

R10 series

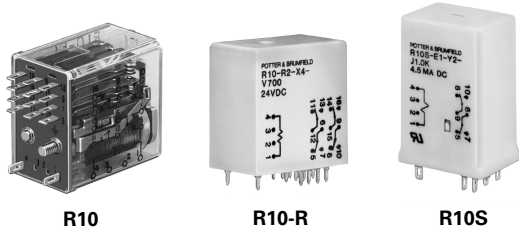
General Purpose Dry Circuit to 7.5 Amp Multicontact AC or DC Relay

- R10-E – Clear Dust Cover Version
- R10-R – Sealed, Immersion Cleanable Type
- R10S – Super Sensitive, Logic Compatible

File E29244

File LR15734

Users should thoroughly review the technical data before selecting a product part number. It is recommended that user also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.



Features

- Broad range of coil options provide sensitivity ranging from 25 to 750mW.
- Various contacts switch from dry circuit to 7.5 amps.
- Many mounting and termination options.

Contact Data @ 25°C

Arrangements: 1 Form C (SPDT) through 8 Form C (8PDT) See Ordering Information tables for more details regarding availability.

Contact Materials, Styles & Ratings @ +25°C

Contact Code	Contact Material	Contact Style	Coil Codes Available	Contact Ratings		
				Min.	Typ.	Max.
W	Silver-Cadmium Oxide	Single Button	V, Q, S, J	500mA	-	7.5A‡
X	Silver-Cadmium Oxide	Single Button	V, Q, S, J	500mA	-	5A§
Y	Fine Silver	Single Button	All	100mA	2A	3A
Z	Fine Silver	Bifurcated	All	1mA	100mA	2A
P	Gold overlay on Silver	Bifurcated Crossbar	All	Dry Circuit	1mA	3A

Ratings are at 28VDC or 155VAC unless otherwise specified. Total load must not exceed 30A per relay.

‡ Use ungrounded frame for AC loads of 5A or greater. Max.ratings are 7.5A at 115VAC and 4A at 28VDC for coil codes S and J.

§ Use ungrounded frame for AC loads of 5A or greater. Max.ratings are 5A at 115VAC and 3A at 28VDC for coil codes S and J.

UL Horsepower Contact Ratings (Coil Code V Only)

Contact Code	No. of Poles	At 110-120VAC	At 220-240VAC
W	1, 2, 4	1/8 HP (3.8A)	1/6 HP (2.2A)
X	1, 2, 4, 6	1/20 HP (1.5A)	1/10 HP (1.5A)

Expected Mechanical Life: 100 million operations, typical. (Except contact Code W: 1,000,000 operations, typical.)

Typical Expected Life For Resistive Loads @ 25°C

Type	Current	Voltage	Contact Style	Coil Code	Operations††
R10	7.5A	120VAC, 60 Hz.	W	V,S,J	7.5 · 10 ⁴
R10	7.5A	28VDC	W	V	7.5 · 10 ⁴
R10	5.0A	120VAC, 60 Hz.	X	V,S,J	5 · 10 ⁴
R10	5.0A	28VDC	X	V	5 · 10 ⁴
R10	4.0A	28VDC	W	S,J	2 · 10 ⁴
R10	3.0A	28VDC	X	S,J	2 · 10 ⁴
R10	3.0A	28VDC or 120VAC	P	V,S,J	3 · 10 ⁴
R10	2.0A	28VDC	P,Y,Z	V	1.5 · 10 ⁶
R10	2.0A	28VDC	P,Y,Z	S,J	6 · 10 ⁵
R10S	2.0A	28VDC	P,Y,Z	J	5 · 10 ⁵
R10	1.0A	28VDC	P,Y,Z	V,S,J	12 · 10 ⁶
R10	1.0A	28VDC	P,Y,Z	SS,JJ	5 · 10 ⁵
R10S	1.0A	28VDC	P,Y,Z	J	1 · 10 ⁶
R10	500mA	28VDC	P,Y,Z	SS,JJ	5 · 10 ⁶
R10	100mA	28VDC or 120VAC	P,Y,Z	V,S,J	1 · 10 ⁸
R10	100mA	48VDC	P,Z	SS,JJ	5 · 10 ⁶
R10	100mA	6VDC	P	SS,JJ	5 · 10 ⁷
R10S	100mA	28VDC or 120VAC	P,Y,Z	J	1 · 10 ⁶
R10	50mA	6VDC	P,Z	V,S,J	5 · 10 ⁷
R10S	30mA	6VDC	P,Z	J	5 · 10 ⁶
R10	1mA	6VDC	P	SS,JJ	5 · 10 ⁷

†† Relay operated at rated coil voltage or 133% of pick-up current or higher.

