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R10 Series Panel Plug-in Relay

- **1 through 8 form C (CO) contact arrangement**
- **Broad range of coil options provides sensitivity ranging from 25 to 750mW**
- **Various contacts switch from dry circuit to 7.5 amps**
- **Many mounting and termination options**



R10 R10-R R10S R10-T

Typical applications
Coin changers, audio equipment, elevators, traffic controls, ultrasonic test equipment, parking toll readers

Approvals

UL E29244; CSA LR15734
Technical data of approved types on request

Contact Data

Contact arrangement	1, 2, 3, 4, 6 and 8 Form C (CO)
Rated voltage	120VAC
Rated current	7.5A
Contact material	Ag, AgCdO, Au overlay Ag, AuPtAg
Contact style	Single or bifurcated crossbar
Min. recommended contact load	
W type, AgCdO, single contact	300mA, 12VDC
X type, AgCdO, single contact	300mA, 12VDC
M type, AgCdO, bifurcated contact	300mA, 12VDC
Y type, Ag, single contact	100mA, 12VDC
Z type, Ag, bifurcated crossbar	1mA, 12VDC
P type, Au overlay Ag, bifurcated crossbar	dry circuit
L type, AuPtAg, bifurcated crossbar	dry circuit
Initial contact resistance	
All AgCdO contact types	100mΩ
All other contact materials and types	50mΩ
Frequency of operation	360 ops./hr

Contact ratings

Type	Load	Cycles
UL 508		
W type, AgCdO, single contact		
	7.5A, 120VAC, resistive	
	7.5A, 28VDC, resistive	
	1/8HP, 120VAC, same polarity	
	1/6HP, 240VAC, same polarity	
X type, AgCdO, single contact		
	2A, 30VDC, resistive	$100x10^3$
	5A, 120VAC, resistive	$6x10^3$
	5A, 30VDC, resistive	$100x10^3$
	1/20HP, 120VAC, same polarity	
	1/10HP, 240VAC, same polarity	
M type, AgCdO, bifurcated contact		
	5A, 120VAC, resistive	$6x10^3$
	5A, 28VDC, resistive	$6x10^3$
Y type, Ag, single contact		
	2A, 120VAC	$6x10^3$
	2A, 28VDC	$6x10^3$
	250VA, 250VAC	$30x10^3$
	125VA, 125VAC	$100x10^3$
Z type, Ag, bifurcated crossbar contact		
	3A, 120VAC	$6x10^3$
	3A, 28VDC	$6x10^3$
	2A, 30VDC	$100x10^3$

Contact ratings (continued)

Type	Load	Cycles
UL 508		
P type, Au overlay Ag, bifurcated crossbar contact		
	2A, 120VAC, resistive	$100x10^3$
	3 A, 120 VAC, resistive	$6x10^3$
	3 A, 30 VDC, resistive	$100x10^3$
L type, AuPtAg, bifurcated crossbar contact		
	500mA, 28VDC, resistive	$6x10^3$
Mechanical endurance	$10x10^6$ ops., except W type is $1x10^6$ ops.	

Coil Data

Coil voltage range	3 to 115VDC 4.5mA to 20mA 6 to 115VAC

Coil versions, DC coil

Coil code	Rated voltage VDC	Operate voltage VDC	Coil resistance Ω±10%	Rated coil power mW
V - standard DC voltage adjustment				
1, 2 and 4 pole				
V10	3	2.25	10	900
V28	5	3.75	28	900
V52	6	4.5	52	900
V185	12	9	185	900
V700	24	18	700	900
V2.5K	48	36	2500	900
V5.8K	72	54	5800	900
V15.0K	115	86	15000	900
6 pole				
V6	3	2.25	6	1,500
V16	5	3.75	16	1,600
V25	6	4.5	25	1,500
V90	12	9	90	1,600
V430	24	18	430	1,400
V1.5K	48	36	1500	1,600
V3.5K	72	54	3500	1,500
V9.0K	115	86	9000	1,500
8 pole				
V5	3	2.25	5	1,800
V14	5	3.75	14	1,800
V20	6	4.5	20	1,800
V72	12	9	72	2,000
V350	24	18	350	1,700
V1.25K	48	36	1250	1,900
V2.8K	72	54	2800	1,900
V8.0K	115	86	8000	1,700

All figures are given for coil without preenergization, at ambient temperature +23°C.

