



**TELEDYNE  
RELAYS**

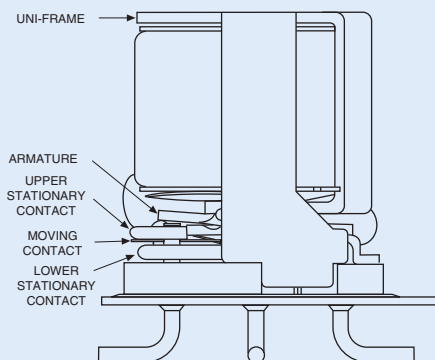
*A Unit of Teledyne Electronics and Communications*

## **CENTIGRID® SURFACE MOUNT COMMERCIAL RELAYS SENSITIVE DPDT**

# **SERIES S134**

| SERIES DESIGNATION | RELAY TYPE                                                                                      |
|--------------------|-------------------------------------------------------------------------------------------------|
| S134               | DPDT basic relay                                                                                |
| S134D              | DPDT relay with internal diode for coil transient suppression                                   |
| S134DD             | DPDT relay with internal diodes for coil transient suppression and polarity reversal protection |

### **INTERNAL CONSTRUCTION**



### **DESCRIPTION**

The Series S134 sensitive surface mount Centigrid® relay is an ultraminiature, hermetically sealed, armature relay. The low profile height (.460") and .100" lead spacing make it ideal for applications where extreme packaging density and/or close PC board spacing are required. The specially formed leads are pre-tinned to make the relays ideal for most types of surface mount solder reflow processes.

The basic design and internal construction are identical to the Series 134 Centigrid® relays, and are capable of meeting Teledyne Relays' T²R® requirements. The following unique construction features and manufacturing techniques provide overall high reliability and excellent resistance to environmental extremes:

- All welded construction.
- Unique uni-frame design providing high magnetic efficiency and mechanical rigidity.
- High force/mass ratios for resistance to shock and vibration.
- Advanced cleaning techniques provide maximum assurance of internal cleanliness.
- Precious metal alloy contact material with gold plating assures excellent high current and dry circuit switching capabilities.

The Series S134D and S134DD relays have internal discrete silicon diodes for coil suppression and polarity reversal protection.

The sensitive surface mount Centigrid® relay has a high resistance coil, thus requiring extremely low operating power (200 mw typical). The advantages of reduced heat dissipation and power supply demands are a plus.

### **ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS**

|                                      |                  |                                 |
|--------------------------------------|------------------|---------------------------------|
| <b>Temperature</b><br>(Ambient)      | <b>Storage</b>   | -65°C to +125°C                 |
|                                      | <b>Operating</b> | -55°C to +85°C                  |
| <b>Vibration</b><br>(General Note 1) |                  | 30 g's to 3000 Hz               |
| <b>Shock</b><br>(General Note 1)     |                  | 75 g's,<br>6 msec, half-sine    |
| <b>Acceleration</b>                  |                  | 50 g's                          |
| <b>Enclosure</b>                     |                  | Hermetically sealed             |
| <b>Weight</b>                        |                  | 0.15 oz. (4.3g) max.            |
| <b>Reflow Temperature</b>            |                  | 260°C max. temp.<br>1 min. max. |