Initial Dielectric Strength

Between Open Contacts: 500V rms, for contact codes P and Z. 1,000V rms for contact codes W, X and Y with coil code V.

Between All Other Conductors: 1,000V rms.

Dimensions are shown for reference purposes only.

Dimensions are in inches over (millimeters) unless otherwise specified.

Specifications and availability subject to change.

www.tycoelectronics.com
Technical support:
Refer to inside back cover.

Capacitance

Between Contacts: 2 pf, typ.

Between Contacts and Coil: 2 pf, typ.

Between Coil and Frame: 30 pf, typ.

Initial Insulation Resistance

Between Mutually Insulated Elements: 10¹⁰ ohms @ 25°C, 50% RH. Consult factory for optional acetal resin material rated 10¹² ohms.

Coil Data @ 25°C (also see Coil Data tables)

Voltage: 3 to 115VDC and 6 to 115VAC.

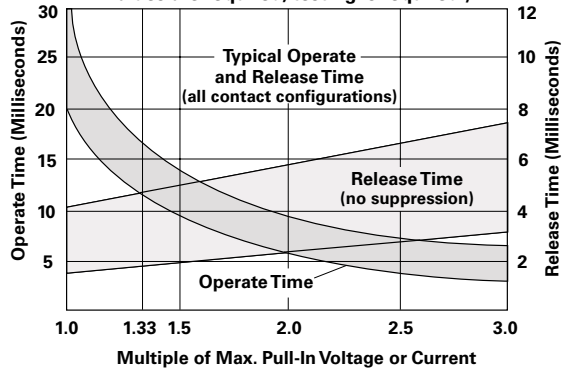
Maximum Coil Power: 2.2 Watts.

Coil Temperature Rise: 30°C per Watt.

Maximum Coil Temperature: 105°C.

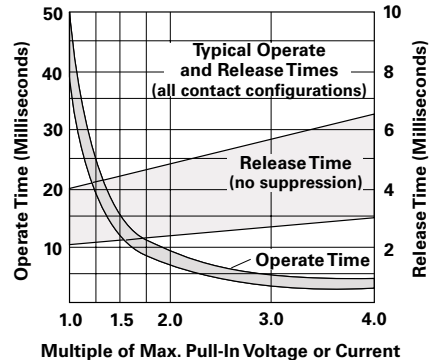
Operate Data @ 25°C

R10 Relays (DC Only) Typical Ranges of Operations
(Curves for reference only. If specific values are required, testing is required.)



R10 Ultra-Sensitive "SS" and "JJ" Typical Ranges of Operation

(Curves for reference only. If specific values are required, testing is required.)



Environmental Data

Storage Temperature Range: -55°C to +105°C.

Operating Temperature Range: -55°C to +75°C.

Mechanical Data

Terminal Finish: Tin plating standard.

Weight: 0.8 to 1.4 oz. (23 to 40g) approximately.

Coil Data Tables @ 25°C

One of the **boldface** resistance or voltage values from a table below is to be inserted in step 6 of the ordering chart on the next page.

V Standard DC Voltage Adjustment				
2.2 Watts Maximum Continuous Coil Dissipation @ 25°C				
VDC at 25°C		Coil Resistance at 25°C ± 10% (ohms)		
Nominal	Pick-up (Max.)	1, 2 & 4 Form A, B, C or D Pick-up 500mW	6 Form A, B or C Pick-up 850mW	8 Form A, B or C Pick-up 1000mW
3.0	2.25	10	6	5
5.0	3.75	28	16	14
6.0	4.5	52	25	20
12.0	9.0	185	90	72
24.0	18.0	700	430	350
48.0	36.0	2.5K	1.5K	1.25K
72.0	54.0	5.8K	3.5K	2.8K
115.0	86.0	15.0K	9.0K	8.0K

Q Special DC Voltage Adjustment						
1 & 2 Form A, B, C or D			3 & 4 Form A, B, C or D			Nominal Voltage @ 25°C (VDC)
Coil Res. @ 25°C ± 10% (ohms)	Pick-up (Max.) @ 25°C (VDC)	Pick-up @ 25°C (mW)	Coil Res. @ 25°C ± 10% (ohms)	Pick-Up (Max.) @ 25°C (VDC)	Pick-up @ 25°C (mW)	
52	3.1	180	32	3.8	450	5
110	4.5	185	52	4.2	340	6
450	9.2	190	185	8.4	380	12
1.8K	17.4	170	1.0K	17.2	295	24
7.5K	36.2	175	3.2K	31.1	300	48
15.0K	49.5	165	7.5K	49.3	325	72
30.0K	67.5	160	15.0K	67.5	300	115

