

TF Series

Mid Size Snap-acting Switches



Agency Approvals

Agency	Agency File Number
US	E42363

Specifications

Contact Rating	From low level ¹ to 21 AMPS @ 277 V AC.
Electrical Life	300,000 cycles at 10 AMPS @ 250 V AC, consult Customer Service Center for typical life of higher rated switches.
Insulation Resistance	1,000 M ohm min.
Dielectric Strength	1,500 Vrms min. @ sea level
Operating Temperature	-40°C to 85°C
Operating Force	From 15 to 400 grams at actuator button available
Mounting	Torque screws 2-5 in/lbs

Notes:

1. Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Description

The TF series mid size snap-acting switch from C&K features a broad range of operating forces, ratings up to 21A and a wide variety of actuator styles to fit the specific needs of any design. Often used in motor controls, thermostats and portable tools, designers across the globe turn to the TF series for its performance and resilience.

Features & Benefits

- Broad range of operating forces
- Ratings up to 21 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Applications

- Motor controls
- Thermostats
- Portable tools

Materials

Switch Housing	Thermoplastic (UL 94V-0)
Actuator Button	Thermoplastic (UL 94V-0)
Spring	Copper alloy.
Pivot	Brass Alloy
Movable Contacts	Gold alloy for ratings 1 amp or less. Fine silver for ratings greater than 1 amp up to 15 amps. Precious metal alloy for ratings greater than 15 amps.
Stationary Contacts	Gold alloy for ratings 1 amp or less. Fine silver for ratings greater than 1 amp.
Terminals	Brass alloy for ratings up to 10 amps. Copper alloy for ratings greater than 10 amps.

Notes:

Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

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Operating Force

Option Code	Basic Switch Operating Force (oz./grams)
CC	0.53, 15
CD	0.88, 25
CF	1.76, 50
CG	2.65, 75
CJ	5.29, 150
EC	7.94, 225
EE	14.11, 400

Notes:

Minimums may apply, consult Customer Service Center. Operating Force option 'CC' not available with 'T18 & T26' Actuator options. Operating force varies with actuator option, see ACTUATOR option section.

Electrical Rating

Option Code	RoHS Compliant ¹	RoHS Compatible ¹	Contact Material		Electrical Rating c _{us}
			Movable Contact	Stationary Contact	
F5	Yes		Gold Alloy		From low level ¹ to 1 amp @ 125 V AC, 1 amp @ 30 V DC.
H8			Fine Silver	Fine Silver	5 amps @ 277 V AC; 1/10 HP @ 125 & 250 V AC.
J3					21 amps @ 277 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 5 amps @ 125 V AC "L".
J6	Yes				15 amps @ 277 V AC; 1/2 HP @ 125 & 250 V AC; 5 amps @ 125 V AC "L". 0.5 amp @ 125 V DC; 0.25 amp @ 250 V DC.
K6					11 amps @ 277 V AC; 1/3 HP @ 125 & 250 V AC; 0.5 amp @ 125 V DC; 0.25 amp @ 250 V DC.
L3	Yes		Silver Alloy	Fine Silver	20 amps @ 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC
M8	Yes		Fine Silver	Silver Alloy	0.1AMPS @ 125VAC, 0.1AMPS @ 30V DC.

Notes: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications. All models c_{us} Consult Customer Service center for availability and delivery of nonstandard ratings.

¹ Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Operating Force

Electrical Rating	Amps (REF.)	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)
F5	1	•	•	•	•	•	•	-
H8	5	•	•	•	•	•	•	•
J3	21	X	X	X	X	•	•	•
J6	15	X	X	X	X	•	•	•
K6	11	X	•	•	•	•	•	•
L3	20	X	X	X	X	•	•	•

Notes:

• Available

X Not available.

¹ Available with 4A & 5A terminations only, see page 5. All models c_{us} Consult Customer Service center for availability and delivery of nonstandard ratings.

² Operating forces correlated with M8 Electrical Rating:

Please consult factory.