# SERIES S134

## GENERAL ELECTRICAL SPECIFICATIONS (–65°C to +125°C unless otherwise noted) (Notes 2 & 3)

|                                                                                          |                                                                                                                                                          |                           |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Contact Arrangement                                                                      | 2 Form C (DPDT)                                                                                                                                          |                           |
| Rated Duty                                                                               | Continuous                                                                                                                                               |                           |
| Contact Resistance                                                                       | 0.1 ohm max. before life; 0.2 ohm max. after life at 1A/28Vdc (measured 1/8" from header)                                                                |                           |
| Contact Load Ratings (DC)<br>(See Fig. 2 for other DC resistive voltage/current ratings) | Resistive: 1 Amp/28Vdc<br>Inductive: 200 mA/28Vdc (320 mH)<br>Lamp: 100 mA/28Vdc<br>Low Level: 10 to 50 $\mu$ A/10 to 50mV                               |                           |
| Contact Load Ratings (AC)                                                                | Resistive: 250 mA/115Vac, 60 and 400 Hz (Case undergrounded)<br>100 mA/115Vac, 60 and 400 Hz (Case grounded)                                             |                           |
| Contact Life Ratings                                                                     | 10,000,000 cycles (typical) at low level<br>1,000,000 cycles (typical) at 0.5A/28Vdc resistive<br>100,000 cycles min. at all other loads specified above |                           |
| Contact Overload Rating                                                                  | 2A/28Vdc Resistive (100 cycles min.)                                                                                                                     |                           |
| Contact Carry Rating                                                                     | Contact factory                                                                                                                                          |                           |
| Coil Operating Power                                                                     | 200 milliwatts typical at nominal rated voltage @ 25°C                                                                                                   |                           |
| Operate Time                                                                             | 4.0 msec max. at nominal rated voltage @ 25°C                                                                                                            |                           |
| Release Time                                                                             | S134 Series: 2.0 msec max. S134D, S134DD Series: 7.5 msec max.                                                                                           |                           |
| Contact Bounce                                                                           | 1.5 msec max.                                                                                                                                            |                           |
| Intercontact Capacitance                                                                 | 0.4 pf typical                                                                                                                                           |                           |
| Insulation Resistance                                                                    | 10,000 megohms min. between mutually isolated terminals                                                                                                  |                           |
| Dielectric Strength                                                                      | Atmospheric pressure: 500 Vrms/60Hz                                                                                                                      | 70,000 ft.: 125 Vrms/60Hz |
| Negative Coil Transient (Vdc)                                                            | S134D, S134DD                                                                                                                                            | 1.0 max                   |
| Diode P.I.V. (Vdc)                                                                       | S134D, S134DD                                                                                                                                            | 100 min.                  |

## DETAILED ELECTRICAL SPECIFICATIONS (–65°C to +125°C unless otherwise noted) (Note 3)

| BASE PART NUMBERS<br>(See Note 10 for full P/N example) |                 |      | S134-5<br>S134D-5<br>S134DD-5 |      | S134-6<br>S134D-6<br>S134DD-6 |      | S134-9<br>S134D-9<br>S134DD-9 |      | S134-12<br>S134D-12<br>S134DD-12 |  | S134-18<br>S134D-18<br>S134DD-18 |  | S134-26<br>S134D-26<br>S134DD-26 |  |
|---------------------------------------------------------|-----------------|------|-------------------------------|------|-------------------------------|------|-------------------------------|------|----------------------------------|--|----------------------------------|--|----------------------------------|--|
| Coil Voltage (Vdc)                                      | Nom.            |      | 5.0                           | 6.0  | 9.0                           | 12.0 | 18.0                          | 26.5 |                                  |  |                                  |  |                                  |  |
|                                                         | Max.            |      | 7.5                           | 10.0 | 15.0                          | 20.0 | 30.0                          | 40.0 |                                  |  |                                  |  |                                  |  |
| Coil Resistance<br>(Ohms $\pm$ 10% @25°C)               | S134, S134D     |      | 100                           | 200  | 400                           | 800  | 1600                          | 3200 |                                  |  |                                  |  |                                  |  |
|                                                         | S134DD (Note 4) |      | 64                            | 125  | 400                           | 800  | 1600                          | 3200 |                                  |  |                                  |  |                                  |  |
| Coil Current (mAdc @25°C)<br>(134DD Series)             | Note 5          | Min. | 56.8                          | 36.3 | 18.1                          | 12.5 | 9.6                           | 7.2  |                                  |  |                                  |  |                                  |  |
|                                                         |                 | Max. | 78.1                          | 48.9 | 23.6                          | 16.0 | 12.2                          | 9.0  |                                  |  |                                  |  |                                  |  |
| Pick-up Voltage (Vdc, Max.)                             | S134, S134D     |      | 3.5                           | 4.5  | 6.8                           | 9.0  | 13.5                          | 18.0 |                                  |  |                                  |  |                                  |  |
|                                                         | S134DD          |      | 3.7                           | 4.8  | 8.0                           | 11.0 | 14.5                          | 19.0 |                                  |  |                                  |  |                                  |  |
| Drop-out Voltage (Vdc)                                  | S134, S134D     | Min. | 0.12                          | 0.18 | 0.35                          | 0.41 | 0.59                          | 0.89 |                                  |  |                                  |  |                                  |  |
|                                                         |                 | Max. | 2.5                           | 3.2  | 4.9                           | 6.5  | 10.0                          | 13.0 |                                  |  |                                  |  |                                  |  |
|                                                         | S134DD          | Min. | 0.7                           | 0.8  | 0.9                           | 1.0  | 1.1                           | 1.3  |                                  |  |                                  |  |                                  |  |
|                                                         |                 | Max. | 2.6                           | 3.0  | 4.5                           | 5.8  | 9.0                           | 13.0 |                                  |  |                                  |  |                                  |  |

