

DowKey™

Microwave Switches

Company Profile

Dow-Key Microwave, a subsidiary of Dover Corporation and a leader in the design and fabrication of switching products, has supplied the aerospace, military and communication industry with state-of-the-art products to direct RF energy since 1945. To date, thousands of designs have been created and manufactured at its facility located in Ventura, California, USA. Dow-Key offers switching products to four major markets – Commercial, Military, Avionics, and Hi-Rel/Space. These products include individual coaxial, waveguide, board mount, and MEMS switches along with custom integrated assemblies and switch matrices.

Location

Dow-Key Microwave is located in Ventura, California approximately one hour north of the Los Angeles International Airport with ready access to the 101 Ventura Highway.

Capabilities and Facilities

Dow-Key constantly maintains and updates in-house capability in design, machining, processing, assembly, and test of existing and new products. The company operates in a new 40,000 square foot building containing administrative, quality, engineering, and manufacturing groups. In support of manufacturing functions, Dow-Key has a class 100 and a 100K clean room, machine shop, environmental test lab, CAD design center, and production test areas. Its test labs use the most current RF test equipment and place an emphasis on developing test automation utilizing the latest industry tools.

Engineering

With many years of combined switch experience, Dow-Key's engineering team is considered by many to be the switch industry's best in both design and manufacturing support. Innovative engineering solutions achieved through active participation in customer design efforts along with direct technical support help to insure program success. Please feel free to contact Dow-Key's technical staff for all of your design support needs.

Quality Management

Dow-Key Microwave has developed and implemented a quality management system to satisfy the requirements of its customers. This also results in the ability to streamline internal and external company processes, improve product reliability and reduce cost. Its quality system has been registered through the ISO accreditation councils of the RvA and ANSI-RAB QMS, assuring that Dow-Key's Quality system is compliant to the ISO 9001 standard.

General

At Dow-Key you are not limited to the catalog products on the pages that follow. Requests for modification of standard items and their specifications in order to meet specific customer needs are always welcome. Inquiries regarding custom integrated components or switch assemblies are also always appreciated.

New product information is constantly being added in the form of industry publication press releases and through the corporate website at www.dowkey.com. Please visit this site for general company information and standard product descriptions and specifications. Dow-Key Microwave, "*The Solutions Company*", is waiting to assist you with all of your switch requirements.

This catalog is intended to be used as a guide in selecting the proper type of switch product or switching function for a given application and is subject to change without notification at any time. Please refer to our website for catalog updates and corrections along with new product information.

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Ordering:

The information found in this catalog or on our Website, www.dowkey.com, should be sufficient for you to select a particular Dow-Key product. In those cases where additional information is required, call Dow-Key directly or our local Dow-Key Sales Representative who will provide you with price and delivery information.

When placing your order, please include the part number, product name, quantity, and shipping instructions. In the case of a non-standard product, a full description of desired features must accompany your order to avoid any error.

Send Orders to:

Dow-Key Microwave
4822 McGrath Street
Ventura, CA 93003 U.S.A.

Or send them in care of our Sales Representative in your area. A complete listing of our Representatives can be found on our Website www.dowkey.com.

Orders will be accepted by way of U.S. mail, telephone, Fax, or Email. Confirmation of orders on your standard Purchase Order is required.

Telephone: (805) 650-0260
Fax: (805) 650-1734
Email: ASKDK@DowKey.com

Domestic Terms:

Net 30 days, F.O.B. Dow-Key plant, Ventura, California, U.S.A. unless otherwise specified. Shipments made to firms are on a C.O.D. basis unless credit has been established or on receipt of advance payment. American Express, MasterCard and Visa are also accepted

Export Terms:

Unless other terms have been agreed upon in advance, export terms are either payment in advance of shipment or against a confirmed irrevocable letter of credit. All prices are F.O.B. Ventura, California, U.S.A.

Shipping:

Orders within the United States and Canada will be shipped via United Parcel Service Ground unless other instructions are received. Shipment to all other countries will be by customer direction.

Packaging:

All products shipped from Dow-Key Microwave, Ventura, California are packaged in accordance with best commercial practices unless otherwise specified in the contract or purchase order.

Delivery:

Most standard products are available from stock or within our typical manufacturing lead-time of 4 to 8 weeks after receipt of order.

Source Inspection:

Should Customer Source Inspection of product be required, a charge of \$250.00 per occurrence will apply.

Application and Technical Assistance:

Dow-Key provides a knowledgeable and experienced engineering staff to work closely with customers in product design and application development as well as minor modifications to existing standard products. This service is also available for the design of individual specialized switching components or complex switching systems.

Warranty:

Dow-Key Microwave Corporation warrants all switch products to be free of defects in material and workmanship for a period of one year after the date of initial shipment. The limit of liability under this warranty is to repair, replace or refund purchase price on any product or part thereof that is returned by the purchaser and proves to be defective after examination by Dow-Key. This warranty does not extend to any products mishandled, misused or subjected to abuse or neglect in storage, transportation or use. Repairs or alterations made without consent or knowledge of Dow-Key Microwave Corporation will invalidate this warranty. This warranty supercedes all others, either expressed or implied.

Return Material Authorization:

Please call Dow-Key to receive a Return Material Authorization (RMA) number prior to returning any item for service. Items returned to Dow-Key without a RMA number are subject to return without evaluation or any work being done. Dow Key will not accept COD freight charges for returned items.

Dow-Key Terms and Conditions:

Dow-Key Microwave Corporation Terms and Conditions apply to all orders unless other provisions have been previously agreed upon. A copy of Dow-Key's Terms and Conditions can be found at www.dowkey.com.

Certificate of Compliance:

If requested at order placement, a certificate of compliance is available upon shipment.

Minimum Order Amount:

Dow-Key's minimum order amount is \$250.00

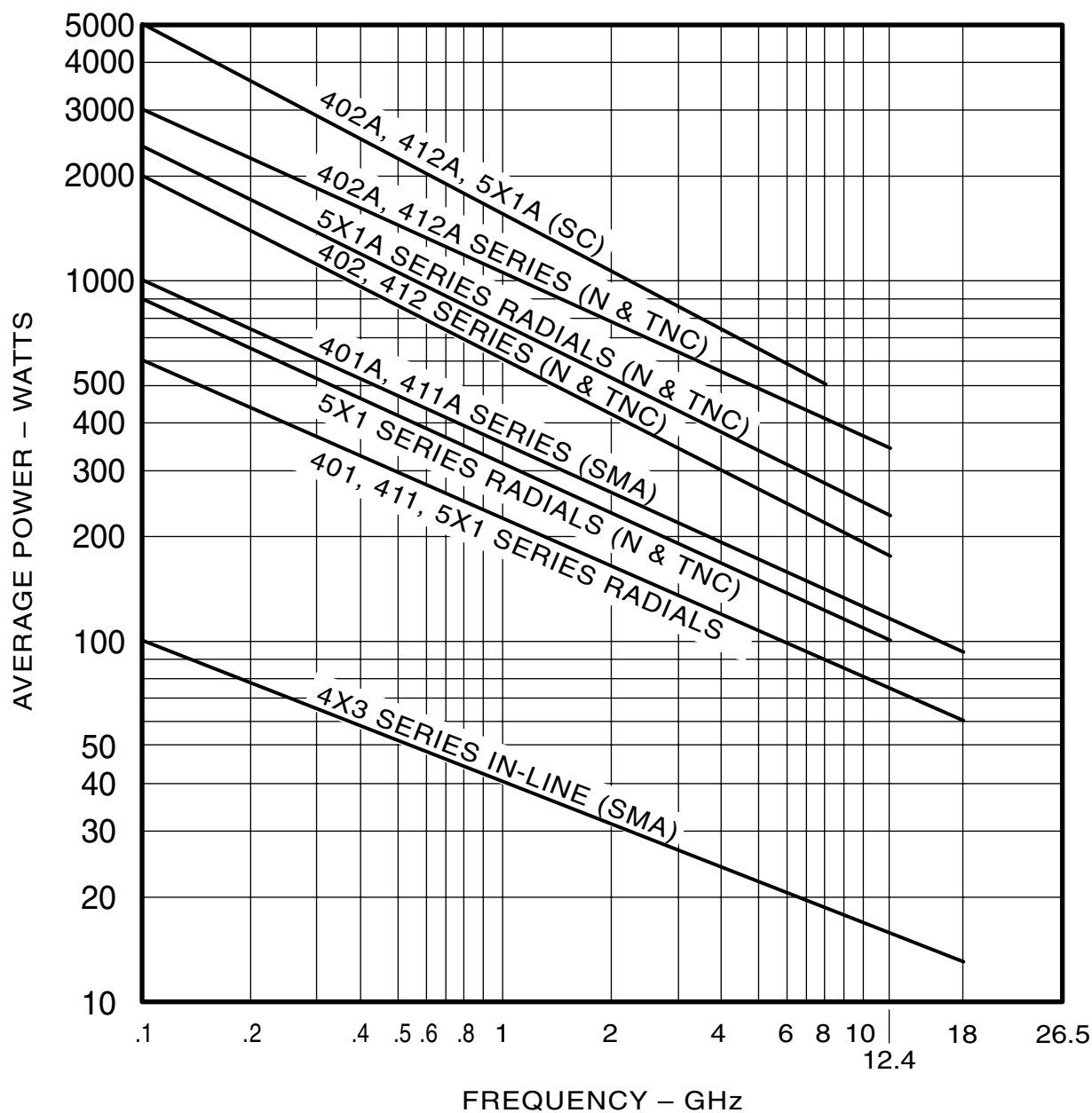
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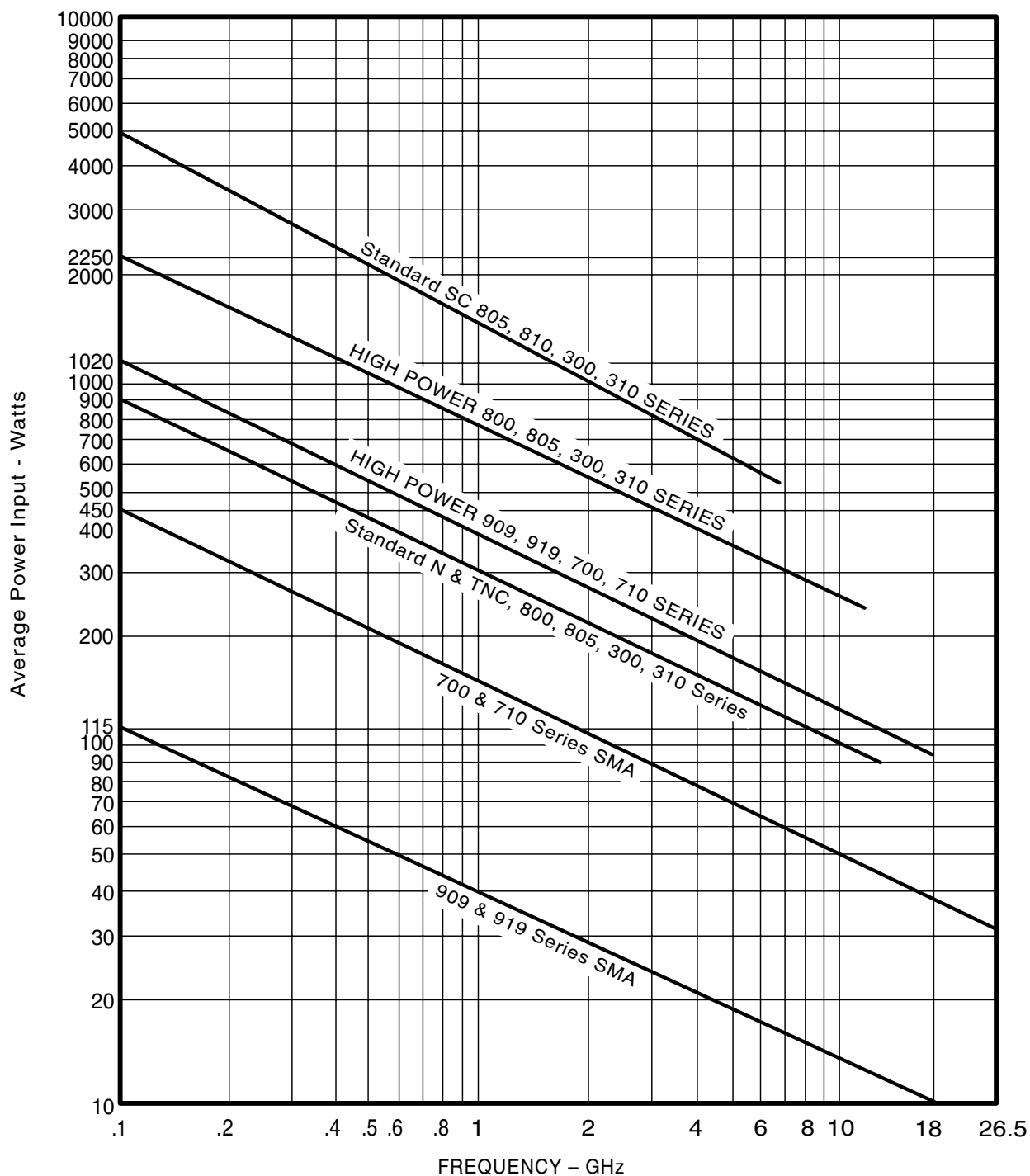
Dow-Key Microwave Corporation continually improves products as new technologies, materials and processes become available. We, therefore, reserve the right to alter, amend, discontinue, or replace any product and or specifications in this catalog at our sole discretion without prior notice.

