



APPLICATION NOTES:

- [001](#)
- [002](#)
- [023](#)

APPLICABLE SOCKET:

- [S501](#)

Non latching hermetically sealed relay

Contact arrangement **3 PDT**
 Coil supply **Alternating current**
 Meets the requirements of **MS 27743**
 Qualified to **CECC16101-032**
CECC16103-805

PRINCIPLE TECHNICAL CHARACTERISTICS

Contacts rated at **28 Vdc; 115 Vac, 400 Hz**
 Weight **85 grams max**
 Dimensions max. of case in mm **26 x 25.4 x 26**
 Balanced-force design

Hermetically sealed, corrosion protected metal can

Balanced force armature with linked contacts

CONTACT ELECTRICAL CHARACTERISTICS

Minimum operating cycles	Contact rating per pole and load type	Load Current in Amps		
		@28 Vdc	@115 Vac 400 Hz	@115/200 Vac 400 Hz
50,000 cycles	resistive load	25	25	25
10,000 cycles	inductive load (L/R=5ms)	12	12	15
50,000 cycles	motor load	10	10	10
50,000 cycles	lamp load	5	5	5
50 cycles	resistive overload	50	80	
200,000 cycles	at 25% rated resistive load			



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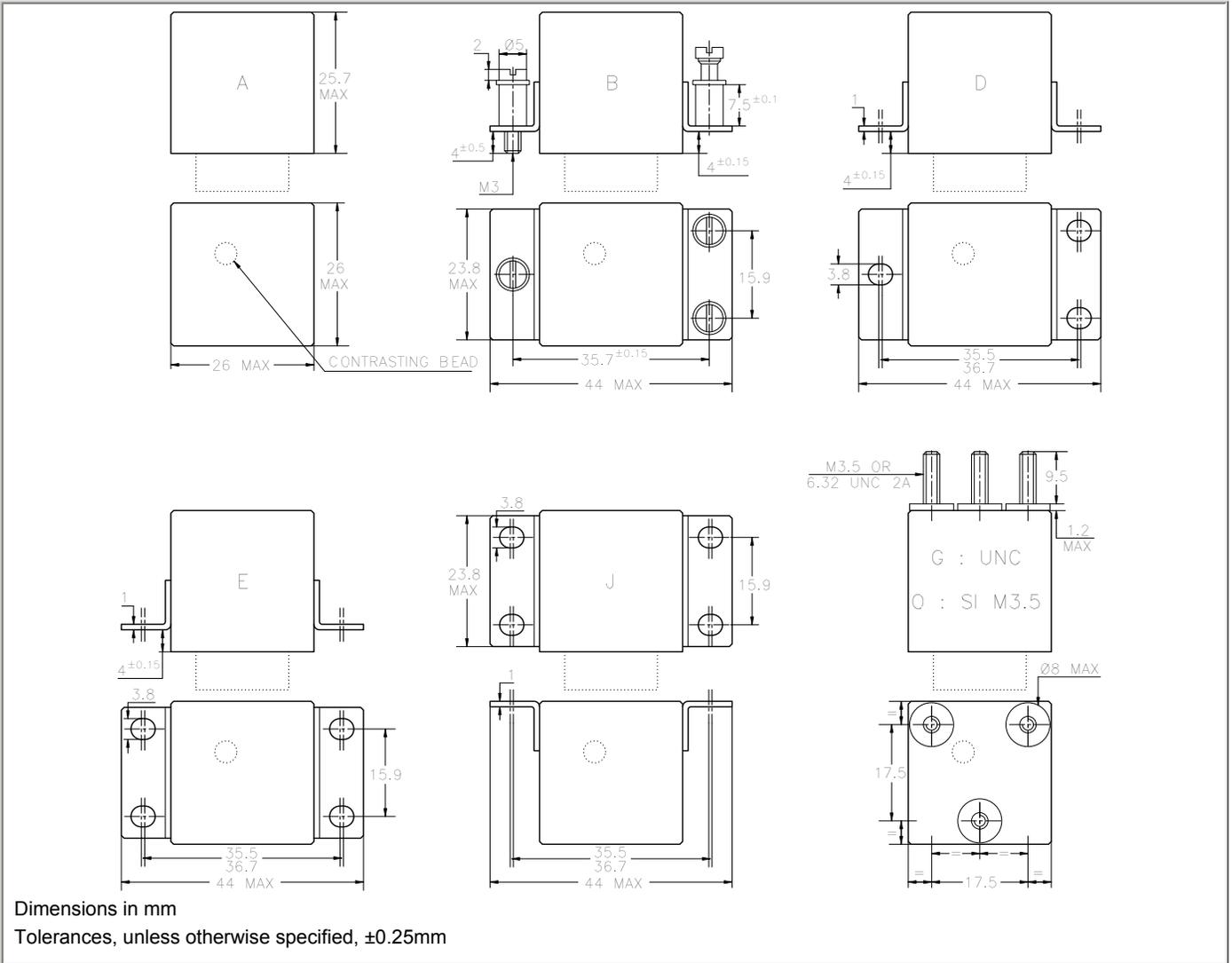
Data sheets are for initial product selection and comparison. Contact Esterline Power Systems prior to choosing a component.

