

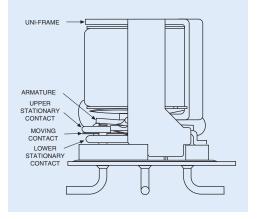


CENTIGRID® SURFACE MOUNT COMMERCIAL RELAYS SENSITIVE DPDT

SERIES	5
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



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

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.

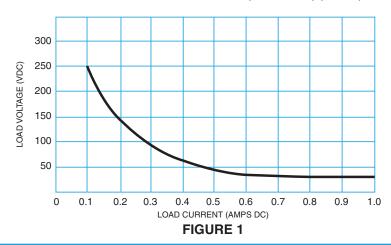
SERIES S134 GENERAL ELECTRICAL SPECIFICATIONS (-65°C to +125°C unless otherwise noted) (Notes 2 & 3)

Contact Arrangement	2 Form C (D	PDT)			
Rated Duty	Continuous				
Contact Resistance	0.1 ohm max	0.1 ohm max. before life; 0.2 ohm max. after life at 1A/28Vdc (measured 1/8" from header)			
Contact Load Ratings (DC) (See Fig. 2 for other DC resistive voltage/current ratings)	Resistive: Inductive: Lamp: Low Level:	Inductive: 200 mA/28Vdc (320 mH) Lamp: 100 mA/28Vdc			
Contact Load Ratings (AC)	Resistive: 250 mA/115Vac, 60 and 400 Hz (Case undergrounded) 100 mA/115Vac, 60 and 400 Hz (Case grounded)				
Contact Life Ratings	10,000,000 cycles (typical) at low level 1,000,000 cycles (typical) at 0.5A/28Vdc resistive 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, S134DD1.0 max		1.0 max			
Diode P.I.V. (Vdc)	S134D, S	134DD	100 min.		

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

(See Note 1	BASE PA NUMBE 0 for full P/N exam	RS	S134-5 S134D-5 S134DD-5	S134-6 S134D-6 S134DD-6	S134-9 S134D-9 S134DD-9	S134-12 S134D-12 S134DD-12	S134-18 S134D-18 S134DD-18	S134-26 S134D-26 S134DD-26
Coil Voltage (Vdc)	No	em.	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	S134,	S134D	100	200	400	800	1600	3200
(Ohms ±10% @25°C)	S134DD (Note 4)		64	125	400	800	1600	3200
Coil Current (mAdc @25°C)	Noto F	Min.	56.8	36.3	18.1	12.5	9.6	7.2
(134DD Series)	Note 5	Max.	78.1	48.9	23.6	16.0	12.2	9.0
Biok up Voltage (Vde Mex.)		S134D	3.5	4.5	6.8	9.0	13.5	18.0
Pick-up Voltage (Vdc, Max.)	S13	S134DD		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

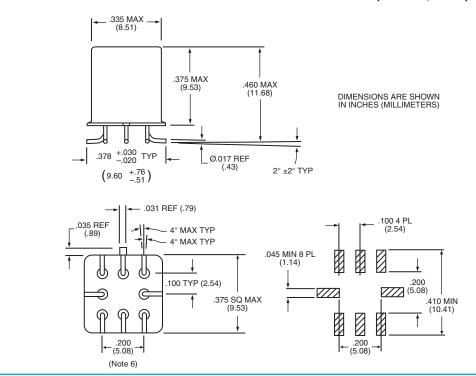
TYPICAL DC CONTACT RATING (RESISTIVE) (Note 2)



SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE www.teledynerelays.com

SERIES S134

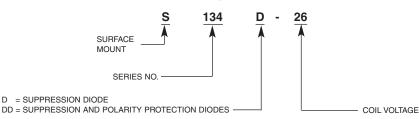
OUTLINE DIMENSIONS AND RECOMMENDED PAD LAYOUT (Notes 7, 8 & 9)

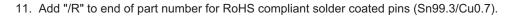


GENERAL NOTES

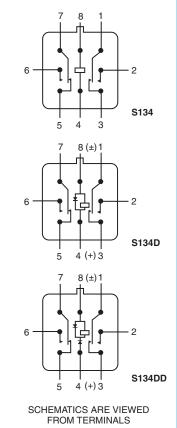
- 1. Relay contacts will exhibit no chatter in excess of 10 µsec or transfer in excess of 1 µsec.
- "Typical" characteristics are based on available data and are best estimates. No on-going verification tests are performed.
- 3. Unless otherwise specified, parameters are initial values.
- 4. For reference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

