Description

The Type HO Transfer 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 indications.

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

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

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
710C70100*	1
710C70200	2
715C70100*	3
710C71400**	4 (with arc suppression diode)

***Meets MIL-S-3928/19-02**
***Meets MIL-S-3928/19-05**

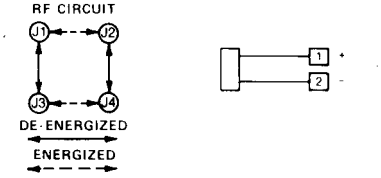
Special Configuration

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

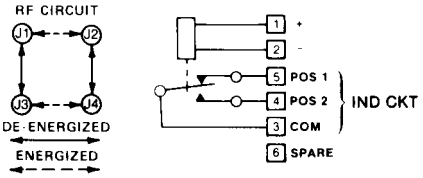
RF Circuit: Transfer
Actuator: Failsafe
Connector: SMA
Frequency: 0-18GHz

Schematic

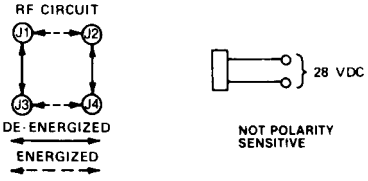
#1. Failsafe



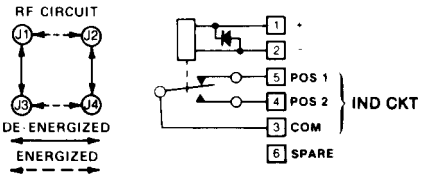
2. Failsafe with Indicator Circuit



3. Failsafe



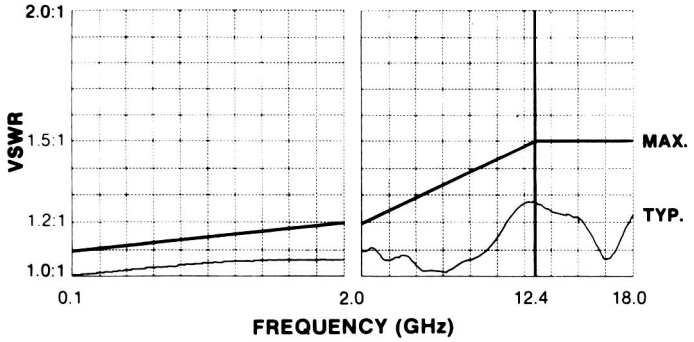
4. Failsafe w/ Indicator Circuit

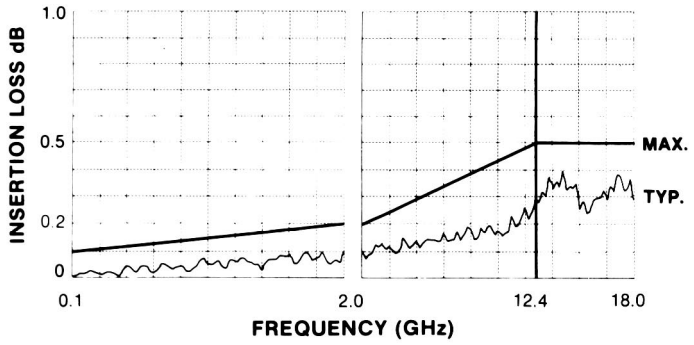


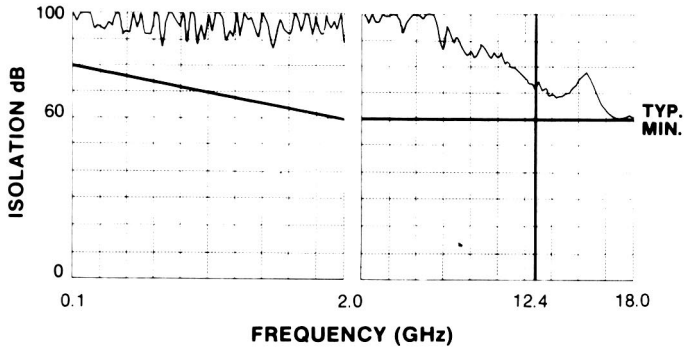
Specifications

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

Type N Shown

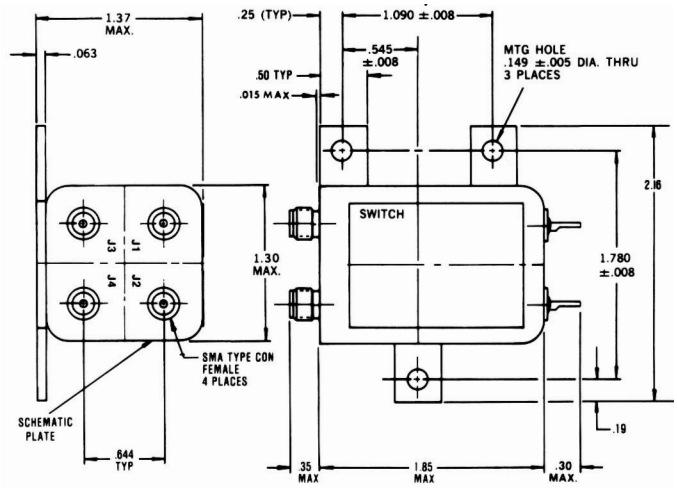




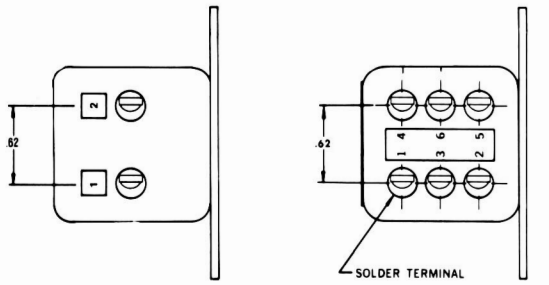


Actuator Voltage:	20 to 30Vdc
Coil Resistance:	250 ± 25 Ohms @ 20°C
Current:	120 mA max. @ 28Vdc and 20°C
Switching Time:	20 milliseconds @ 28Vdc and 20°C
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	3.5 oz. max.

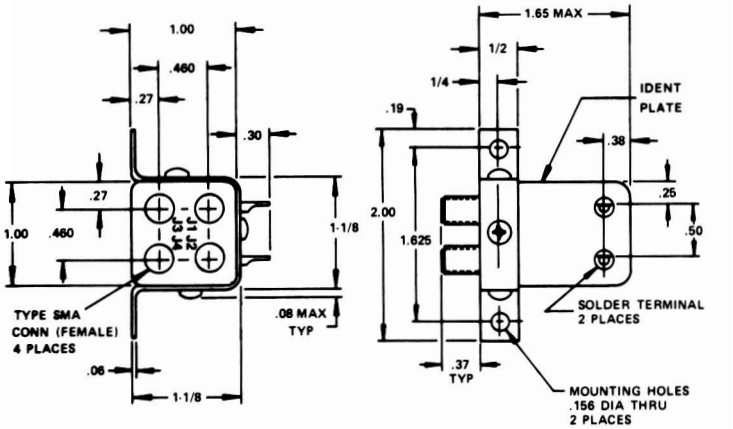
Dimensions



HO 710C70100 & 710C70200



WITHOUT INDICATOR WITH INDICATOR



HOF 715C70100

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 HO

Description

The Type HO Coaxial Transfer 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 is available with or without actuator cutoff circuit. Both latching and failsafe models are available with or without indicators.