COIL CHARACTERISTICS (Vac)**M501**

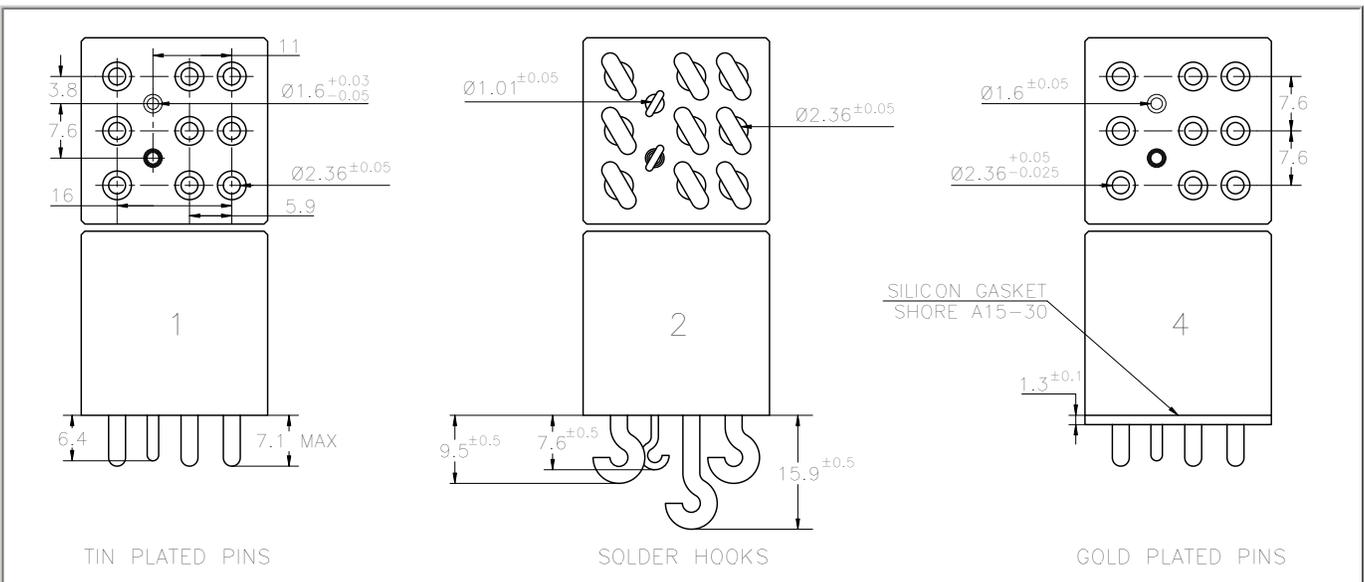
CODE	Vac / 400 Hz		Vac / 60-400 Hz	
	E	F	J	K
Nominal operating voltage	28	115	28	115
Maximum operating voltage	30	124	30	124
Maximum pickup voltage at +125° C	22	90	22	90
Maximum drop-out voltage at +125° C	10	30	10	30
Maximum coil current in amps at +25° C	0.225	0.04	0.12	0.028
Temperature range	-65° C to +125 ° C		-45° C to +85 ° C	

