DowKey® Microwave CORPORATION

The DowKey 169 Series SPDT switch is the smallest of the DowKey coaxial RF relays. The switch is manufactured with gold plated contacts to provide reliable RF performance to 1 GHz.

Typical applications for the 169 Series include:

- Military Communications
- Commercial Radio
- Transmit/Receive Switching
- Antenna Switching
- Conditions where size and weight are critical parameters

DowKey® 169 Series SPDT Switch

Specifications :

Operating Voltage:
(across temperature range)
12 Vdc (11-14 Vdc)
28 Vdc (24-32 Vdc)

Coil Current (Nominal):
12 Vdc 171 mA
28 Vdc 96 mA

Operate Time:
20 mS maximum

Operating Temperature:
0ºC to +65ºC

Mechanical Life, Cycles:
1 x 10^6 minimum

Nominal Weight:
4.5 oz., (125g.)

RF Characteristics

Frequency MHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)	RF Power Watts (max)
50	1.03	50	0.03	150
100	1.06	50	0.05	100
400	1.12	45	0.10	75
1,000	1.25	35	0.15	50
2,000	1.50	30	0.30	25

Connectors and Part Numbers

Nominal Coil Voltage	Connector Type	Part Number
12 Vdc	BNC	169-2203
28 Vdc	BNC	169-2302

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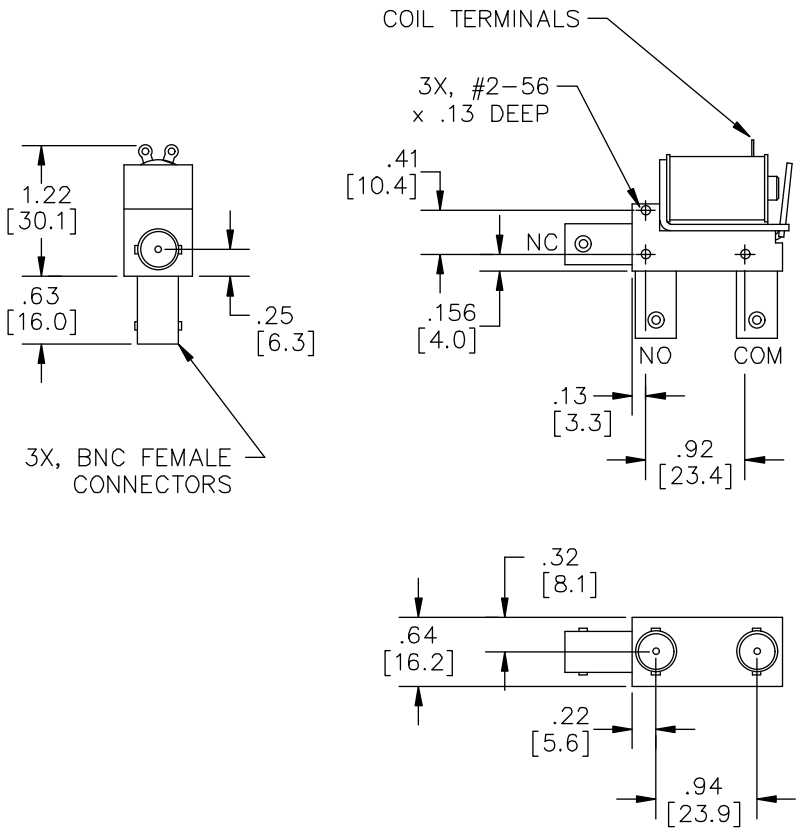
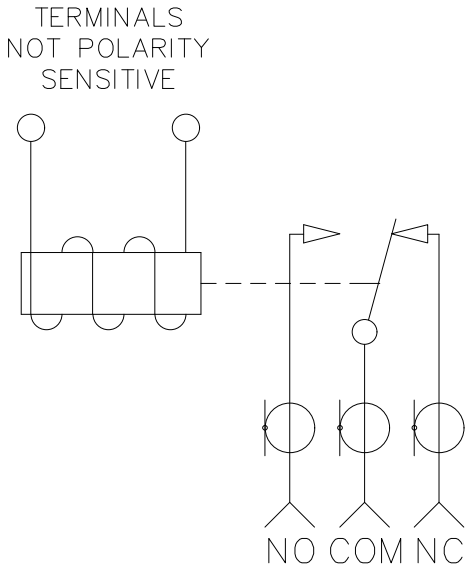
Mechanical



Electrical



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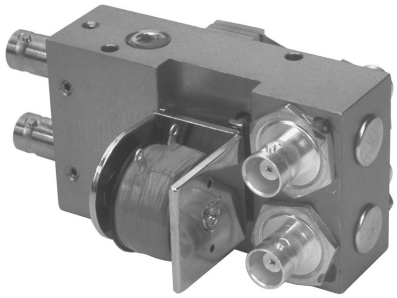
DowKey® Microwave CORPORATION

The DowKey 260 Series is a standard DPDT switch with six connectors, allowing two of four straight-through paths from two inputs. The 260B is identical in construction, except that there is an internal connection between the N/C contacts, leaving only four connectors. The 260B Series is widely used to insert or by-pass a circuit element (such as an amplifier or filter) in a transmission path between two normally connected elements. Both are available with a choice of actuator coils, connector options, and a pair of form "C" auxiliary contacts.



Typical applications for the 260 & 260B Series include:

- Inserting a Linear Amplifier Between an Exciter and an Antenna
- Filter, Attenuator, or Amplifier By-Pass Switching
- Insert Filters or Attenuators in a Transmission Path
- Dual Simultaneous Transmit/Receive or Antenna Switching

DowKey® 260 Series DPDT & 260B Series By-Pass Switch

Specifications :

Operating Voltage:
(across temperature range)
12 Vdc (11-14 Vdc)
26.5 Vdc (24-32 Vdc)

Coil Current (Nominal):
12 Vdc 250 mA
26.5 Vdc 110 mA

Operate Time:
25 mS maximum

Operating Temperature:
0ºC to +65ºC

Mechanical Life, Cycles:
1 x 10^6 minimum

Nominal Weight:
12..0 oz., (340g.)

RF Characteristics

Frequency MHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)	RF Power Watts (max)
0-50	1.05	40	0.04	1,000
50-100	1.08	35	0.05	1,000
100-400	1.15	25	0.10	1,000-500
400-1,000	1.20	18	0.15	500-350

Connectors and Part Numbers

Nominal Coil Voltage	Connector Type	DPDT	with 2 "C" Ind. Contacts	By-Pass	with 2 "C" Ind. Contacts
12 Vdc	N	260-2201	260-220142	260B-2201	260B-220142
26.5 Vdc	N	260-2301	260-230142	260B-2301	260B-230142
115 Vac	N	260-2601	260-260142	260B-2601	260B-260142
12 Vdc	BNC	260-2202	260-220242	260B-2202	260B-220242
26.5 Vdc	BNC	260-2302	260-220242	260B-2202	260B-220242
115 Vac	BNC	260-2602	260-220242	260B-2202	260B-220242
12 Vdc	UHF*	260-2204	260-220442	260B-2204	260B-220442
26.5 Vdc	UHF*	260-2304	260-230442	260B-2304	260B-230442
115 Vac	UHF*	260-2604	260-260442	260B-2604	260B-260442

*Not recommended for applications above 300 MHz.

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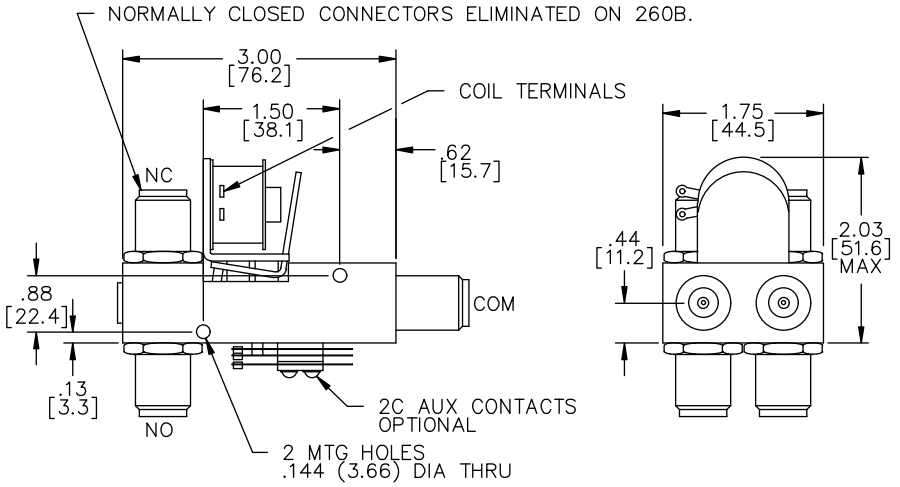
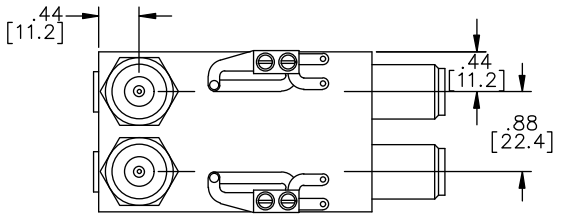
Mechanical

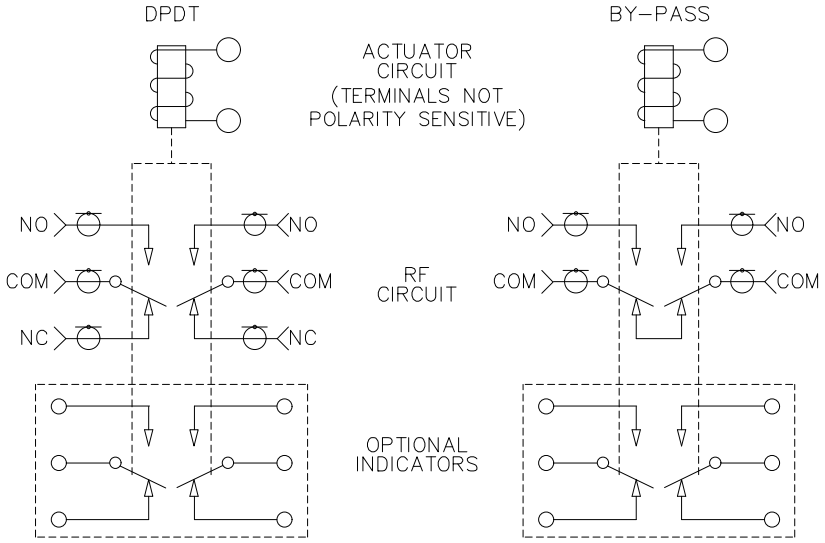




TYPICAL CONNECTOR LENGTHS

CONN. DIM.	N 01 (Shown)	UHF 04	BNC 02
COM.	0.50 [12.7]	0.50 [12.7]	0.70 [17.8]
NC,NO	0.70 [17.8]	0.70 [17.8]	0.60 [15.2]

Electrical



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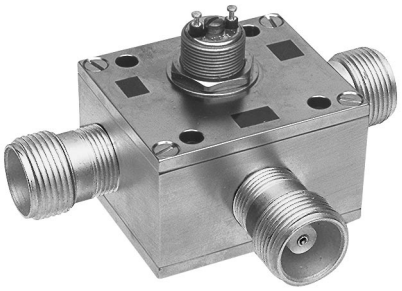
DowKey® Microwave CORPORATION

The DowKey 310 Series SPDT relays have high power handling capability in a small package. The ability to handle up to 3 KW at low frequencies (up to 30 MHz) is achieved with vacuum-enclosed contacts, minimizing noise and losses. This rugged switch is capable of "hot" switching 1 KW at 30 MHz with the optional special Tungsten-Molybdenum contacts to avoid pitting when switched with RF power applied. (It should be noted that even with heavy-duty construction, hot-switching will reduce the typical operational life of 1,000,000 cycles significantly - to approximately 10,000 cycles)



DowKey® 310 Series SPDT Switch

Typical applications for the 310 Series include:

- High Power Transmitter Switching
- Radar Pulse Forming Networks
- Phased Array Antenna Systems
- UHF/VHF Communications Systems
- Magnetic Resonance Imaging Systems

Specifications :

Operating Voltage:
(across temperature range)
12 Vdc (11-14 Vdc)
28 Vdc (24-32 Vdc)

Coil Current (Nominal):
12 Vdc 150 mA
28 Vdc 84 mA

Switching Time:
8 mS maximum

Operating Temperature:
-25ºC to +65ºC

Mechanical Life, Cycles:
1 x 10^6 minimum

Nominal Weight:
9.0 oz., (260g.)