Power Chart

This chart is based on the following conditions:
Ambient Temperature= 40° C; Altitude= Sea Level; VSWR= 1.0:1; Non-switching
UHF connectors are not recommended for applications above 300MHz.

Please consult factory for additional information.





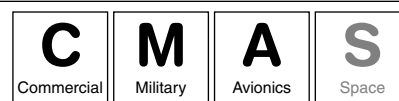
VSWR	Derating Factor	VSWR	Derating Factor
1.5:1	.96	3.5:1	.70
2.0:1	.88	4.0:1	.64
2.5:1	.84	4.5:1	.60
3.0:1	.75	5.0:1	.56

Dow-Key Part Numbering System

		X	A	B	C	-	D	E	FG	H	I	J				
(X) RELAY FAMILY													(J) SPECIAL OPTIONS			
4/5 50 Ohm System													A TTL HI, Commercial (2.4 - 5.5 Vdc)			
													B TTL HI, Military (2.4 - 5.5 Vdc)			
													E CMOS BCD Decoding Logic & MOSFET Driver, Commercial			
													L TTL Logic Low, Commercial (0.0 - 0.8 Vdc)			
													N CANBUS			
													T Ethernet			
(A) CONFIGURATION													(I) TERMINATIONS			
0	SPDT	A	SP10T									1	Short	5	50Ω, 5W	
1	Transfer	B	SP11T									2	Open	7	50Ω, Term, Port 1	
2	SPST	C	SP12T									3	50 Ω	8	50Ω, SMA	
3	SP3T	E	SP14T									4	75 Ω			
4	SP4T	F	SP16T													
5	SP5T															
6	SP6T															
7	SP7T															
8	SP8T															
9	SP9T															
(B) SIZE													(H) AUXILIARY/INDICATOR CONTACTS			
1	Std. Case, normally SMA connectors (Radial)												0	None		
2	Std. Case, normally N Connectors												2	Mechanical SPST		
3	Small Case, normally SMA (Multithrow)												3	Mechanical SPDT		
4	Intermediate Cavity, SMA/TNC												5	Optical		
5	Miniature Radial												6	Electronic		
6	Std. Case, normally N connectors (Radial)												(FG) CONNECTORS			
7	Microminiature Radial												01	N		
9	Microminiature Switch												02	BNC		
(C) SPECIAL OPTIONS													03	TNC		
A	High Power	K	26.5 GHz									04	UHF			
B	Bypass (2-4)	L	Flange Mount Cavity									05	C			
C	Special Mounting Bracket	M	Fast Switching									06	GPO*			
D	Bypass (1-2)	N	Remove STD Mounting Bracket									07	BMA (OSP)			
E	Bypass (3-4)	P	Power Connector									08	SMA			
F	Bypass (1-3)	R	Reverse Polarity									09	3.5mm (SMA Interface)			
G	Make Before Break												12	SMB		
H	HI-REL	S	Seal, Enhanced Epoxy or Gasket									14	TPS			
I	Immersion Seal	T	-55°C to +85°C									19	Pins (PC Board Drop-in)			
J	"D" Type Connector	V	Laser Seal									51	HN			
(D) ACTUATOR COIL TYPE													53	SC		
1	Manual												54	7/16		
2	Failsafe, Position 1												71	SMB		
3	Pulse Latching												(E) ACTUATOR COIL VOLTAGE			
4	Latching, Self Cutoff												0	Manual	7	20 Vdc
5	Normally Open												1	6 Vdc	8	24 Vdc
6	Failsafe, Suppression Diodes												2	12 Vdc	9	15 Vdc
7	Pulse Latching, Suppression Diodes												3	28 Vdc		
8	Latching Reset, Suppression Diodes												4	48 Vdc		
9	Normally Open, Suppression Diodes															

* GPO is a trademark of Gilbert Engineering

SPDT SECTION



RF Characteristics



Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.10	85	0.10
1-4	1.15	80	0.15
4-8	1.20	70	0.20
8-12	1.30	65	0.30
12-18	1.35	60	0.35
*18-26.5	1.50	55	0.50

* "K" option only. Ex: 401K-2208

Note: Typical performance dependent on selected options

401 Series SPDT Failsafe, SMA

Mechanical

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 195 mA

28 Vdc 95 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

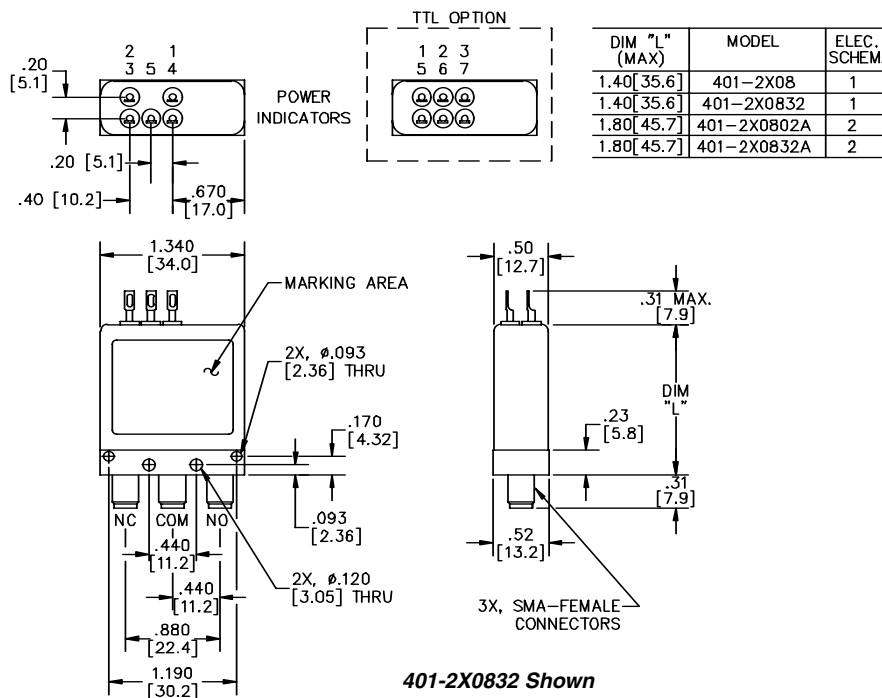
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

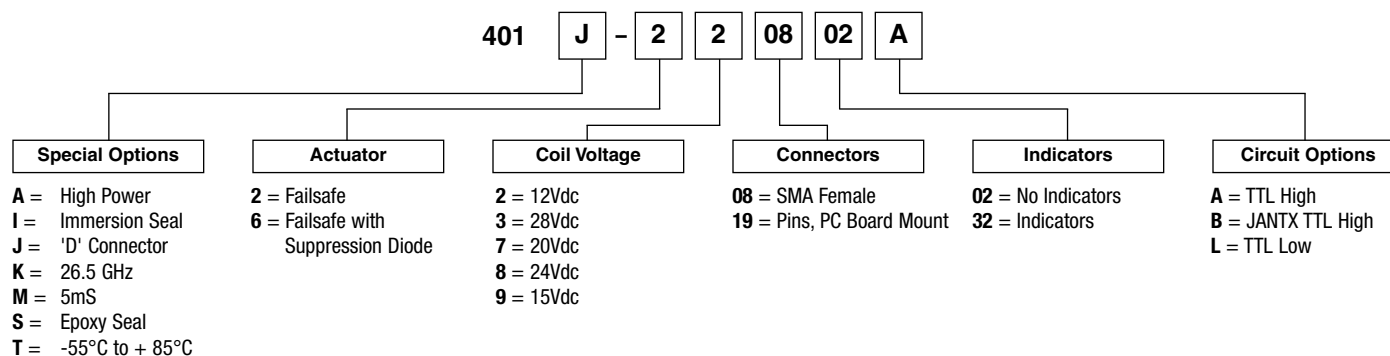
Nominal Weight:

2.5 oz., (71g.)



