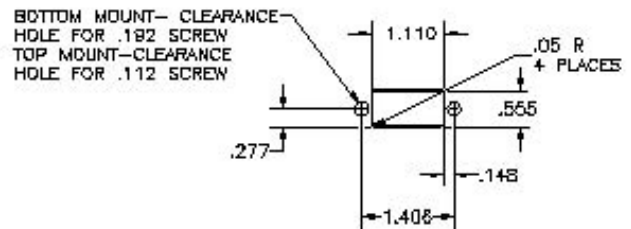
## SOCKET DRAWING



## 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 ±.01; xxx ±.005

3. Weight

.073 lb. max

4. Temperature range

-70° C to +125° C



Featuring **LEACH**® power and control solutions  
www.esterline.com

AMERICAS  
6900 Orangethorpe Ave.  
P.O. Box 5032  
Buena Park, CA 90622

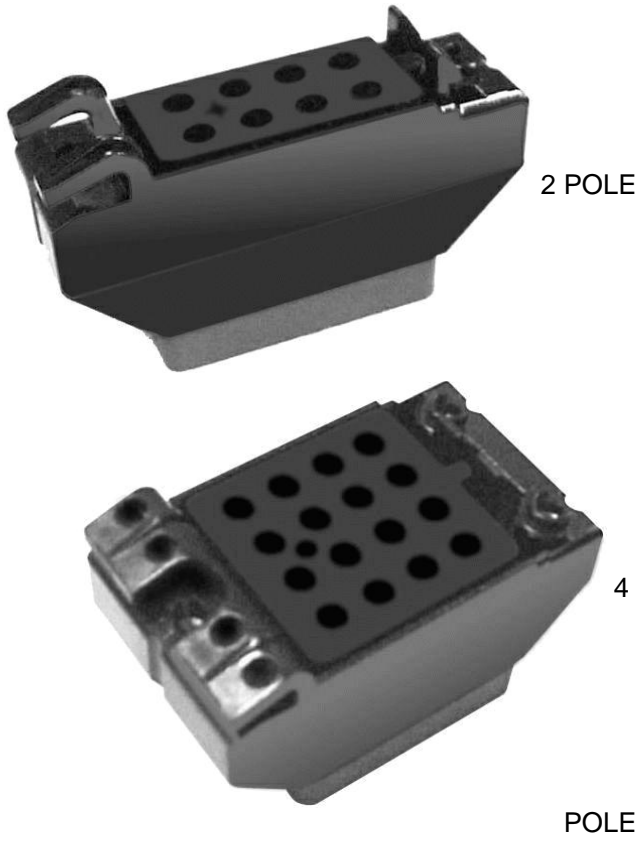
Tel: (01) 714-736-7599  
Fax: (01) 714-670-1145

EUROPE  
2 Rue Goethe  
57430 Sarralbe  
France

Tel: (33) 3 87 97 31 01  
Fax: (33) 3 87 97 96 86

ASIA  
Units 602-603 6/F Lakeside 1  
No.8 Science Park West Avenue  
Phase Two, Hong Kong Science Park  
Pak Shek Kok, Tai Po, N.T.  
Hong Kong  
Tel: (852) 2 191 3830  
Fax: (852) 2 389 5803

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



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.



Featuring **LEACH**® power and control solutions  
[www.esterline.com](http://www.esterline.com)