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R10 Series Panel Plug-in Relay (Continued)

Coil versions, DC coil (continued)

Coil code	Rated voltage VDC	Operate voltage VDC	Coil resistance Ω±10%	Rated coil power mW
Q - special DC voltage adjustment				
1 and 2 pole				
Q52	5	3.1	52	500
Q110	6	4.5	110	350
Q450	12	9.2	450	350
Q1.8K	24	17.4	1,800	350
Q7.5K	48	36.2	7500	310
Q15.0K	72	49.5	15000	350
Q30.0K	115	67.5	30000	450
3 and 4 pole				
Q32	5	3.8	32	800
Q52	6	4.2	52	700
Q185	12	8.4	185	800
Q1.0K	24	17.2	1000	600
Q3.2K	48	31.1	3200	750
Q7.5K	72	49.3	7500	700
Q15.0K	115	67.5	15000	900
S - sensitive DC voltage adjustment				
1 and 2 pole				
S50	3	2.25	50	180
S140	5	3.75	140	180
S200	6	4.5	200	180
S800	12	9	800	180
S3.2K	24	18	3200	180
S13.0K	48	36	13000	180
S28.0K	72	54	28000	190
S50.0K	115	86	50000	270
3 and 4 pole				
S30	3	2.25	30	300
S80	5	3.75	80	350
S110	6	4.5	110	350
S450	12	9	450	350
S1.8K	24	18	1800	350
S7.5K	48	36	7500	300
S16.0K	72	54	16000	350
S40.0K	115	86	40000	350
6 pole				
S20	3	2.25	20	500
S56	5	3.75	56	500
S80	6	4.5	80	500
S320	12	9	320	500
S1.2K	24	18	1200	500
S5.2K	48	36	5200	500
S13.0K	72	54	13000	400
S30.0K	115	86	30000	500
8 pole				
S12	3	2.25	12	750
S35	5	3.75	35	750
S52	6	4.5	52	700
S200	12	9	200	750
S800	24	18	800	750
S3.2K	48	36	3200	750
S7.5K	72	54	7500	700
S16.0K	115	86	16000	850
SS - ultra sensitive DC voltage adjustment				
1 pole				
SS220	3	2.25	220	45
SS700	5	3.75	700	40
SS1.0K	6	4.5	1000	40
SS4.0K	12	9	4000	40
SS9.0K	18	13.5	9000	40
SS15.0K	24	18	15000	40
SS30.0K	36	27	30000	45

Coil versions, DC coil (continued)

Coil code	Rated voltage VDC	Operate voltage VDC	Coil resistance Ω±10%	Rated coil power mW
S - sensitive DC voltage adjustment (continued)				
2 pole				
SS110	3	2.25	110	85
SS350	5	3.75	350	75
SS500	6	4.5	500	75
SS2.0K	12	9	2000	75
SS4.5K	18	13.5	4500	75
SS7.5K	24	18	7500	80
SS15.0K	36	27	15000	85
SS30.0K	48	36	30000	80
3 and 4 pole				
SS52	3	2.25	52	175
SS175	5	3.75	175	150
SS250	6	4.5	250	150
SS1.0K	12	9	1000	150
SS2.2K	18	13.5	2200	150
SS3.7K	24	18	3700	150
SS7.5K	36	27	7500	175
SS15.0K	48	36	15000	150