Part Number Selection

For Electrical Schematic
see page # 1-5





C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.10	85	0.10
1-4	1.15	80	0.15
4-8	1.20	70	0.20
8-12	1.30	65	0.30
12-18	1.35	60	0.35
*18-26.5	1.50	55	0.50

* "K" option only. Ex: 401K-3208

Note: Typical performance dependent on selected options

401 Series SPDT Latching, SMA**Mechanical****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

12 Vdc 230 mA

28 Vdc 120 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

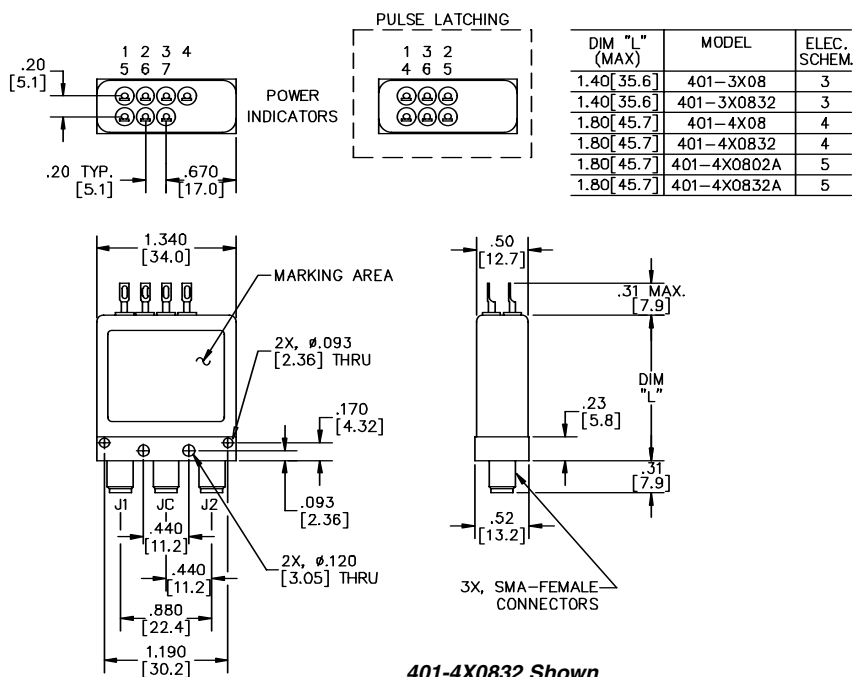
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

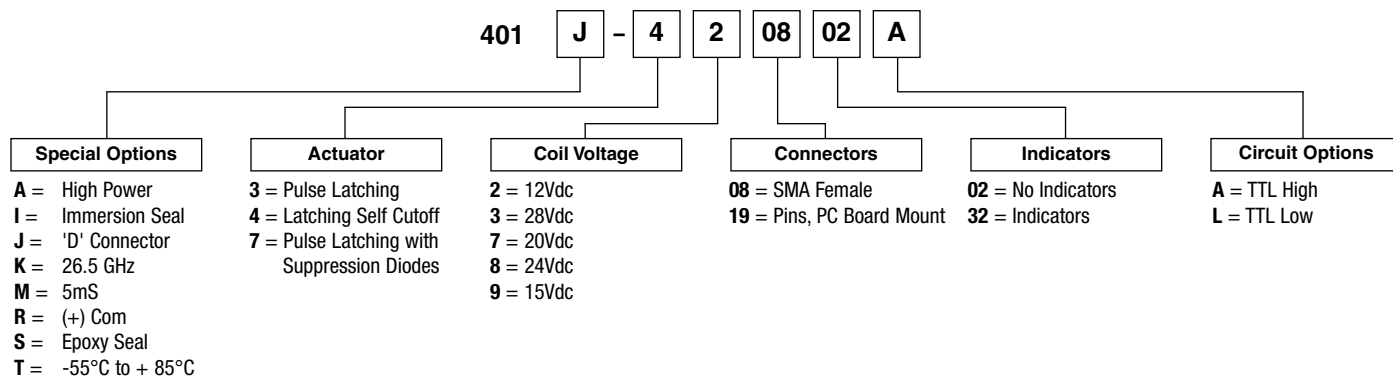
2.5 oz., (71g.)



401-4X0832 Shown

Part Number Selection

For Electrical Schematic
see page # 1-5





DowKey® Microwave
CORPORATION

C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.10	85	0.10
1-4	1.15	80	0.15
4-8	1.20	70	0.20
8-12	1.30	65	0.30
12-18	1.35	60	0.35
*18-26.5	1.50	55	0.50

* "K" option only. Ex: 403K-2208

Note: Typical performance dependent on selected options

403 Series SPDT Failsafe, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 195 mA

28 Vdc 95 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

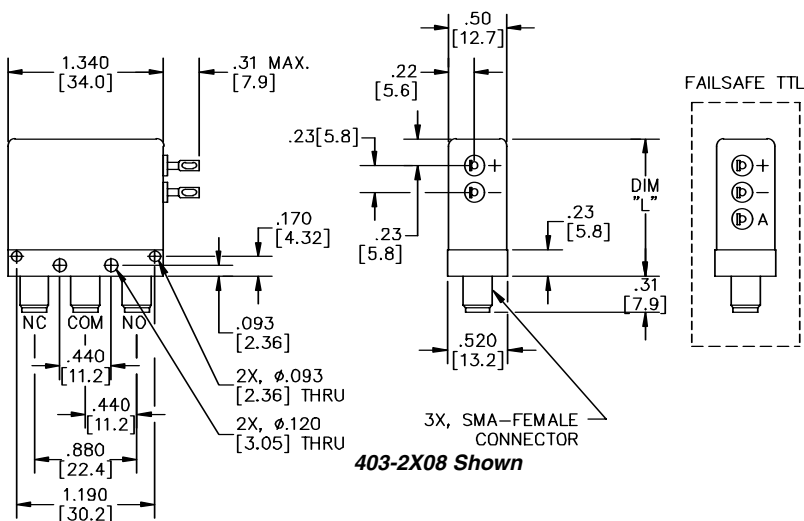
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

1.5 oz., (42g.)



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.18[30.0]	403-2X08	1
1.40[35.6]	403-2X0802A	2

Part Number Selection

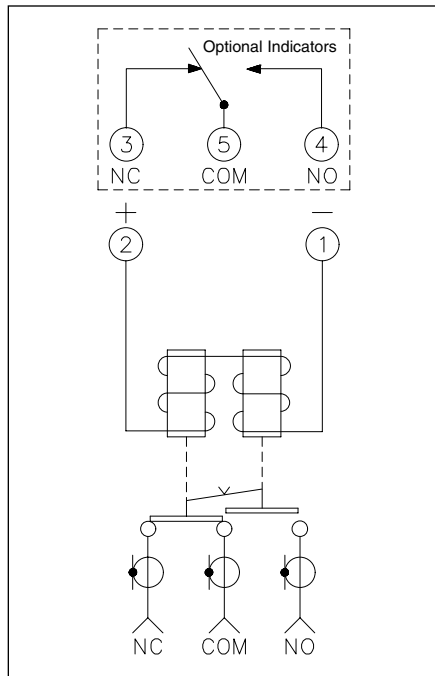
For Electrical Schematic
see page # 1-5

403 **A** - **2** **2** **08** **02** **A**

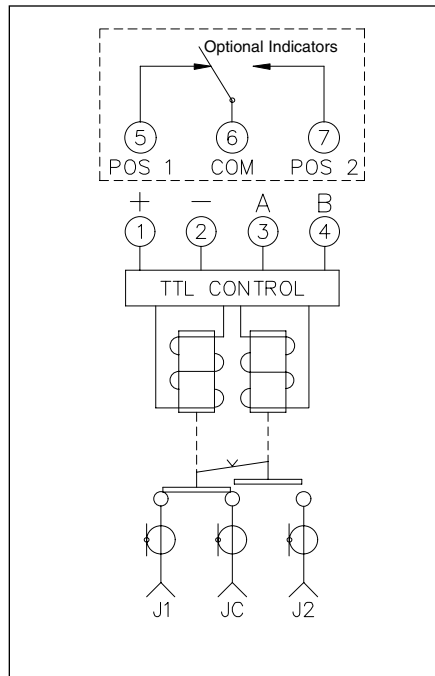
Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
A = High Power	2 = Failsafe	2 = 12Vdc	08 = SMA Female	02 = No Indicators	A = TTL High
I = Immersion Seal	6 = Failsafe with Suppression Diode	3 = 28Vdc	19 = Pins, PC Board Mount		
K = 26.5 GHz		7 = 20Vdc			
S = Epoxy Seal		8 = 24Vdc			
T = -55°C to +85°C		9 = 15Vdc			