**AMERICAS**  
 6900 Orangethorpe Ave.  
 P.O. Box 5032  
 Buena Park, CA 90622

Tel: (01) 714-736-7599  
 Fax: (01) 714-670-1145

**EUROPE**  
 2 Rue Goethe  
 57430 Sarralbe  
 France

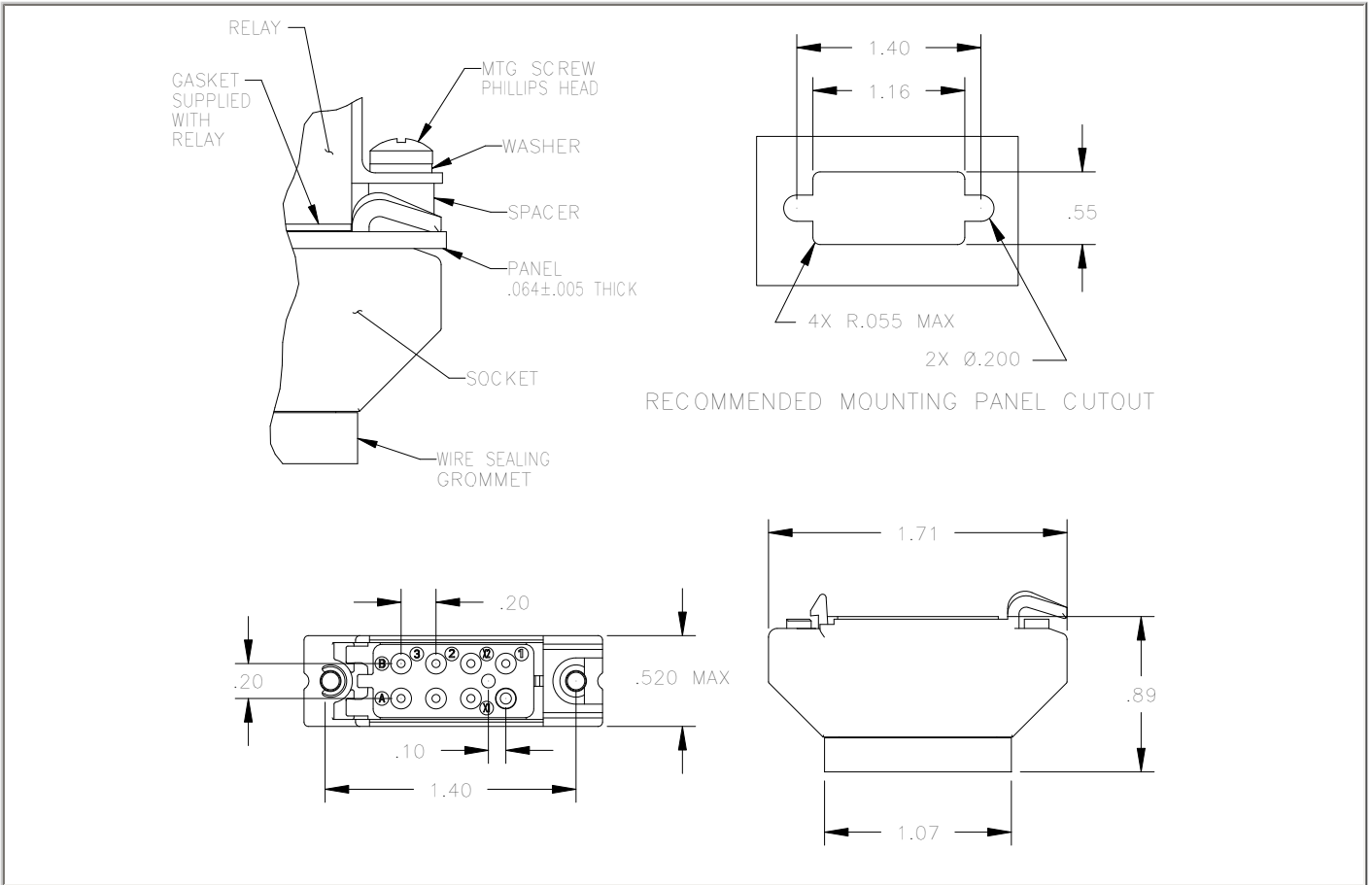
Tel: (33) 3 87 97 31 01  
 Fax: (33) 3 87 97 96 86

**ASIA**  
 Units 602-603 6/F Lakeside 1  
 No.8 Science Park West Avenue  
 Phase Two, Hong Kong Science Park  
 Pak Shek Kok, Tai Po, N.T.  
 Hong Kong  
 Tel: (852) 2 191 3830  
 Fax: (852) 2 389 5803