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

DowKey's failsafe model design features a dual magnetic field for high efficiency and long life reliability - also excellent shock/vibration characteristics.

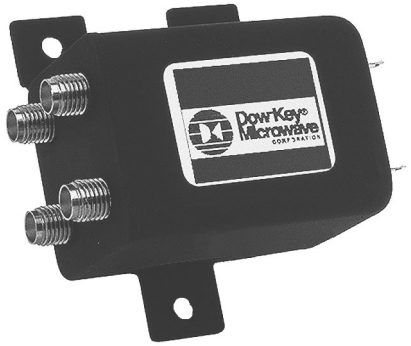
Standard Products

P/N	Schematic	Type
705C90100	1	Latching
705C90200	2	Latching w/I.C.
705C91100	3	Pulse Latching
705C91200	4	Pulse Latching w/I.C.
745C90100	5	failsafe
745C90200	6	failsafe w/I.C.

Meets MIL-S-3928

Special Configuration

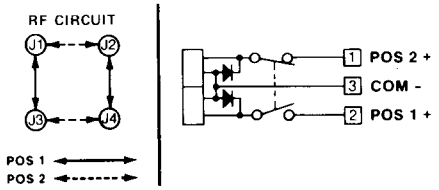
Actuating Voltage
Transient Circuit
TTL Logic Circuit
Mounting Configuration
Terminal Location
Power Plug



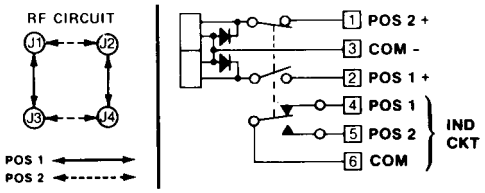
RF Circuit: Transfer
Actuator: Latching and Failsafe
Connector: 3.5mm
Frequency: 0-26.5GHz

Schematic

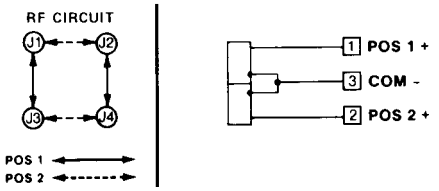
#1. Latching



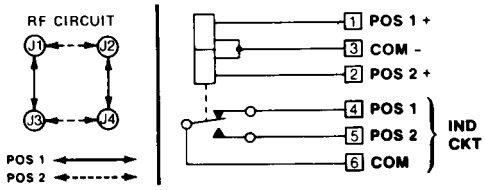
2. Latching with Indicator Circuit



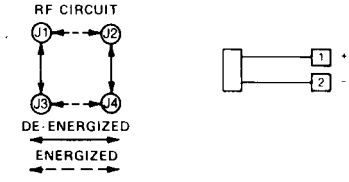
3. Pulse Latching



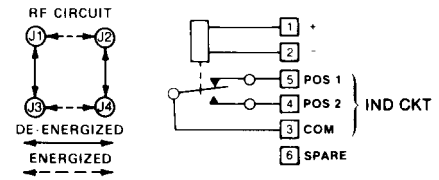
4. Pulse Latching w/ Indicator Circuit



5. Failsafe



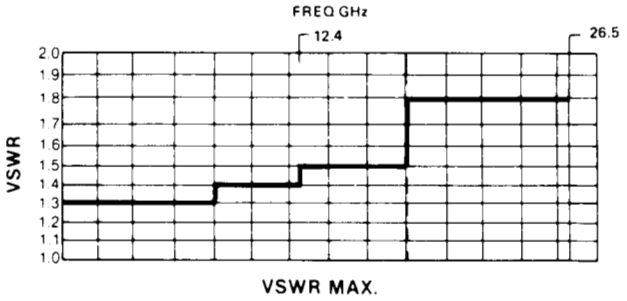
6. failsafe w/Indicator Circuit



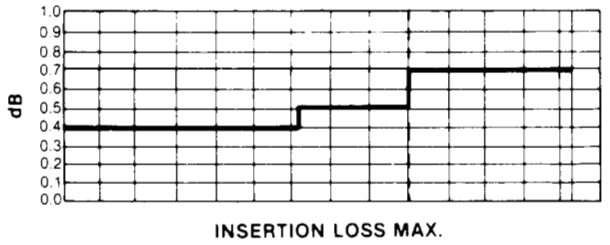
Specifications

Maximum RF performance of a production switch

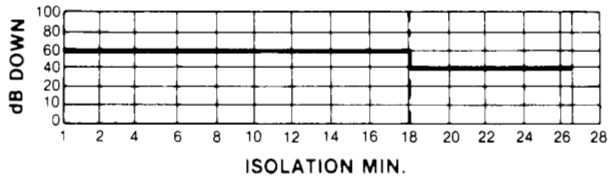
RF Characteristics



VSWR MAX.



INSERTION LOSS MAX.



ISOLATION MIN.

Lower Frequency

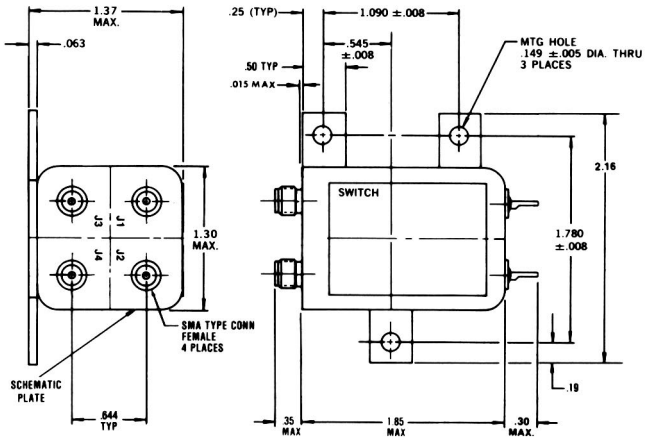
At 10MHz, typical values are:
Isolation: 100dB
VSWR: 1.05:1
Insertion Loss: 0.05dB
Because of the inherently good RF performance at lower frequencies, this product line is not tested below 2GHz except upon request.

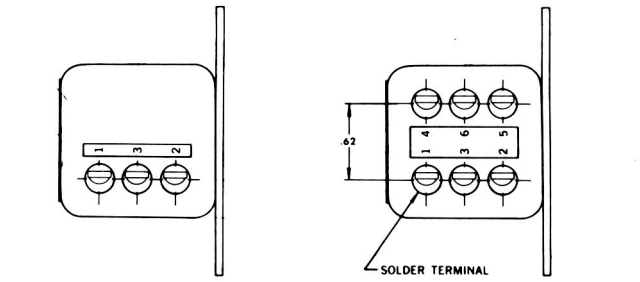
Voltage:	20 to 30Vdc
Coil Resistance:	500 ± 50 Ohms @ 20°C
Current:	65mA max @ 28Vdc and 20°C
Switching Time:	20 milliseconds @ 28Vdc and 20°C
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	3.5 oz.