Teledyne Part Numbering System for Surface Mount Relays





TERMINAL LOCATIONS & SCHEMATIC DIAGRAMS



Appendix A: Spacer Pads

Pad designation and bottom view dimensions	Height	For use with the following:	Dim. H Max.
Ø.150		ER411T ER412, ER412D, ER412DD	.295 (7.49)
(1.50) (REF)		712, 712D, 712TN, RF300, RF310, RF320	.300 (7.62)
		ER420, ER422D, ER420DD, 421, ER421D, ER421DD, ER422, ER422D, ER422DD, 722, 722D, RF341	.305 (7.75)
		ER431T, ER432T, ER432, ER432D, ER432DD	.400 (10.16)
		732, 732D, 732TN, RF303, RF313, RF323	.410 (10.41)
"M4" Pad for TO-5		RF312	.350 (8.89)
	$\overline{\uparrow}$	ER411, ER411D, ER411DD	.295 (7.49)
		ER431, ER431D, ER431DD	.400 (10.16)
$\bigcirc \bigcirc \bigcirc \bigcirc$		RF311	.300 (7.62)
"M4" Pad for TO-5		RF331	.410 (10.41)
		172, 172D	.305 (7.75)
	Dim H MAX	ER114, ER114D, ER114DD, J114, J114D, J114DD	.300 (7.62)
		ER134, ER134D, ER134DD, J134, J134D, J134DD	.400 (10.16)
		RF100	.315 (8.00)
"M4" Pad for Centigrid®		RF103	.420 (10.67)
.156 [3.96] (REF)		122C, A152	.320 (8.13)
	Dim H MAX	ER116C, J116C	.300 (7.62)
.256 [6.5] (REF) (REF) (O) (O) (O) (O) (O) (O) (O) (O) (O) (O		ER136C, J136C	.400 (10.16)
		RF180	.325 (8.25)
"M9" Pad for Centigrid [®]		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.

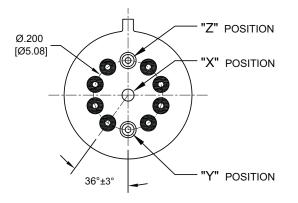
Appendix A: Spreader Pads

Pad designation and bottom view dimensions	Height	For use with the following:	Dim. H Max.
		ER411T, J411T, ER412, ER412D ER412DD, J412, J412D, J412DD ER412T, J412T	.388 (9.86)
	Dim H MAX (REF)	712, 712D, 712TN	.393 (9.99)
$\begin{array}{c c} & 1.50 \\ \hline & .300 \\ \hline [7.62] \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \end{array} \begin{array}{c} 0 \\ \end{array} \end{array} \end{array} $		ER431T, J431T, ER432, ER432D ER432DD, J432, J432D, J432DD ER432T, J432T	.493 (12.52)
	.370	732, 732D, 732TN	.503 (12.78)
"M" Pad 5/_6/_	[9.4] MIN	ER420, J420, ER420D, J420D ER420DD, J420DD, ER421, J421 ER421D, J421D, ER421DD J422D, ER422DD, J422DD, 722	.398 (10.11)
		ER411T ER412, ER412D, ER412DD J412, J412D, J412DD	.441 (11.20)
	Dim H MAX	712, 712D	.451 (11.46)
		ER421, ER421D, ER421DD 722, 732D	.451 (11.46)
		ER431T ER432, ER432D, ER432DD	.546 (13.87)
"M2" Pad <u>7/ 8</u> /	Ť	732, 732D	.556 (14.12)
		ER411, ER411D, ER411DD ER411TX ER412X, ER412DX, ER412DDX ER412TX	.388 (9.86)
[2.54]	Dim H	712X, 712DX, 712TNX	.393 (9.99)
.150 [3.81] [3.81] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.62] [7.63] [7.6	MAX .014 [0.36] (REF) .370 [9.4] MIN 	ER420X, ER420DX, ER420DDX ER421X, ER421DX, ER421DDX ER422X, ER422DX ER422DDX, 722X, 722DDX	.398 (10.11)
		ER431, ER431D, ER431DD ER431TX ER432X, ER432DX, ER432DDX ER432TX	.493 (12.52)
"M3" Pad <u>5/ 6/ 9</u> /		732X, 732DX, 732TNX	.503 (12.78)

Notes:

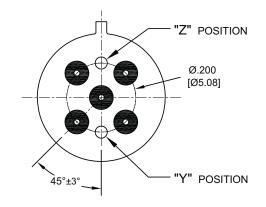
- 1. Spreader pad material: Diallyl Phthalate.
- 2. To specify an "M", "M2" or "M3" spreader pad, refer to the mounting variants portion of the part number example in the applicable datasheet.
- 3. Dimensions are in inches (mm).
- 4. Unless otherwise specified, tolerance is \pm .010" (0.25).
- 5/. Add 25 m Ω to the contact resistance shown in the datasheet.
- $\underline{6}$ /. Add .01 oz. (0.25 g) to the weight of the relay assembly shown in the datasheet.
- $\underline{7}/.$ Add 50 m Ω to the contact resistance shown in the datasheet.
- $\underline{8}$ /. 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

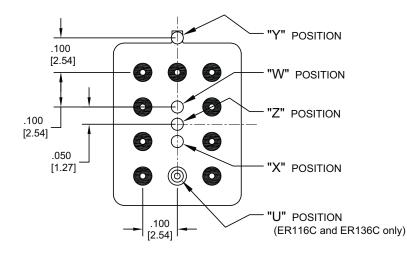


TO-5 Relays:

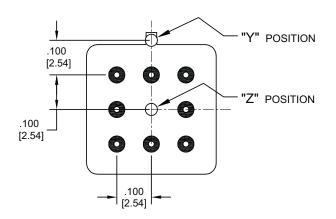
ER411T, ER412, ER412T, ER420, ER421, ER422, ER431T, ER432, ER432T, 712, 712TN, 400H, 400K, 400V, RF300, RF303, RF341, RF312, RF310, RF313, RF320, RF323



TO-5 Relays: ER411, ER431, RF311, RF331



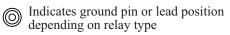
Centigrid® Relays: RF180, ER116C, 122C, ER136C



Centigrid® Relays: RF100, RF103, ER114, ER134, 172

O Indicates ground pin position

Indicates glass insulated lead position



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.