



CENTIGRID® SURFACE MOUNT COMMERCIAL RELAYS DPDT



SERIES	RELAY TYPE
S172	DPDT basic relay
S172D	DPDT relay with internal diode for coil transient suppression

DESCRIPTION

The S172 surface mount Centigrid® relay is an ultraminiature, hermetically sealed, armature relay for commercial applications. Its low profile height (.470) and .100" grid spaced terminals make it an ideal choice 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 all types of surface-mount solder reflow processes.

The basic design and internal structure are similar to Teledyne's DPDT 114 Centigrid® relay. Unique construction features and manufacturing techniques provide overall high reliability and excellent resistance to environmental extremes:

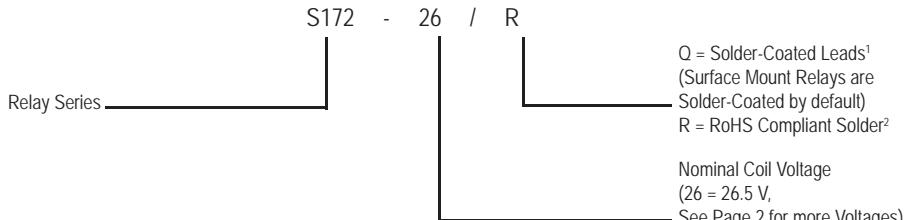
The S172 feature:

- All welded construction.
- High force/mass ratios for resistance to shock and vibration.

- Unique uni-frame design providing high magnetic efficiency and mechanical rigidity.
- 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 S172D relay has an internal discrete silicon diode for coil transient suppression.

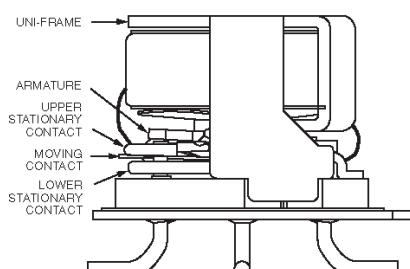
Part Numbering System



ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS

Temperature (Operating)	-55°C to +85°C
Vibration (General Note I)	10 g's to 500 Hz
Shock (General Note I)	30 g's, 6ms half sine
Enclosure	Hermetically sealed
Weight	0.15 oz. (4.3g) max.
Reflow Temperature	260°C max. temp. 1 min. max

INTERNAL CONSTRUCTION

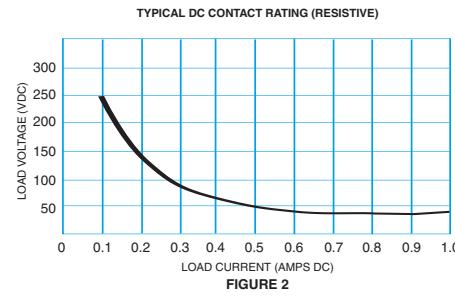
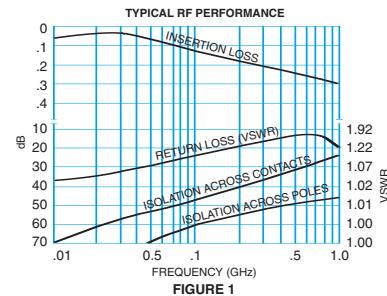


SERIES S172
GENERAL ELECTRICAL SPECIFICATIONS (-55 °C to 85 °C unless otherwise noted. See notes 2 & 3.)