1 401/403 Failsafe



2 401/403 Failsafe TTL



LOGIC TRUTH TABLE

FAILSAFE TTL - SCH #2

LOGIC TRUTH TABLE		
RF PATH	INDICATOR PATH	LOGIC INPUT "A"
NC-COM	NC-COM	0
NO-COM	NO-COM	1

"0" = 0.0V-0.8V

"1" = 2.4V-5.5V

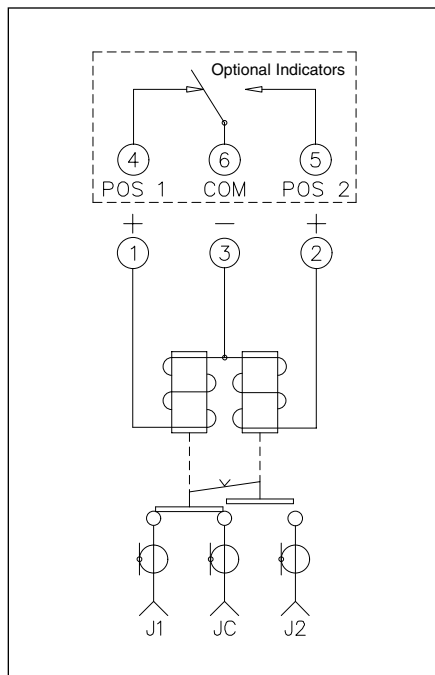
SELF CUTOFF TTL - SCH #5

LOGIC TRUTH TABLE			
RF PATH	INDICATOR PATH	LOGIC INPUT "A"	LOGIC INPUT "B"
JC-J1	COM-1	1	0
JC-J2	COM-2	0	1

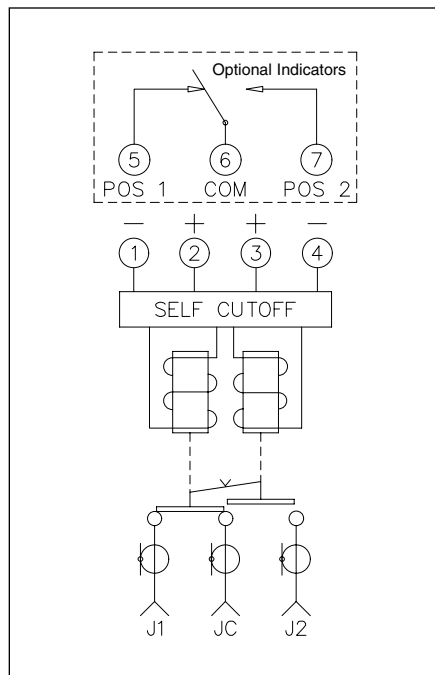
"0" = 0.0V-0.8V

"1" = 2.4V-5.5V

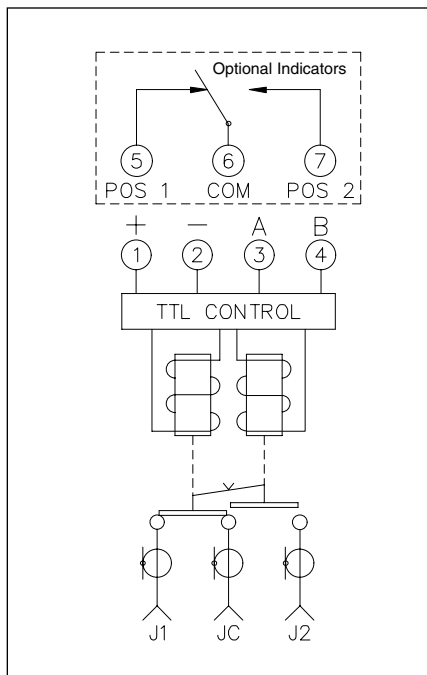
3 401 Pulse Latch



4 401 Self Cutoff



5 401 Self Cutoff TTL




DowKey® Microwave
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C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	85	0.15
1-2	1.20	80	0.20
2-4	1.25	70	0.25
4-8	1.45	60	0.40
8-12.4	1.50	60	0.50

Note: RF characteristics for Type N & TNC female connectors, consult Dow-Key for other connector configurations

**402 Series SPDT Failsafe
with TTL & Indicator Option, N**
Specifications
Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 275 mA

28 Vdc 115 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

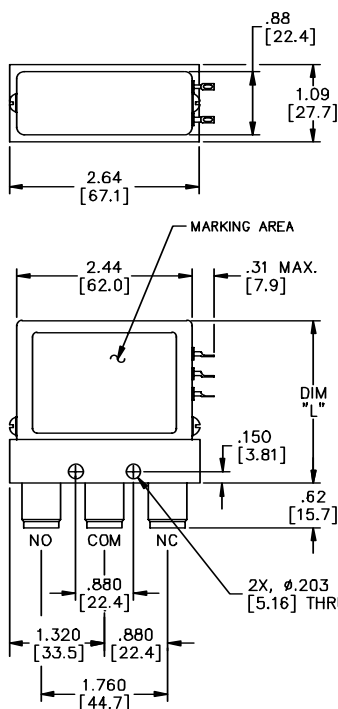
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

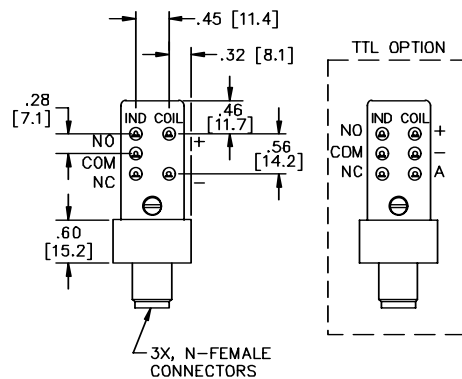
50G, 1/2 Sine, 11mS

Nominal Weight:

9.0 oz., (260g.)



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.30 [58.4]	402-2X01	1
2.30 [58.4]	402-2X0132	1
2.30 [58.4]	402-2X0102A	2
2.30 [58.4]	402-2X0132A	2



402-2X0132 Shown

Part Number Selection

 For Electrical Schematic
see page # 1-8

402 J - 2 2 01 02 A

Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
A = High Power J = 'D' Connector P = Power Connector T = -55°C to + 85°C	2 = Failsafe 6 = Failsafe with Suppression Diode	2 = 12Vdc 3 = 28Vdc 4 = 48Vdc 7 = 20Vdc 8 = 24Vdc 9 = 15Vdc	01 = N Female 02 = BNC Female 03 = TNC Female 53 = SC Female*	02 = No Indicators 32 = Indicators	A = TTL High B = JANTX TTL High L = TTL Low

*1" connector spacing
Consult Dow-Key for dimension



DowKey® Microwave
CORPORATION

C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	85	0.15
1-2	1.20	80	0.20
2-4	1.25	70	0.25
4-8	1.35	60	0.40
8-12.4	1.50	60	0.50

Note: RF characteristics are for Type N & TNC female connectors, consult Dow-Key for other connector configurations



402 Series SPDT Latching with Indicator Option, N

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 320 mA

28 Vdc 135 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

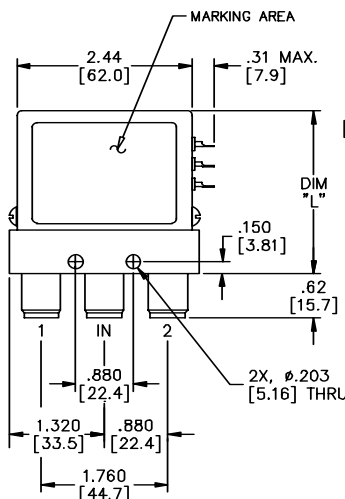
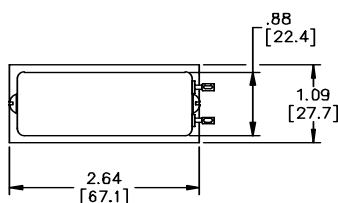
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

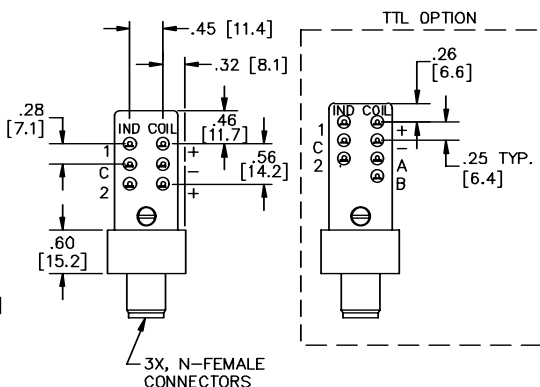
50 G, 1/2 Sine, 11 mS

Nominal Weight:

9.0 oz. (260g.)



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.30 [58.4]	402-3X01	3
2.30 [58.4]	402-3X0132	3
2.40 [61.0]	402-4X01	4
2.40 [61.0]	402-4X0132	4
2.40 [61.0]	402-4X0102A	5
2.40 [61.0]	402-4X0132A	5



402-3X0132 Shown

Part Number Selection

For Electrical Schematic
see page # 1-8

402 J - 4 2 01 02 A

Special Options

A = High Power
J = 'D' Connector
P = Power Connector
R = (+) Com
T = -55°C to +85°C

Actuator

3 = Pulse Latching
4 = Latching Self Cutoff
7 = Pulse Latching with
Suppression Diodes

Coil Voltage

2 = 12Vdc
3 = 28Vdc
4 = 48Vdc
7 = 20Vdc
8 = 24Vdc
9 = 15Vdc

Connectors

01 = N Female
02 = BNC Female
03 = TNC Female
53 = SC Female*

Indicators

02 = No Indicators
32 = Indicators

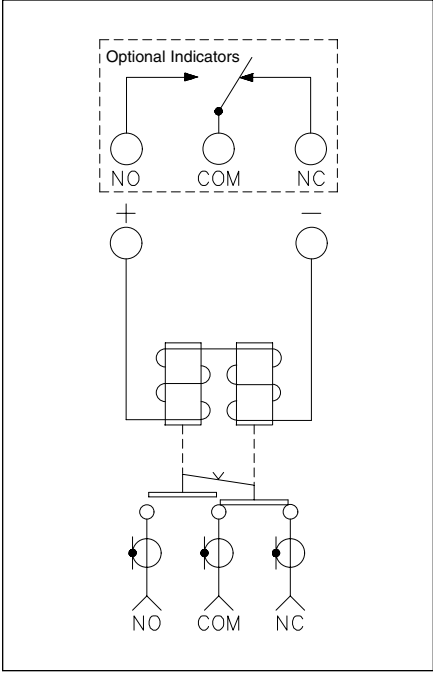
Circuit Options

A = TTL High
L = TTL Low

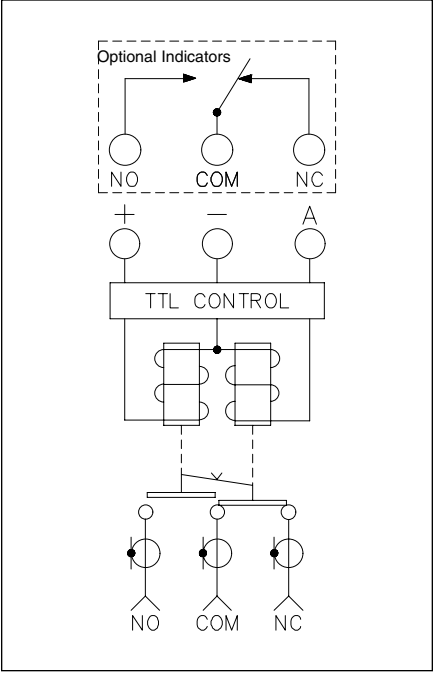
*1" connector spacing
Consult Dow-Key for dimensions