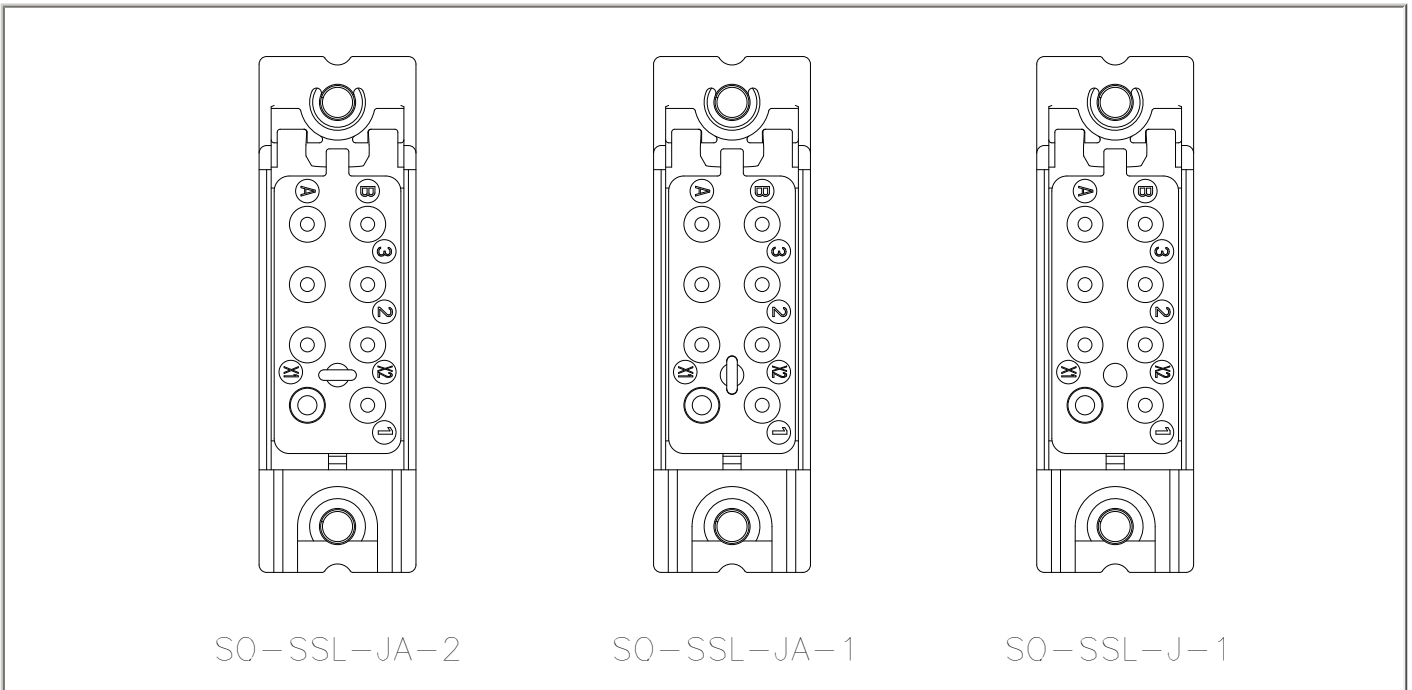
Data sheets are for initial product selection and comparison. Contact Esterline Power Systems prior to choosing a component.