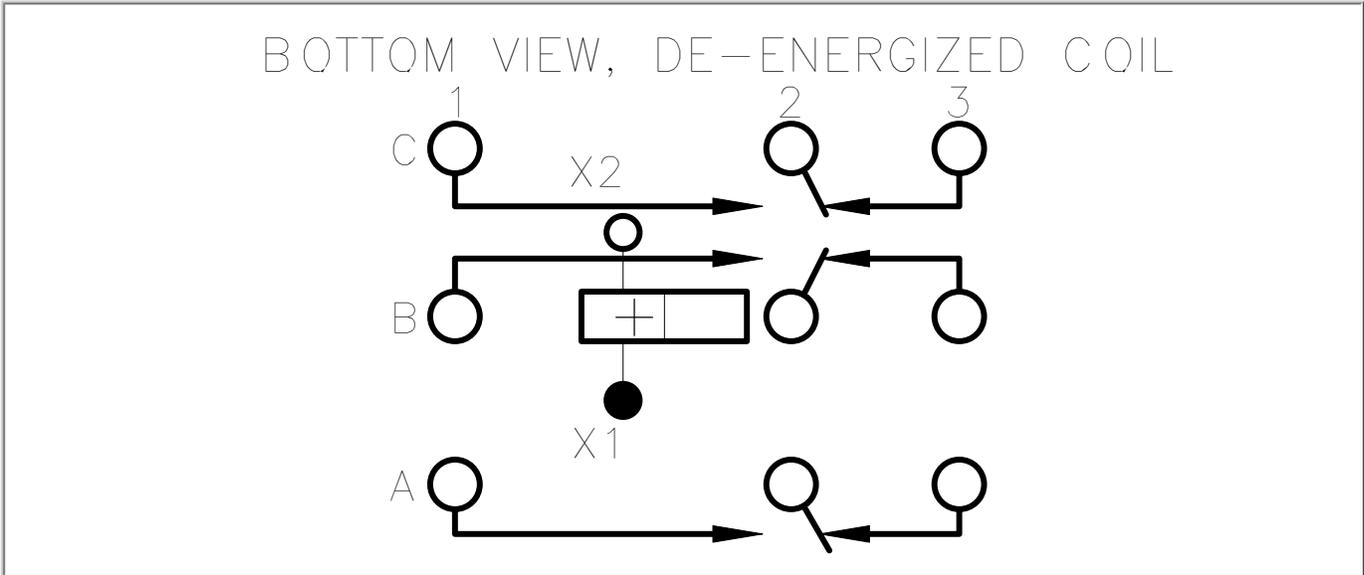
GENERAL CHARACTERISTICS

Dielectric strength at sea level	
- Contacts to ground and between contacts	1250 VRMS / 50 Hz
- Coil to ground	1000 VRMS / 50 Hz
Dielectric strength at altitude 25,000 m (all points)	350 VRMS / 50 Hz
Initial insulation resistance at 500 Vdc	100 M Ω min.
Sinusoidal vibration (except G and O mounting)	30G / 75 to 3000 Hz
Sinusoidal vibration (G and O mounting only)	20G / 75 to 3000 Hz
Shock (except G and O mounting)	200G / 6 ms
Shock (G and O mounting only)	50G / 11 ms
Maximum contact opening time under vibration and shock	10 μs
Operate time at nominal voltage	20 ms max
Release time	50 ms max
Bounce time	1 ms max
Contact voltage drop at nominal current	
- initial value	150 mV max
- after life	175 mV max



TERMINAL TYPES





NUMBERING SYSTEM

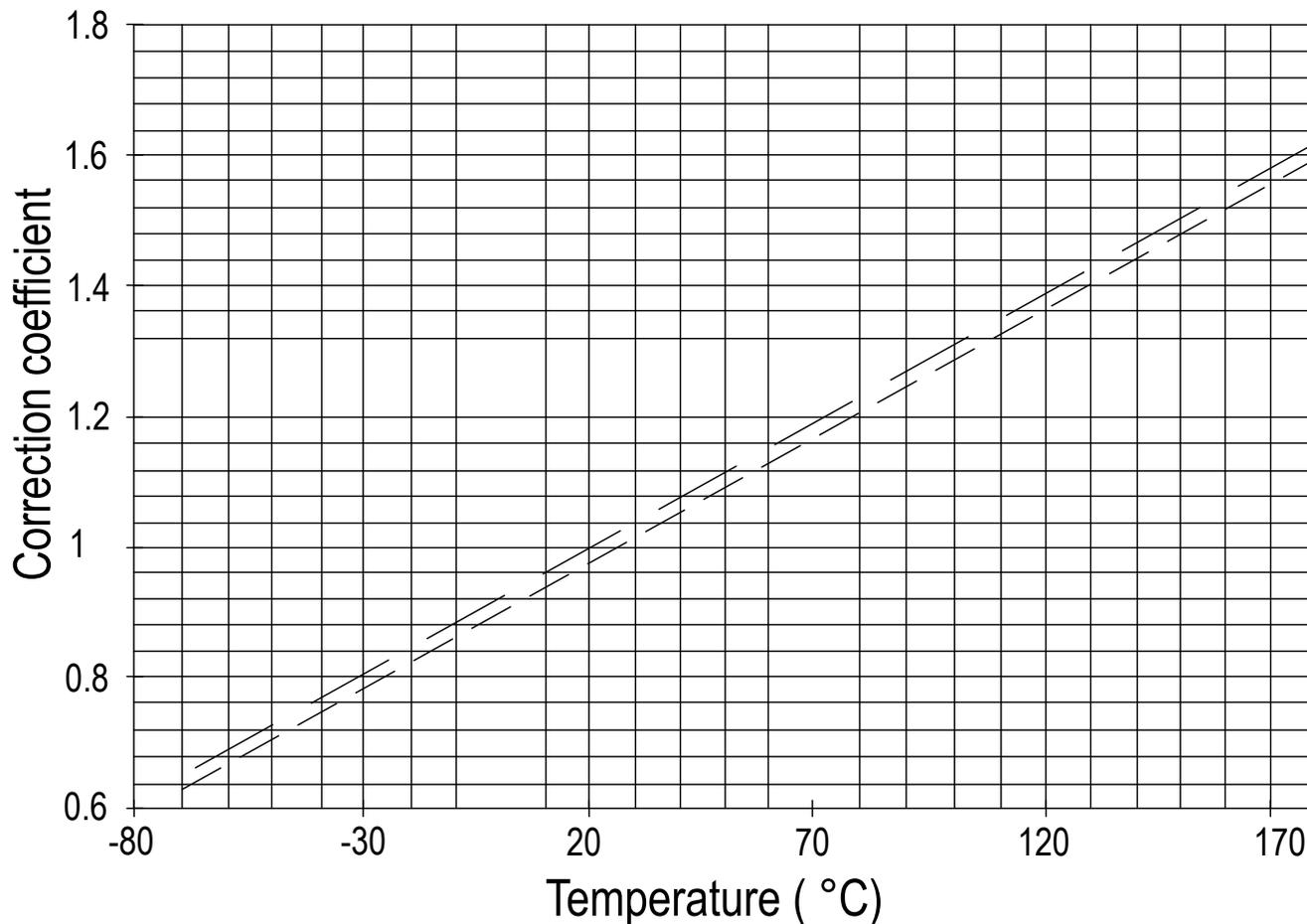
	M501	A	1	F	C	ER
Basic series designation						
1-Mounting Style (A,B,D,G,J,O)						
2-Terminal Types (1,2,4)						
3-Coil Voltage (E,F,J,K)						
4-See Note 4 Below						
5-See Note 5 Below						

NOTES

1. Relays with mounting styles B,D and terminal type 4 are compatible with socket families S501...
2. Isolation spacer pads for PCB mounting available on request.
3. For other mounting styles or terminal types, please contact the factory.
4. **Options**
 - **C:** Circuit breaker compatibility 30 A / 1 hour; 50 A / 5 sec; 100 A / 1.2 sec 250 A / 0.2 sec; 350 A / 0.1 sec
 - **D:** low level: 10 μ A / 10 mV
5. Quality level:
 - **006:** Model qualified to CECC16303-809
 - **ER:** Please contact factory.