RF Characteristics

Frequency MHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)	RF Power Watts (CW)
30	1.05	35	0.07	3,000
50	1.06	30	0.08	2,300
100	1.08	25	0.09	2,000
400	1.10	17	0.10	850

Connectors and Part Numbers

Nominal Coil Voltage	Connector Type	Part Number
12 Vdc	N	310-2201
28 Vdc	N	310-2301
115 Vac	N	310-2601
12 Vdc	HN	310-2251
28 Vdc	HN	310-2351
115 Vac	HN	310-2651
12 Vdc	SC	310-2253
28 Vdc	SC	310-2353
115 Vac	SC	310-2653

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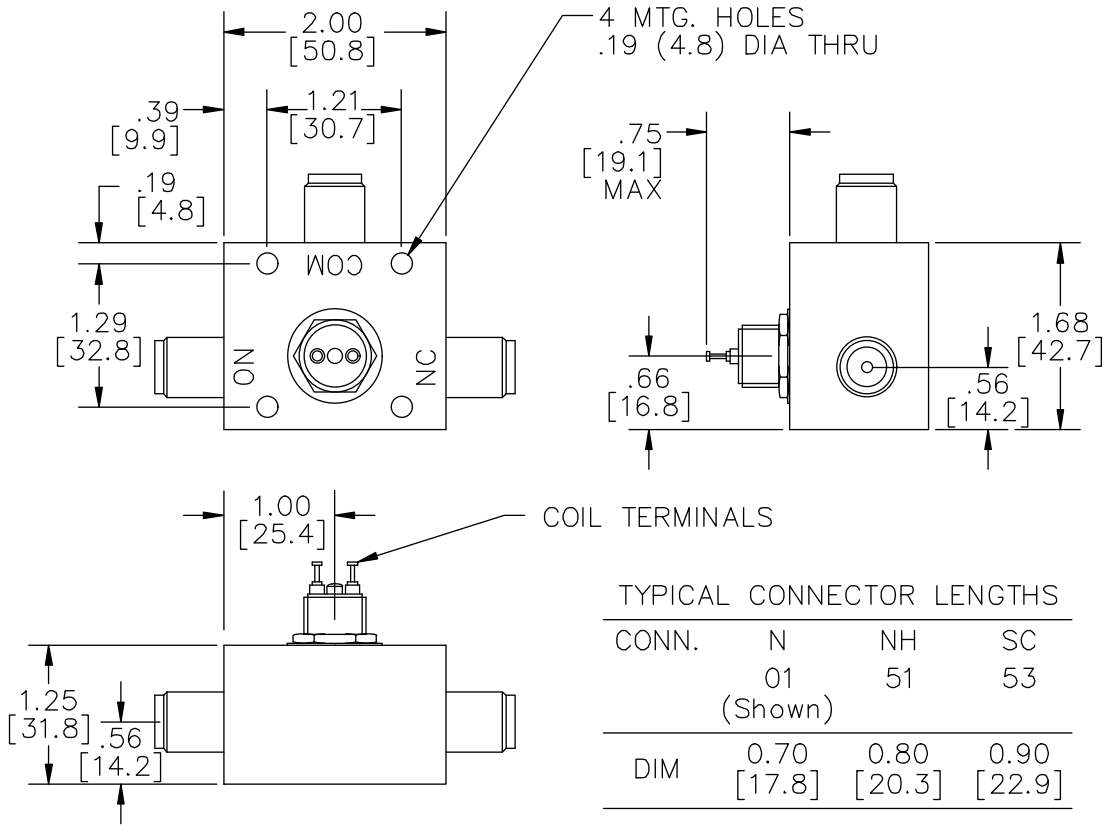
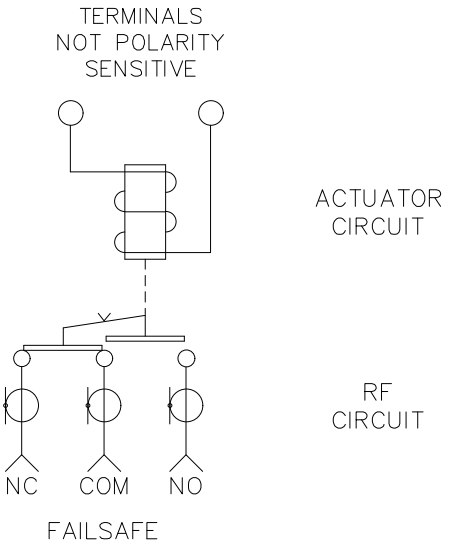
Mechanical



TYPICAL CONNECTOR LENGTHS

CONN.	N	NH	SC
	01 (Shown)	51	53
DIM	0.70 [17.8]	0.80 [20.3]	0.90 [22.9]

Electrical



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DowKey/TRANSCO

Standard RF, Microwave and Waveguide Switches

DowKey Microwave Corporation
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(805) 650-0260 • FAX (805) 650-1734

TRANSCO PART NUMBERS AND FEDERAL STOCK NUMBERS PER MIL S 3928

Slash No.	Option No.	TPI Part No.	FSN 5985-
MIL-S-3928/7-	-01	C6N2A1	-
	-02	C0N2AB	552-9040
	-03	C4N2AB	548-3715
	-04	C6N3A1	-
	-05	C4N3AB	539-6133
	-06	C0N6AB	754-9860
	-07	C4N6AB	989-5364
	-08	C6N6A1	-
	-09	11600	-
	-10	13300	783-5769
	-12	C0N3AB	-
	-17	11300	504-8506
	-18	11100	557-5208
	-19	11400	-
	-20	11200	557-5721
	-21	11800	586-7023
	-22	C0N4AB	448-0300
	-24	14100	501-1886
	-25	300C00100	-
	-26	300C00200	241-3503
MIL-S-3928/9-	-01	1460-820	518-0832
	-04	M1460-H22	401-2883
	-05	M1460-H20	439-5691
	-06	1460-20-95	512-5297
	-07	1460-3-96	296-5334
	-08	1460-6-96	813-0833
	-09	1460-830-95	-
	-10	1460-22-95	-
	-11	1460-822	296-6729
	-12	1460-6	504-6639
	-13	M1460-H30	01-097-3720
	-14	M1460-HA3	01-118-8463
	-15	M1460-HA6	763-3823

Slash	No.Option	No.TPI Part	No.FSN 5985
MIL-S-3928/10-	-04	810C00100	272-7325
			123-8438*
	-05	810C00200	433-6758
			01-017-5236*
	-06	810C05200	-
	-07	315C05200	-
	-08	310C00200	246-9414
	-09	810C00300	009-3691-0
	-09	810C00300	617-2436
	-10	300C00200	241-3503
MIL-S-3928/15-	-01	919C70100	477-0060*
			433-8301
	-06	900C70100	155-0122
	-07	909C7010	150-8559
	-08	909C70200	022-9059
	-09	919C72700	-
	-10	919C70200	621-6997
	-01	919C70100-8	01-043-0781
	-07	909C70100-8	01-092-9506
	-08	909C70200-8	022-9059
	-10	919C70200-8	00-150-8559
MIL-S-3928/17-	-02	144C70100	01-106-0807*
			01-042-0669
		144C70600	275-7009
MIL-S-3928/18-	-01	146C70100	172-8187
			01-086-0592*
	-02	146C70600	005-2503
	-01	146C70100-8	
	-02	146C70600-8	
MIL-S-3928/19-	-01	700C70900	009-6619
	-02	710C70100	125-9895
	-05	710C71400	-
	-02	710C70100-8	01-106-3305
	-05	710C71400-8	625-9681
MIL-S-3928/20-	-01	820C31700	-
	-03	810C30900	417-0532
	-04	910C90700	006-4308
	-06	900C31500	619-7145
	-07	81OC30100	248-2974
			01-116-4495*
	-08	800C30200	325-6104
		with diodes	01-021-4686
MIL-S-3928/21-	-01	700C30200	139-1745
			01-100-8860*
	-02	310C30800	630-6674
	-03	300C30200	-

*Multiple federal stock numbers

Coaxial Switch — Type DO

Description

The Type DO Latching SPDT Switch has RF geometry optimized for SMA connectors and operates over a 0-18GHz frequency band. It is magnetically latched and available with or without actuator cut-off circuitry. It is also available with or without indicating switches. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Actuator features:
1. Balanced rotating armature
2. Reliable actuation with low current
3. Positive latching with permanent magnets

A single voltage pulse of 20 milliseconds is all that is required to change positions; no holding power is required to maintain a position.

Magnetic latching offers distinct advantages over other mechanisms since it uses no springs or mechanical detents which are prone to fatigue and wear. Transco considers magnetic latching to be the optimum design for applications which require high vibration levels, environmental extremes, long life and reliability.

This switch is part of the Type D family of switches featuring different RF connectors and frequencies.