Characteristics of failsafe Models

Coil Resistance	250 ± 25 Ohms @ 20°C
Current	120mA max @ 28Vdc and 20°C

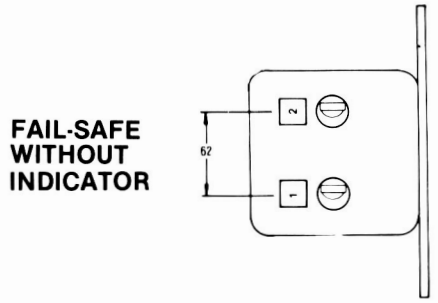
Dimensions





LATCHING WITHOUT INDICATOR

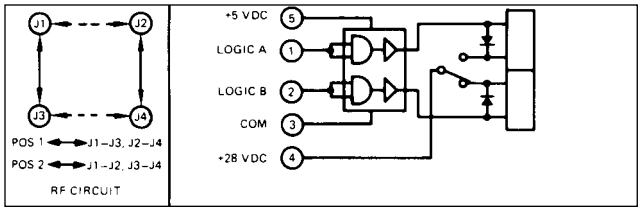
LATCHING WITH INDICATOR



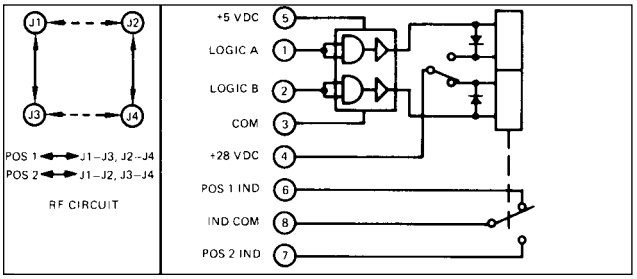
FAIL-SAFE WITHOUT INDICATOR

Schematic

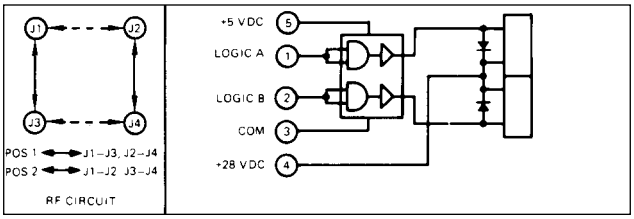
700C70100-30 - 705C90100-30



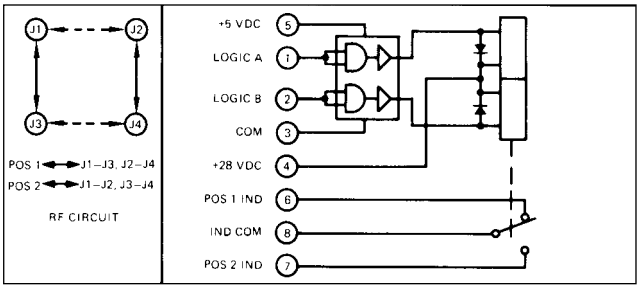
700C70200-30 - 705C90200-30



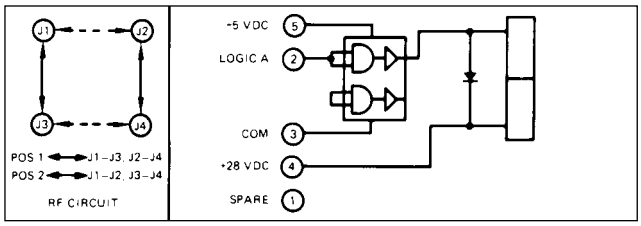
700C71100-30 - 705C91100-30



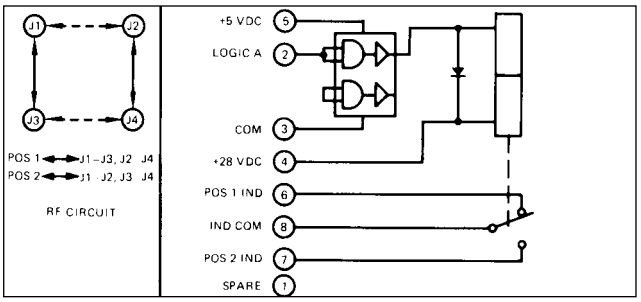
700C71200-30 - 705C91200-30



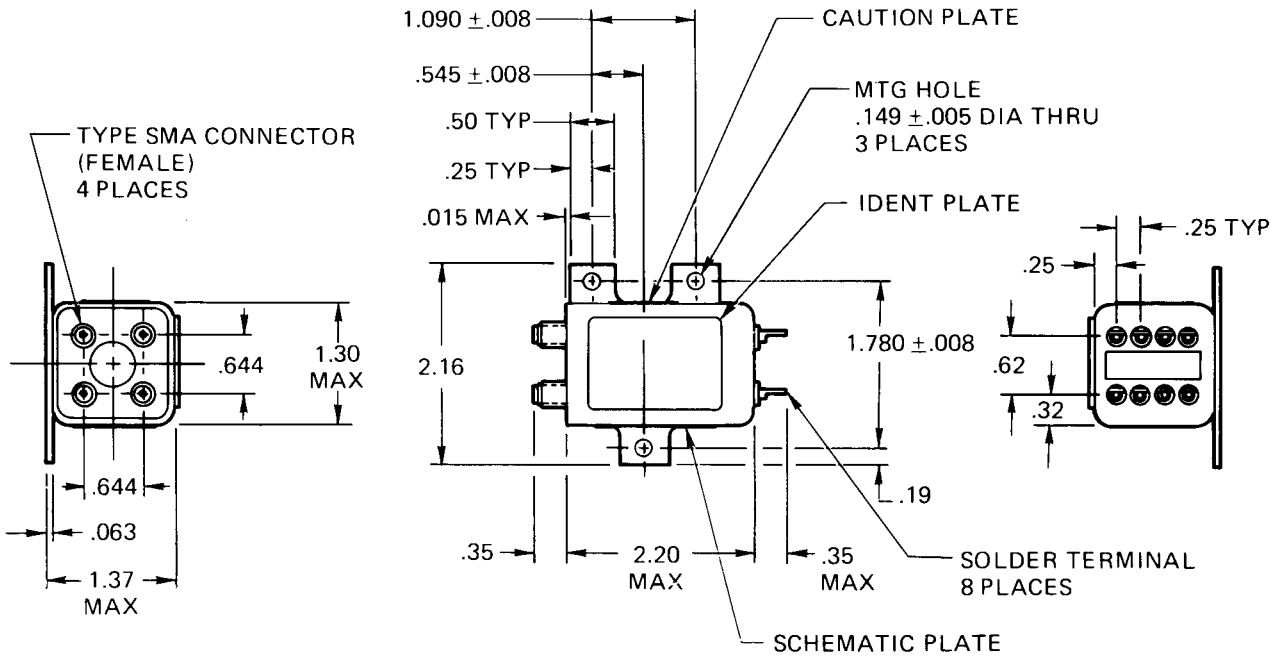
710C70100-30 - 745C90100-30



710C70200-30 - 745C90200-30



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 MIN

Switching Time, Max: 20ms at 20Vdc

700C70100-30
700C70200-30
700C71100-30
700C71200-30
705C90100-30
705C90200-30
705C91100-30
705C91200-30

Logic Truth Table		
RF Position	Logic Signal	
	A	B
Pos 1	1	0
Pos 2	0	1

710C70100-30
710C70200-30
745C90100-30
745C90200-30

Logic Truth Table		
RF Position	Logic Signal	
	A	
Pos 1	0	
Pos 2	1	

Coaxial Switch Type H

Description

The Type H Latching Transfer Switch has RF geometry optimized for TNC and N connectors and operates over a 0-12.4GHz frequency band. The actuator is a magnetic latching type utilizing a current 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. Symmetrical armature
2. Positive latching with permanent magnets.