1 402 Failsafe



2 402 Failsafe TTL



LOGIC TRUTH TABLE

FAILSAFE TTL - SCH #2

LOGIC TRUTH TABLE		
RF PATH	INDICATOR PATH	LOGIC INPUT "A"
NC-COM	NC-COM	0
NO-COM	NO-COM	1

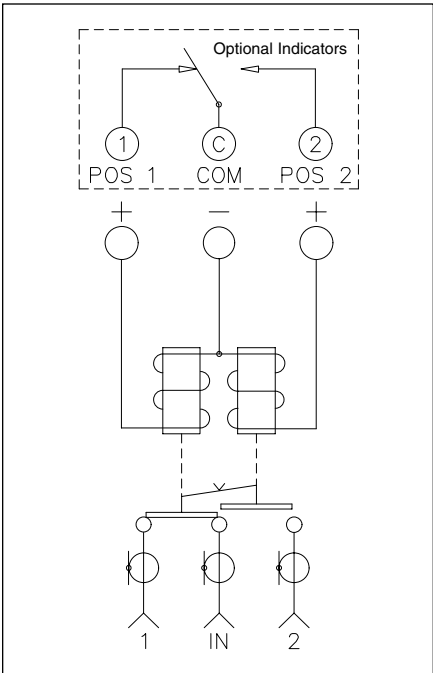
"0" = 0.0V-0.8V
"1" = 2.4V-5.5V

SELF CUTOFF TTL - SCH #5

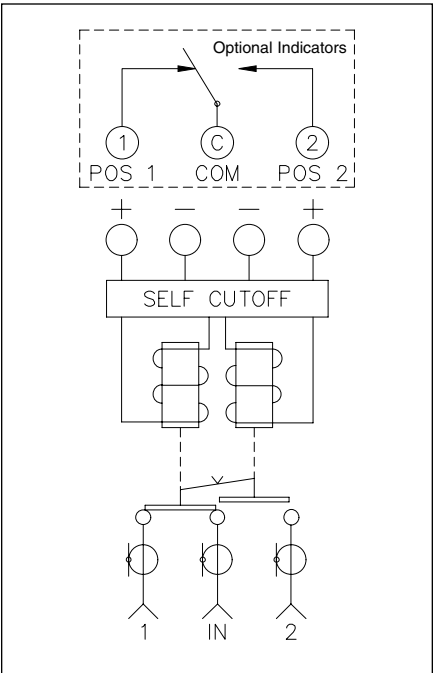
LOGIC TRUTH TABLE			
RF PATH	INDICATOR PATH	LOGIC INPUT "A"	LOGIC INPUT "B"
IN-1	COM-1	1	0
IN-2	COM-2	0	1

"0" = 0.0V-0.8V
"1" = 2.4V-5.5V

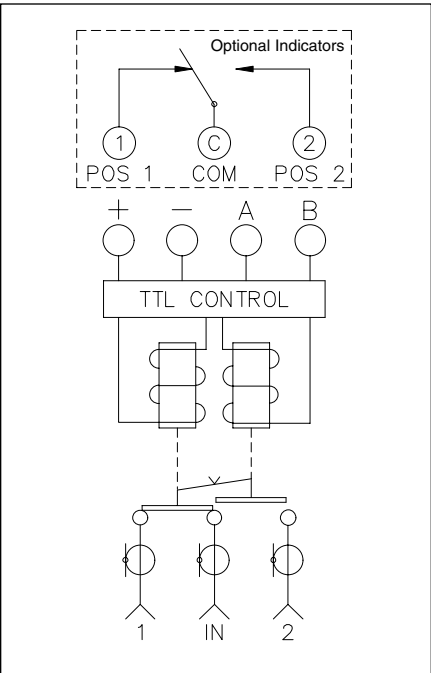
3 402 Pulse Latch



4 402 Self Cutoff



5 402 Self Cutoff TTL





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**521 Series SPDT
Failsafe, SMA**

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12	1.40	60	0.40
12-18	1.50	60	0.50
*18-26.5	1.60	55	0.70

* "K" option only

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 690 mA

28 Vdc 295 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

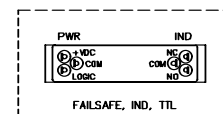
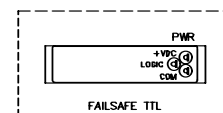
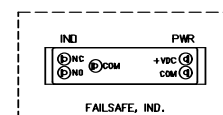
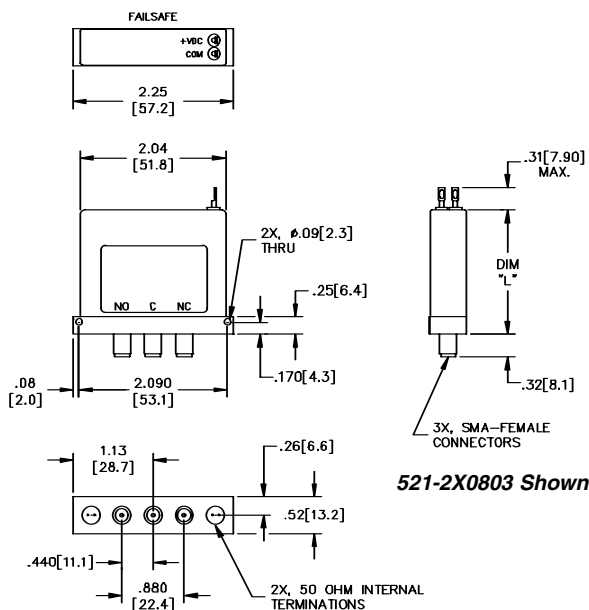
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

3 oz., (85g.)



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.28 [35.5]	521-2X08	1
1.53 [38.9]	521-2X0833	1
1.70 [43.2]	521-2X0803A	2
1.70 [43.2]	521-2X0833A	2

Part Number Selection

For Electrical Schematic
see page # 1-11

521 J - 2 2 08 03 A

Special Options	Actuator	Coil Voltage	Connectors	Indicators/Terminations	Circuit Option
I = Immersion Seal J = 'D' Connector K = 26.5 GHz S = Epoxy Seal T = -55°C to +85°C	2 = Failsafe, Position 1 6 = Failsafe, Position 1 Suppression Diodes	2 = 12 Vdc 3 = 28 Vdc 8 = 24 Vdc 9 = 15 Vdc	08 = SMA Female	02 = No Indicators, Underterminated Ports 03 = No Indicators, 2W Terminations 05 = No Indicators, 5W Terminations 08 = No Indicators, 2W External Terminations 32 = Indicators, Underterminated Ports 33 = Indicators, 2W Terminations 35 = Indicators, 5W Terminations 38 = Indicators, 2W External Terminations	A = TTL High L = TTL Low



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**521 Series SPDT
Latching, SMA**

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12	1.40	60	0.40
12-18	1.50	60	0.50
*18-26.5	1.60	55	0.70

* "K" option only

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 450 mA

28 Vdc 190 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

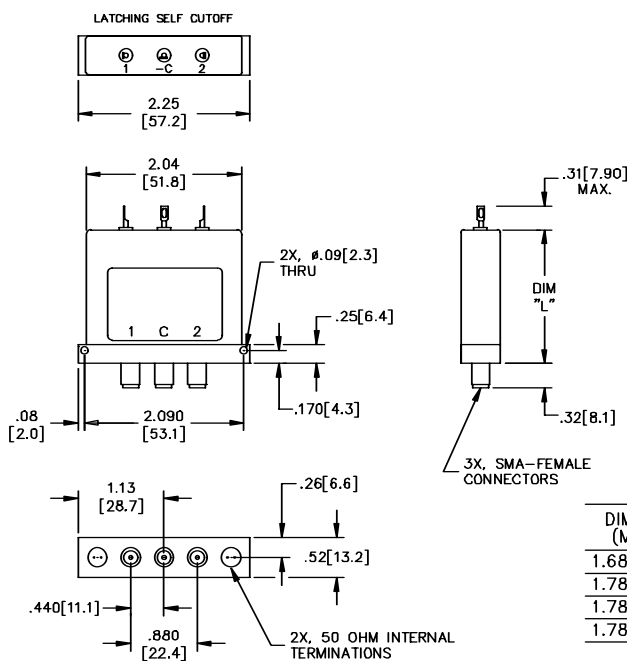
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

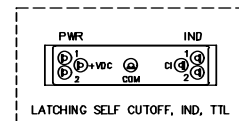
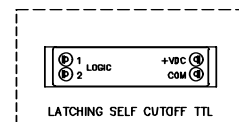
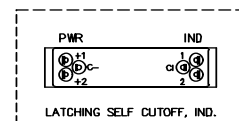
50 G, 1/2 Sine, 11 mS

Nominal Weight:

5 oz., (142g.)



521-4X0803 Shown



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.68 [42.7]	521-4X08	3
1.78 [45.2]	521-4X0833	3
1.78 [45.2]	521-4X0803A	4
1.78 [45.2]	521-4X0833A	4

For Electrical Schematic
see page # 1-11

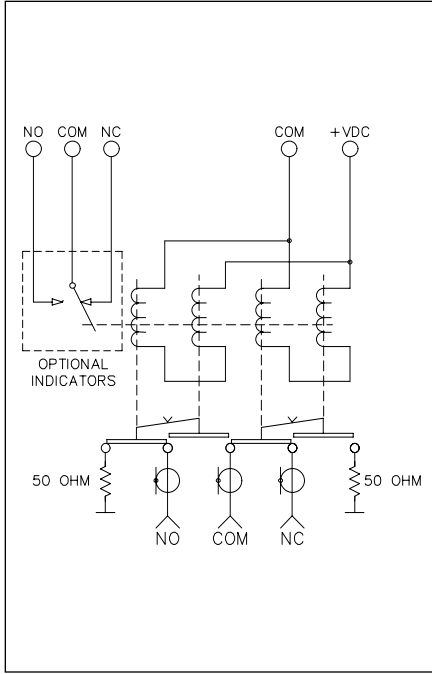
Part Number Selection

521 J - 4 2 08 03 A

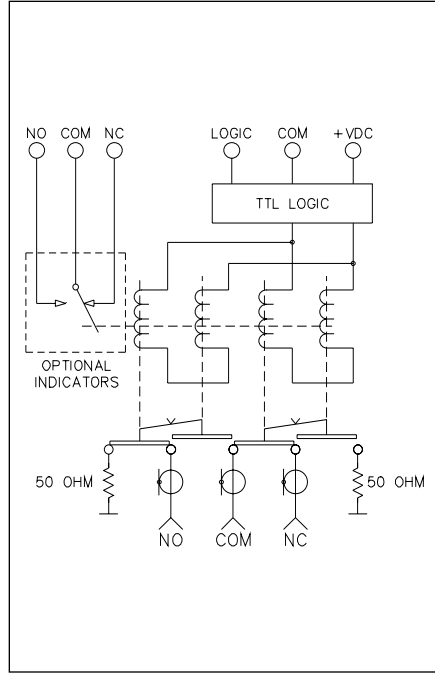
Special Options	Actuator	Coil Voltage	Connectors	Indicators/Terminations	Circuit Option
I = Immersion Seal J = 'D' Connector K = 26.5 GHz R = Common Positive S = Epoxy Seal T = -55°C to +85°C	3 = Pulse Latching 4 = Latching Self Cutoff	2 = 12 Vdc 3 = 28 Vdc 8 = 24 Vdc 9 = 15 Vdc	08 = SMA Female	02 = No Indicators, Underterminated Ports 03 = No Indicators, 2W Terminations 05 = No Indicators, 5W Terminations 08 = No Indicators, 2W External Terminations 32 = Indicators, Underterminated Ports 33 = Indicators, 2W Terminations 35 = Indicators, 5W Terminations 38 = Indicators, 2W External Terminations	A = TTL High L = TTL Low