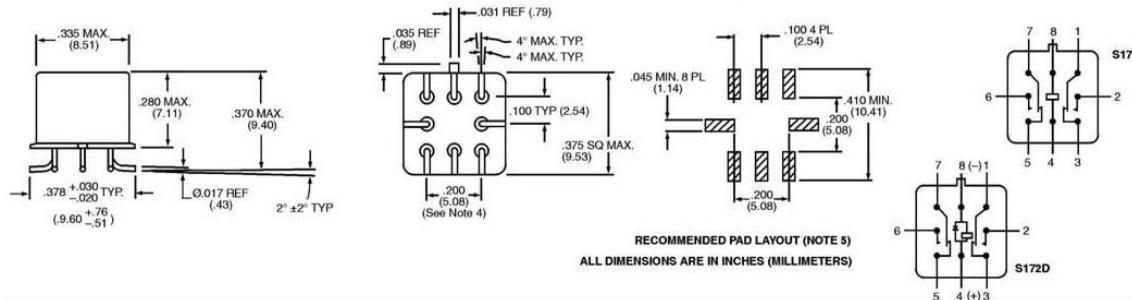
Contact Arrangement	2 Form C (DPDT)	
Rated Duty	Continuous	
Contact Resistance	0.15 Ω max.	
Contact Load Rating	Resistive: 1 A / 28 Vdc Inductive: 200 mA / 28 Vdc (320mH) Lamp: 100 mA / 28 Vdc (320mH) Low level: 10 to 50 μA @ 10 to 50 mV	
Contact Life Ratings	5,000,000 cycles (typical) at low level 500,000 cycles (typical) at 0.5 A / 28 Vdc resistive 100,000 cycles min. at all other loads specified above	
Contact Overload Rating	2 A / 28 Vdc Resistive (100 cycles min.)	
Contact Carry Rating	Contact Factory	
Operate Time	6.0 msec max. at nominal rated coil voltage	
Release Time	S172: 3.0 ms max.	S172D: 6.0 ms max.
Contact Bounce	1.5 msec max.	
Intercontact Capacitance	0.4 pf typical	
Insulation Resistance	1,000 MΩ min. between mutually isolated terminals	
Dielectric Strength	300 Vrms (60 Hz) @ atmospheric pressure	
Negative Coil Transient (Vdc)	2.0 Vdc Max.	
Diode P.I.V. (Vdc)	60 Vdc Min.	

DETAILED ELECTRICAL SPECIFICATIONS (-55 °C to 85 °C unless otherwise noted. See note 2.)

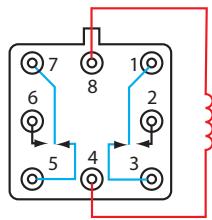
BASE PART NUMBERS (S172, S172D)		S172-3 S172D-3	S172-5 S172D-5	S172-12 S172D-12	S172-26 S172D-26
Coil Voltage	Nom.	3.0	5.0	12.0	26.5
	Max.	3.6	5.8	16.0	32.0
Coil Resistance (Ohms ±25%)		39	64	400	1600
Pick-up Voltage (Vdc, Max.) Pulse Operation		2.25	3.8	9.0	18.0
Coil Operating Power at Nominal Voltage (mW)		235	405	360	440

PERFORMANCE CURVES (Note 2)

GENERAL NOTES

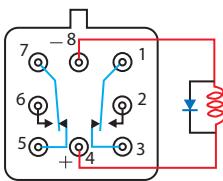
1. Relay contacts will exhibit no chatter in excess of 10 usec or transfer in excess of 1 usec.
2. "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
3. Unless otherwise specified, parameters are initial values.
4. Relays can be supplied with a spacer pad. See appendix.

SERIES S172
OUTLINE DIMENSIONS


(Viewed From Terminals)

SCHEMATIC DIAGRAMS


S172



S172D

NOTES:

1. DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS SHOWN IN [].
2. POSITIONS 5 AND 10 ARE FOR UNINSULATED CASE GROUND OPTIONS.
3. NO PROTRUSION BELOW BOTTOM OF HEADER WHEN GROUND PINS ARE INSTALLED
4. TO ORDER THE CASE GROUND OPTION, AFTER THE SERIES DESIGNATOR, ADD "Y" TO THE PART NUMBER FOR POSITION 5 OR "Z" TO THE PART NUMBER FOR POSITION 10.
5. UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE $\pm .010$ INCH (0.025 MM)

