# E415 RELAY (4PDT/15A)

Built to MIL-PRF-83536

## FEATURES

- Balanced force design provides the benefit of consistently high contact pressure, reduced bounce, and less arching leading to extended contact life
- A variety of coil options are available which allow AC or DC control
- Welded hermetically sealed, non-corrosive enclosure
- Portfolio includes 1 to 6 pole, 5 to 50 Amp devices
- Wide choice of mounting and terminal styles

## APPLICATIONS

- Rail
- Aerospace
- Ground Vehicle
- Qualified to MIL-PRF-83536 for severe condition applications

## GENERAL CHARACTERISTICS

- No. of Poles: 4 Form C (4PDT)
- Dimensions: 1.025″ x 1.025″ x 1.010″
  (26.0 x 26.0 x 25.7) mm
- Weight
  Mounting Code 4: 0.20 lb. (90.6 grams)
  All Others: 0.17 lb. (77 grams)

## SWITCHING CHARACTERISTICS

- Operate Time @ +25°C
  EA415: 20 ms. Max
  All Others: 15 ms. Max
- Release Time @ +25°C
  Mounting Code 4: 20 ms. Max
  EA415: 50 ms. Max
  All Others: 15 ms. Max
- Bounce Time: 1 ms. Max
- Mechanical Life: 400,000 Cycles

## ENVIRONMENTAL CHARACTERISTICS

- Temperature Range: -70°C to +125°C

- Vibration (Sinusoidal)
  Mounting Code 3: 20g 57-3,000 Hz
  All Others: 30g 10-3,000 Hz
- Shock (Any Axis)
  Mounting Code 3: 100g, 6 ms
  All Others: 200g, 6 ms
- Seal: Hermetic ($1x10^{-8}$ atm $cm^3/s$)

## ELECTRICAL CHARACTERISTICS

- Contact Voltage Drop (at Rated Resistive Load)
  Initial: 150 mV Max.
  After Guaranteed Life: 175 mV Max.
- Dielectric Strength @ Sea Level

| Mounting Code 4: | Coil to Case | All Other Points |
|---|---|---|
| Initial @ 60 Hz: | 1,050 $V_{rms}$ | 1,500 $V_{rms}$ |
| After Life Test @ 60 Hz: | 1,050 $V_{rms}$ | 1,250 $V_{rms}$ |
| All Others | | |
| Initial @ 60 Hz: | 1,000 $V_{rms}$ | 1,250 $V_{rms}$ |
| After Life Test @ 60 Hz: | 1,000 $V_{rms}$ | 1,000 $V_{rms}$ |

- Insulation Resistance
  Initial: 100 MΩ Min, @ 500 Vdc
  After Life Tests (Mounting Code 4): 100 MΩ Min, @ 500 Vdc
  After Life Tests (All Others): 50 MΩ Min, @ 500 Vdc
  Max. Leakage Current (Mounting Code 4): 100 μA RMS

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## CONTACT RATING (AMPS)

| Type of Load (High Level) | Cycles x $10^3$ | 28 Vdc | 115 Vac 400 Hz 1 Phase | 115 Vac 50/60 Hz 1 Phase | 115/200 Vac 400 Hz 3 Phase | 115/200 Vac 50/60 Hz 3 Phase |
|---|---|---|---|---|---|---|
| Resistive | 100 | 15 | 15 | 3.75 | 15 | 3.75 |
| Inductive | 20 | 10 | 10 | N/A | 10 | N/A |
| Inductive | 10 | N/A | N/A | 3.75 | N/A | 3.75 |
| Motor | 100 | 6 | 6 | 3 | 6 | 3 |
| Lamp | 100 | 3 | 3 | 1.5 | N/A | N/A |

Note: 115 Vac 50/60 Hz life reduced to 10,000 Cycles for all load types

## PART NUMBERING

Part Number

E415
ES415
EA415 | E | 2 | C | D

BASIC SERIES

| | |
|---|---|
| E415 | 4PDT |
| ES415 | 4PDT w/ Standard Internal Voltage Suppression |
| EA415 | 4PDT w/ AC Coil |