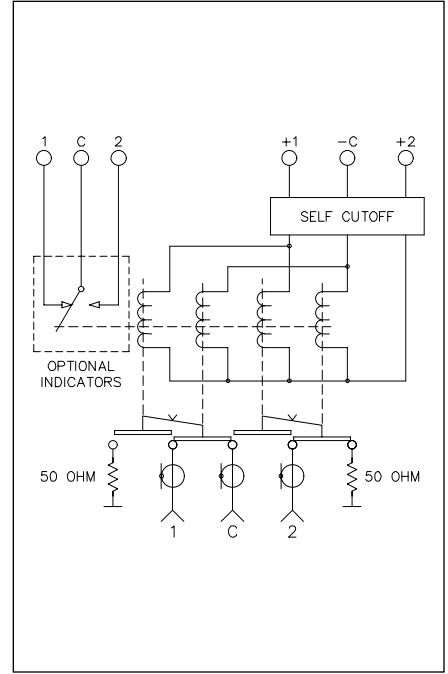
1 521 Failsafe



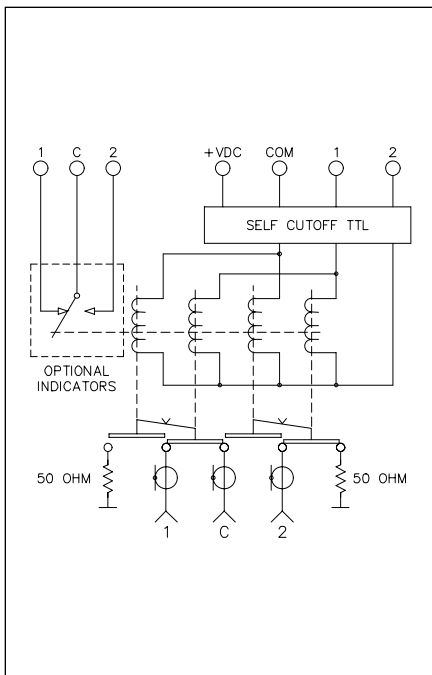
2 521 Failsafe TTL



3 521 Self Cutoff



4 521 Self Cutoff TTL



LOGIC TRUTH TABLE

FAILSAFE TTL - SCH #3

LOGIC TRUTH TABLE		
RF PATH	INDICATOR PATH	LOGIC INPUT
NC-COM	NC-COM	0
NO-COM	NO-COM	1

"0" = 0.0V-0.8V

"1" = 2.4V-5.5V

SELF CUTOFF TTL - SCH #5

LOGIC TRUTH TABLE			
RF PATH	INDICATOR PATH	LOGIC INPUT "1"	LOGIC INPUT "2"
C-1	C-1	1	0
C-2	C-2	0	1

"0" = 0.0V-0.8V

"1" = 2.4V-5.5V



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909 Series SPDT Latching, SMA

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

28 Vdc 95 mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

20g's sine/random

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

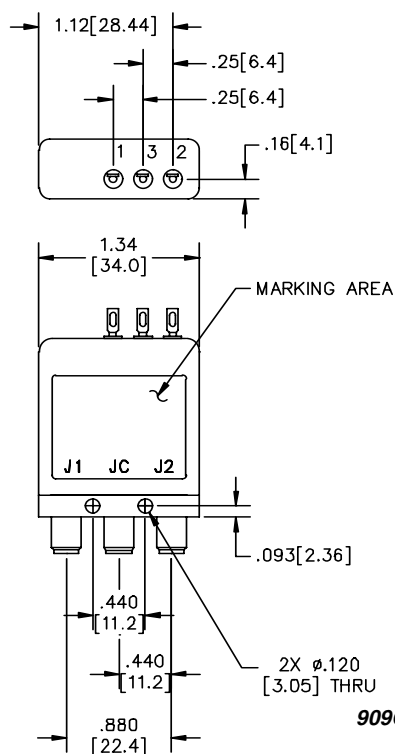
Nominal Weight:

2.0 oz., (57g.)

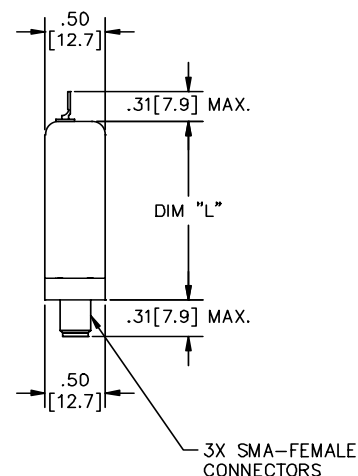
RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	80	0.15
1-4	1.25	80	0.20
4-8	1.35	70	0.35
8-12.4	1.45	60	0.45
12.4-18	1.45	60	0.45

Mechanical

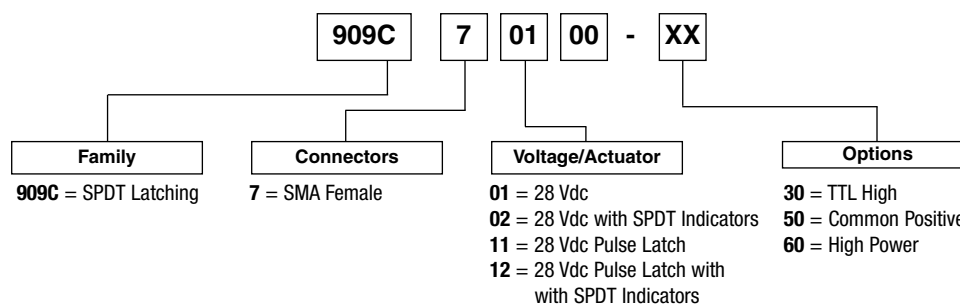


DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.30 [33.1]	909C70100	1
1.30 [33.1]	909C71100	1
1.50 [38.1]	909C70200	3
1.50 [38.1]	909C71200	3



909C70100 Shown

Part Number Selection



For Electrical Schematic
see page # 1-14



C Commercial	M Military	A Avionics	S Space
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**RF Characteristics**

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	80	0.15
1-4	1.25	80	0.20
4-8	1.35	70	0.35
8-12.4	1.45	60	0.45
12.4-18	1.50	60	0.50

919 Series SPDT Failsafe**Specifications****Operating Voltage:**

(across temperature range)

28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 120mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

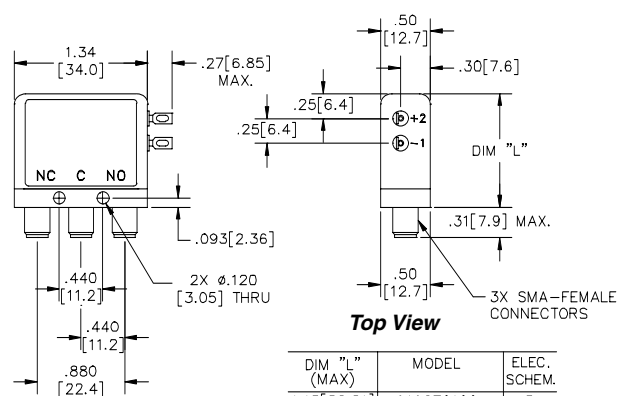
20g's sine/random

Mechanical Shock, Non-Operating:

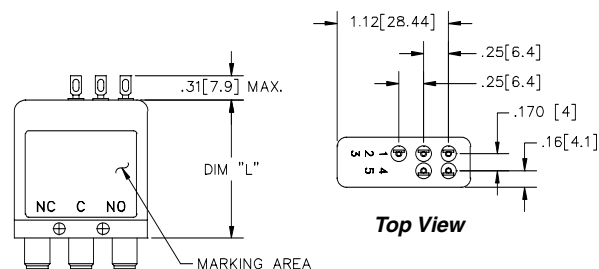
50G, 1/2 Sine, 11mS

Nominal Weight:

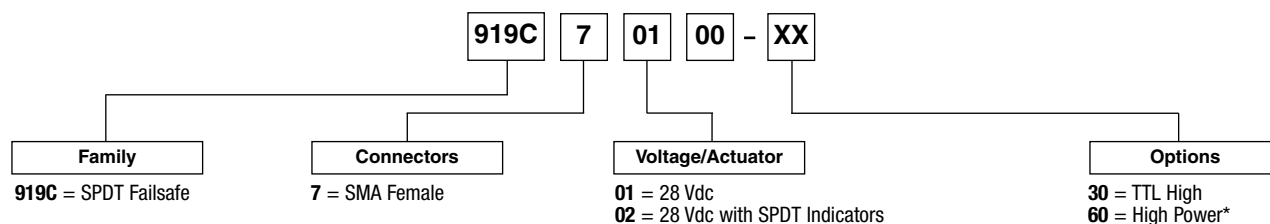
2.0 oz., (57g.)