# SOCKET DIMENSIONS

# SO-SSL (2 POLE)



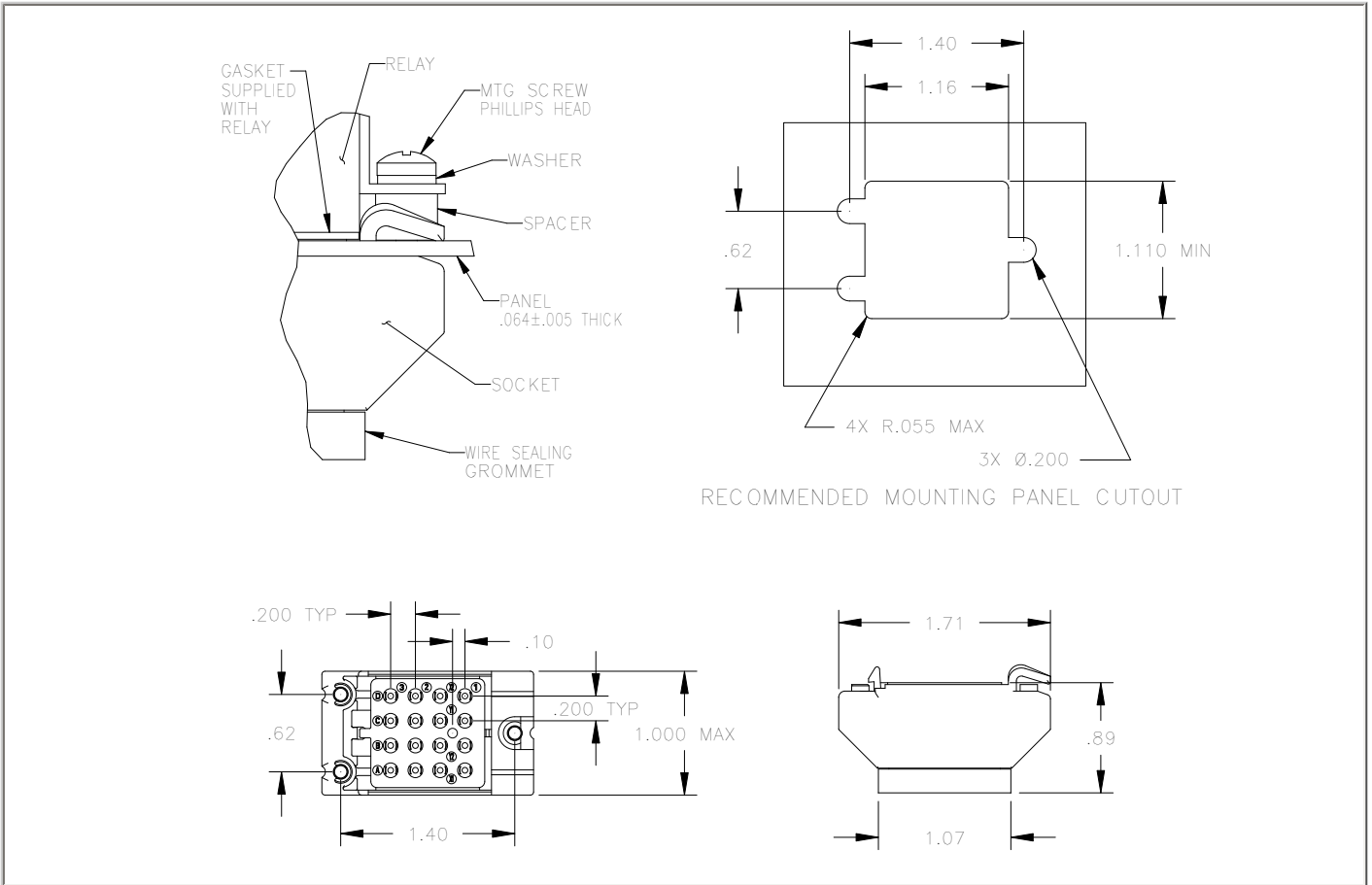
# TERMINAL LAYOUT



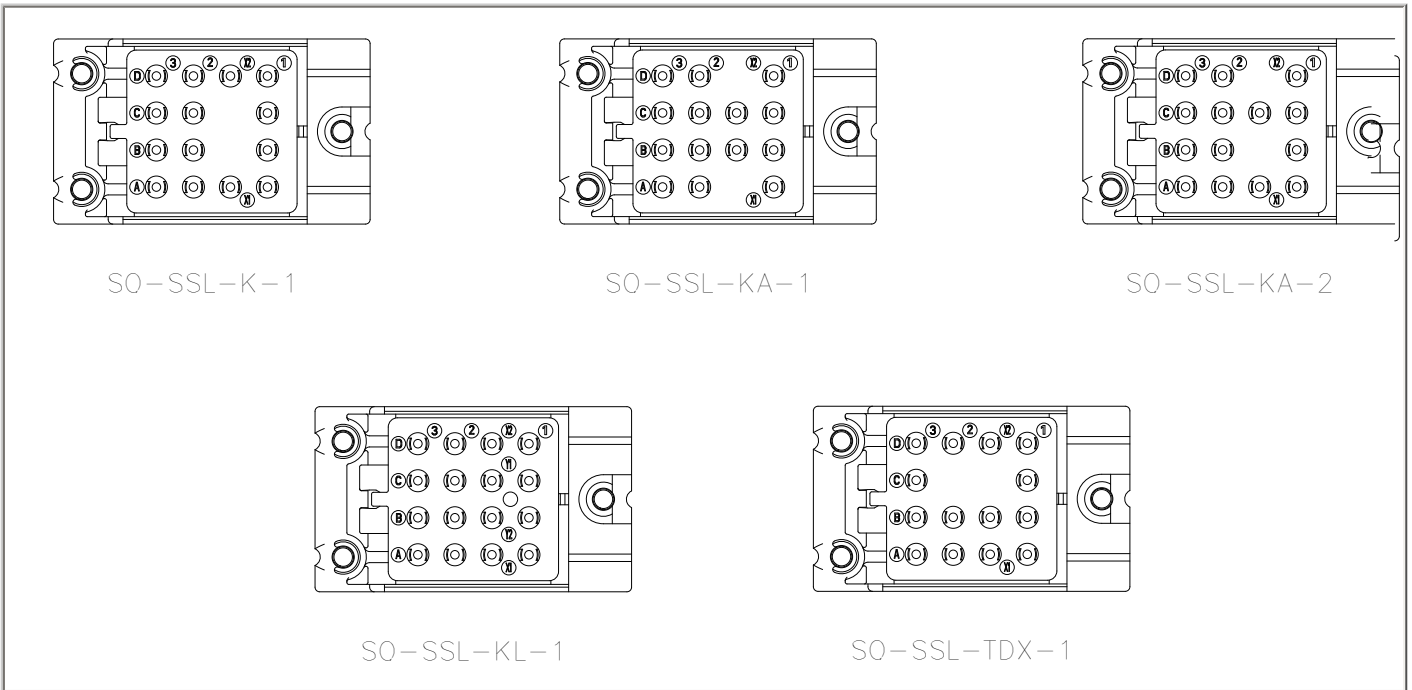


# SOCKET DIMENSIONS

# 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)_____				