Coil code	Maximum coil current mADC	Operate current mADC	Coil resistance Ω±10%	Pick-up coil power mW
J - sensitive DC current adjustment				
2 pole				
J1.0K	45	8.5	1000	75
J2.5K	28	5.8	2500	85
J5.0K	20	4.1	5000	85
J10.0K	14	3.1	10000	100
J15.0K	11.5	2.6	15000	100
J30.0K	8.3	1.7	30000	85
4 pole				
J1.0K	45	13	1000	175
J2.5K	28	8.4	2500	175
J5.0K	20	6.2	5000	200
J10.0K	14	4.5	10000	200
J15.0K	11.5	3.5	15000	200
J30.0K	8.3	2.5	30000	200
6 pole				
J1.0K	45	16	1000	250
J2.5K	28	10	2500	250
J5.0K	20	7.2	5000	250
J10.0K	14	5	10000	250
J15.0K	11.5	4.2	15000	270
J30.0K	8.3	2.9	30000	250
8 pole				
J1.0K	45	20	1000	250
J2.5K	28	13	2500	250
J5.0K	20	9	5000	250
J10.0K	14	6.4	10000	250
J15.0K	11.5	5.3	15000	270
J30.0K	8.3	3.7	30000	250
J - sensitive DC current adjustment - R10S types only				
1 pole				
J500 [1]	–	4.5	500	10
J1.0K [1]	–	3.2	1000	10
J2.5K	–	2	2500	10
J5.0K [2]	–	1.4	5000	10
J10.0K	–	1	10000	10
J16.0K	–	0.8	16000	10
J30.0K [3]	–	0.6	30000	11

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R10 Series Panel Plug-in Relay (Continued)

Coil versions, DC coil (continued)

Coil code	Maximum coil current mADC	Operate current mADC	Coil resistance Ω±10%	Pick-up coil power mW
J - sensitive DC current adjustment – R10S types only				
2 pole				
J500 1)	–	6.3	500	20
J1.0K	–	4.5	1000	20
J2.5K 2)	–	2.9	2500	25
J5.0K	–	2	5000	20
J10.0K 3)	–	1.4	10000	20
J16.0K	–	1.2	16000	25
J30.0K	–	0.8	30000	20
4 pole				
J500	–	9	500	45
J1.0K	–	6.5	1000	45
J2.5K 2)	–	4.1	2500	45
J5.0K 3)	–	2.9	5000	45
J10.0K	–	2	10000	40
J16.0K	–	1.4	16000	35
J30.0K	–	1.2	30000	45
JJ - ultrasensitive DC current adjustment				
1 pole				
JJ1.0K	45	4.5	1000	20
JJ2.5K	28	2.9	2500	25
JJ5.0K	20	2.1	5000	25
JJ10.0K	14	1.5	10000	25
JJ15.0K	11.5	1.2	15000	25
JJ30.0K	8.3	0.85	30000	25
2 pole				
JJ1.0K	45	6.5	1000	45
JJ2.5K	28	4.1	2500	45
JJ5.0K	20	2.9	5000	45
JJ10.0K	14	2	10000	40
JJ15.0K	11.5	1.7	15000	45
JJ30.0K	8.3	1.2	30000	45
4 pole				
JJ1.0K	45	9	1000	85
JJ2.5K	28	5.8	2500	85
JJ5.0K	20	4.1	5000	85
JJ10.0K	14	3	10000	90
JJ15.0K	11.5	2.4	15000	85
JJ30.0K	8.3	1.7	30000	90

1) Suggested for 5VDC operation
2) Suggested for 12VDC operation
3) Suggested for 24VDC operation

All figures are given for coil without preenergization, at ambient temperature +23°C.

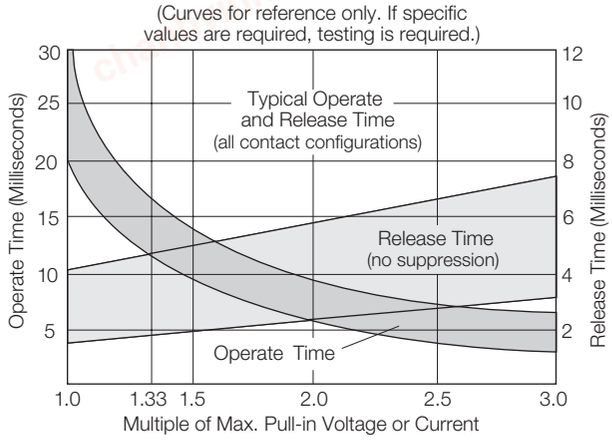
Coil versions, AC coil (dual coil diode rectified construction)