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.

Type	Conn.	Freq.
HO	SMA	18GHz
HT	TNC	12.4GHz
HX	SC	6.5GHz

Standard Products

Pin	Conn	Schematic
300C00100	N	1
300C00200*	N	2
300C30100	TNC	1
300C30200**	TNC	2

*** Meets MIL-S-3928/10-10**
**** Meets MIL-S-3928/21-03**

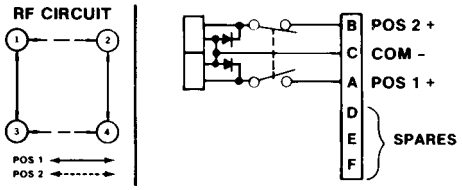
Special Configuration

Actuating Voltage
TTL Logic Circuit
Mounting Configuration
Terminal Location

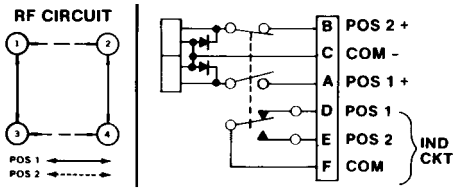
RF Circuit: Transfer
Actuator: Latching
Connector: N & TNC
Frequency: 0-12.4GHz

Schematic

 # 1. Latching

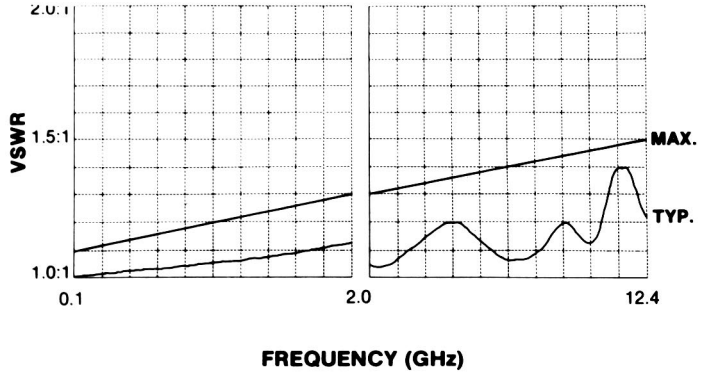


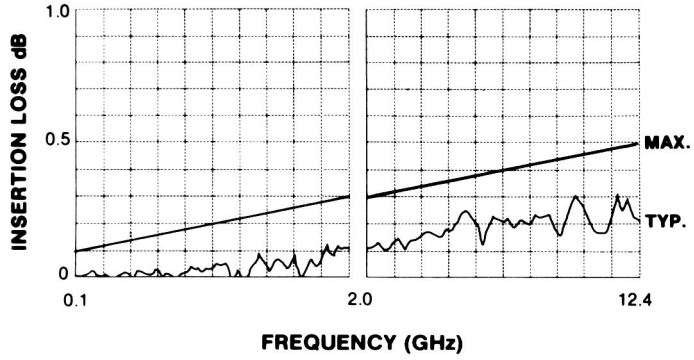
 # 2. Latching w/ Indicator Circuit

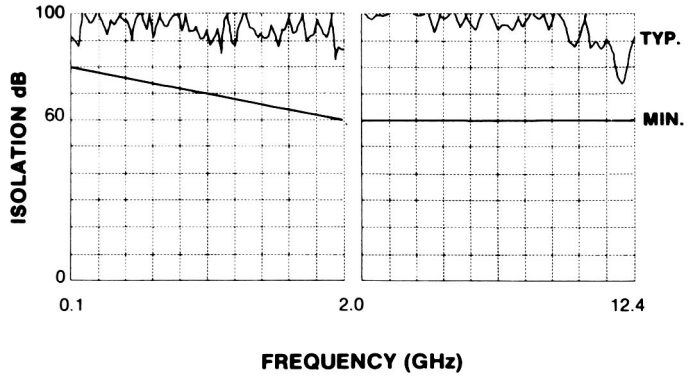


Specifications

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

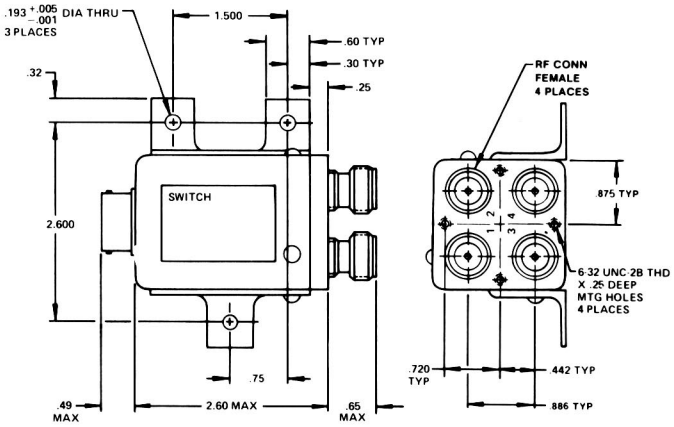


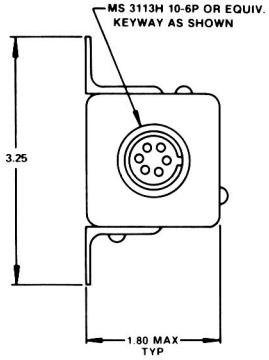




Voltage:	20 to 30Vdc
Coil Resistance:	45 ± 5 Ohms @ 20°C
Current:	.65 amp max @ 28Vdc and 20°C
Switching Time:	20 milliseconds max RF to RF
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	12 oz.

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.

Coaxial Switch — Type H

Description

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

A proven failsafe actuator is utilized to provide reliable performance in applications where the simplicity of failsafe operation is desired.

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

Type	Conn.	Freq.
HO	SMA	18GHz
HT	TNC	12.4GHz
HX	SC	6.5GHz

Standard Products

P/N	Conn	Schematic
310C00100	N	1
310C00200*	N	2
310C30100	TNC	1
310C30200	TNC	2

Other Products

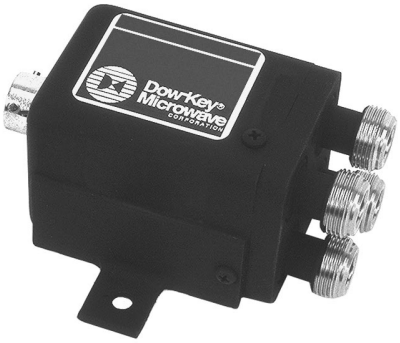
P/N	Schematic
310C30800** with solder terminals	3

***Meets MIL-S-3928/10-08**
**** Meets Mil-S-3928/21-02**

Special Configuration

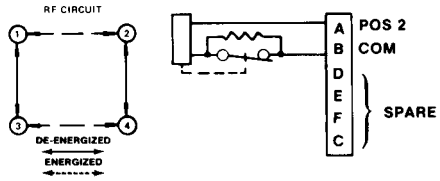
Actuating Voltage — TTL Logic Circuit
Transient Current — Terminal Location
Mounting Configuration