Type	Conn.	Freq.
D	N &TC	12 GHz
DO	SMA	18 GHz
DX	SC	6 GHz
DO	3 5 mm	26.5GHz

Standard Products

P/N	Schematic
909C70 1 00*	1
909C70200**	2
909C71100	3
909C71200	4

*** Meets MIL-S-3928/15-07**
**** Meets MIL-S-3928/15-08**

Special Configuration

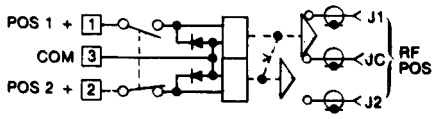
Actuating Voltage — Mounting Configuration
Transient Circuit — Terminal Location
TTL Logic Circuit

(For dimensions and circuit diagrams see pages 106 and 107)

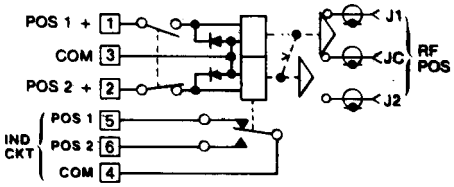
RF Circuit: SPDT
Actuator: Latching
Connector: SMA
Frequency: 0-18GHz

Schematic

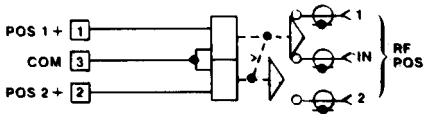
#1. Latching



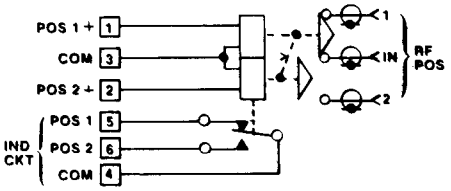
2. Latching with Indicator



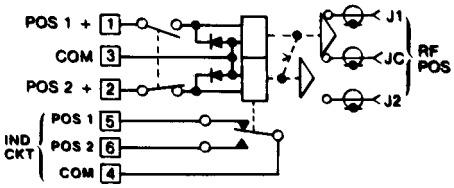
3. Pulse Latching



4. Pulse Latching w/ Indicator

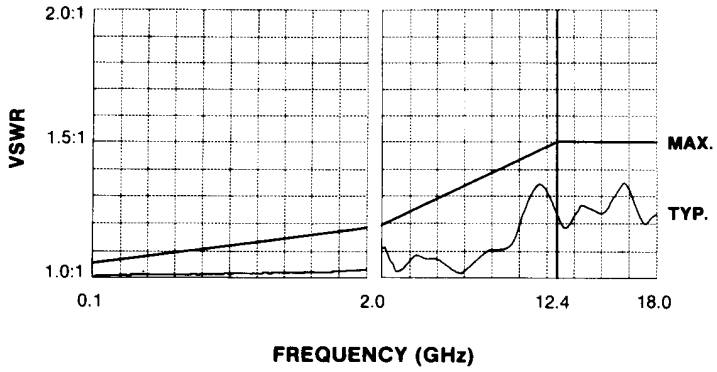


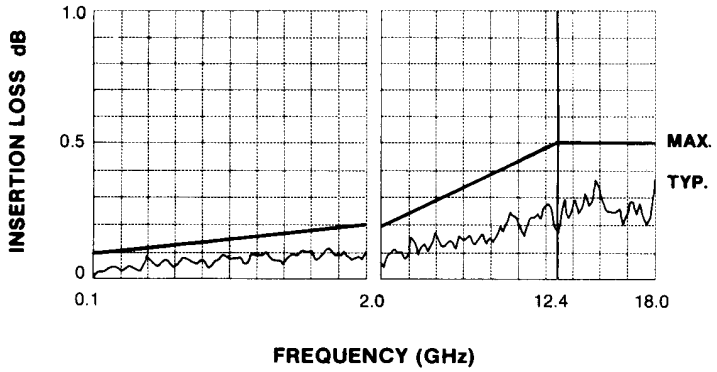
5. Latching w/ Indicator

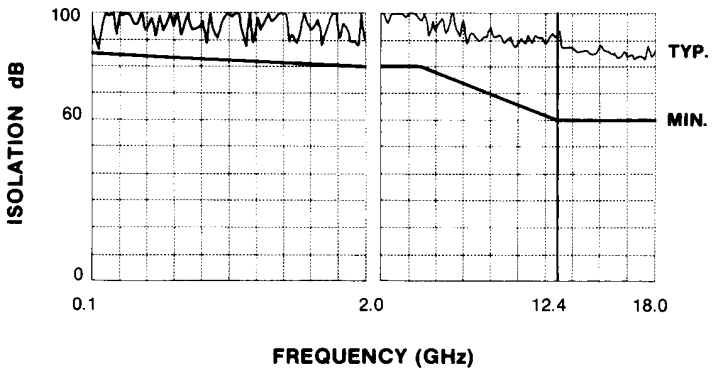


Specifications

Typical RF data of a production switch; computer printouts below:

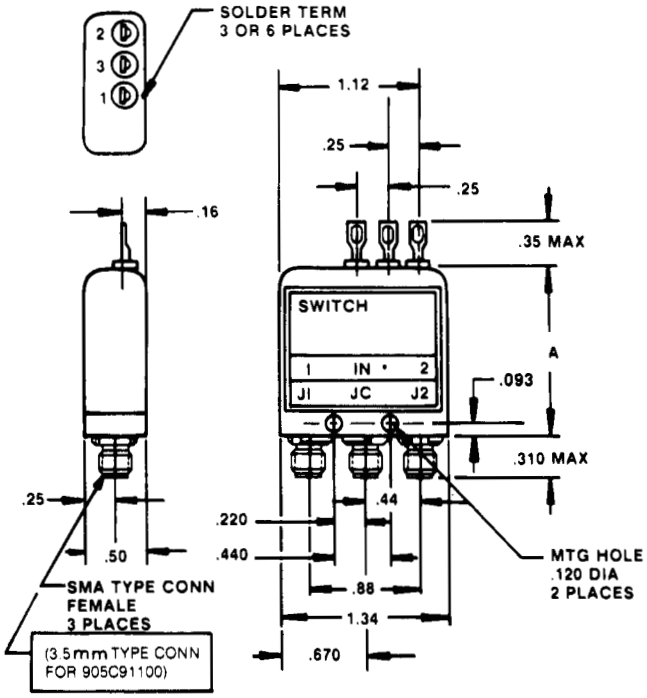






Voltage:	20 to 30Vdc
Coil Resistance:	310 ± 10 Ohms @ 20°C
Current:	95mA max @ 28Vdc and 20°C
Switching Time:	20 milliseconds
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	1,000,000 cycles min
Weight:	909C70100, 909C71100 } 1.5 oz.
	909C70200, 909C71200 } 2.0 oz.

Dimensions



Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

P/N	A
909C70100 909C71100 905C91100	1.30
909C70200 909C71200	1.50

Coaxial Switch — Type DO

Description

The type DO coaxial switch has RF geometry optimized for SMA connectors and operates over a 0-18GHz frequency band. It is also available with or without indicators. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Actuator features:
1. Balanced rotating armature
2. Low current required to develop the actuating torque

This design features a dual magnetic field for high efficiency and long life reliability...also excellent shock/vibration characteristics.

This switch is part of the Type D family of switches featuring different RF connectors and frequencies.

Type	Conn.	Freq.
D	N	12 GHz
DO	SMA	18 GHz
DX	SC	6 GHz

Standard Products

P/N	Schematic
919C70100*	1
919C70200**	2

*** Meets MIL-S-3928/15-01**
**** Meets MIL-S-3928/15-10**

Special Configuration

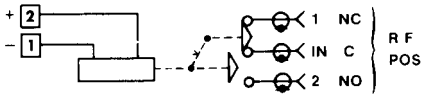
Actuating Voltage — Mounting Configuration
Transient Circuit — Terminal Location
TTL Logic Circuit

(For dimensions and circuit diagrams see pages 106 and 107)

RF Circuit: SPDT
Actuator: Failsafe
Connector: SMA
Frequency: 0-18GHz

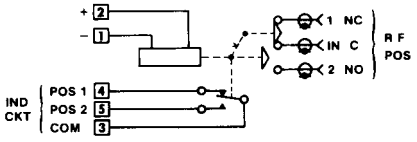
Schematic

 # 1. Failsafe



ENERGIZE TO CONNECT IN TO 2 (POS 2)
SHOWN IN FAILSAFE POSITION (POS 1)

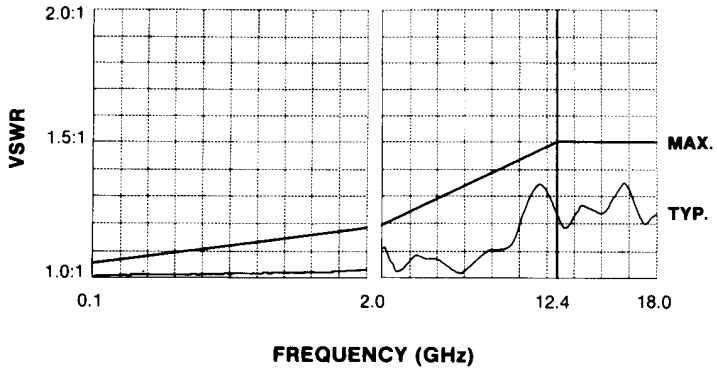
 # 2. Failsafe w/ Indicator

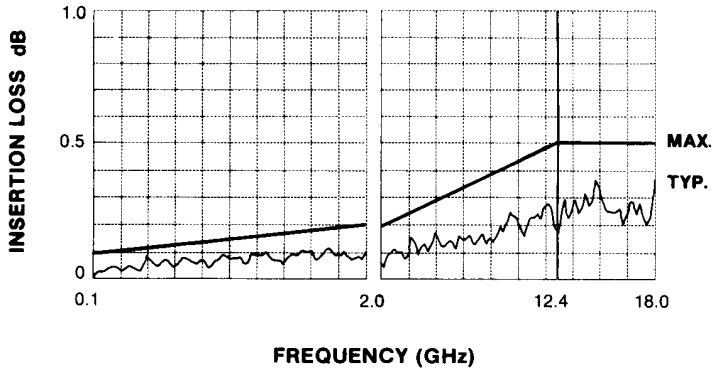


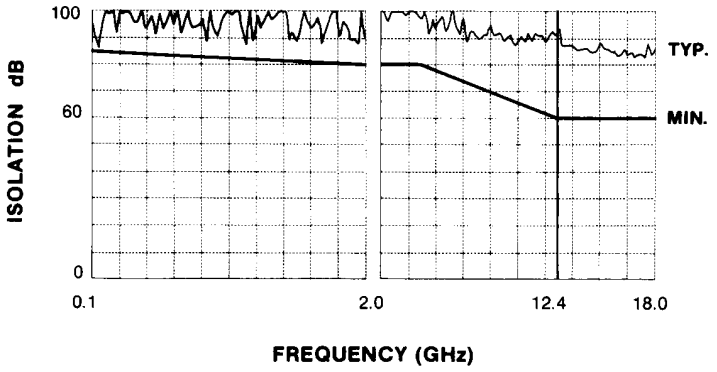
ENERGIZE TO CONNECT IN TO 2 (POS 2)
SHOWN IN FAILSAFE POSITION (POS 1)

Specifications

Typical RF data of a production switch; computer printouts below:

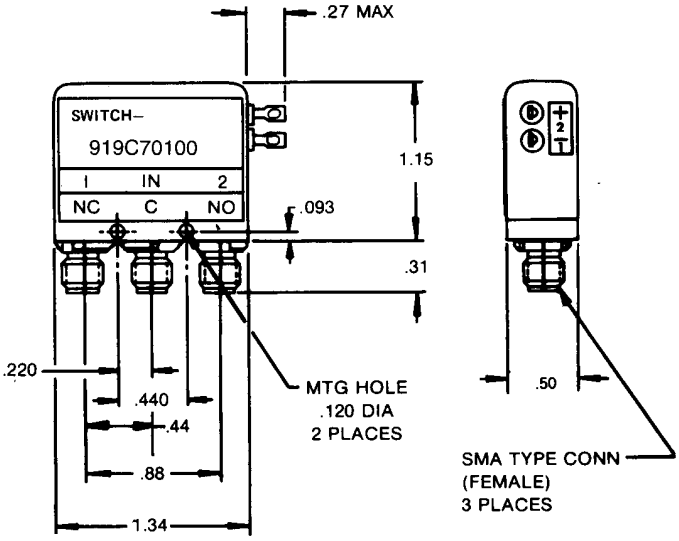


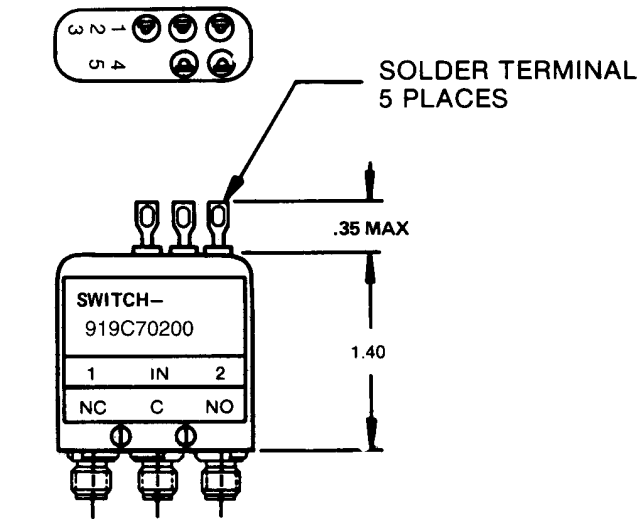




Voltage:	20 to 30Vdc
Coil Resistance:	290 Ohms min.
Current:	100mA max @ 28Vdc and 20°C
Switching Time:	20 milliseconds
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	1,000,000 cycles min
Weight:	919C70100 1.25 oz. max.
	919C70200 1.35 oz. max.