TYPICAL CHARACTERISTICS

- Coil resistance/temperature change: See application note no. 001

**CORRECTION DUE TO COIL COPPER WIRE RESISTANCE
CHANGE IN TEMPERATURE**

— — Nominal Resistance at 25°C

——— Nominal Resistance at 20°C

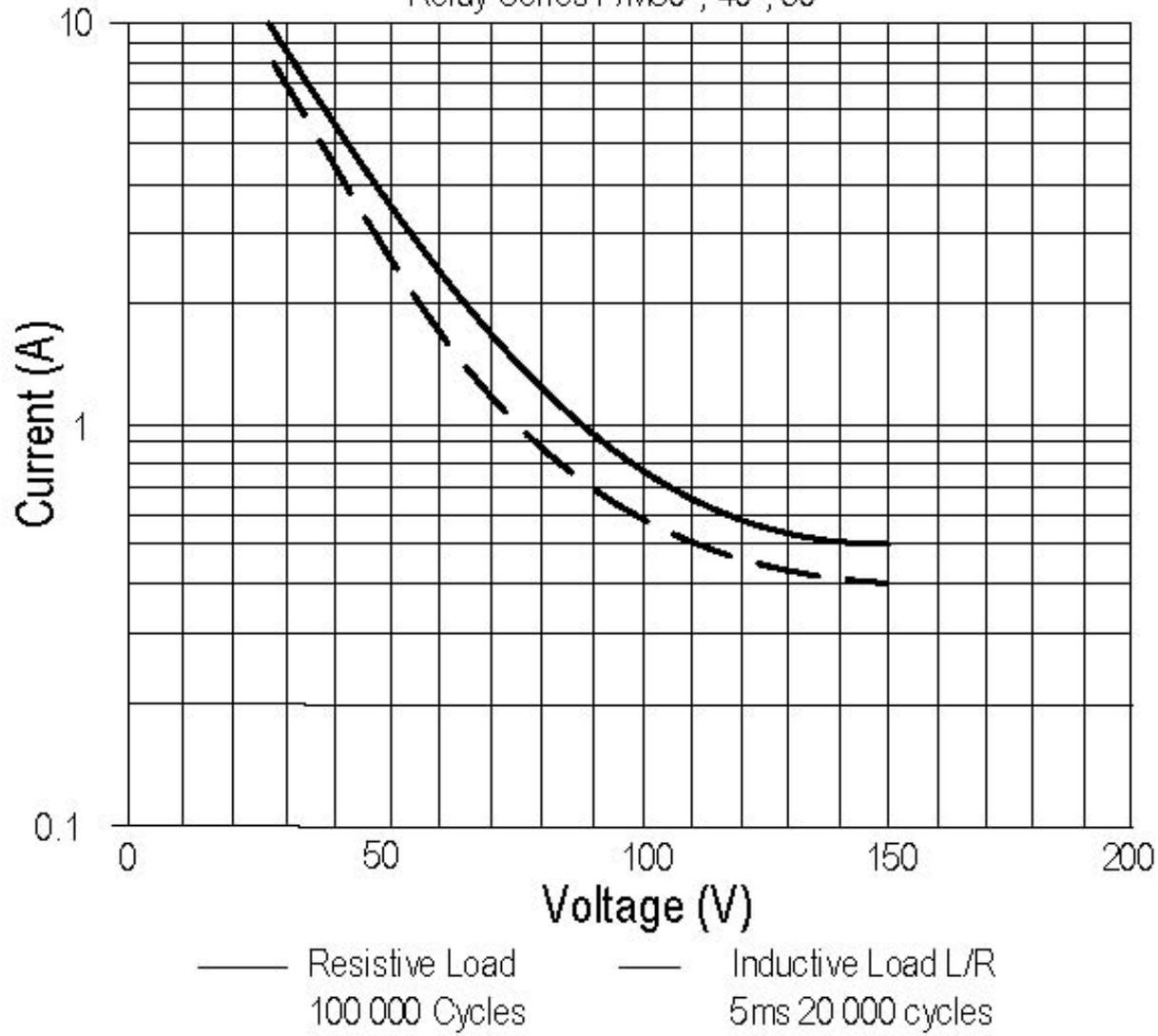
Example: Coil resistance at 25°C: 935 ohms. What is it at 125°C?