Coil code	Rated voltage VAC	Operate voltage VAC	Coil resistance Ω±20%
Standard AC			
2 and 4 pole			
6V	6	5	25
12V	12	9	120
24V	24	18	500
48V	48	36	2000
115V	115	86	9000
6 and 8 pole			
6V	6	5	15
12V	12	9	90
24V	24	18	350
48V	48	36	1400
115V	115	86	7500

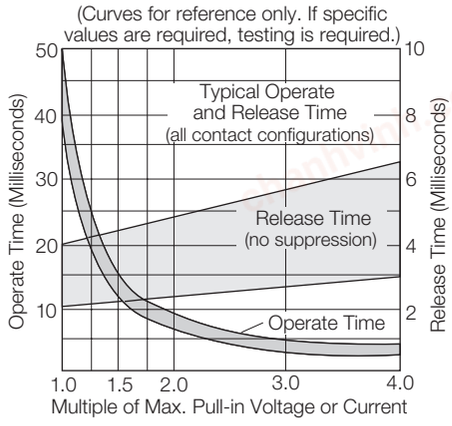
All figures are given for coil without preenergization, at ambient temperature +23°C.

Operative Range

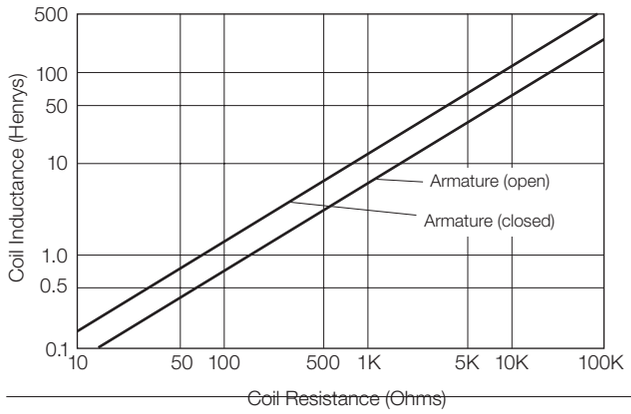
R10 Relays (DC Only) Typical Ranges of Operations @ 25°C



R10 Ultra-Sensitive “SS” and “JJ” Typical Ranges of Operation @ 25°C



Typical Coil Inductance



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R10 Series Panel Plug-in Relay (Continued)

Insulation Data

Initial dielectric strength	
between open contacts	500V_{rms}
between contact and coil	1000V_{rms}
between adjacent contacts	1000V_{rms}
Initial insulation resistance	
between insulated elements	10GΩ, 500VDC

Other Data

Material compliance:	EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter
Ambient temperature	-55ºC to 75ºC
Category of environmental protection	
IEC 61810	RTI - dust protected and RTIII - wash tight

Other Data (continued)

Terminal type	Solder/plug-in terminals, PCB-THT, 8- or 11-PIN octal type plug
Weight	23 to 40g
Packaging/unit	tray/50 pcs., box/350pcs.