Mechanical

919C70100 Shown



919C70200 Shown

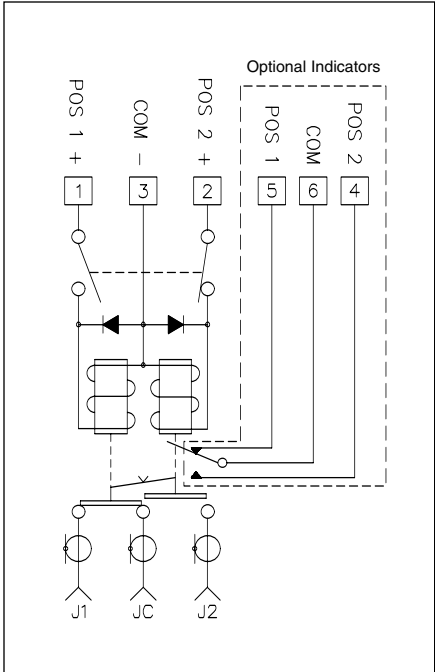
Part Number SelectionFor Electrical Schematic
see page # 1-14

*Consult Power Chart on page #

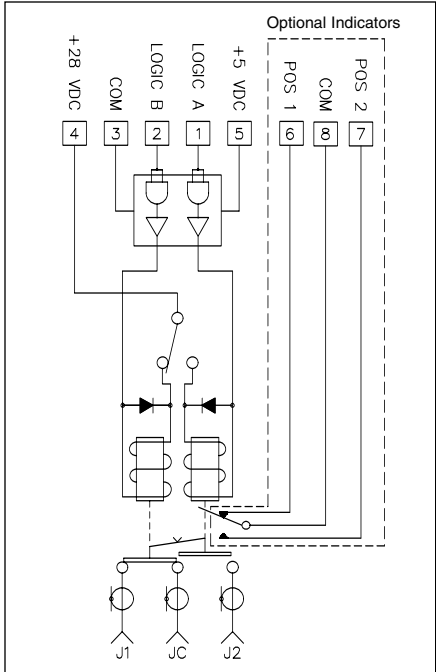


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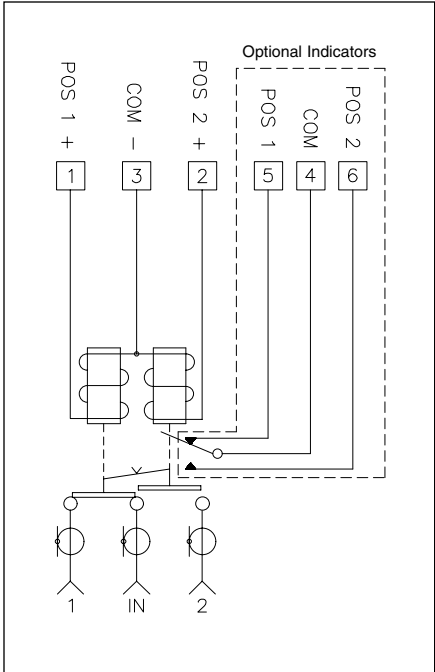
1 909 Self Cutoff



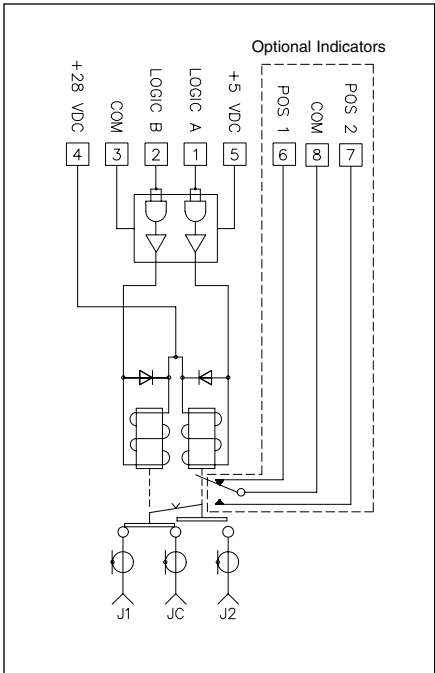
2 909 Self Cutoff TTL



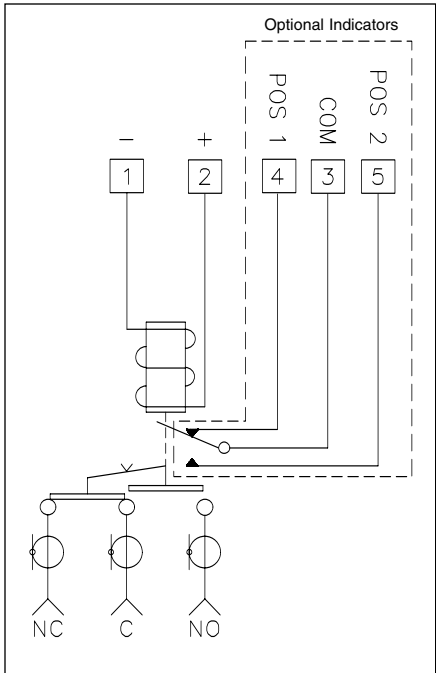
3 909 Pulse Latch



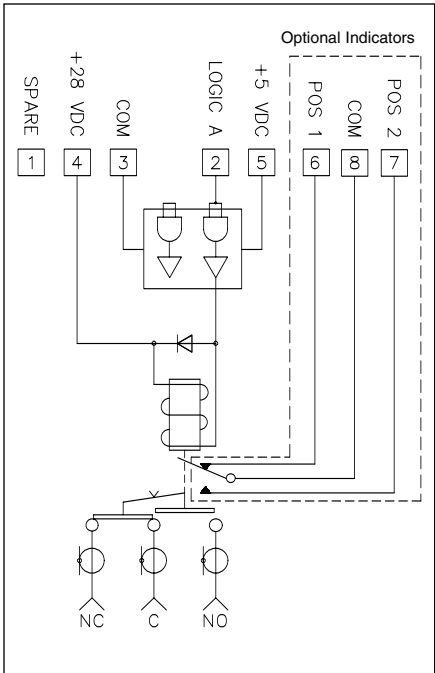
4 909 Pulse Latch TTL



5 919 Failsafe



6 919 Failsafe TTL





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Military

A
Avionics

S
Space

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.20	75	0.20
1-4	1.30	60	0.30
4-8	1.40	60	0.40
8-12.4	1.50	60	0.50

Note: RF Characteristics are for type N & TNC Female connectors, consult Dow-Key for other connector configurations



805 Series SPDT Latching

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 310mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

20g's sine/random

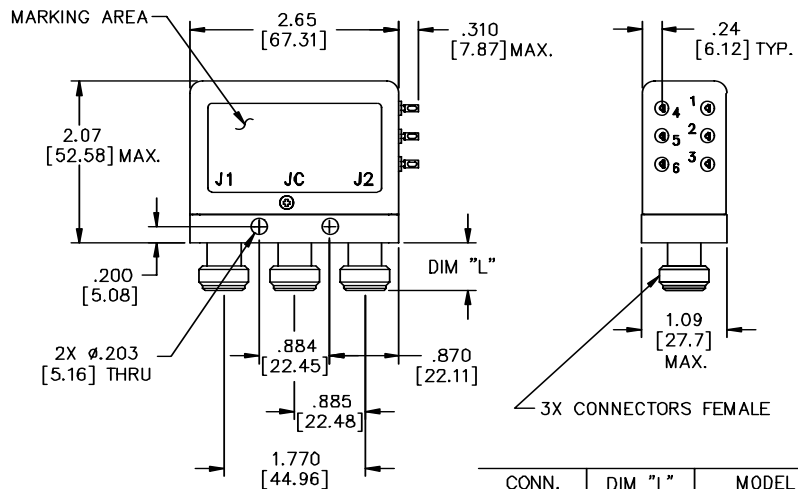
Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

8.5 oz., (241g.)

Mechanical

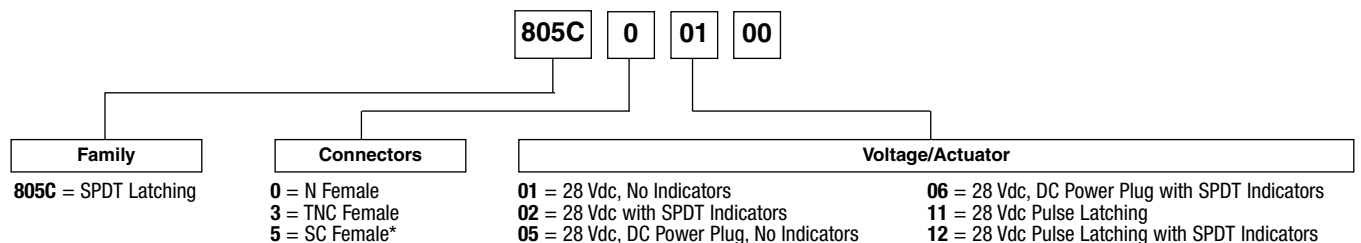


805C00200 Shown

CONN.	DIM "L" (MAX)	MODEL	ELEC. SCHEM.
N CONN.	.60 [15.25]	805C00100	1
N CONN.	.60 [15.25]	805C00200	1
N CONN.	.60 [15.25]	805C01100	2
N CONN.	.60 [15.25]	805C01200	2
TNC CONN.	.56 [14.23]	805C30100	1
TNC CONN.	.56 [14.23]	805C30200	1
TNC CONN.	.56 [14.23]	805C31100	2
TNC CONN.	.56 [14.23]	805C31200	2

Part Number Selection

For Electrical Schematic
see page # 1-17



*1" connector spacing
Consult Dow-Key for Dimensions



C Commercial	M Military	A Avionics	S Space
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810 Series SPDT Failsafe with indicators

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 160mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

20g's sine/random

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

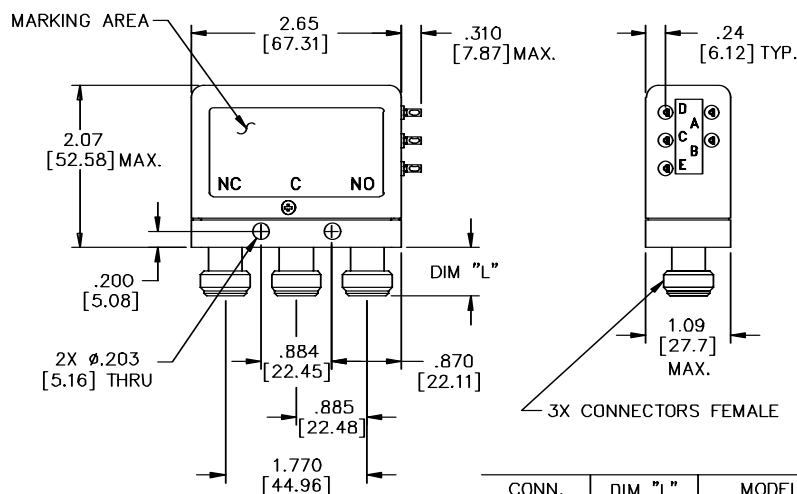
8.5 oz., (241g.)