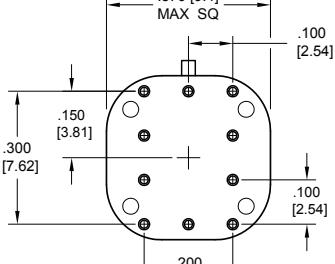
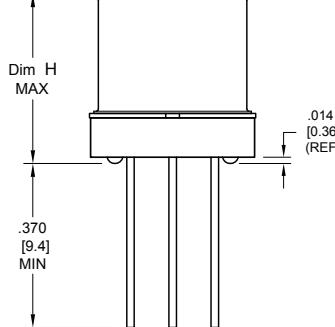
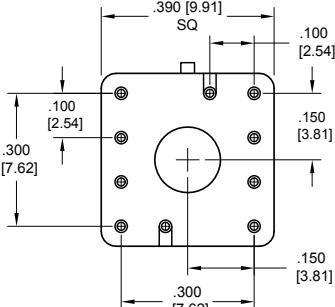
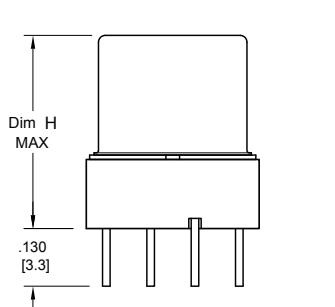
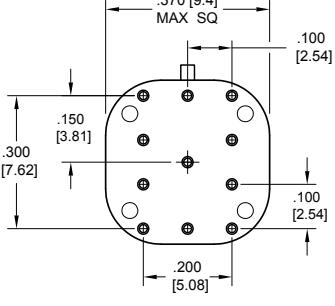
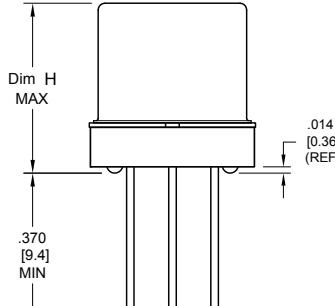
APPENDIX: Spacer Pads

Pad designation and bottom view dimensions	Height	For use with the following:	Dim. H Max.
		ER412, ER412D, ER412DD	.295 (7.49)
"M4" Pad for TO-5		712, 712D, 712TN, RF300, RF310, RF320 RF700, RF703	.300 (7.62)
		ER420, ER420D, ER420DD, 421, ER421D, ER421DD, ER422, ER422D, ER422DD, 722, 722D, RF341	.305 (7.75)
"M4" Pad for TO-5		ER431T, ER432T, ER432, ER432D, ER432DD	.400 (10.16)
"M4" Pad for TO-5		732, 732D, 732TN, RF303, RF313, RF323	.410 (10.41)
		RF312, RF332	.350 (8.89)
		SI800, SI803	
"M4" Pad for Centigrad®		ER411, ER411D, ER411DD, ER411T	.295 (7.49)
		ER431, ER431D, ER431DD	.400 (10.16)
"M4" Pad for Centigrad®		RF311	.300 (7.62)
		RF331	.410 (10.41)
		172, 172D	.305 (7.75)
"M4" Pad for Centigrad®		ER114, ER114D, ER114DD, J114, J114D, J114DD	.300 (7.62)
		ER134, ER134D, ER134DD, J134, J134D, J134DD	.400 (10.16)
"M4" Pad for Centigrad®		RF100	.315 (8.00)
		RF103	.420 (10.67)
		122C, A152	.320 (8.13)
"M9" Pad for Centigrad®		ER116C, J116C	.300 (7.62)
		ER136C, J136C	.400 (10.16)
"M9" Pad for Centigrad®		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 mm).
5. Add 10 mΩ to the contact resistance shown in the datasheet.
6. Add 0.01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.