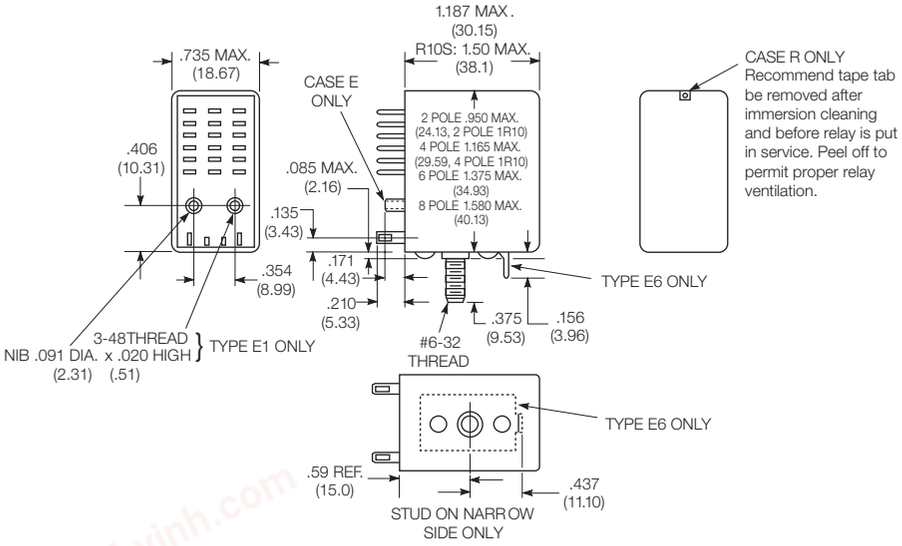
Accessories

For details see datasheet	Sockets and Accessories, R10 Relays

Product Code	Description
Many versions of sockets and clips available.	

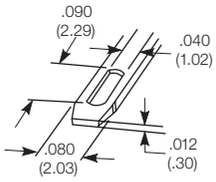
NOTE: Relays with contact current <50mA are not recommended for use in sockets.

Dimensions

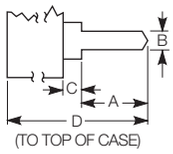


Terminal dimensions

Solder terminal dimensions

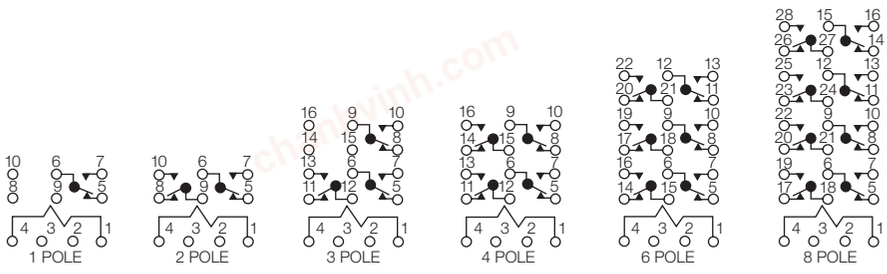


Printed circuit terminal dimensions

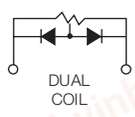


	A	B	C	D	Arrang.
Type 2	.131	.050	.064	1.251	Inline
Type 7	.131	.040	.013	1.20	Inline
Type 9	.170	.040	.000	1.187	Staggered
Thickness	.012	.012	.012	.013	—

Terminal assignment



R10 - AC Coil Diagram



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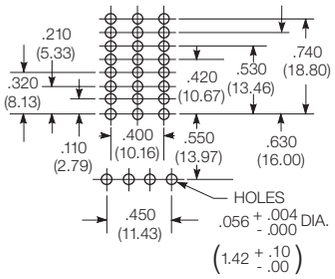
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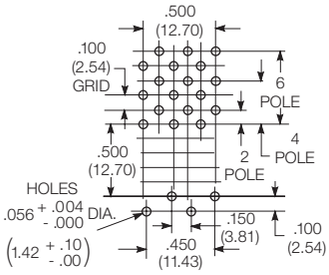
R10 Series Panel Plug-in Relay (Continued)

PCB layout
Bottom view on solder pins

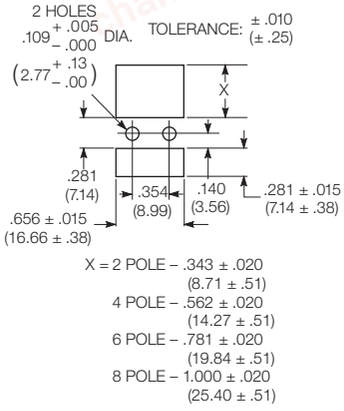
Terminal Types E2 & R2
(Omit unnecessary holes)



Terminal Types E9 & R9
(Omit unnecessary holes)