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

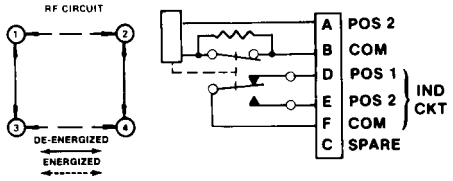


Schematic

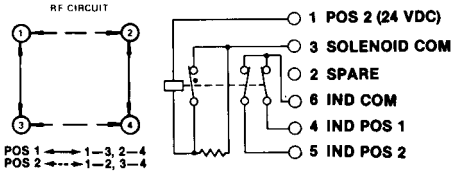
#1. Failsafe



2. Failsafe with Indicator Circuit

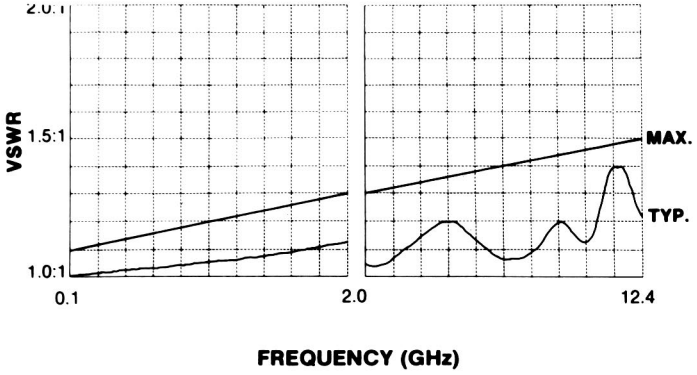


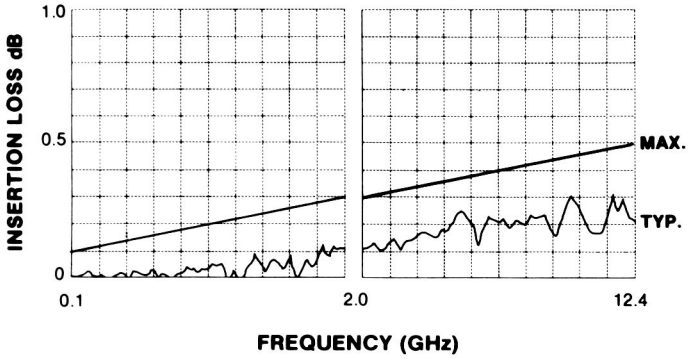
3. Failsafe with Indicator and Solder Terminal

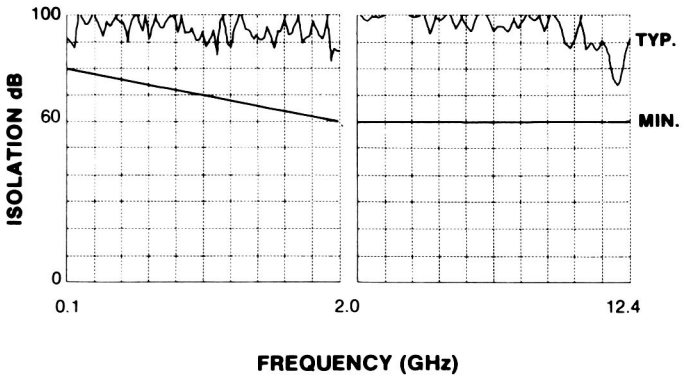


Specifications

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

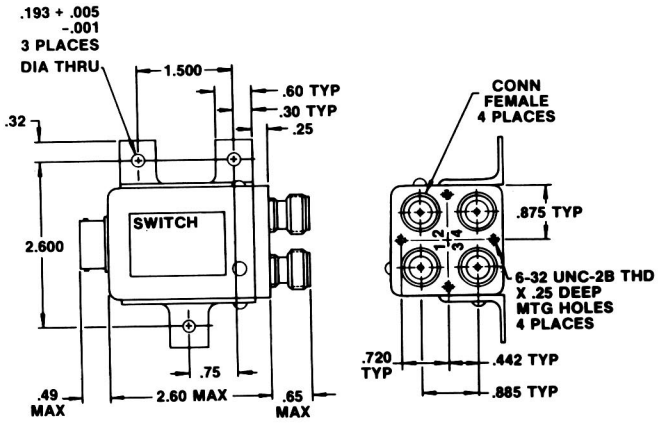


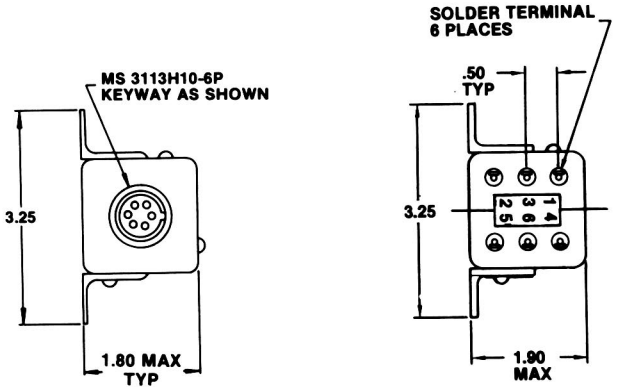




Actuator Voltage:	20 to 30Vdc
Current:	1.0 amp max. @ 28Vdc and 20°C
Switching Time:	20 milliseconds max RF to RF
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	12 oz. max.

Dimensions





Lower Frequency

At 10MHz, typical values are:
Isolation: 90dB
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 HT

Description

The Type HT Coaxial Switch has RF geometry optimized for TNC connectors and operates over a 0-12.4GHz frequency band. The model HT is available in latching or failsafe models. It offers TNC connectors in the smallest possible package. Both models are available with or without indicators. DowKey's design mechanically links indicating switches to the rotating armature for positive indications.

The latching models use a magnetic latching actuator featuring a balanced rotating armature and a current cut-off circuit. Current is required for only 30 milliseconds to change position; no holding power is required.

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.
H	N	12.4 GHz
HO	SMA	18 GHz
HX	SC	6.5 GHz

Standard Products

P/N	Schematic
700C30100	1
700C30200*	2
710C30100	3
710C30200	4

*** Meets MIL-S-3928/21-01**

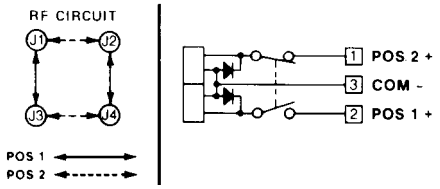
Special Configuration

Actuating Voltage — TTL Logic Circuit
Terminal Location — Mounting Configuration

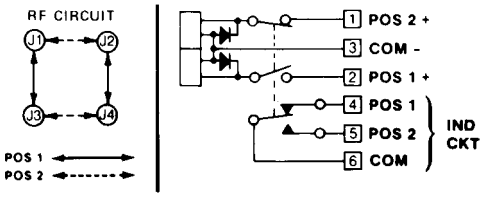
RF Circuit: Transfer
Actuator: Latching and Failsafe
Connector: TNC
Frequency: 0-12.4GHz