TYPICAL DC CONTACT RATING (RESISTIVE) (Note 2)

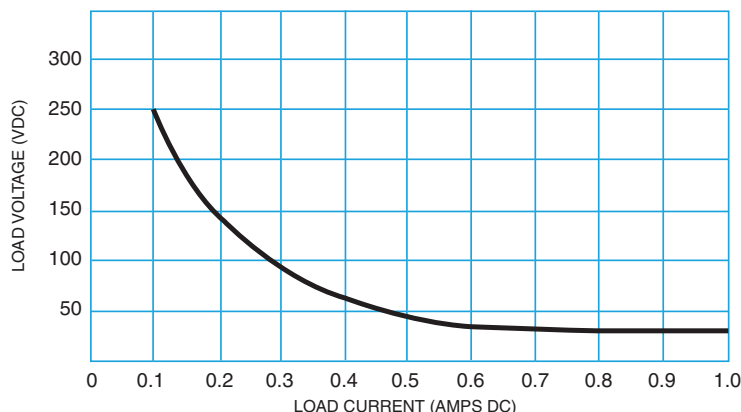
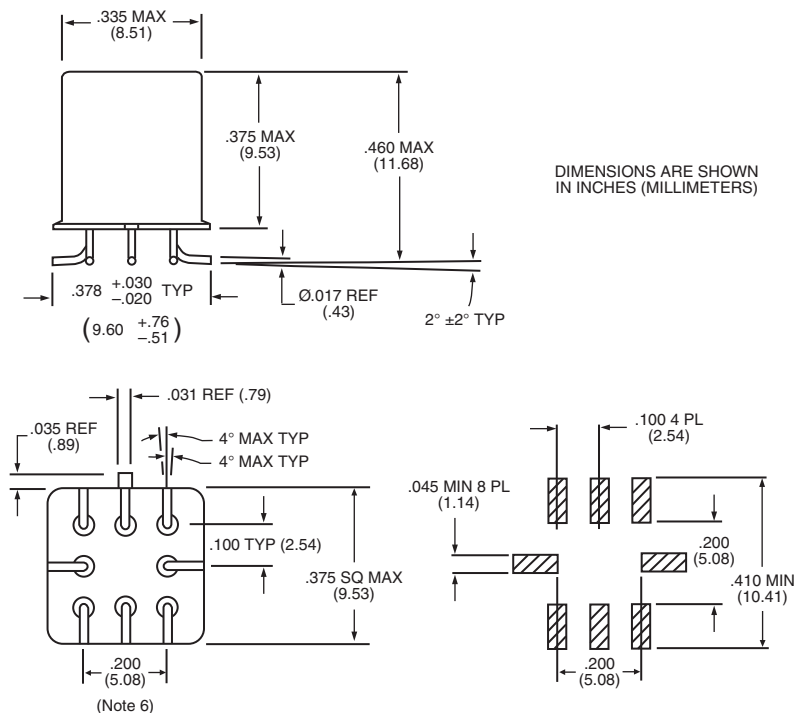
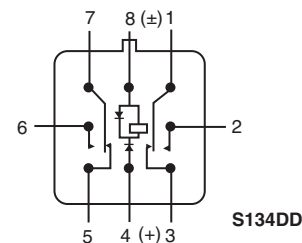
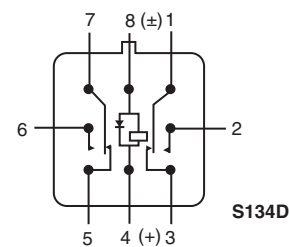
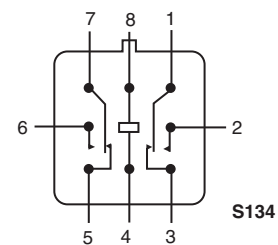