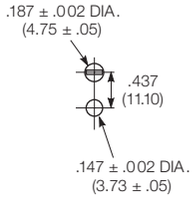


Suggested panel cutout for relay



X = 2 POLE – .343 ± .020
(8.71 ± .51)
4 POLE – .562 ± .020
(14.27 ± .51)
6 POLE – .781 ± .020
(19.84 ± .51)
8 POLE – 1.000 ± .020
(25.40 ± .51)

Mounting hole layout for terminal & mounting style 6



Product code structure

Typical product code: **R10 -E 1 Y 4 -V700**

Type
- **R10** Cradle-style relay with form C contacts
- **R10S** Super sensitive cradle-style relay with form C contacts

Case style
- **E** Non-sealed polycarbonate dust cover (RTI)
- **R** Wash-tight (RTIII), tape sealed plastic case [1]
- **T** Octal style base on non-sealed polycarbonate dust cover (terminal types 1 & 2 only; 1, 2 & 3 poles only)

1) R10 type only, terminal code 2 or 9 only, no ground or stud

Terminal and mounting
- **1** Solder/Plug-in terminals with #3-48 mounting stud on R10-E; 8-pin octal type on R10-T
- **2** PCB terminals (std.) 1.62mm (.064in) clearance, 31.75mm (1.25in) seated ht.; 11-pin octal type on R10-T
- **6** Side mounting plate with #6-32 stud, solder/plug-in terminals (#3-48 stud not included)
- **7** Narrow 1.02mm (.04in) PCB terminals, .33mm (.013in) clearance, 30.48mm (1.2in) seated ht.
- **9** Non-shouldered, narrow 1.02mm (.04in) PCB terminals in staggered arrangement [2]

2) Available only on 1 through 6 pole models

Contact style and rating [3]
- **W** Single contact rated 7.5A max, 300mA min. [4] [5]
- **X** Single contact rated 5A max, 300mA min. [5] [6]
- **M** Bifurcated contact rated 5A max, 300 mA min. [5] [6]
- **Y** Single contact rated 2A typ, 3A max, 100mA min.
- **Z** Bifurcated low level contacts rated 100mA typ, 2A max, 1mA min.
- **P** Bifurcated crossbar dry circuit contacts rated 1mA typ, 3A max, dry circuit min.
- **L** Bifurcated crossbar dry circuit contacts rated 500 microA typ, 250 mA max, dry circuit min.

3) Ratings are at 28VDCV or 115VAC. Total load must not exceed 30A per relay.
4) Use ungrounded frame for AC load of ≥5A. Max ratings are 7.5A at 115VAC and 4A at 28VDC for coil codes S & J
5) Only available on R10 type, only available with coil adjustment code V, Q, S and J.
6) Use ungrounded frame for AC load of ≥5A. Max ratings are 5A at 115VAC and 3A at 28VDC for coil codes S & J

Number of poles
- **1** 1 pole
- **2** 2 pole
- **3** 3 pole
- **4** 4 pole (not available on R10-T)
- **6** 6 pole (not available on R10-T) [7]
- **8** 8 pole (not available on R10-T) [8]

7) Not available with contact code W
8) Only available with case style E, not available with contact code W

Coil voltage
Coil code: please refer to coil versions table
- **AC voltage** Specify coil code consisting of nominal coil voltage followed by W (example: 24V)
- **DC voltage** Specify coil code consisting of coil adjustment code letter followed by coil resistance (example: V700)

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R10 Series Panel Plug-in Relay (Continued)