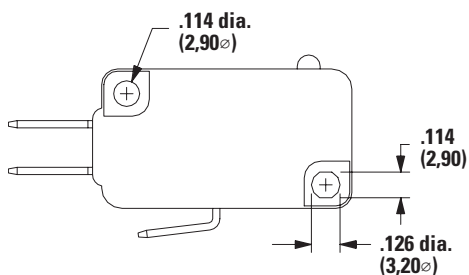
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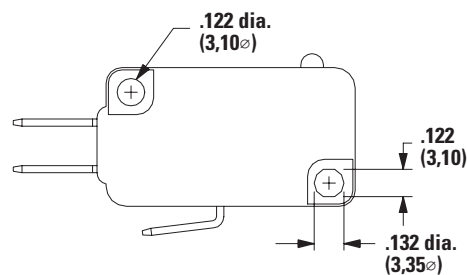


Mounting Style

S Standard for 4-40 Screw Size



V Metric for 3 mm Screw Size



Actuator

Option Code	Fig.	Dim. A	Dim. B	Dim. C	Dim. D
P00	1	0.80 (20.3)	-	0.578 ± 0.015 (14.68 ± 0.38)	-
A10	2	0.81 (20.6)	0.32 (8.1)	0.810 ± 0.020 (20.57 ± 0.51)	0.19 dia. (4.8Ø)
A15		1.34 (34.0)		0.810 ± 0.030 (20.57 ± 0.76)	
A20		1.05 (26.7)	0.54 (13.7)	0.810 ± 0.050 (20.57) ± 1.27	
A25		1.56 (39.6)		0.810 ± 0.075 (20.57 ± 1.91)	
T10	3	0.84 (21.3)	0.32 (8.1)	0.600 ± 0.020 (15.24 ± 0.51)	-
T15		1.40 (35.6)		0.600 ± 0.040 (15.24 ± 1.02)	
T16		2.34 (59.4)		0.600 ± 0.065 (15.24 ± 1.65)	
T18		2.75 (69.9)		0.600 ± 0.080 (15.24 ± 2.03)	
T20		1.10 (27.9)	0.54 (13.7)	0.600 ± 0.080 (15.24 ± 1.27)	
T25		1.62 (41.1)		0.600 ± 0.070 (15.24 ± 1.78)	
T26		2.57 (65.3)		0.600 ± 0.150 (15.24 ± 3.81)	
T28		2.97 (75.4)		0.600 ± 0.187 (15.24) ± 4.75	
T13	4	1.34 (34.0)	0.32 (8.1)	0.810 ± 0.030 (20.57 ± 0.76)	0.19 dia. (4.8Ø)
T14		1.29 (32.8)		0.730 ± 0.030 (18.54 ± 0.76)	
T23		1.56 (39.6)	0.54 (13.7)	0.810 ± 0.065 (20.57 ± 1.65)	0.25 dia. (6.4Ø)
T24		1.50 (38.1)		0.730 ± 0.060 (18.54) ± 1.52	
WP0	5	0.80 (20.3)	-	0.635 ± 0.015 (16.13 ± .038)	-

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Figure 1 - Pin Plunger

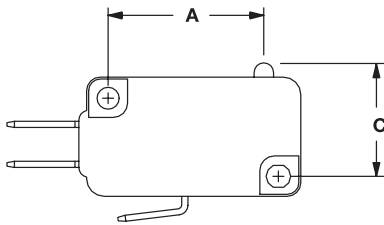


Figure 2 - Lever Roller

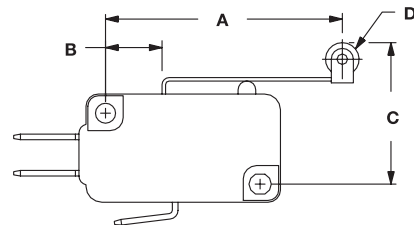


Figure 3 - Lever

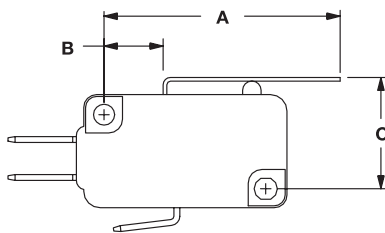


Figure 4 - Simulated Roller

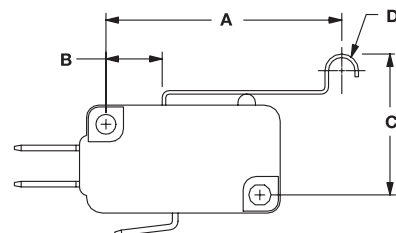
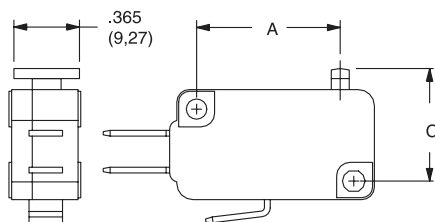


Figure 5 - Wide Pin



Note: Switch characteristics chart on following page.