FIGURE 1

# OUTLINE DIMENSIONS AND RECOMMENDED PAD LAYOUT (Notes 7, 8 & 9)



## TERMINAL LOCATIONS & SCHEMATIC DIAGRAMS

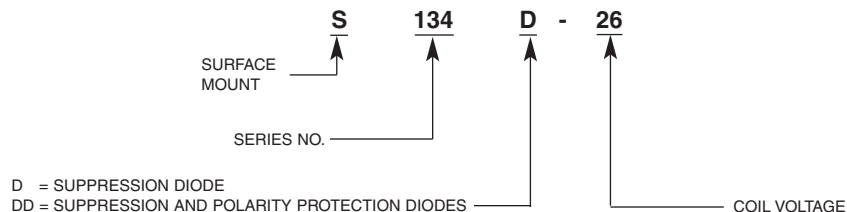


SCHEMATICS ARE VIEWED FROM TERMINALS

## GENERAL NOTES

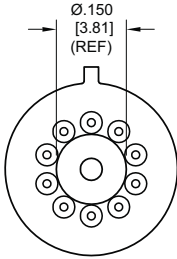
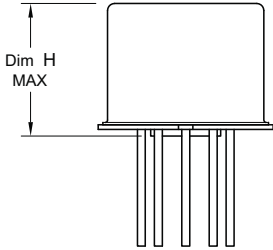
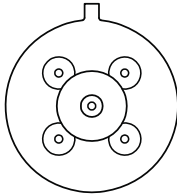
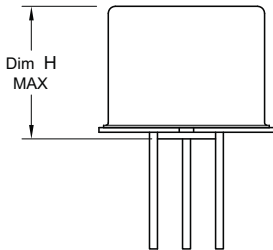
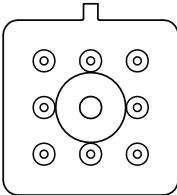
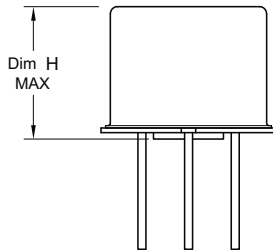
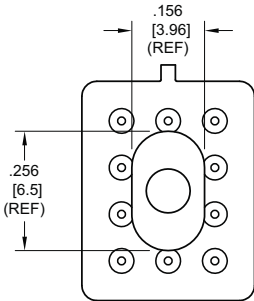
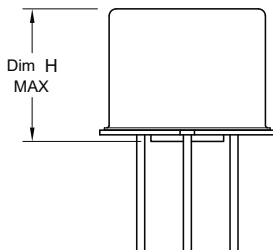
- Relay contacts will exhibit no chatter in excess of 10  $\mu$ sec or transfer in excess of 1  $\mu$ sec.
- "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
- Unless otherwise specified, parameters are initial values.
- For reference only. Coil resistance not directly measurable at relay terminals due to internal series semiconductor.
- Measured at nominal voltage for 5 sec. max.
- Position of leads as they emerge from relay base.
- Leads will fit noted pad layout with no overhang.
- Lead ends are coplanar within .008" wide tolerance zone.
- Terminals coated with SN60 or SN63 solder per QQ-S-571. Kovar exposed at sheared end of leads.
- 

## Teledyne Part Numbering System for Surface Mount Relays



- Add "R" to end of part number for RoHS compliant solder coated pins (Sn99.3/Cu0.7).

# Appendix A: Spacer Pads

| Pad designation and bottom view dimensions                                                                         | Height                                                                              | For use with the following:                                                                  | Dim. H Max.  |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------|
|  <p>“M4” Pad for TO-5</p>         |    | ER411T<br>ER412, ER412D, ER412DD                                                             | .295 (7.49)  |
|                                                                                                                    |                                                                                     | 712, 712D, 712TN,<br>RF300, RF310, RF320                                                     | .300 (7.62)  |
|                                                                                                                    |                                                                                     | ER420, ER422D, ER420DD, 421,<br>ER421D, ER421DD, ER422, ER422D,<br>ER422DD, 722, 722D, RF341 | .305 (7.75)  |
|                                                                                                                    |                                                                                     | ER431T, ER432T,<br>ER432, ER432D, ER432DD                                                    | .400 (10.16) |
|                                                                                                                    |                                                                                     | 732, 732D, 732TN, RF303, RF313,<br>RF323                                                     | .410 (10.41) |
|                                                                                                                    |                                                                                     | RF312                                                                                        | .350 (8.89)  |
|  <p>“M4” Pad for TO-5</p>         |    | ER411, ER411D, ER411DD                                                                       | .295 (7.49)  |
|                                                                                                                    |                                                                                     | ER431, ER431D, ER431DD                                                                       | .400 (10.16) |
|                                                                                                                    |                                                                                     | RF311                                                                                        | .300 (7.62)  |
|                                                                                                                    |                                                                                     | RF331                                                                                        | .410 (10.41) |
|  <p>“M4” Pad for Centigrid®</p> |  | 172, 172D                                                                                    | .305 (7.75)  |
|                                                                                                                    |                                                                                     | ER114, ER114D, ER114DD,<br>J114, J114D, J114DD                                               | .300 (7.62)  |
|                                                                                                                    |                                                                                     | ER134, ER134D, ER134DD,<br>J134, J134D, J134DD                                               | .400 (10.16) |
|                                                                                                                    |                                                                                     | RF100                                                                                        | .315 (8.00)  |
|                                                                                                                    |                                                                                     | RF103                                                                                        | .420 (10.67) |
|  <p>“M9” Pad for Centigrid®</p> |  | 122C, A152                                                                                   | .320 (8.13)  |
|                                                                                                                    |                                                                                     | ER116C, J116C                                                                                | .300 (7.62)  |
|                                                                                                                    |                                                                                     | ER136C, J136C                                                                                | .400 (10.16) |
|                                                                                                                    |                                                                                     | RF180                                                                                        | .325 (8.25)  |
|                                                                                                                    |                                                                                     | A150                                                                                         | .305 (7.75)  |