Dimensions





Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Description

The type DO latching and failsafe switches have RF geometry optimized for 3.5mm connectors and operate over a 0-26.5GHz frequency band. The latching model is magnetically latched and available with or without actuator cutoff circuitry. Both latching and failsafe models are available with or without indicators. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Standard Products

P/N	Schematic	Type
905C90100	1	Latching
905C90100	2	Latching w/I.C.
905C91100	3	Pulse Latching
905C91200	4	Pulse Latching w/I.C.
915C90100	5	failsafe
915C90200	6	failsafe w/I.C.

*** Meets MIL-S-3928**

Special Configuration

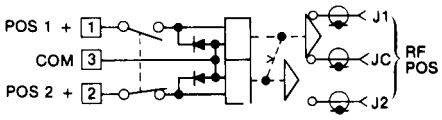
Actuating Voltage Mounting Configuration
Transient Circuit Terminal Location
TTL Logic Circuit

(For dimensions and circuit diagrams see pages 106 and 107)

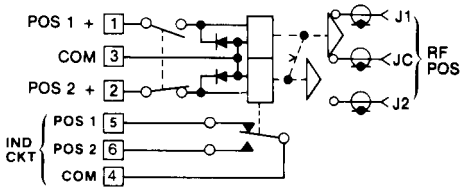
RF Circuit: SPDT
Actuator: Latching and Failsafe
Connector: *3.5mm
Frequency: 0-26.5GHz

Schematic

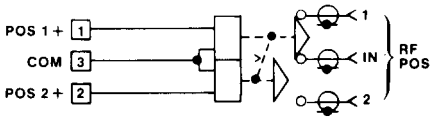
#1. Latching



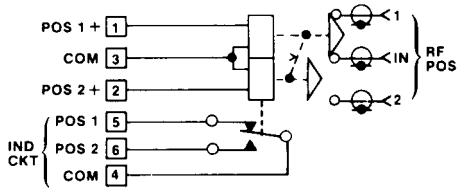
2. Latching with Indicator



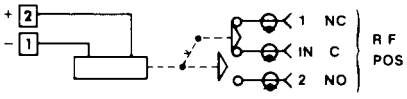
3. Pulse Latching



4. Pulse Latching w/ Indicator

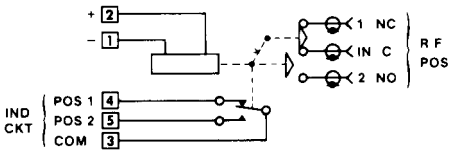


5. Failsafe



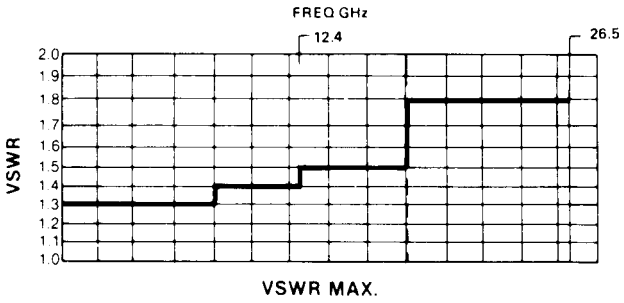
ENERGIZE TO CONNECT IN TO 2 (POS 2)
SHOWN IN FAILSAFE POSITION (POS 1)

6. Failsafe w/Indicator

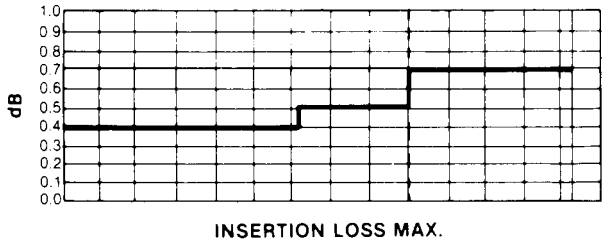


ENERGIZE TO CONNECT IN TO 2 (POS 2)
SHOWN IN FAILSAFE POSITION (POS 1)

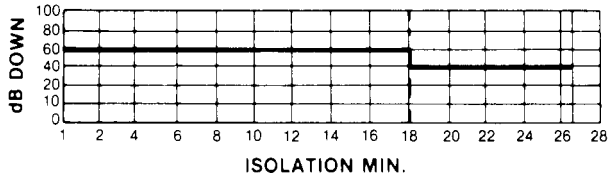
RF Characteristics



VSWR MAX.



INSERTION LOSS MAX.



ISOLATION MIN.

Lower Frequency

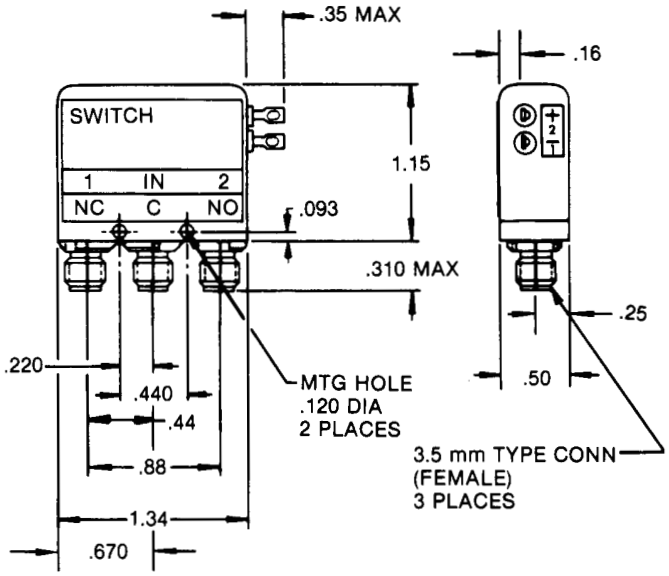
At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Voltage:	20 to 30Vdc	
Coil Resistance:	310 ± 15 Ohms @ 20°C	
Current:	95mA max @ 28Vdc and 20°C	
Switching Time:	20 milliseconds	
RF Contacts:	break-before-make	
Impedance:	50 Ohms nominal	
Temperature:	-55°C to 85°C	
Vibration:	20g's sine/random	
Life:	1,000,000 cycles min	
Weight:	905C90100 Latching	1.5 oz.
	905C90200 Latching w/I.C.	2.0 oz.
	905C91100 Pulse Latching	1.5 oz.
	905C91200 Pulse Latching w/I.C.	2.0 oz.
	915C90100 failsafe	1.25 oz.
	915C90200 failsafe w/I.C.	1.35 oz.

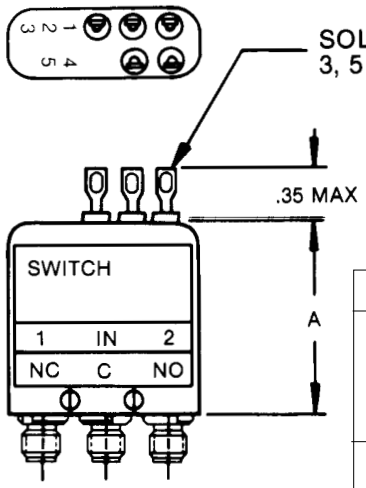
Characteristics of failsafe Models

Coil Resistance	290 Ohms min.
Current	120mA max @ 28Vdc and 20°C

Dimensions - failsafe



Latching and failsafe with indicator

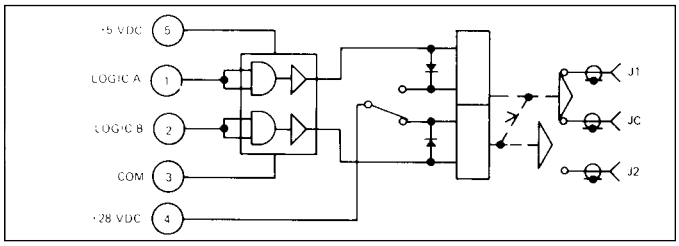


P/N	A
905C90100 905C91100	1.30
915C90200	1.40
905C90200	1.50
905C91200	1.50

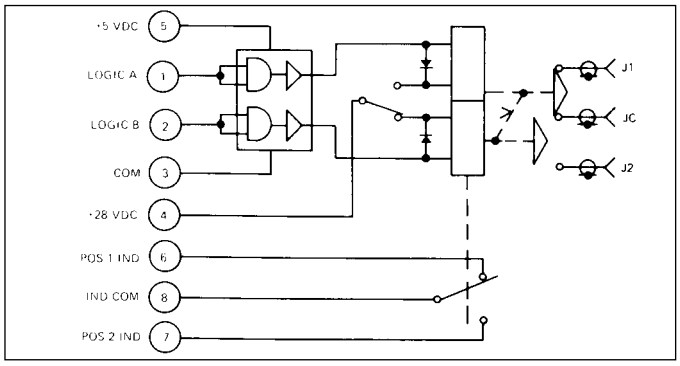
Specifications subject to change without notice