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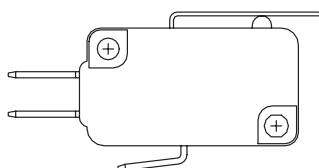


Switch Characteristics

Option Code	Max. Operating Force (oz./grams)							Min. Release Force (oz./grams)							Max. Differential Travel	Max. Pre-Travel	Min. Over Travel
	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)			
A10	0.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	0.21 6	0.35 10	0.35 10	0.53 15	0.71 20	1.98 56	3.88 110	0.015 (0.38)	0.060 (1.52)	0.030 (0.76)
A15	0.28 8	0.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	0.07 2	0.14 4	0.14 4	0.18 5	0.35 10	0.71 20	2.82 80	0.030 (0.76)	0.100 (2.54)	0.065 (1.65)
A20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.07 2	0.11 3	0.11 3	0.18 5	0.42 12	0.71 20	1.41 40	0.025 (0.64)	0.12 (3.05)	0.055 (1.40)
A25	0.18 5	0.28 8	0.56 16	0.85 24	1.69 48	2.65 75	4.41 125	0.04 1	0.07 2	0.07 2	0.07 2	0.21 6	0.35 10	0.71 20	0.050 (1.27)	0.250 (6.35)	0.120 (3.05)
P00	0.53 15	0.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	0.21 6	0.35 10	0.35 10	0.53 15	1.23 35	1.98 56	3.88 110	0.010 (0.25)	0.047 (1.19)	0.050 (1.27)
T10	0.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	0.21 6	0.35 10	0.35 10	0.53 15	0.71 20	1.98 56	3.88 110	0.015 (0.38)	0.060 (1.52)	0.030 (0.76)
T13	0.28 8	0.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	0.07 2	0.14 4	0.14 4	0.18 5	0.35 10	0.71 20	2.82 80	0.030 (0.76)	0.100 (2.54)	0.065 (1.65)
T14	0.28 8	0.42 12	1.23 35	1.76 50	3.17 90	4.76 135	7.94 225	0.07 2	0.14 4	0.14 4	0.18 5	0.35 10	0.71 20	2.82 80	0.030 (0.76)	0.100 (2.54)	0.060 (1.52)
T15	0.25 7	0.42 12	1.06 30	1.41 40	2.82 80	4.41 125	7.94 225	0.07 2	0.14 4	0.14 4	0.18 5	0.28 8	0.63 18	2.82 80	0.030 (0.76)	0.110 (2.79)	0.065 (1.65)
T16	0.18 5	0.28 8	0.53 15	0.78 22	1.59 45	2.47 70	4.23 120	0.04 1	0.07 2	0.07 2	0.07 2	0.28 8	0.35 10	0.71 20	0.045 (1.14)	0.250 (6.35)	0.125 (3.18)
T18	N/A	0.21 6	0.42 12	0.71 20	1.41 40	2.12 60	3.53 100	N/A	0.04 1	0.04 1	0.07 2	0.18 5	0.28 8	0.56 16	0.062 (1.57)	0.300 (7.62)	0.155 (3.94)
T20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.21 6	0.35 10	0.35 10	0.53 15	0.71 20	1.98 56	3.88 110	0.030 (0.76)	0.140 (3.56)	0.060 (1.52)
T23	0.18 5	0.28 8	0.56 16	0.85 24	1.69 48	2.65 75	4.41 125	0.04 1	0.07 2	0.07 2	0.07 2	0.21 6	0.35 10	0.71 20	0.050 (1.27)	0.250 (6.35)	0.120 (3.05)
T24	0.18 5	0.28 8	0.56 16	0.88 25	1.76 50	2.65 75	4.76 135	0.04 1	0.07 2	0.07 2	0.11 3	0.21 6	0.35 10	0.71 20	0.005 (1.27)	0.23 (5.84)	0.11 (2.79)
T25	0.18 5	0.28 8	0.53 15	0.88 25	1.59 45	2.47 70	4.23 120	0.04 1	0.07 2	0.07 2	0.07 2	0.21 6	0.35 10	0.99 28	0.055 (1.40)	0.250 (6.35)	0.125 (3.18)
T26	N/A	0.14 4	0.28 8	0.42 12	0.85 24	1.27 36	2.26 64	N/A	0.04 1	0.04 1	0.05 1.5	0.12 3.5	0.21 6	0.39 11	0.100 (2.54)	0.500 (12.70)	0.235 (5.97)
T28	N/A	N/A	N/A	0.42 12	0.71 20	1.06 30	1.94 55	N/A	N/A	N/A	0.04 1	0.11 3	0.18 5	0.32 9	0.12 (3.05)	0.560 (14.22)	0.285 (7.24)
WP0	0.53 15	0.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	0.21 6	0.35 10	0.35 10	0.53 15	1.23 35	1.97 56	3.88 110	0.010 (0.25)	0.047 (1.19)	0.030 (0.51)