Product Code	Arrangement	Material	Contact Style/Rating	Nom. Coil V	Terminals & Mounting	Part Number
R10-E1P2-115V	2 Form C, 2 CO	Au overlay Ag	Bif crossbar / dry circuit	115 VAC	Solder/plug-in w/ #3-48 mounting stud	7-1393765-0
R10-E1P2-V700				24 VDC		6-1393765-9
R10-E1P4-115V	4 Form C, 4 CO			115 VAC		7-1393765-6
R10-E1P4-V700				24 VDC		7-1393765-5
R10-E1W2-V185	2 Form C, 2 CO	AgCdO	Single contact / 7.5A	12 VDC		8-1393765-9
R10-E1W2-V700				24 VDC		9-1393765-1
R10-E1W4-V185	4 Form C, 4 CO			12 VDC		9-1393765-3
R10-E1W4-V700				24 VDC		9-1393765-5
R10-E1X2-24V	2 Form C, 2 CO		Single contact / 5A	24 VAC		1-1393766-1
R10-E1X2-115V				115 VAC		1-1393766-0
R10-E1X2-S800				12 VDC		1393766-3
R10-E1X2-V185						1393766-5
R10-E1X2-V700				24 VDC		1393766-9
R10-E1X4-115V	4 Form C, 4 CO			115 VAC		1-1393766-8
R10-E1X4-V185				12 VDC		1-1393766-4
R10-E1X4-V700				24 VDC		1-1393766-7
R10-E1X4-V2.5K				48 VDC		1-1393766-5
R10-E1X6-115V	6 Form C, 6 CO			115 VAC		2-1393766-5
R10-E1X6-V90				12 VDC		2-1393766-4
R10-E1X6-V430				24 VAC		2-1393766-2
R10-E1Y2-J1.0K	2 Form C, 2 CO	Ag	Single contact / 2A typical	Not applicable		3-1393766-3
R10-E1Y2-J2.5K						3-1393766-4
R10-E1Y2-V185				12 VDC		4-1393766-0
R10-E1Y2-V700				24 VDC		4-1393766-4
R10-E1Y2-V2.5K				48 VDC		4-1393766-1
R10-E1Y2-V15.0K				115 VDC		3-1393766-9
R10-E1Y4-J10.0K	4 Form C, 4 CO			Not applicable		4-1393766-9
R10-E1Y4-V52						5-1393766-6
R10-E1Y4-V2.5K				48 VDC		5-1393766-5
R10-E1Y4-V700				24 VDC		5-1393766-7
R10-E1Y6-V430	6 Form C, 6 CO					6-1393766-1
R10-E1Y6-V1.5K				48 VDC		6-1393766-0
R10-E1Z2-V185	2 Form C, 2 CO		Bifurcated / 100mA typical	12 VDC		7-1393766-2
R10-E1Z2-V700				24 VDC		7-1393766-4
R10-E1Z4-V185	4 Form C, 4 CO			12 VDC		7-1393766-9
R10-E1Z4-V700				24 VDC		8-1393766-1
R10-E1Z4-V2.5K				48 VDC		8-1393766-0
R10-E1Z6-V430	6 Form C, 6 CO			24 VDC		8-1393766-6
R10-E1Z6-V1.5K				48 VDC		8-1393766-5
R10-T1P2-115V	2 Form C, 2 CO	Au overlay Ag	Bif crossbar / dry circuit	115 VAC		2-1393769-8
R10S-E1Y1-J1.0K	1 Form C, 1 CO	Ag	Single contact / 2A typical	Not applicable		7-1393769-0
R10S-E1Y2-J5.0K	2 Form C, 2 CO					7-1393769-5
R10-E2P4-V185	4 Form C, 4 CO	Au overlay Ag	Bif crossbar / dry circuit	12 VDC	PCB, .064" clearance, 1.25" seated ht.	1393767-3
R10-E2P4-V700				24 VDC		1393767-4
R10-E2W2-V185	2 Form C, 2 CO	AgCdO	Single contact / 5A	12 VDC		1393767-7
R10-E2X2-V185						1-1393767-1
R10-E2X2-V700				24 VDC		1-1393767-5
R10-E2X4-V185	4 Form C, 4 CO			12 VDC		1-1393767-7
R10-E2X4-V700				24 VDC		1-1393767-8
R10-E2Y2-V185	2 Form C, 2 CO	Ag	Single contact / 2A typical	12 VDC		2-1393767-6
R10-E2Y2-V700				24 VDC		2-1393767-9
R10-E2Y4-V185	4 Form C, 4 CO			12 VDC		3-1393767-5
R10-E2Y4-V700				24 VDC		3-1393767-6
R10S-E2Y1-J1.0K	1 Form C, 1 CO			Not applicable		8-1393769-1

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