Schematic

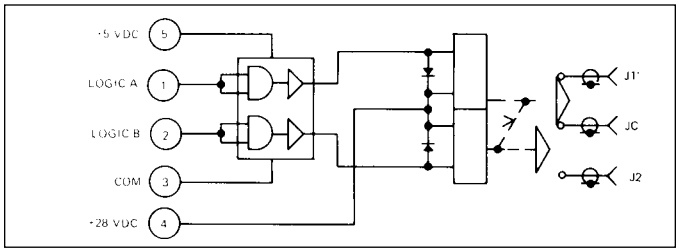
909C70100-30 - 905C90100-30



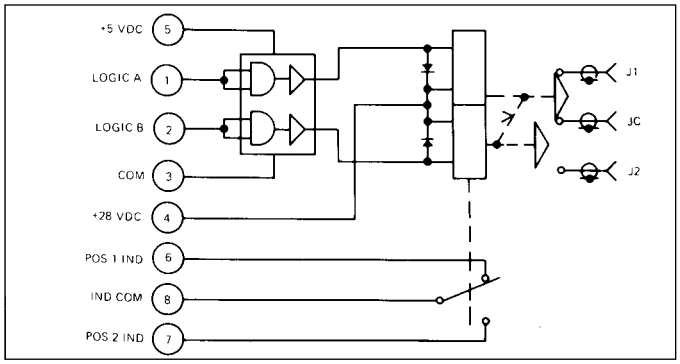
909C70200-30 - 905C90200-30



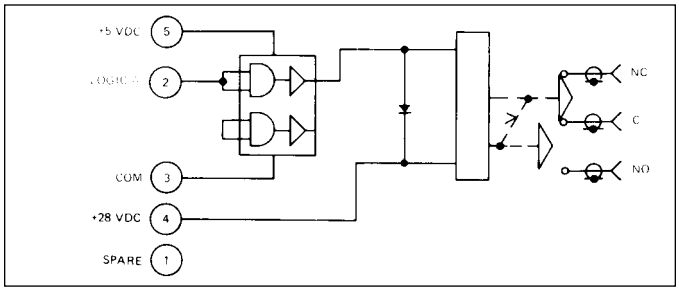
909C71100-30 - 905C91100-30



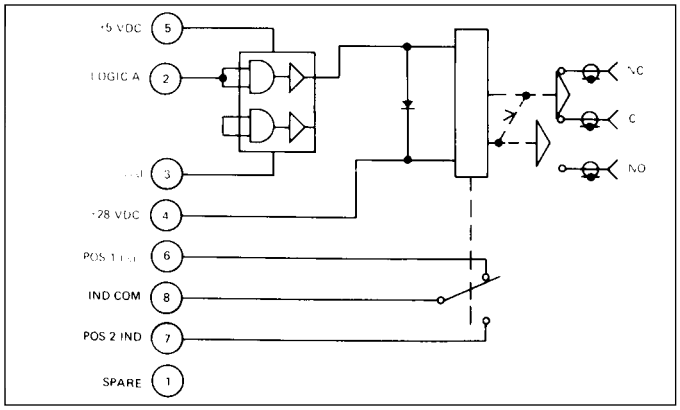
909C71200-30 - 905C91200-30



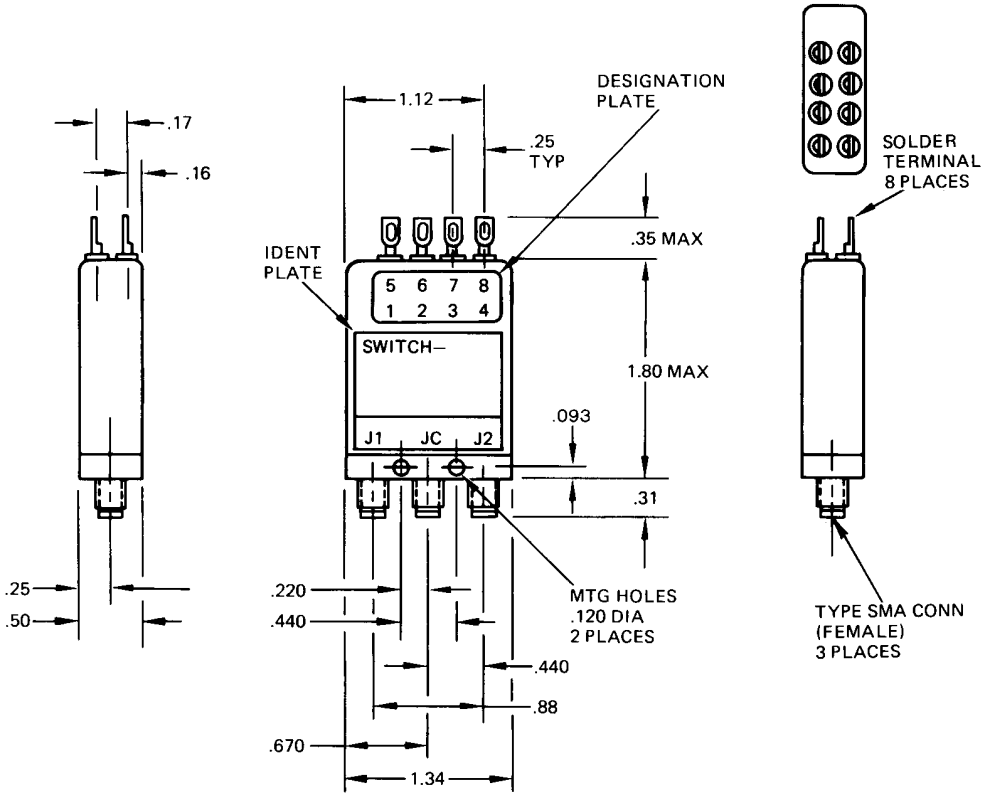
919C70100-30 - 915C90100-30



919C70200-30 - 915C90200-30



Dimensions



Logic Truth Table

Voltage

28Vdc	20 to 30Vdc
5Vdc	4.5 to 5.5Vdc
Logic 0	0 to 4Vdc
Logic 1	2.4 to 5.5Vdc pulse width 20ms at 20Vdc

Coil Current:	120mA max at 28Vdc, 20°C
Switching Time, Max:	20ms at 20Vdc

909C70200-30
909C70100-30
909C71100-30
909C71200-30
905C90100-30
905C90200-30
905C91100-30
905C91200-30

Logic Truth Table		
RF Path	Logic Signal	
	A	B
In 1	1	0
In 2	0	1

919C70100-30
919C70200-30
915C90100-30
915C90200-30

Logic Truth Table		
RF Path	Logic Signal	
	A	
In 1	0	
In 2	1	

Coaxial Switch — Type D

Description

The Type D Latching SPDT Switch has RF geometry optimized for N and TNC connectors and operates over a 0-12.4GHz frequency band. It is magnetically latched and available with or without an actuator cut-off circuit. It is also available with or without indicating switches. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Actuator features:
1. Balanced rotating armature
2. Reliable actuation with low current
3. Positive latching with permanent magnets

A single voltage pulse of 50 milliseconds is all that is required to change positions; no holding power is required to maintain a position.

Magnetic latching offers distinct advantages over other mechanisms since it uses no springs or mechanical detents which are prone to fatigue and wear. DowKey considers magnetic latching to be the optimum design for applications which require high vibration levels, environmental extremes, long life and reliability.

This switch is part of the DowKey family of switches. Other types in this family are referenced below.

Type	Conn.	Freq.
DO	SMA	18 GHz
DX	SC	6.5 GHz

Meets MIL-S-3928

Standard Products

P/N	Conn.	Schematic
805C00100	N	1
805C00200	N	2
805C01100	N	3
805C01200	N	4
805C30100	TNC	1
805C30200*	TNC	2
805C31100	TNC	3
805C31200	TNC	4

Meets MIL-S-3928/20-08

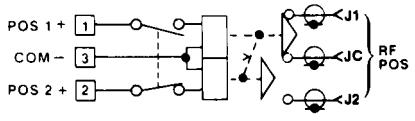
Special Configuration

DC-Power Plug — TTL Logic
Transient Circuit — Terminal Location

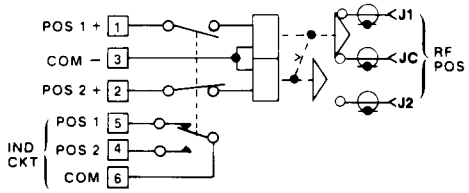
RF Circuit: SPDT
Actuator: Latching
Connector: TNC & N
Frequency: 0-12.4GHz

Schematic

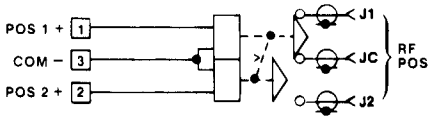
#1. Latching



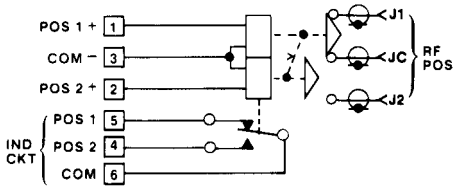
 # 2. Latching with Indicator



 # 3. Pulse Latching



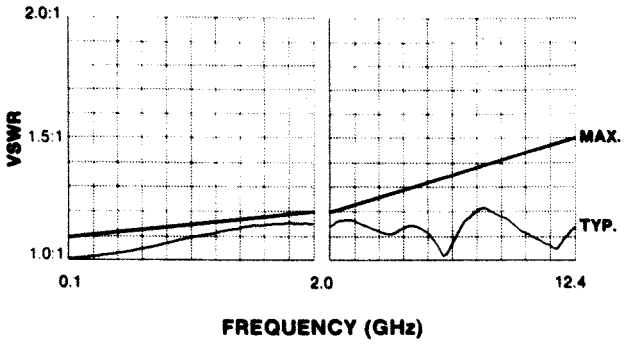
 # 4. Pulse Latching w/ Indicator

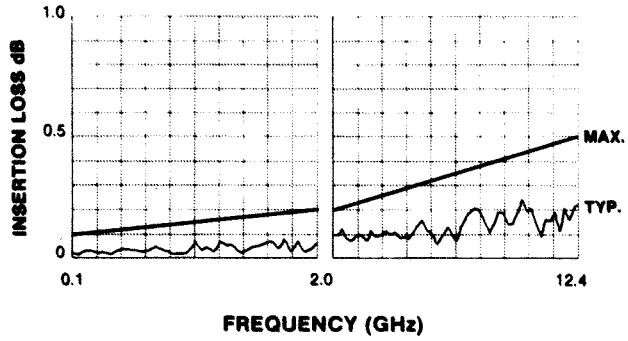


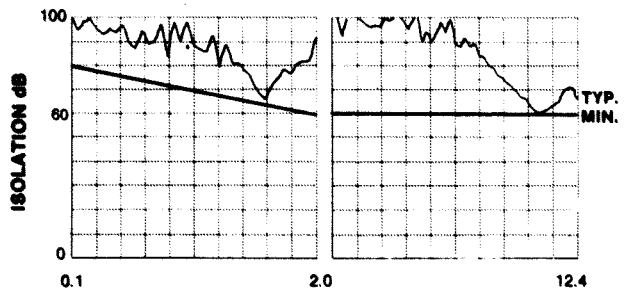
Specifications

Typical RF data of a production switch; computer printouts below:

Type N Shown

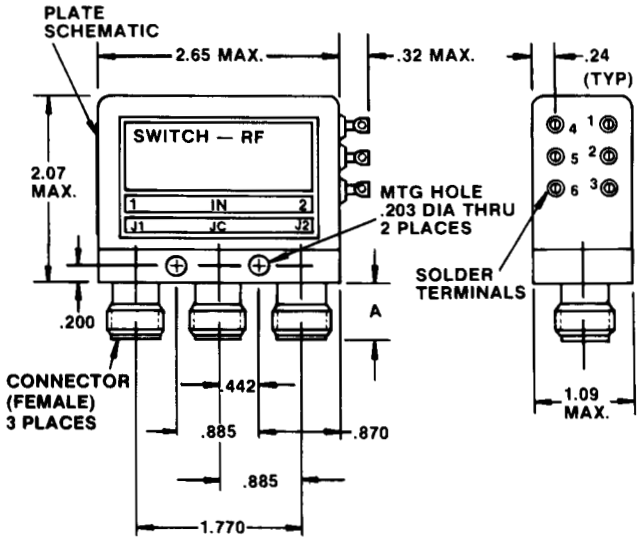






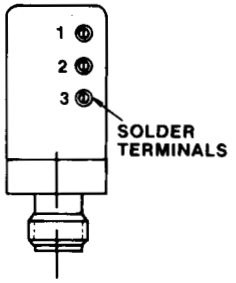
Actuator Voltage:	20 to 30Vdc
Coil Resistance:	95 ± 5 Ohms @ 20°C
Current:	0.31 amps max. @ 28Vdc
Switching Time:	20 milliseconds
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	8.2 oz. max.

Dimensions



805C00200 SHOWN

CONN	A
N	.60
TNC	.56



805C00100 SHOWN

Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Coaxial Switch Type D

Description

The Type D Coaxial SPDT Switch has RF geometry optimized for TNC and N connectors and operates over a 0-12.4GHz frequency band. It is also available with or without indicators. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Actuator features:
1. Balanced rotating armature
2. Lower current required to develop the actuating torque.
3. Dual holding power - permanent magnet plus electromagnet

This design features a dual magnetic field for high efficiency and long life reliability...and excellent shock/vibration characteristics.