Schematic

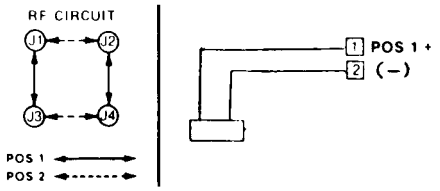
#1. Latching



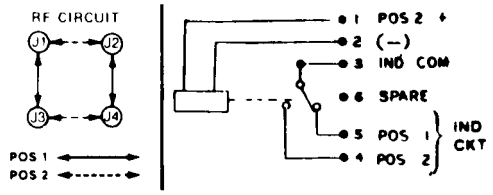
 # 2. Latching with Indicator Circuit



 # 3. Failsafe

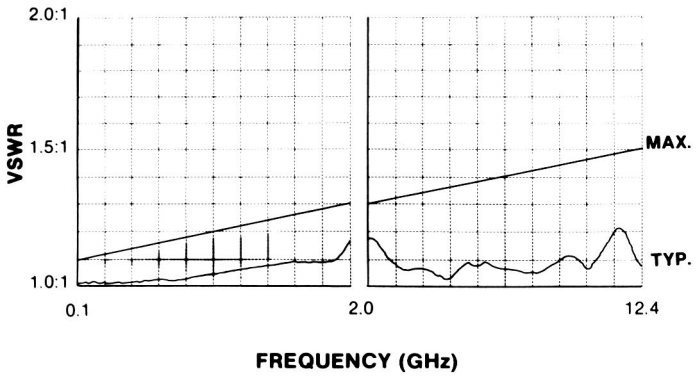


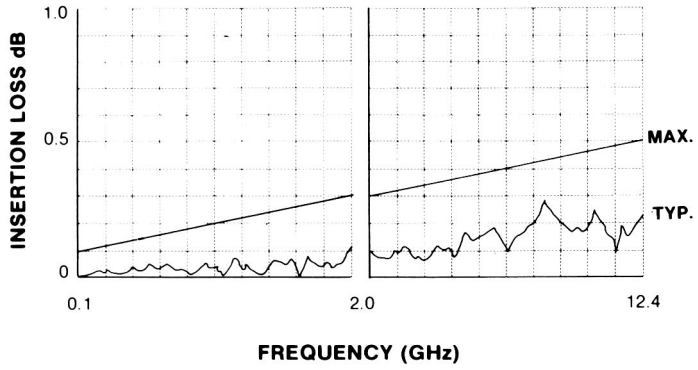
 # 4. Failsafe w/ Indicator Circuit

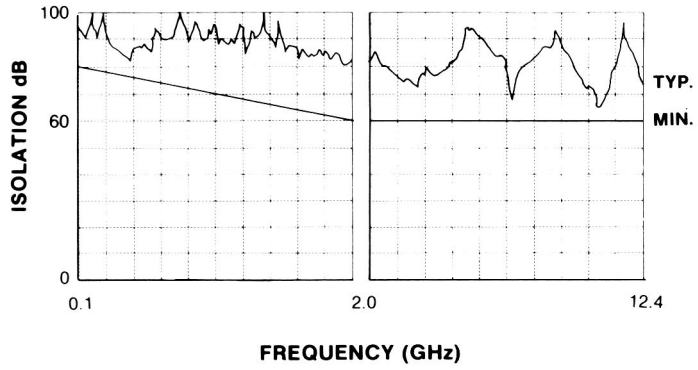


Specifications

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

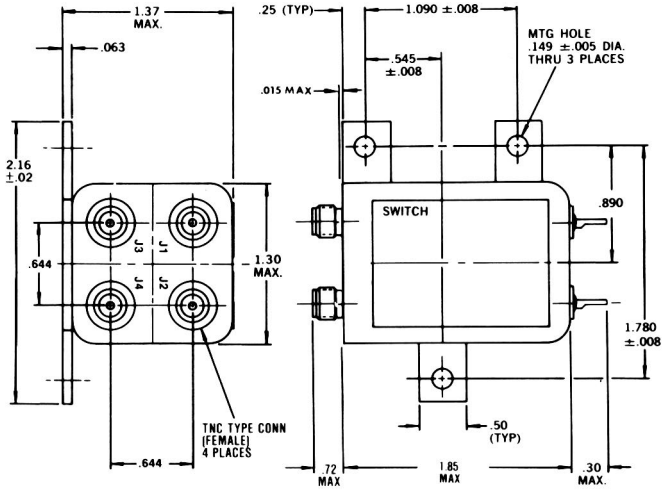


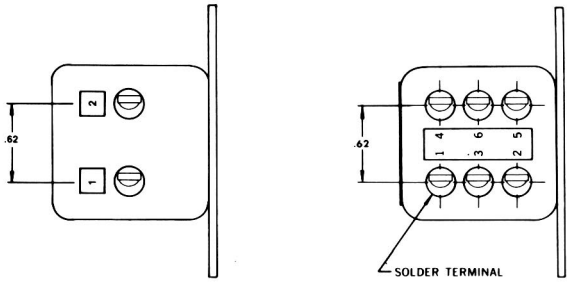




	Failsafe Models
Coil Resistance:	250 ± 25 Ohms @ 20°C
Current:	120mA @ 28Vdc and 20°C
	Latching Models
Coil Resistance:	500 ± 50 Ohms @ 20°C
Current:	65mA @ 28Vdc and 20°C
Voltage:	20 to 30Vdc
Switching Time:	20 milliseconds max RF to RF
RF Contacts:	break-before-make
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	20g's sine/random
Life:	100,000 cycles min
Weight:	3.5 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.

Mating connector to be 5/8" diameter

Coaxial Switch — Type HX

Description

The Type HX Coaxial Switches are designed for high average power applications over a 0-6.5GHz frequency band. They use SC connectors and are available in latching or failsafe models, with or without indicators.

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.

Latching models use a magnetic latching actuator featuring a balance rotating armature. Current is required for only 40 milliseconds to change position; no holding power is required.

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

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

Type	Conn.	Freq.
H	N	12.4 GHz
HO	SMA	1 8 GHz
HT	TNC	12.4GHz

Standard Products

P/N	Schematic
300C51100	1
300C51200	2
310C51100	3
310C51200	4

Meets MIL-S-3928
*** Transco developed proprietary material**

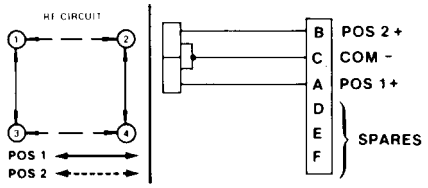
Special Configuration

Actuating Voltage
Mounting Configuration
Actuator Cut-off Circuit

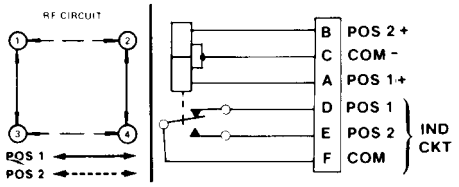
RF Circuit: Transfer High Power
Actuator: Latching and Failsafe
Connector: SC
Frequency: 0-6.5GHz