Correction coefficient on diagram is: 1.39 at 125°C. R becomes: $935 \times 1.39 = 1299$ Ohms

Correction also applies to operating voltages

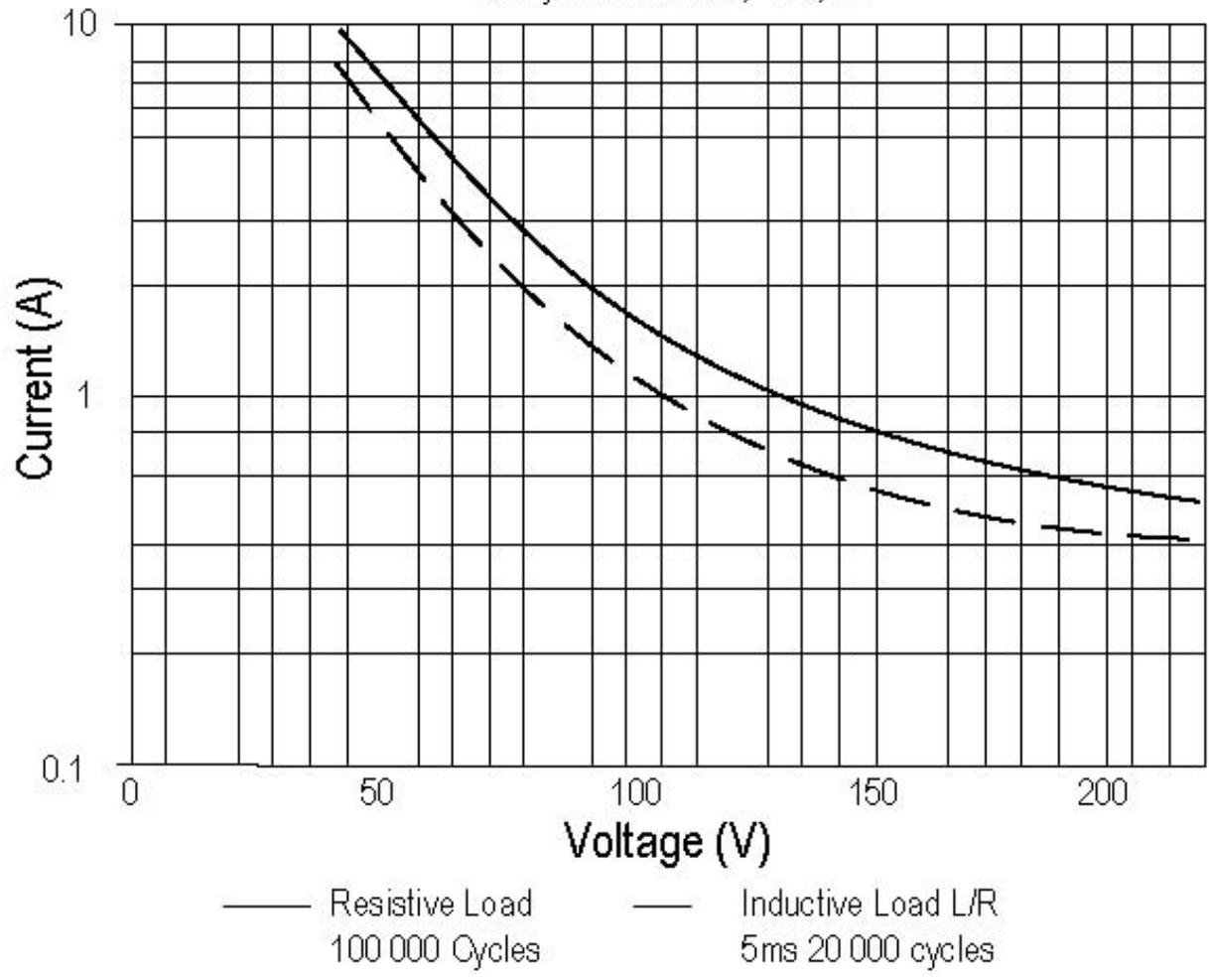
LIFE CAPABILITY VERSUS VOLTAGE

Relay Series F/M30*, 40*, 60*



LIFE CAPABILITY VERSUS VOLTAGE

Relay Series FD 30,* 40*, 60*



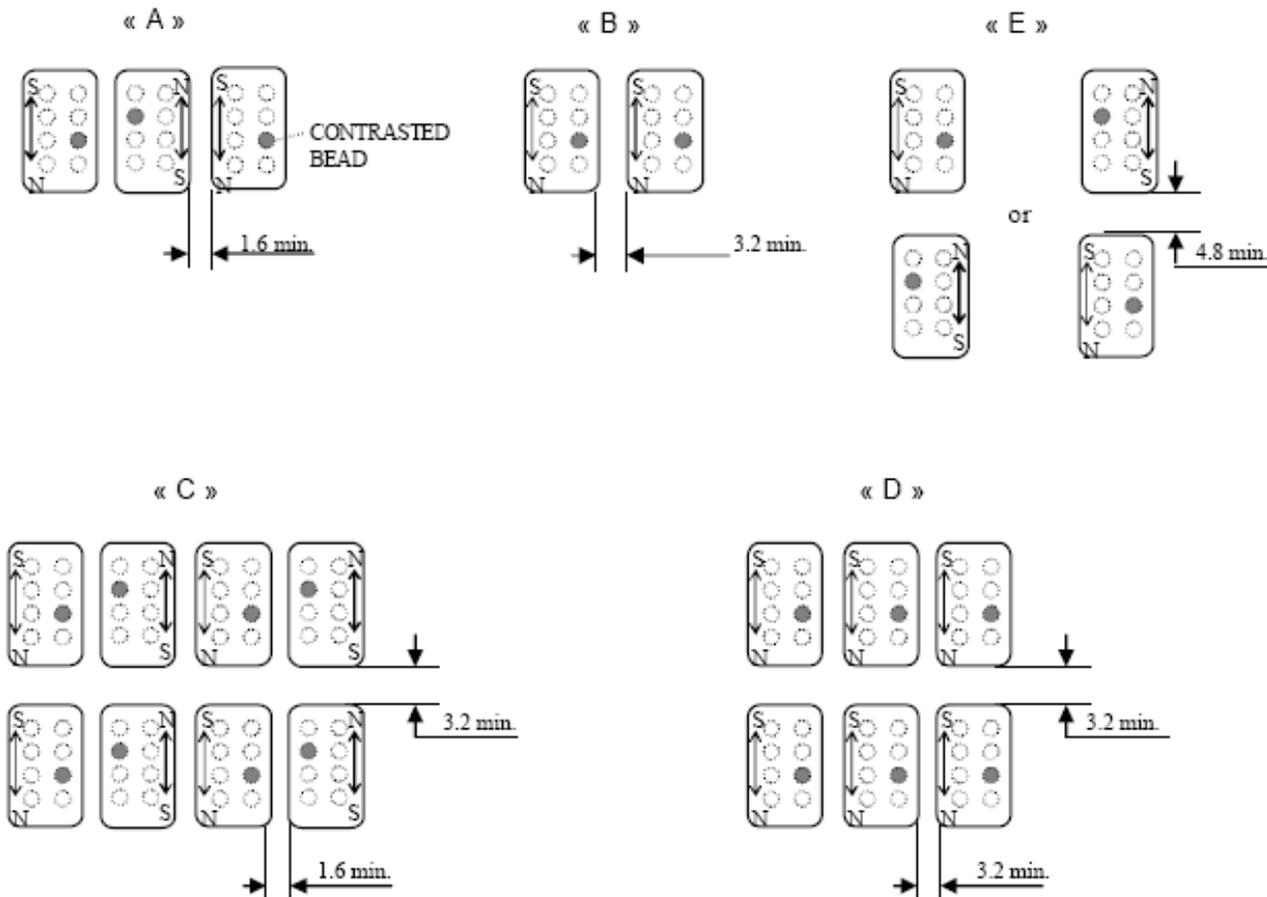
MOUNTING DISTANCE BETWEEN RELAYS
Applicable to M2XX / M3XX / M4XX / M5XX

Definition and applicability

This application note defines the minimum distance between relays to maintain the whole performances of the relays as given in our data sheets.

Phenomenon analysis