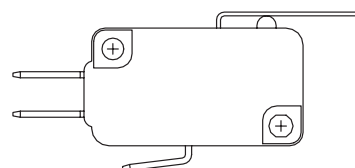
Note: For basic switch operating forces, see page 3.

High Force, Low Motion Pivot Position



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

Low Force, High Motion Pivot Position



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

Notes: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.

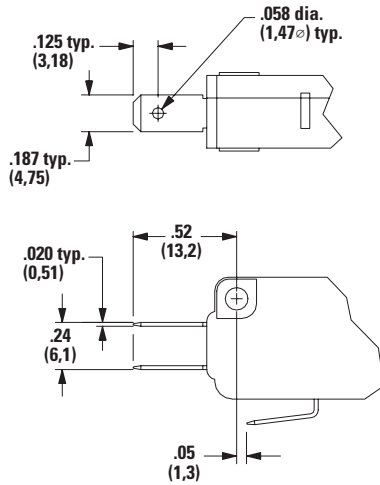
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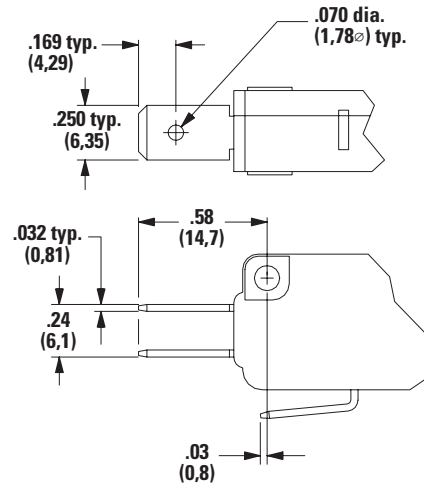


Terminations

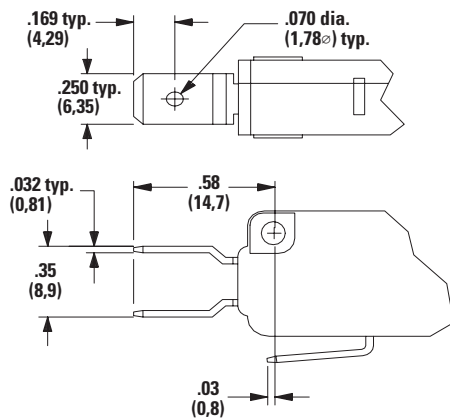
40 0.187" Quick Connect



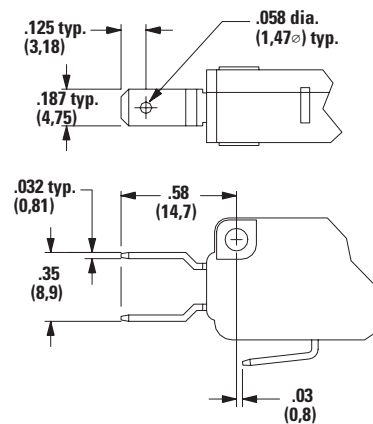
4A 0.250" Quick Connect



5A Offset 0.250" Quick Connect



5B Offset 0.187" Quick Connect



Circuitry

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw Normally Open)

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