This switch is part of the DowKey family of switches. Other types in this family are referenced below.

Type	Conn.	Freq.
DO	SMA	18 GHz
DX	SC	6.5 GHz

Standard Products

P/N	Conn.	Schematic
810C00100	N	1
810C00200	N	2
810C30100	TNC	1
810C30200	TNC	2

Meets MIL-S-3928/10-04 (810C00100)
MIL-S-3928/10-05 (810C00200)

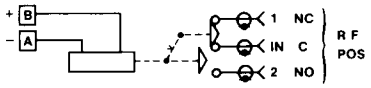
Special Configuration

Actuating Voltage TTL Logic Circuit
Transient Circuit Terminal Location
Mounting Configuration

RF Circuit: SPDT
Actuator: Failsafe
Connector: TNC & N
Frequency: 0-12.4GHz

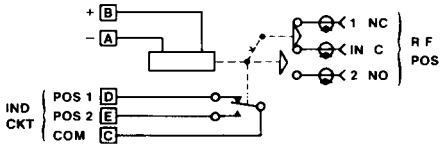
Schematic

#1. Failsafe



SHOWN IN FAIL-SAFE POSITION (NC)
ENERGIZE TO CONNECT POSITION 2 (NO)

2. Failsafe with Indicator Circuit

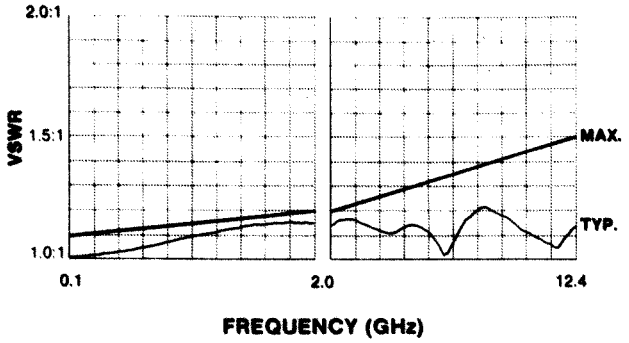


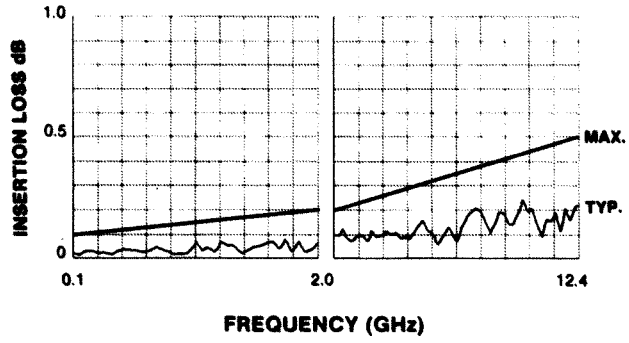
SHOWN IN FAIL-SAFE POSITION (NC)
ENERGIZE TO CONNECT POSITION 2 (NO)

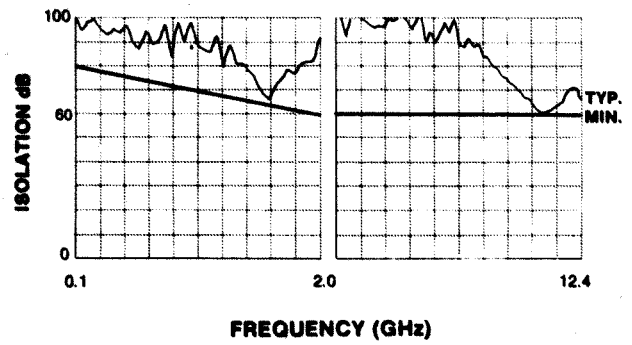
Specifications

Typical RF data of a production switch; computer printouts below:

Type N Shown

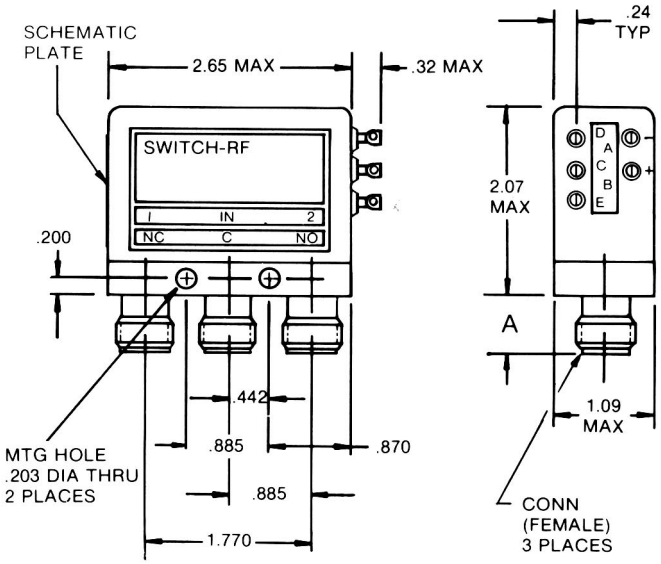






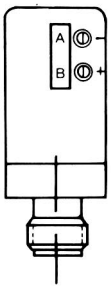
Actuator Voltage:	20 to 30Vdc
Coil Resistance:	190 ± 10 Ohms @ 20°C
Current:	160 amps max. @ 28Vdc and 20°C
Switching Time:	20 milliseconds max. RF to RF
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	1,000,000 cycles min
Weight:	8.2 oz. max.

Dimensions



810C00200 SHOWN

CONN	A
N	.60
TNC	.56



810C00100 SHOWN

Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Coaxial Switch Type DT

Description

The Type DT Coaxial Switch has RF geometry optimized for TNC connectors and operates over a 0-12.4GHz frequency band. This type switch is in a smaller package than Type D and is available in Latching or failsafe models, with or without indicators.

Latching models use a magnetic latching actuator with cut-off circuitry. This switch draws current for approximately 30 milliseconds to change position; no holding power is required to maintain a position.

The failsafe models feature dual holding power...a permanent magnet plus electromagnet for low current with high efficiency.

This switch is part of the DowKey family of switches. Other types in this family are referenced below.

Type	Conn.	Freq.
D	N &TC	1 2.4 GHz
DO	SMA	1 8 GHz
DX	SC	6.5 GHz

Standard Products

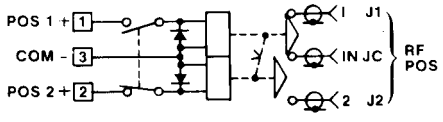
P/N	Schematic
900C30100	1
900C30200	2
910C30100	3
910C30200	4

*** Meets MIL-S-3928/15**

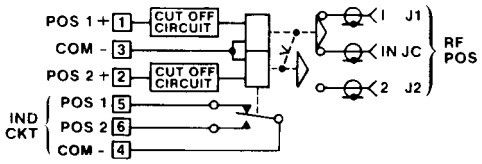
RF Circuit: SPDT
Actuator: Latching and failsafe
Connector: TNC
Frequency: 0-12.4GHz

Schematic

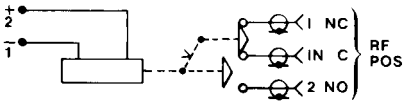
#1. Latching



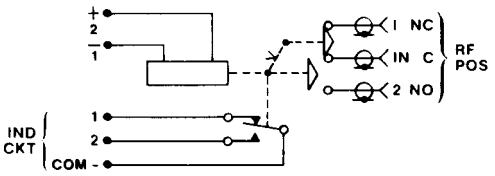
2. Latching with Indicator



3. Failsafe



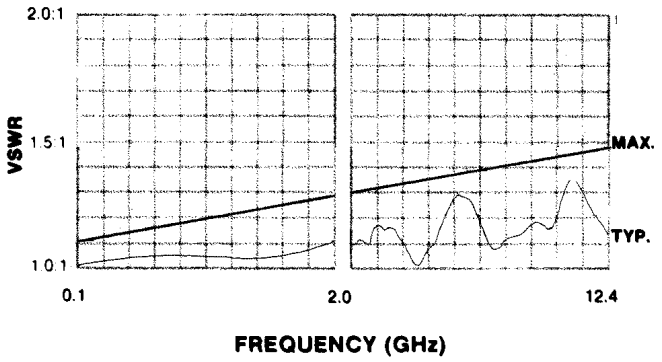
4. Failsafe w/ Indicator

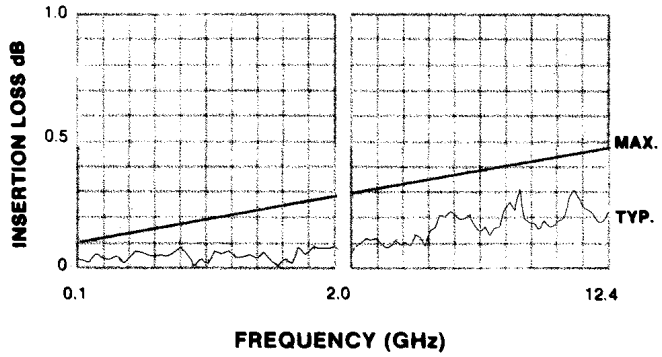


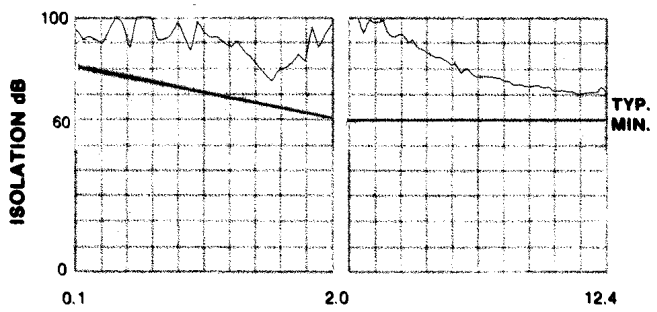
Specifications

Typical RF data of a production switch; computer printouts below:

Type TNC Shown







Voltage:	20 to 30Vdc
Switching Time:	20 milliseconds max @ 28Vdc
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	4 oz. max.

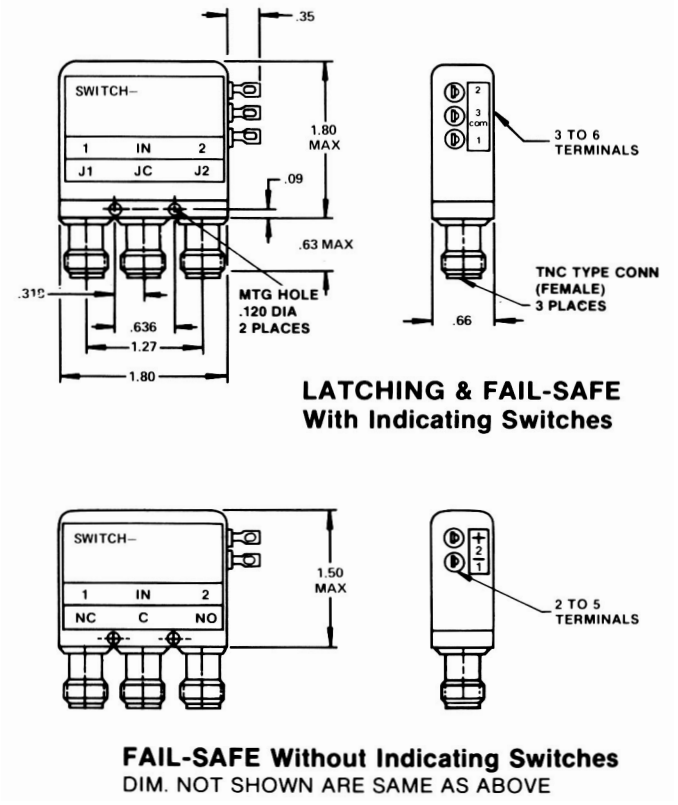
Latching Models
900C30100 and 900C30200

Coil Resistance:	55 ± 5 Ohms @ 20°C
Current:	510mA max @ 28Vdc and 20°C

failsafe Models
910C30100 and 910C30200

Coil Resistance:	115 ± 5 Ohms @ 20°C
Current:	280mA max @ 28Vdc and 20°C

Dimensions



Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Mating connector to be 5/8" diameter

Coaxial Switch — Type DX

Description

The Type DX Coaxial Switches are designed for high average power applications over a 0-6.5GHz frequency band. They use SC connectors with one inch center-to-center spacing.