Each relay generates a magnetic field either when relay is de-energised because of the permanent magnet or in the energised 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 relay 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 1.6 mm space between relays, figure "A". Or when mounted in the same direction, separate each relay from the other by 3.2 mm, figure "B". If two or more rows of relays are installed, allow clearance of 3.2 mm between rows, figures "C" and "D". Provide 4.8 mm space between relays if used in opposition, figure "E". Distance in millimetre.



ENGINEERING DATA SHEET

S500, S501, S502, S550

RELAY SOCKET
25 AMP



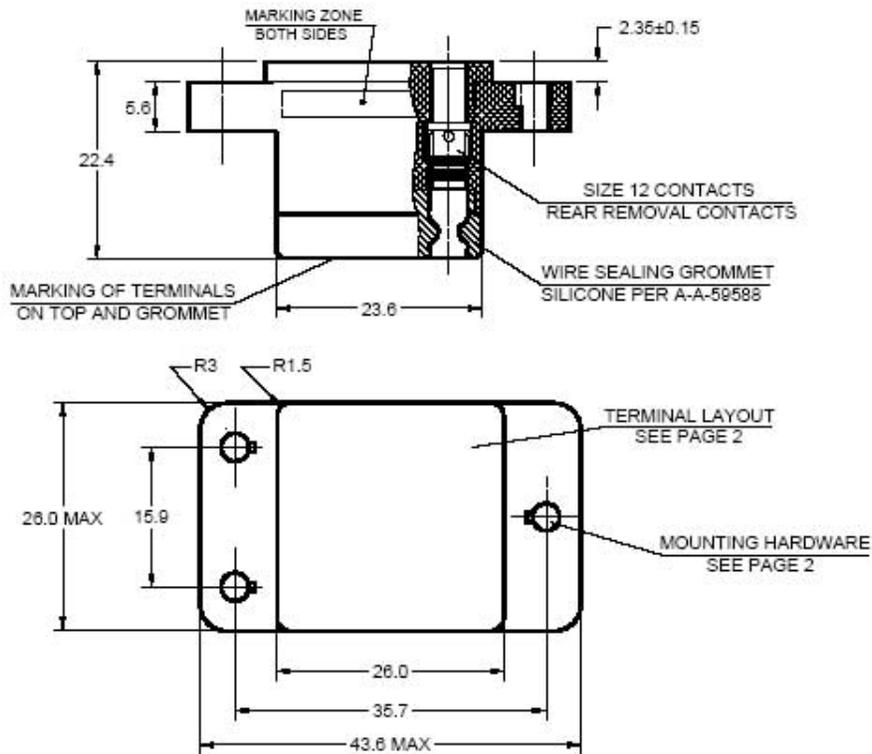
BASIC SOCKET SERIES DESIGNATION FOR:

**SERIES M500 (DC Coil), M501 (AC Coil),
M502 (DC Coil), M550 (DC Coil), T531, CS500**

DESIGNED TO THE STANDARDS AND REQUIREMENTS OF:

MIL-PRF-12883/48 & /54

DIMENSIONS



GENERAL CHARACTERISTICS

Crimp tool for contacts	M 22520/1-01, Positioner M22520/1-02
Insertion / removal tool	#16: M81969/14-03 #12: M81969/14-04
Weight	45 grams Max
Temperature range	-70°C to +125°C
Contact and mounting hardware supplied in a separate plastic bag. Standard tolerances, ±0.25mm	



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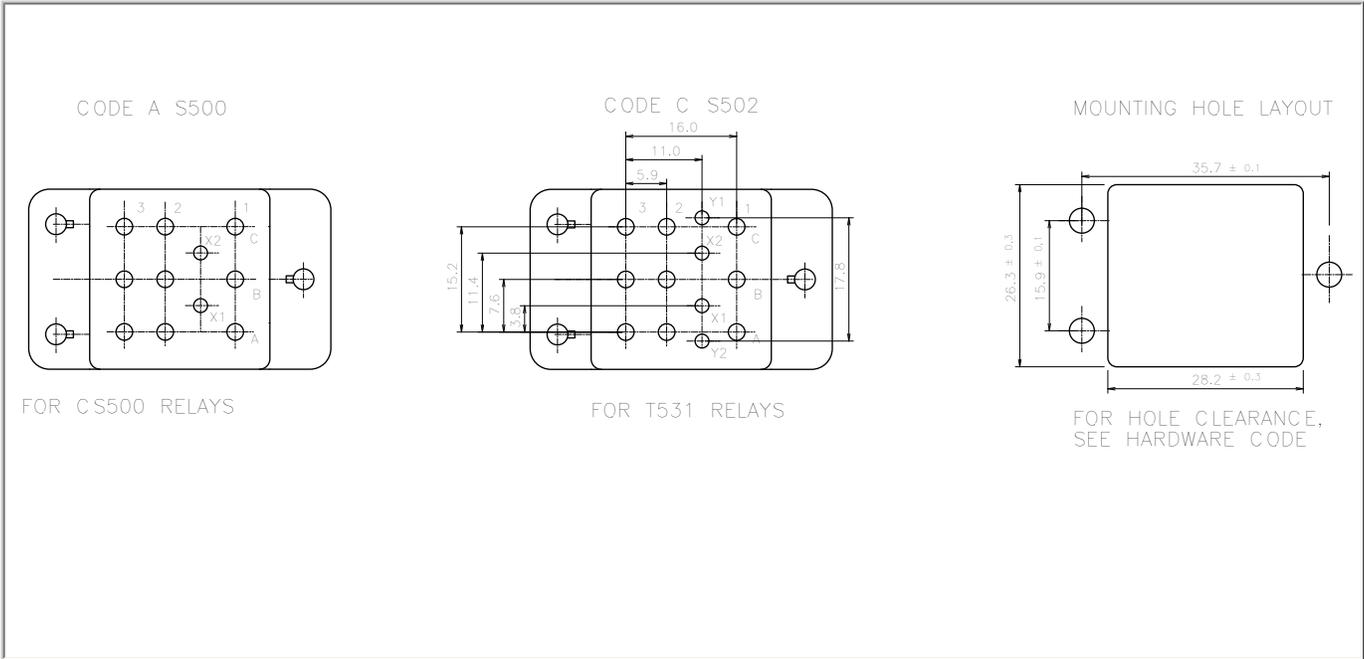
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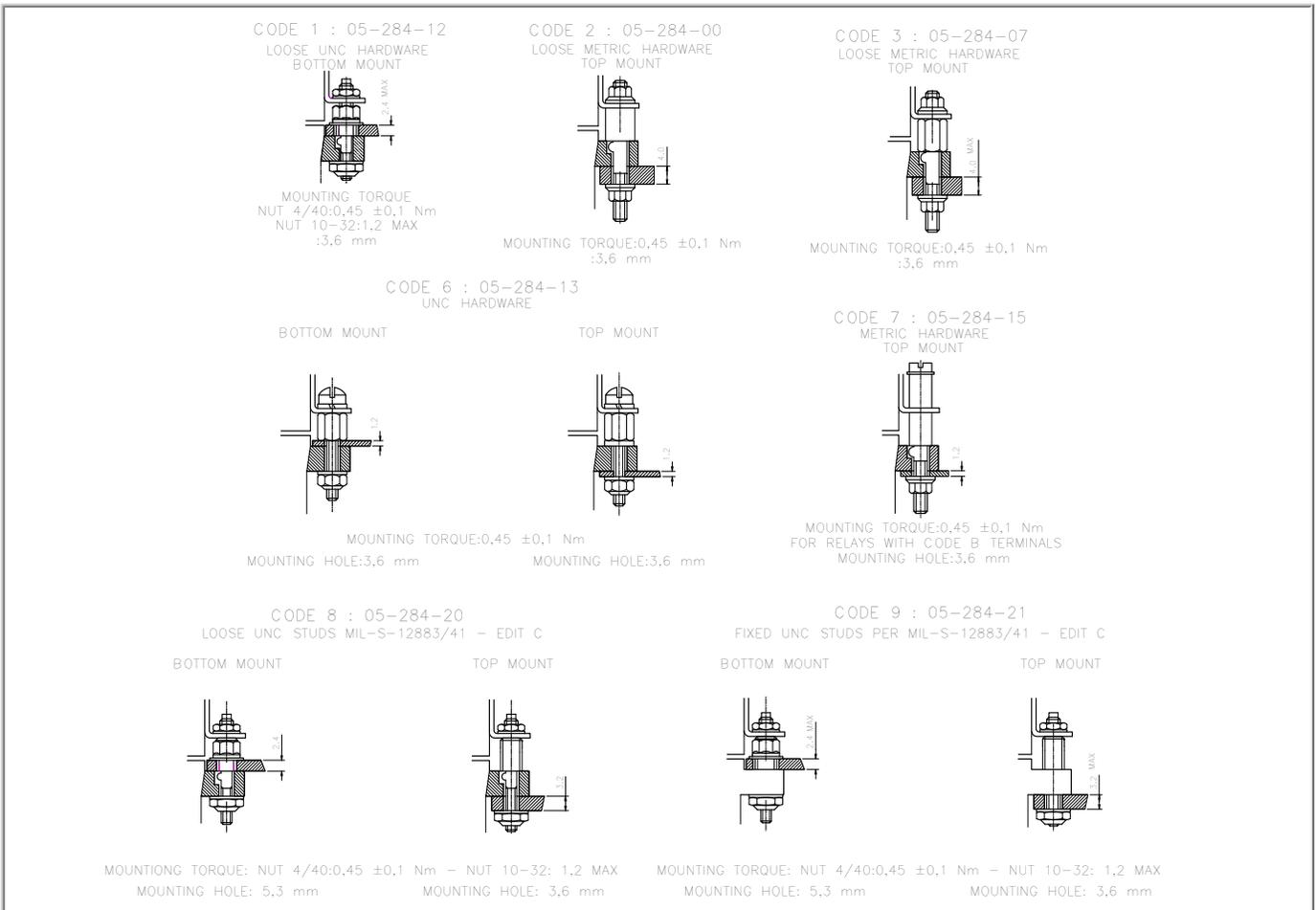
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Data sheets are for initial product selection and comparison. Contact Leach International prior to choosing a component.