Schematic

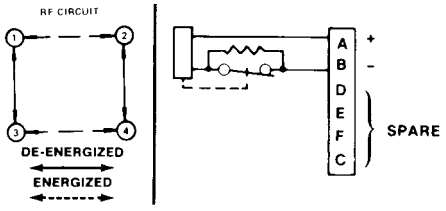
#1. Pulse Latching



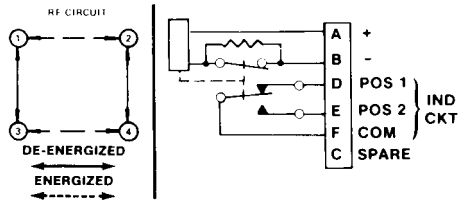
2. Pulse Latching with Indicator



3. Failsafe

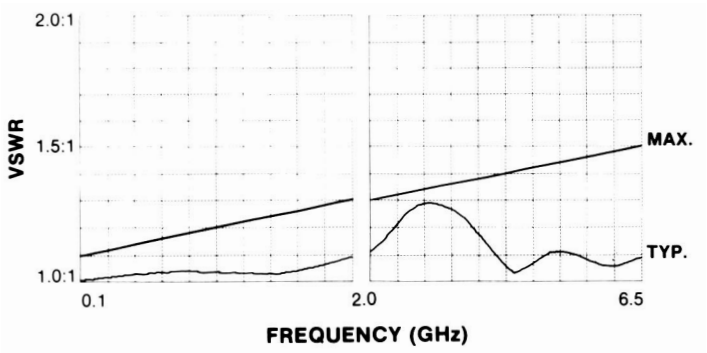


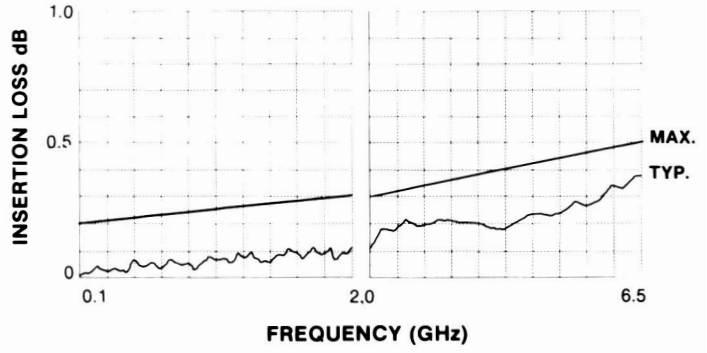
4. Failsafe w/ Indicator

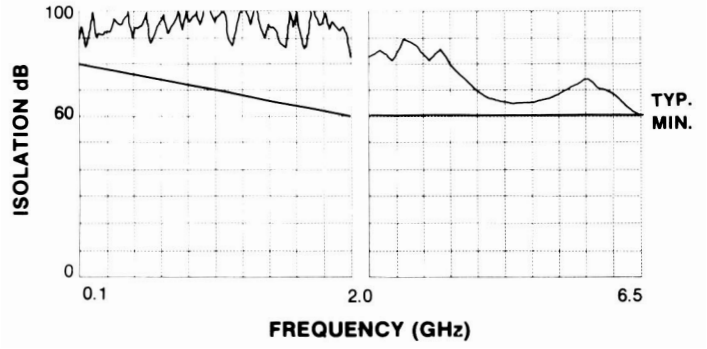


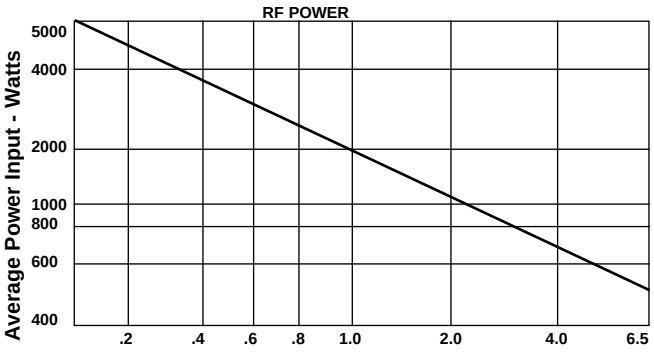
Specifications

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









Voltage:	22 to 30Vdc
Switching Time:	20 milliseconds max @ 28Vdc
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:	12.5 oz. max.

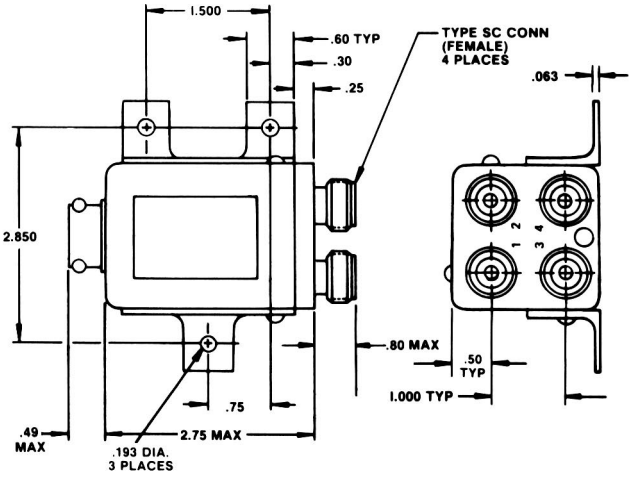
Latching Models
300C51100 and 300C51200

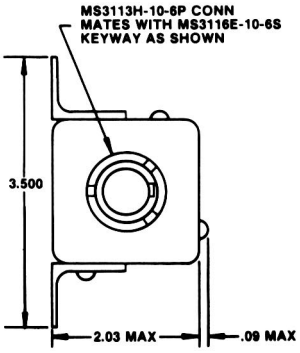
Current:	.65 amp @ 28Vdc and 20°C

failsafe Models
310C51100 and 310C51200

Current Pull-in:	1.1 amp max @ 28Vdc and 20°C
Current Holding:	270 mA 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.

Coaxial Switch Type MO

Description

The Type MO SP3T to SP6T switch utilizes selective linear actuators for each position. RF geometry is optimized for SMA connectors and operates over a 0-18GHz frequency band. Individual solenoids mean faster switching time...no waiting for the switch to sequence through a number of positions before stopping at the selected position. Separate "selective" solenoids provide positive action and a low actuator current requirement.

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

Type	Conn.	Freq.
M	N &TNC	12.4 GHz
MX	SC	6.5 GHz
ML	N &TNC	12.4GHz

Standard Products

P/N	Schematic	
143C70600	1	
144C70600	2	
145C70600	3	
146C70600*	4	
146C70600-30	5	TTL Logic

*** Meets MIL-S-3928/18-02**

Special Configuration

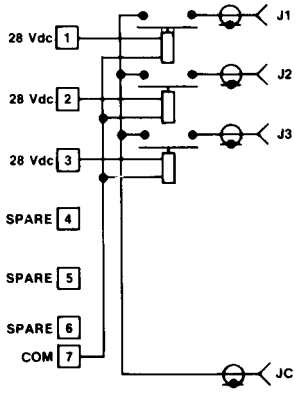
Actuating Voltage
Transient Circuit
TTL Logic Circuit
Mounting Configuration
Terminal Location

(For dimensions and circuit diagrams see page 144)