These switches utilize HCl (heat conducting dielectric) to increase the average power handling capabilities. Test results on a large number of components employing HCl have consistently indicated a CW power rating 2.5 times greater than obtainable with conventional low-loss dielectric materials.

These switches are available in latching or failsafe models, with or without indicating switches.

The latching models use DowKey's Type D switch magnetic latching actuator featuring a balanced rotating armature.

The failsafe models use DowKey's Type D switch failsafe actuator featuring dual holding power...a permanent magnet and electromagnet.

This switch is part of a DowKey family of switches. Other types in this family are referenced below.

Type	Conn.	Freq.
D	N &TNC	1 2.4 GHz
DO	SMA	1 8 GHz

Standard Products

P/N	Schematic
800C51100	1
800C51200	2
810C51100	3
810C51200	4
800C50100	
800C50200	①
* Meets MIL-S-3928	②

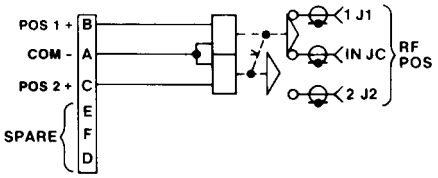
① Same as schematic 1 with the addition of current cutoff circuit.

② Same as schematic 2 with the addition of current cutoff circuit.

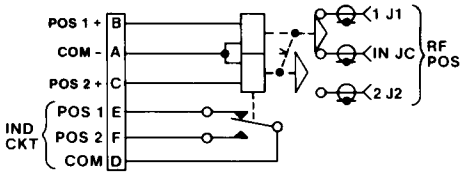
RF Circuit: SPDT High Power
Actuator: Latching and Failsafe
Connector: SC
Frequency: 0-6.5GHz

Schematic

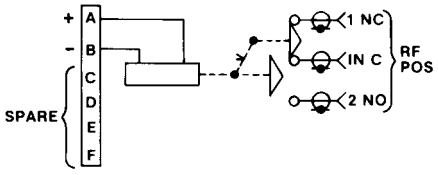
#1. Pulse Latching



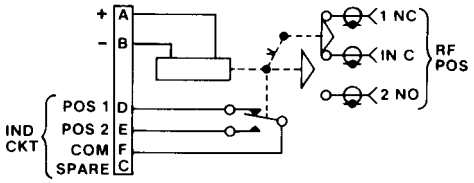
 # 2. Pulse Latching with Indicator



 # 3. Failsafe

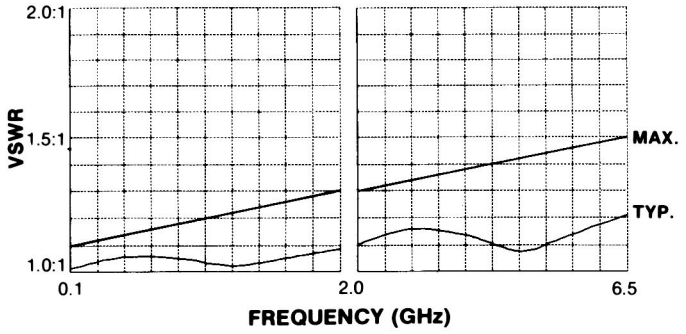


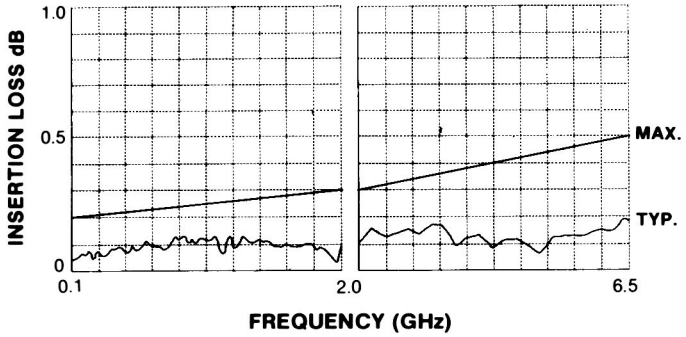
 # 4. Failsafe w/ Indicator

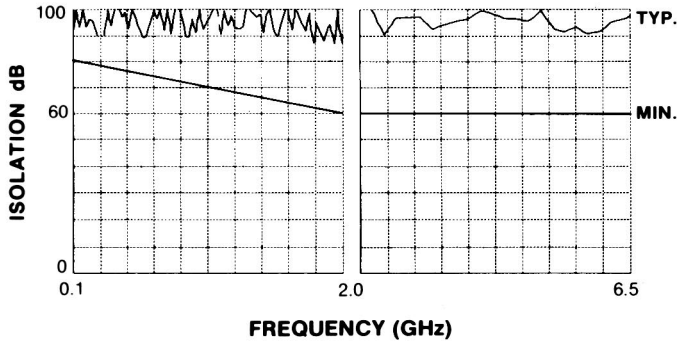


Specifications

Typical RF data of a production switch; computer printouts below:







Voltage:	20 to 30Vdc
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	10g's sine/random
Life:	100,000 cycles min
Weight:	8.5 oz. max.

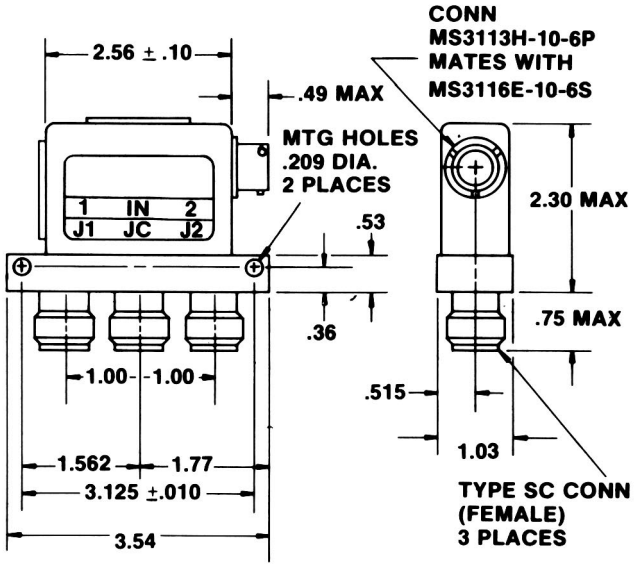
Latching Models
800C51100 and 800C51200
800C50100 and 800C50200

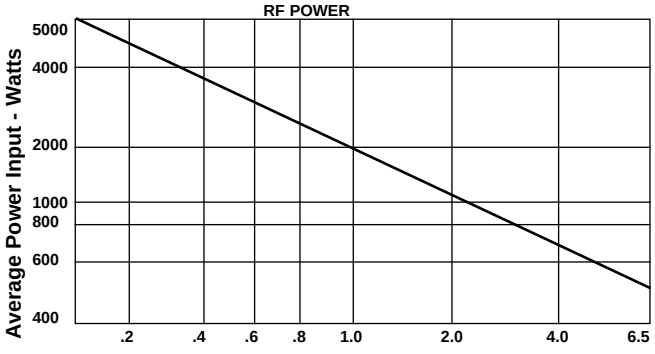
Coil Resistance:	95 ± 5 Ohms @ 20°C
Current:	320mA max @ 28Vdc and 20°C
Switching Time:	20mS max @ 28Vdc and 20°C

failsafe Models
810C51100 and 810C51200

Coil Resistance:	310 ± 5 Ohms @ 20°C
Current:	280mA max @ 28Vdc and 20°C
Switching Time:	30mS max @ 28Vdc and 20°C

Dimensions





1500 Watts Average At 1 GHz

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Coaxial Switch Type PD

Description

The Type PD Switch has the RF contact operation of make-before-break for switching under RF power. The Type PD Switch is available in latching or failsafe models with or without indicating switches.

MBB: Contacts arranged so the closing contacts make before interrupting the closed circuit. This type always has both circuits closed for an instant.

The MBB option offers an advantage in some high power switching applications because the maximum VSWR is limited to a value slightly in excess of 2:1. The BBM type presents a momentary infinite VSWR during switching.

The failsafe model features the same actuator design as the failsafe Type D Switch.

This switch has been tested 63,000 cycles under the following conditions with no measurable effect on the performance specifications.

Power	Frequency	Cycles
25 W CW	3350MHz	3,000
150 W CW	250MHz	20,000
	1087MHz	40,000

4KW pk., 5 W average.

These are not maximum ratings. Please contact DowKey/Transco regarding a switch to test in your system.

Standard Products

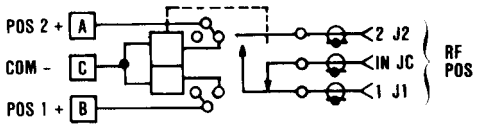
P/N	Conn	Schematic	
808C00100	N	1	Latching
808C00200	N	2	
818C00100	N	3	failsafe
818C00200	N	4	
808C30100	TNC	1	Latching
808C30200	TNC	2	
818C30100	TNC	3	failsafe
818C30200	TNC	4	

*** Meets MIL-S-3928**

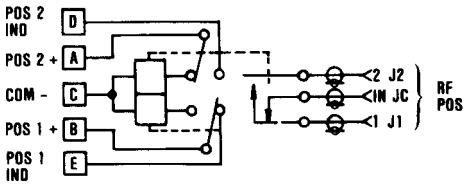
RF Circuit: SPDT (MBB)
Actuator: Latching and Failsafe
Connector: TNC & N
Frequency: 0-12.4GHz