COIL CODE

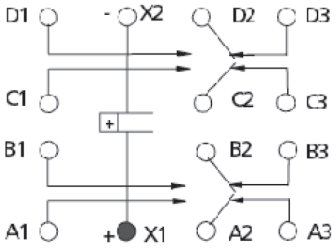
MOUNTING CODE

TERMINAL CODE

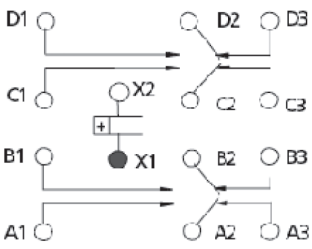
OPTIONS

| | |
|---|---|
| D | Catalog Standard |
| A | Delete Arc Barriers |
| xxxx | Special Code, Assigned by TE |

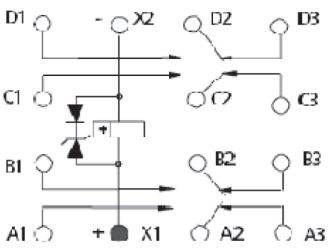
## CIRCUIT DIAGRAM




E415




EA415
(AC Configuration)




ES415 w/ Internal
Voltage Suppression

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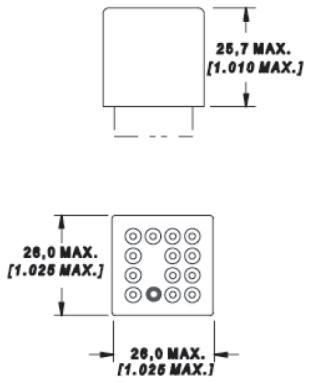
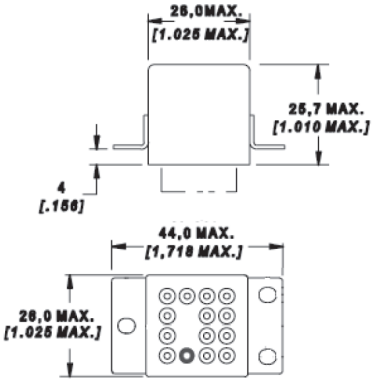
## COIL CODE

| Coil Code | Vdc | | | | | | Vac | | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | D | E | G | J | K | L | N |
| Nominal Coil Voltage | 6 | 12 | 26.5 | 28 | 48 | 110 | 28 400 Hz | 115 400 Hz | 115 50-400 Hz |
| Maximum Pick-Up Voltage @ +25°C | 3.2 | 6.5 | 13.5 | 14 | 24 | 55 | 16.2 | 73 | 73 |
| Maximum Pick-Up Voltage @ +125°C | 4.5 | 9 | 18.7 | 19.5 | 36 | 70 | 22.4 | 90 | 90 |
| Maximum Hold Voltage @ +125°C | 2.3 | 4.5 | 7 | 7 | 14 | 30 | 9 | 30 | 40 |
| Minimum Drop-Out Voltage @ -70°C | 0.25 | 0.5 | 1.5 | 1.5 | 2 | 5 | 1 | 5 | 5 |
| Coil Resistance (Ω ± 10% @ +25°C) | 18 | 70 | 290 | 290 | 955 | 5000 | — | — | — |
| Maximum Coil Transient Suppression (ES415 Only) Vdc | -42 | -42 | -42 | -42 | -100 | -227 | N/A | N/A | N/A |