## Notes:

1. Spacer pad material: Polyester film.
2. To specify an “M4” or “M9” spacer pad, refer to the mounting variants portion of the part numbering example in the applicable datasheet.
3. Dimensions are in inches (mm).
4. Unless otherwise specified, tolerance is  $\pm .010$  (.25).
5. Add 10 m $\Omega$  to the contact resistance show in the datasheet.
6. Add 0.01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.

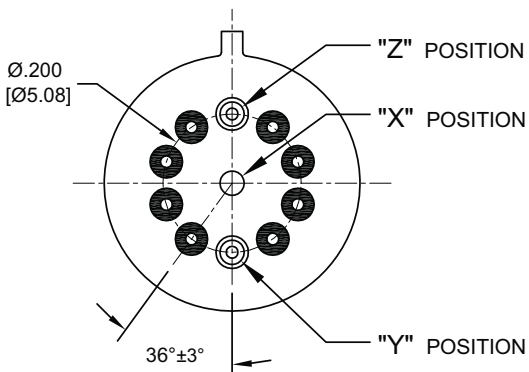
# Appendix A: Spreader Pads

| Pad designation and bottom view dimensions    | Height | For use with the following:                                                                                         | Dim. H Max.  |
|-----------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------|--------------|
| <p>“M” Pad <u>5/</u> <u>6/</u></p>            |        | ER411T, J411T, ER412, ER412D<br>ER412DD, J412, J412D, J412DD<br>ER412T, J412T                                       | .388 (9.86)  |
|                                               |        | 712, 712D, 712TN                                                                                                    | .393 (9.99)  |
|                                               |        | ER431T, J431T, ER432, ER432D<br>ER432DD, J432, J432D, J432DD<br>ER432T, J432T                                       | .493 (12.52) |
|                                               |        | 732, 732D, 732TN                                                                                                    | .503 (12.78) |
|                                               |        | ER420, J420, ER420D, J420D<br>ER420DD, J420DD, ER421, J421<br>ER421D, J421D, ER421DD<br>J422D, ER422DD, J422DD, 722 | .398 (10.11) |
| <p>“M2” Pad <u>7/</u> <u>8/</u></p>           |        | ER411T<br>ER412, ER412D, ER412DD<br>J412, J412D, J412DD                                                             | .441 (11.20) |
|                                               |        | 712, 712D                                                                                                           | .451 (11.46) |
|                                               |        | ER421, ER421D, ER421DD<br>722, 732D                                                                                 | .451 (11.46) |
|                                               |        | ER431T<br>ER432, ER432D, ER432DD                                                                                    | .546 (13.87) |
|                                               |        | 732, 732D                                                                                                           | .556 (14.12) |
| <p>“M3” Pad <u>5/</u> <u>6/</u> <u>9/</u></p> |        | ER411, ER411D, ER411DD<br>ER411TX<br>ER412X, ER412DX, ER412DDX<br>ER412TX                                           | .388 (9.86)  |
|                                               |        | 712X, 712DX, 712TNX                                                                                                 | .393 (9.99)  |
|                                               |        | ER420X, ER420DX, ER420DDX<br>ER421X, ER421DX, ER421DDX<br>ER422X, ER422DX<br>ER422DDX, 722X, 722DDX                 | .398 (10.11) |
|                                               |        | ER431, ER431D, ER431DD<br>ER431TX<br>ER432X, ER432DX, ER432DDX<br>ER432TX                                           | .493 (12.52) |
|                                               |        | 732X, 732DX, 732TNX                                                                                                 | .503 (12.78) |