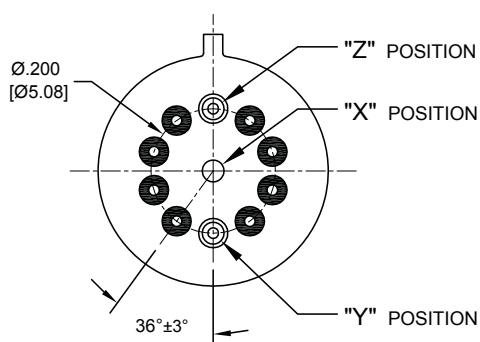
APPENDIX: Spreader Pads

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

Notes:

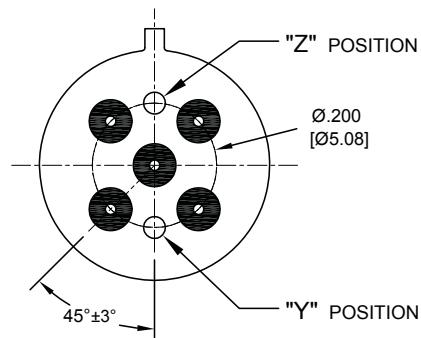
1. Spreader pad material: Diallyl Phthalate.
2. To specify an "M", "M2" or "M3" spreader pad, refer to the mounting variants portion of the part number example in the applicable datasheet.
3. Dimensions are in inches (mm).
4. Unless otherwise specified, tolerance is $\pm .010"$ (0.25 mm).
- 5/. Add 25 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: Ground Pin Positions



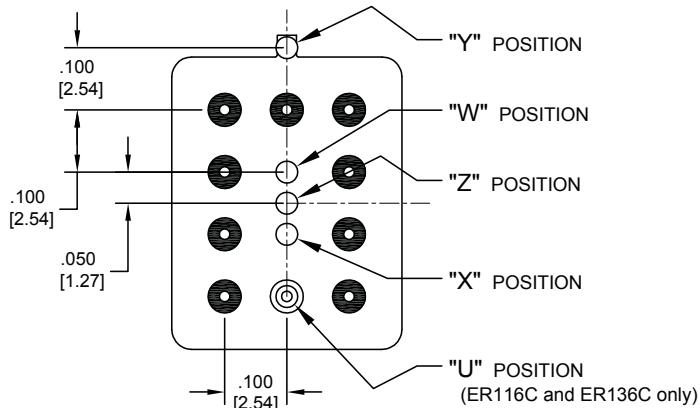
TO-5 Relays:

ER411T, ER412, ER412T, ER420, ER421, ER422, ER431T, ER432, ER432T, 712, 712TN, 400H, 400K, 400V, RF300, RF303, RF341, RF312, RF332, RF310, RF313, RF320, RF323, SI800, SI803, RF700, RF703



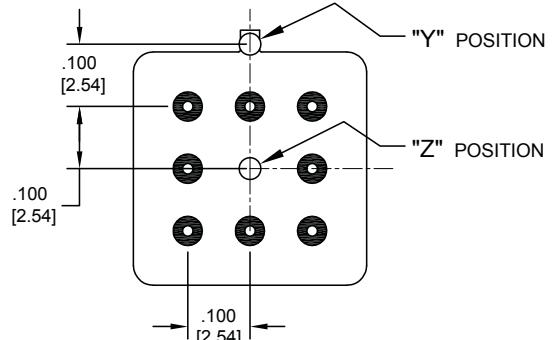
TO-5 Relays:

ER411, ER431, RF311, RF331



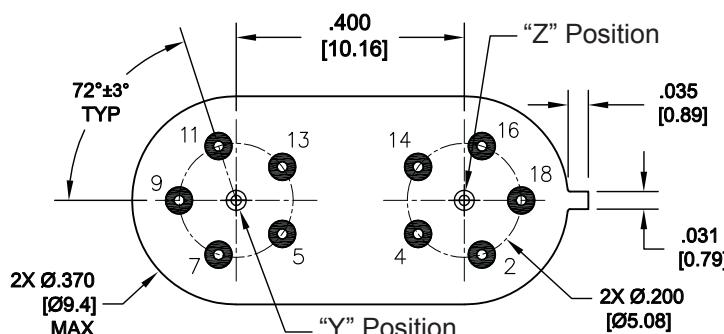
Centigrid® Relays:

RF180, ER116C, 122C, ER136C



Centigrid® Relays:

RF100, RF103, ER114, ER134, 172



Loopback Relays:

LB363

NOTES

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

1. Terminal views shown
2. Dimensions are in inches (mm)
3. Tolerances: ± .010 (±.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.

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