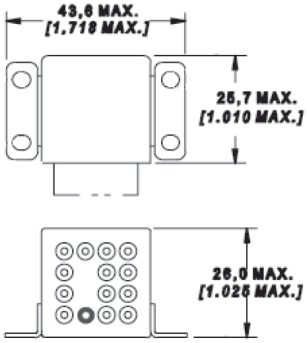
## MOUNTING CODE



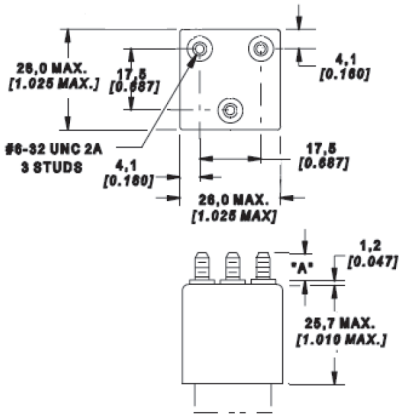

Mount 1



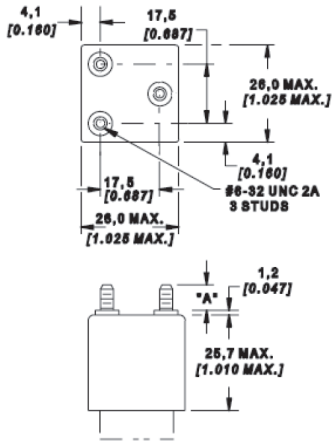

Mount 2



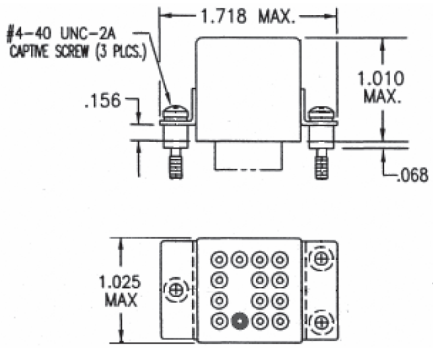

Mount 3




Mount O: A = 9.5 mm (.375")
Mount R: A = 6.35 mm (.250")

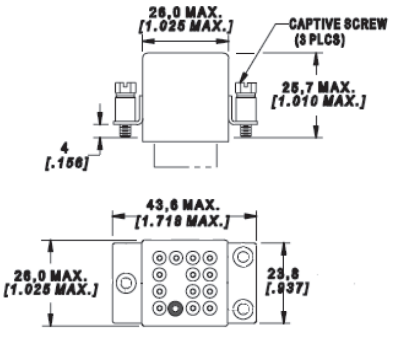



Mount T: A = 9.5 mm (.375")
Mount U: A = 6.35 mm (.250")