MOUNTING HARDWARE



<p>Code A</p> <p>Dia: 2.83.4mm</p>
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CONTACT SIZE AND STYLE

<p>Y1 - Y2 Crimp end to accomodate AWG 20-20-24 05 913 00 (for contact code 8 +10) <u>Contact mating end #20</u></p>	<p>Code 8 Crimp end to 05 910 00 accomodate AWG12-14 <u>Contact mating end #12</u></p>	<p>Code 10 Crimp end to 05 910 01 accomodate AWG16 <u>Contact mating end #12</u></p>
<p>31 236 00 (for contact code 11 + 13) MIL-C-3902/92-532 Bin Code color bands or Bin Code numbering on crimpside <u>Contact mating end #20</u></p>	<p>Coil contacts X1-X2 Crimp end to 05 911 00 accomodate AWG16-18-20 <u>Contact mating end #16</u></p>	<p>Coil contacts X1-X2 Crimp end to 05 910 01 accomodate AWG16-18-20 <u>Contact mating end #16</u></p>
<p>Code 0 Without contacts</p>	<p>Code 11 MIL-C-39029/92-535 30 976 00 Bin Code color bands or Bin Code numbering on crimpside Crimp end to accomodate AWG 12 <u>Contact mating end #12</u></p>	<p>Code 13 MIL-C-39029/92-536 31 099 00 Bin Code color bands or Bin Code numbering on crimpside Crimp end to accomodate AWG 16 <u>Contact mating end #12</u></p>
	<p>Coil contacts MIL-C-39029/92-533 X1-X2 Bin Code color bands 30 315 00 or Bin Code numbering on crimpside Crimp end to accomodate AWG16-18-20 <u>Contact mating end #16</u></p>	<p>Coil contacts MIL-C-39029/92-533 X1-X2 Bin Code color bands 30 315 00 or Bin Code numbering on crimpside Crimp end to accomodate AWG16-18-20 <u>Contact mating end #16</u></p>

SOCKET NUMBERING SYSTEM

S500, S501, S502

	S500	A	1	A	8
1-Basic socket designation_____					
2-Terminal Layout_____					
3-Mounting Hardware_____					
4-Grommet to seal on wire insulation_____					
5-Contact size and style_____					

MS/LEACH CROSS PART NO. AND MATING RELAYS

	MS - Number	LEACH P/N	Number Of Contacts	Hardware
MIL-S-12883/48A	-01	S500-A8A11	9xMIL-C-39029/92-535 2xMIL-C-39029/92-533	Loose Stud
	-02	S500-A9A11	9xMIL-C-39029/92-535 2xMIL-C-39029/92-533	Fixed Stud
	-05	S501-E8A11	9xMIL-C-39029/92-535 2xMIL-C-39029/92-533	Loose Stud
	-03	S501-E9A11	9xMIL-C-39029/92-535 2xMIL-C-39029/92-533	Fixed Stud