S Sensitive DC Voltage Adjustment					
2.2 Watts Maximum Continuous Coil Dissipation @ 25°C					
VDC at 25°C		Coil Resistance at 25°C ± 10% (ohms)			
Nominal	Pick-up (Max.)	1 & 2 Form A, B, C or D Pick-up 100mW	3 & 4 Form A, B, C or D Pick-up 175mW	6 Form A, B or C Pick-up 250mW	8 Form A, B or C Pick-up 400mW
3.0	2.25	50	30	20	12
5.0	3.75	140	80	56	35
6.0	4.5	200	110	80	52
12.0	9.0	800	450	320	200
24.0	18.0	3.2K	1.8K	1.2K	800
48.0	36.0	13.0K	7.5K	5.2K	3.2K
72.0	54.0	28.0K	16.0	13.0K	7.5K
115.0	86.0	50.0K	40.0K	30.0K	16.0K

SS Ultra-Sensitive Voltage Adjustment (1-4 Pole Only)				
2.2 Watts Maximum Continuous Coil Dissipation @ 25°C				
VDC at 25°C		Coil Resistance at 25°C ± 10% (ohms)		
Nominal	Pick-up (Max.)	1 Form C Pick-up Power 20mW	2 Form C Pick-up Power 40mW	3 & 4 Form C, Pick-up Power 80mW
3.0	2.25	220	110	52
5.0	3.75	700	350	175
6.0	4.5	1.0K	500	250
12.0	9.0	4.0K	2.0K	1.0K
18.0	13.5	9.0K	4.5K	2.2K
24.0	18.0	15.0K	7.5K	3.7K
36.0	27.0	30.0K	15.0K	7.5K
48.0	36.0	—	30.0K	15.0K

J Sensitive DC Current Adjustment					
Must Operate Current (mA)					
All Applicable Types Except R10S					
Coil Resistance ±10% (ohms)	2 Form A, B, C or D Pick-up 85mW	4 Form A, B, C or D Pick-up 175mW	6 Form A, B, C or D Pick-up 250mW	8 Form A, B or C Pick-up 400mW	Max. Coil Current (mA)
1.0K	8.5	13.0	16.0	20.0	45.0
2.5K	5.8	8.4	10.0	13.0	28.0
5.0K	4.1	6.2	7.2	9.0	20.0
10.0K	3.1	4.5	5.0	6.4	14.0
15.0K	2.6	3.5	4.2	5.3	11.5
30.0K	1.7	2.5	2.9	3.7	8.3

R10S Types Only			
Coil Resistance ±10% (ohms)	1 Form C Pick-up 10mW	2 Form C Pick-up 20mW	4 Form C Pick-up 40mW
500	4.5 (A)	6.3 (A)	9.0
1.0K	3.2 (A)	4.5	6.5
2.5K	2.0	2.9 (B)	4.1 (B)
5.0K	1.4 (B)	2.0	2.9 (C)
10.0K	1.0	1.4 (C)	2.0
16.0K	0.8	1.2	1.4
30.0K	0.6 (C)	0.8	1.2

(A) Suggested for 5VDC operation.
(B) Suggested for 12VDC operation.
(C) Suggested for 24VDC operation.

JJ Ultra-Sensitive Current Adjustment (1-4 Pole Only)				
Maximum Pick-Up Current (mA)				
Coil Resistance at 25°C ±10%	1 Form C Pick-Up Power 20mW	2 Form C Pick-Up Power 40mW	3 & 4 Form C Pick-Up Power 80mW	Maximum Continuous Coil Current (mA)
1.0K	4.5	6.5	9.0	45.0
2.5K	2.9	4.1	5.8	28.0
5.0K	2.1	2.9	4.1	20.0
10.0K	1.5	2.0	3.0	14.0
15.0K	1.2	1.7	2.4	11.5
30.0K	0.85	1.2	1.7	8.3

Standard AC Operated Relays				
Coil Resistance @ 25°C ± 20% (ohms)		Volts AC @ 25°C		
2 & 4 Form C	6 & 8 Form C	Pick-Up (max.)	Nominal	Maximum Continuous
25	15	5.0	6	7.2
120	90	9.0	12	14.5
500	350	18.0	24	30.0
2.0K	1.4K	36.0	48	60.0
9.0K	7.5K	86.0	115	130.0

Note: Dual coil diode rectified construction.

Typical Coil Inductance