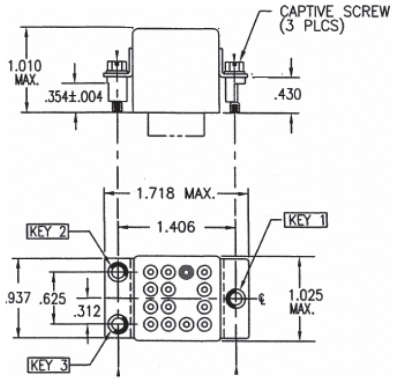



Mount G

## MOUNTING CODE (CONT'D)

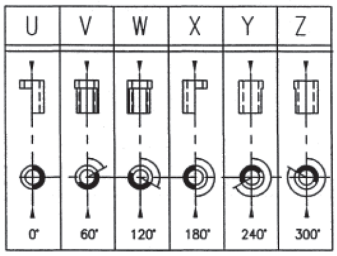


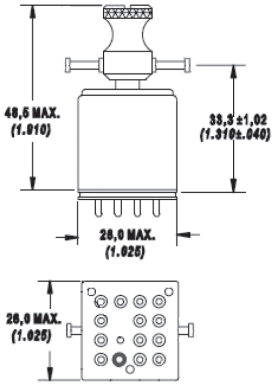

Mount 8: M3
Mount C: #4-40 UNC



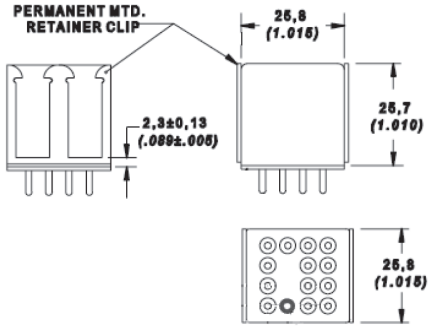

Mount A: M3
Mount B: #4-40 UNC

### KEYING POSITIONS



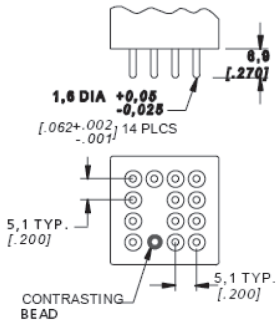




Mount 4: Requires Terminal M or K

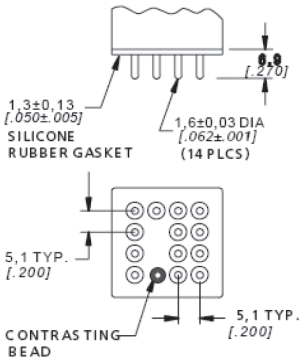



Mount 6: Requires Terminal M or K

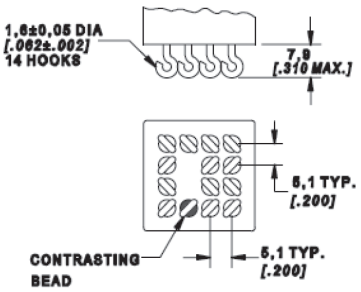
## TERMINAL CODE




Terminal A: Tin Plated (DC)
Terminal B: Solder Dipped

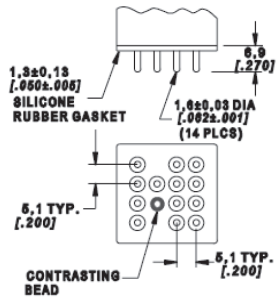



Terminal C: Gold Plated (DC)

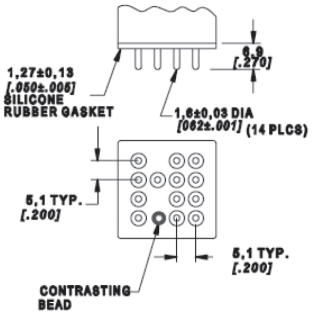



Terminal H: Tin Plated
Terminal J: Solder Dipped

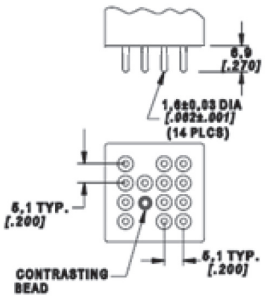
## TERMINAL CODE (CONT'D)



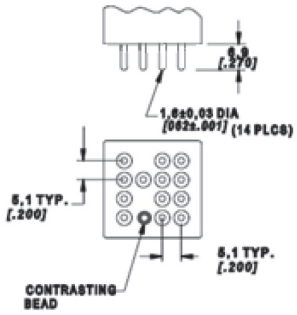

Terminal K: Gold Plated
(115 Vac)



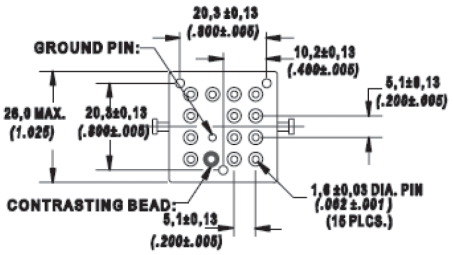

Terminal T: Gold Plated
(28 Vac)



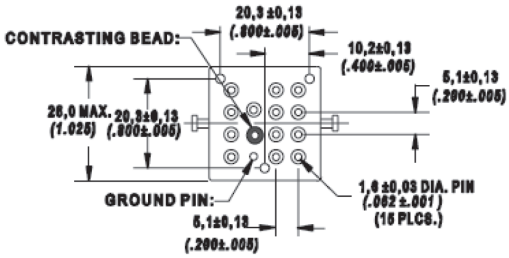

Terminal L: Tin Plated
(115 Vac)




Terminal U: Tin Plated
(28 Vac)




Terminal M: Gold Plated DC
(Track Mount 4)




Terminal K: Gold Plated AC
(Track Mount 4)

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