## Notes:

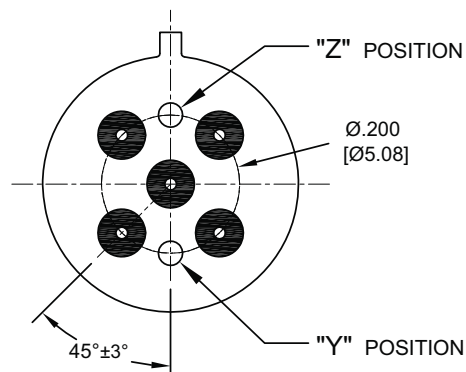
1. Spreader pad material: Diallyl Phthalate.
2. To specify an “M”, “M2” or “M3” spreader pad, refer to the mounting variants portion of the part number example in the applicable datasheet.
3. Dimensions are in inches (mm).
4. Unless otherwise specified, tolerance is  $\pm .010$ ” (0.25).
- 5/. Add 25 mΩ to the contact resistance shown in the datasheet.
- 6/. Add .01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.
- 7/. Add 50 mΩ to the contact resistance shown in the datasheet.
- 8/. Add 0.025 oz (0.71 g) to the weight of the relay assembly shown in the datasheet.
- 9/. M3 pad to be used only when the relay has a center pin (e.g. ER411M3-12A, 722XM3-26.)

## Appendix A: Ground Pin Positions



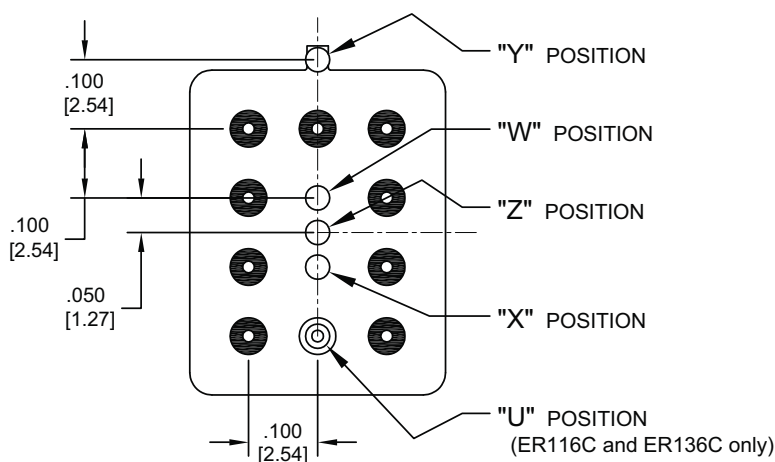
### TO-5 Relays:

ER411T, ER412, ER412T, ER420, ER421, ER422,  
ER431T, ER432, ER432T, 712, 712TN, 400H, 400K,  
400V, RF300, RF303, RF341, RF312, RF310, RF313,  
RF320, RF323



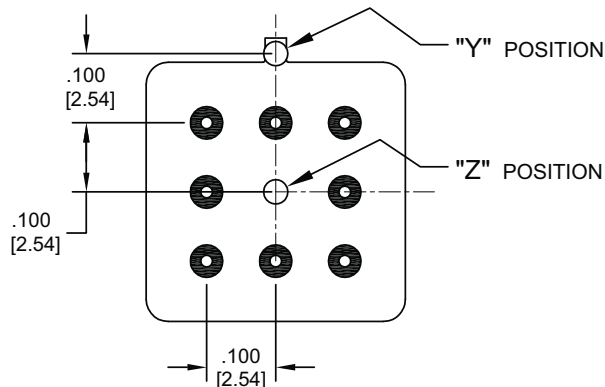
### TO-5 Relays:

ER411, ER431, RF311, RF331



### Centigrid® Relays:

RF180, ER116C, 122C, ER136C



### Centigrid® Relays:

RF100, RF103, ER114, ER134, 172

- Indicates ground pin position
- Indicates glass insulated lead position
- ⊙ Indicates ground pin or lead position depending on relay type

### NOTES

1. Terminal views shown
2. Dimensions are in inches (mm)
3. Tolerances:  $\pm .010$  ( $\pm .25$ ) unless otherwise specified
4. Ground pin positions are within .015 (0.38) dia. of true position
5. Ground pin head dia., 0.035 (0.89) ref: height 0.010 (0.25) ref.
6. Lead dia. 0.017 (0.43) nom.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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