Schematic

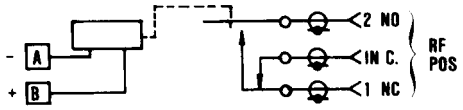
#1. Latching



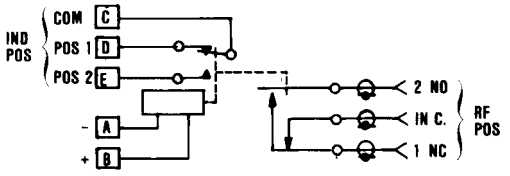
 # 2. Latching with Indicator



 # 3. Failsafe



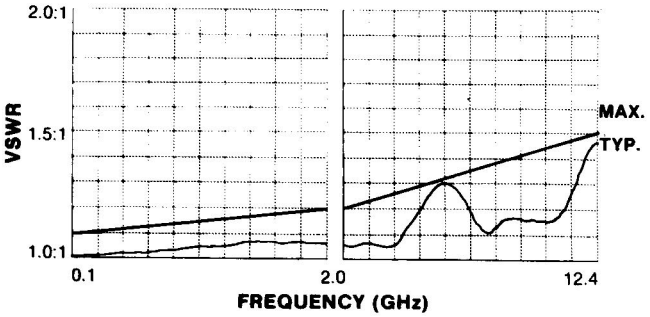
 # 4. Failsafe w/ Indicator

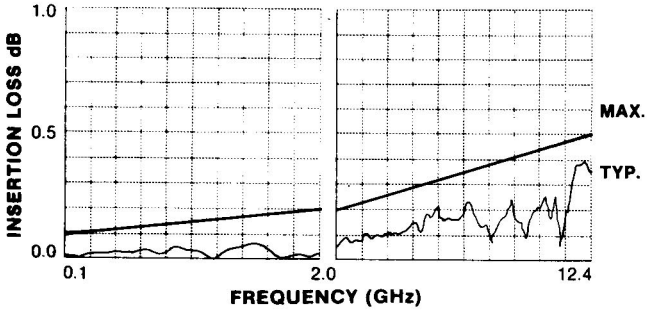


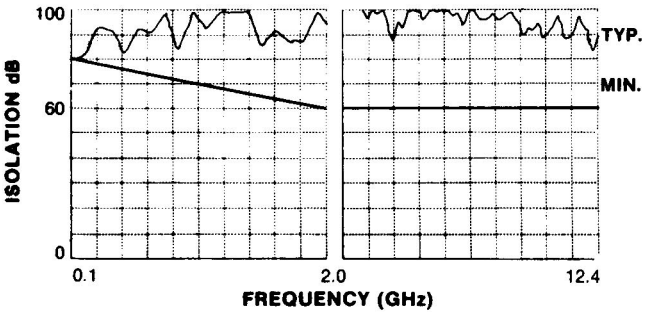
Specifications

Typical RF data of a production switch; computer printouts below:

Type N shown







Lower Frequency

At 10MHz, typical values are:
Isolation: 80dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

Voltage:	20 to 30Vdc
Switching Time:	30 milliseconds max @ 28Vdc
RF Contacts:	break-before-make
Time in MBB Pos	2mS approx.
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	8 oz. max.

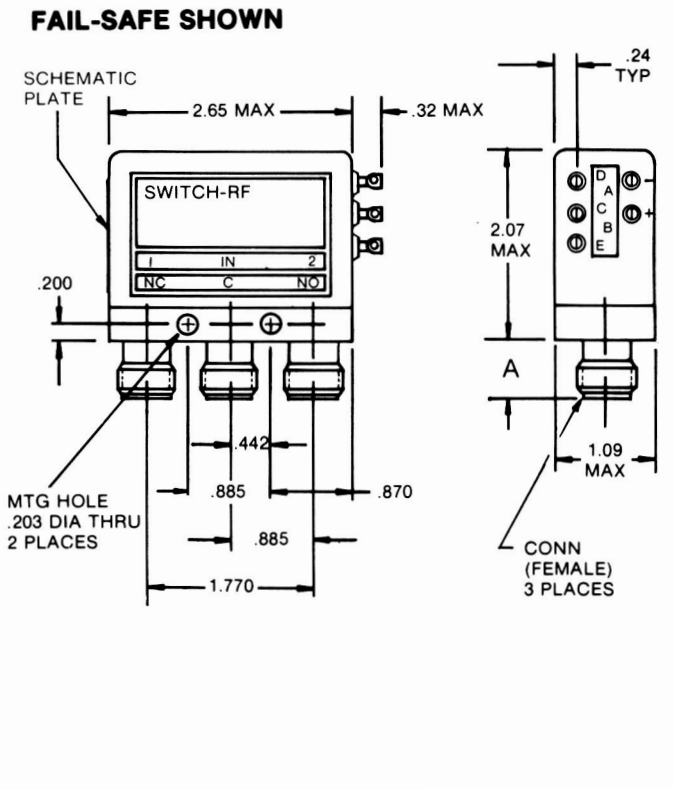
Latching Models
808C00100 and 808C00200
808C30100 and808C30200

Coil Resistance:	55 ± 5 Ohms @ 20°C
Current:	.51 amp @ 28Vdc and 20°C

failsafe Models
818C00100 and 818C00200
818C30100 and 818C30200

Coil Resistance:	100 ± 5 Ohms @ 20°C
Current:	.28 amp @ 28Vdc and 20°C

Dimensions



Coaxial Switch Type HO

Description

The Type HO Coaxial Switch has RF geometry optimized for SMA connectors and operates over a 0-18GHz frequency band. It is magnetically latched and available with or without an actuator cut-off circuit. It is also available with or without indicators. DowKey's design mechanically links indicating switches to the rotating armature for positive indication.

Actuator features:
1. Balanced rotating armature
2. Reliable actuation with low current
3. Positive latching with permanent magnets
4. Basic design concept qualified for space applications.

A single voltage pulse of 20 milliseconds is all that is required to change positions; no holding power is required to maintain a position.

Magnetic latching offers distinct advantages over other mechanisms since it uses no springs or mechanical detents which are prone to fatigue and wear. DowKey considers magnetic latching to be the optimum design for applications which require high vibration levels, environmental extremes, long life and reliability.

This switch is part of a DowKey family of switches. Other types in this family are referenced below.

Type	Conn.	Freq.
H	N	12.4GHz
HT	TNC	12.4GHz
HX	SC	6.5GHz

Standard Products

P/N	Schematic
700C70100	1
700C70200	2
700C71100	3
700C71200	4

Meets MIL-S-3928

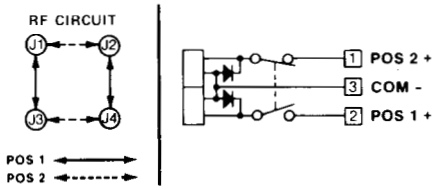
Special Configuration

Actuating Voltage	TTL Logic Circuit
Transient Circuit	Terminal Location
Power Plug	Mounting Configuration

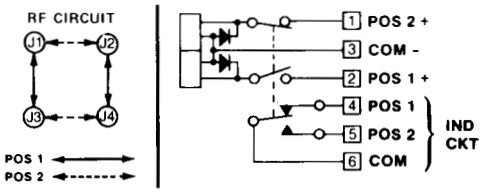
RF Circuit: Transfer
Actuator: Latching
Connector: SMA
Frequency: 0-18GHz

Schematic

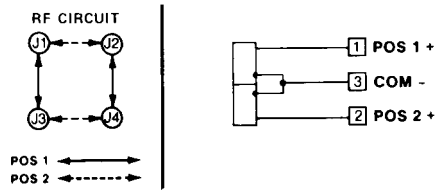
#1. Latching



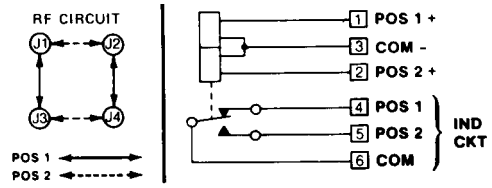
 # 2. Latching with Indicator Circuit



 # 3. Pulse Latching

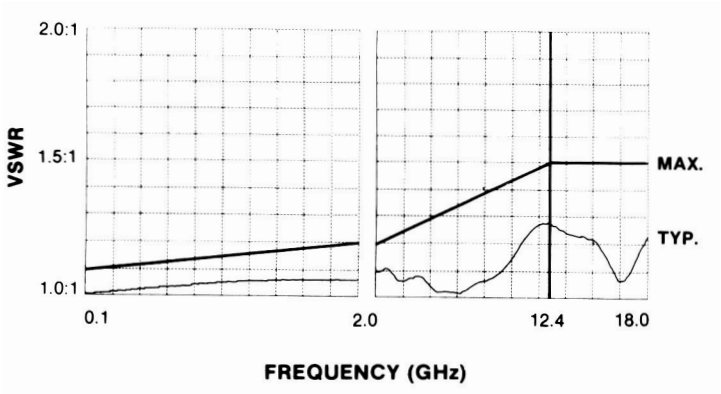


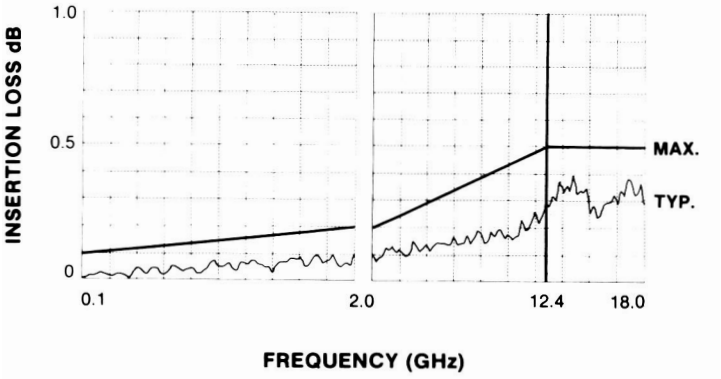
 # 4. Pulse Latching w/ Indicator Circuit

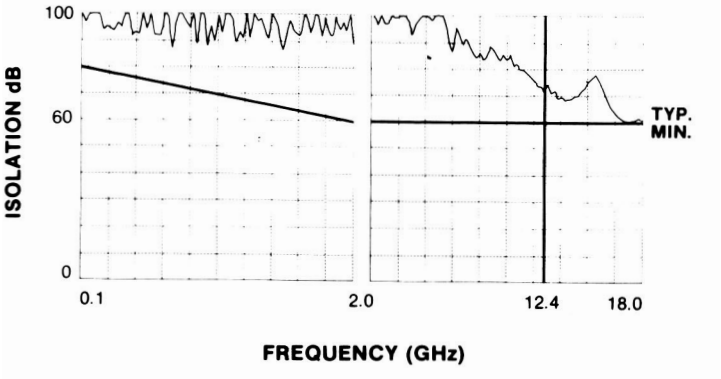


Specifications

Typical RF data of a production switch; computer printouts below:

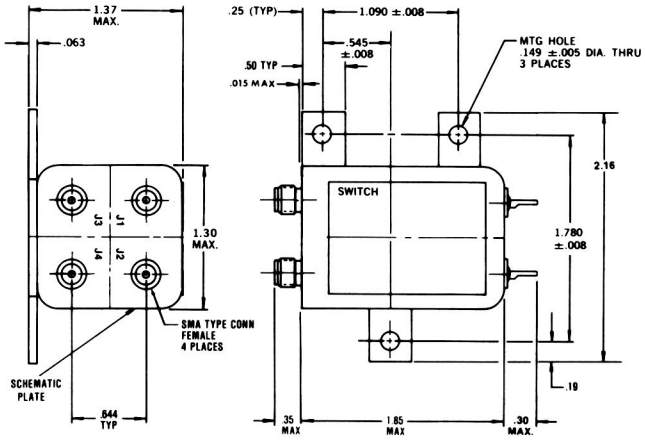


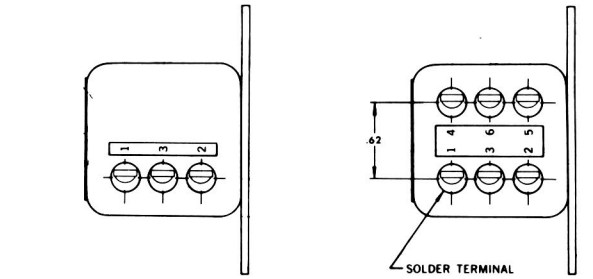




Actuator Voltage:	20 to 30Vdc
Coil Resistance:	500 ± 50 Ohms @ 20°C
Current:	65 mA max. @ 28Vdc and 20°C
Switching Time:	20 milliseconds @ 28Vdc and 20°C
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	3.5 oz. max.

Dimensions





WITHOUT INDICATOR WITH INDICATOR

Lower Frequency

At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.