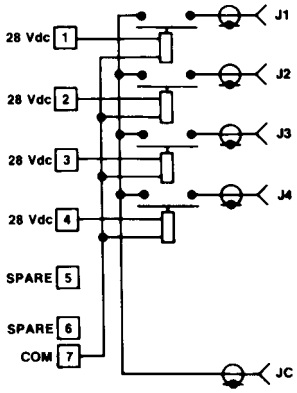
RF Circuit: SP3T to SP6T
Actuator: *Selective with Solder Terminals
Connector: SMA
Frequency: 0-18GHz

Schematic

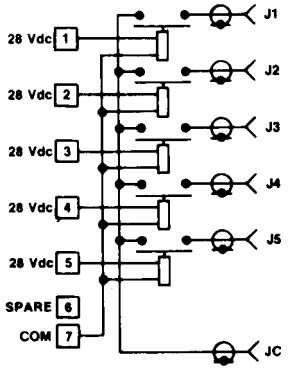
#1. 3 POS



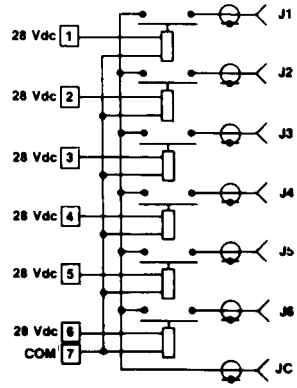
 # 2. 4 POS



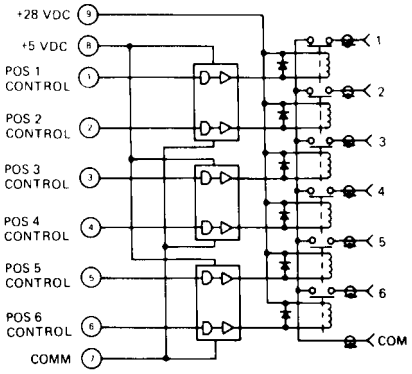
 # 3. 5 POS



 # 4. 6 POS

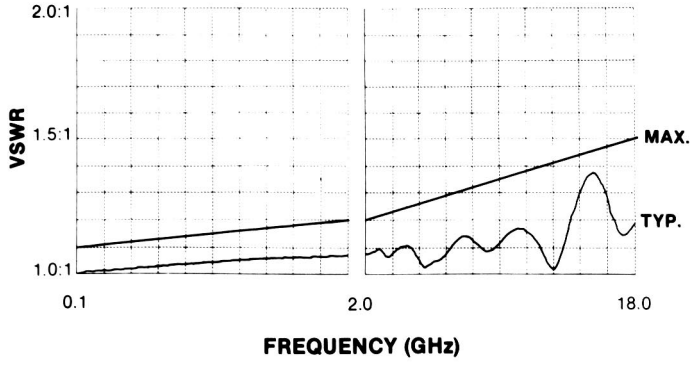


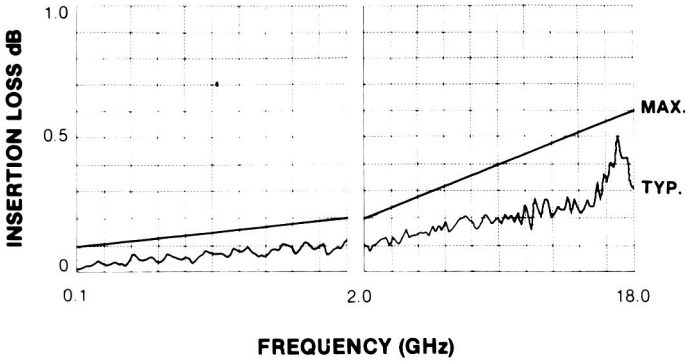
 # 5. 146C70600-30

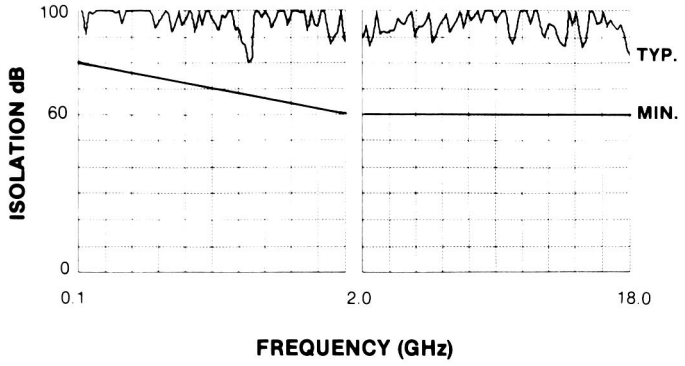


Specifications

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



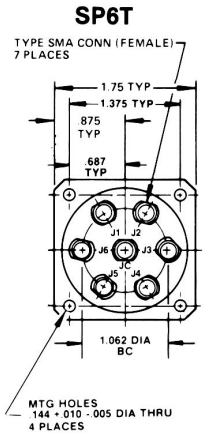


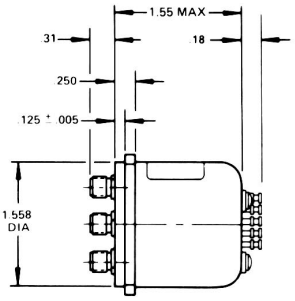


Control Input Logic Table					RF Conn	
1	2	3	4	5	6	RF Com To
0	0	0	0	0	0	Open
1	0	0	0	0	0	RF 1
0	1	0	0	0	0	RF 2
0	0	1	0	0	0	RF 3
0	0	0	1	0	0	RF 4
0	0	0	0	1	0	RF 5
0	0	0	0	0	1	RF 6

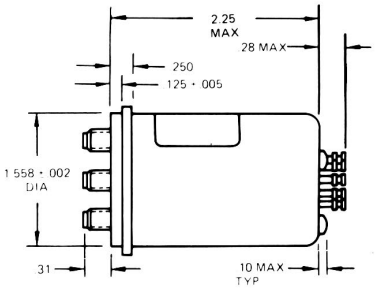
Voltage:	20 to 30Vdc
Coil Resistance:	205 ± 15 Ohms @ 20°C
Current:	170mA max @ 28Vdc and 20°C
Switching Time:	20 milliseconds max @ 28Vdc and 20°C
Impedance:	50 Ohms nominal
Temperature:	-55°C to 85°C
Vibration:	10g's sine/random
Life:	1,000,000 cycles min
Weight:	5.5 oz. max for the SP6T

Dimensions

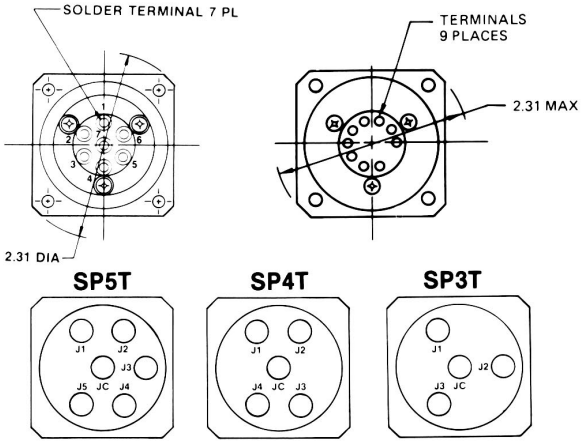




P/N 143C70600
P/N 144C70600
P/N 145C70600
P/N 146C70600



P/N 146C70600-30



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.