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.20	75	0.20
1-4	1.30	60	0.30
4-8	1.40	60	0.40
8-12.4	1.50	60	0.50

Note: RF Characteristics are for type N & TNC Female connectors, consult Dow-Key for other connector configurations

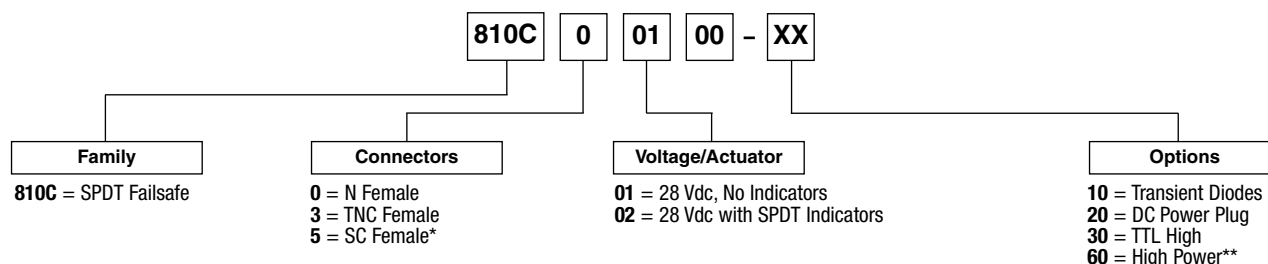
Mechanical



810C00200 Shown

CONN.	DIM "L" (MAX)	MODEL	ELEC. SCHEM.
N CONN.	.60[15.25]	810C00100	3
N CONN.	.60[15.25]	810C00200	3
TNC CONN.	.56[14.23]	810C30100	3
TNC CONN.	.56[14.23]	810C30200	3

Part Number Selection



*1" connector spacing
Consult Dow-Key for Dimensions

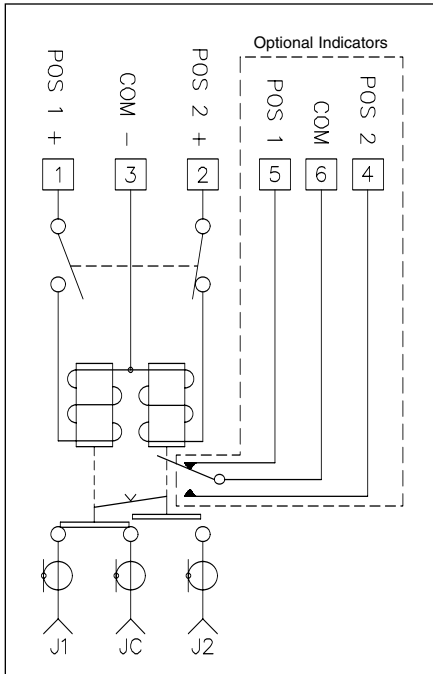
For Electrical Schematic
see page # 1-17

**Consult Power Chart on page #

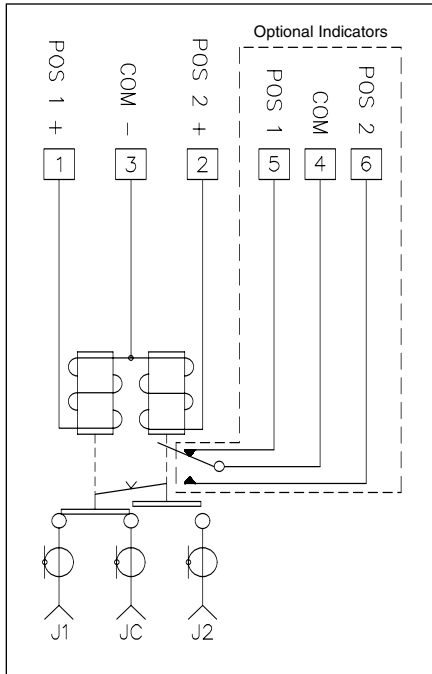


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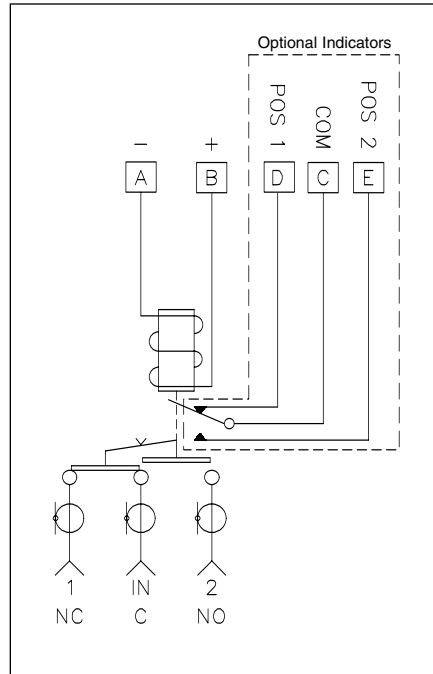
1 805 Self Cutoff



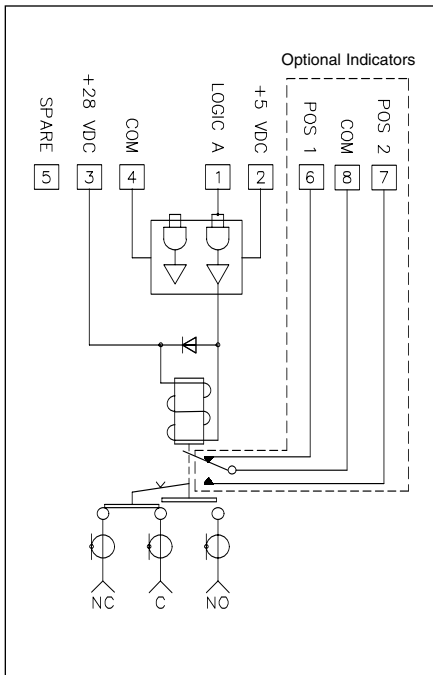
2 805 Pulse Latch



3 810 Failsafe



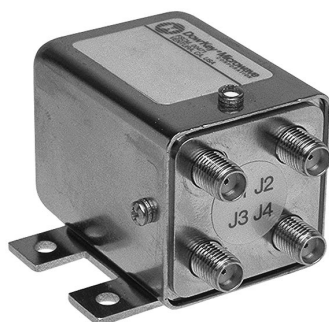
4 810 Failsafe TTL



TRANSFER SECTION



C Commercial	M Military	A Avionics	S Space
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411C Series Transfer Failsafe, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 360 mA

28 Vdc 145 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

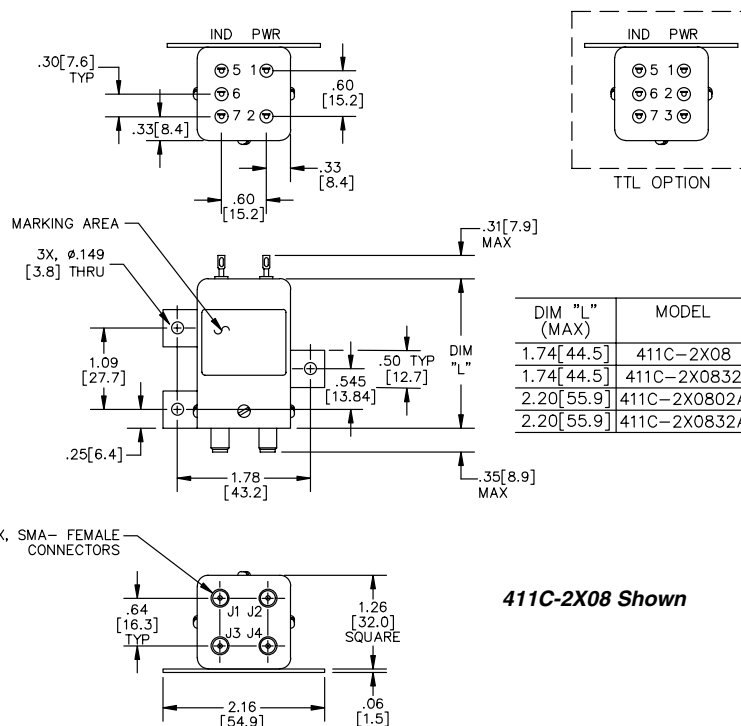
Nominal Weight:

4.0 oz., (115g.)

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.10	85	0.10
1-4	1.20	80	0.20
4-8	1.30	70	0.30
8-12	1.40	65	0.40
12-18	1.50	60	0.50

Mechanical



411C-2X08 Shown

Part Number Selection

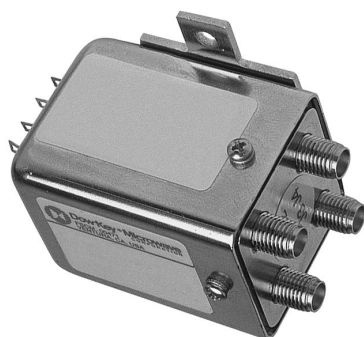
For Electrical Schematic
see page # 2.6

411C J - 2 2 01 02 A

Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
A = High Power B = Bypass (J2-J4) D = Bypass (J1-J2) E = Bypass (J3-J4) F = Bypass (J1-J3) I = Immersion Seal J = 'D' Connector N = No Mounting Bracket S = Epoxy Seal T = -55°C to +85°C	2 = Failsafe 6 = Failsafe with Suppression Diode	2 = 12Vdc 3 = 28Vdc 4 = 48Vdc 7 = 20Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female 71 = SMB Female	02 = No Indicators 32 = Indicators	A = TTL High B = JANTX TTL High L = TTL Low



C Commercial	M Military	A Avionics	S Space
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411C Series Transfer Latching, SMA

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.10	85	0.10
1-4	1.20	80	0.20
4-8	1.30	70	0.30
8-12	1.40	65	0.40
12-18	1.50	60	0.50

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

12 Vdc 320 mA

28 Vdc 185 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

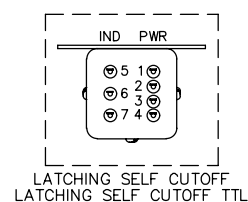
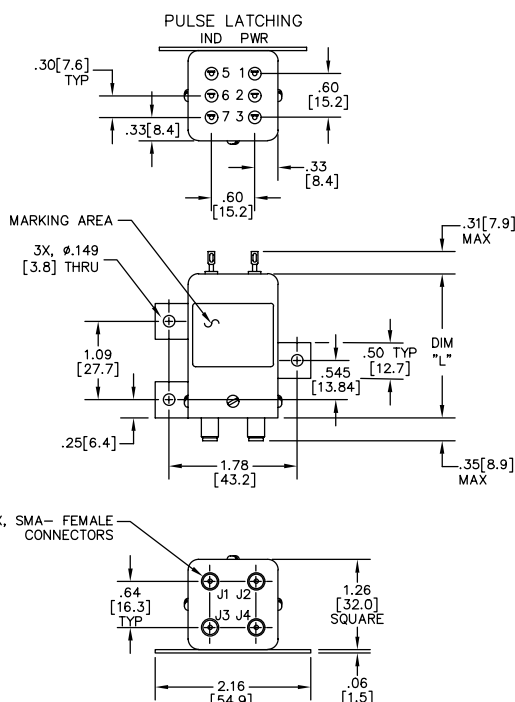
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

4.0 oz., (115g.)



DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.74[44.5]	411C-3X08	3
1.74[44.5]	411C-3X0832	3
2.20[55.9]	411C-4X08	4
2.20[55.9]	411C-4X0832	4
2.20[55.9]	411C-4X0802A	5
2.20[55.9]	411C-4X0832A	5

411C-3X08 Shown

**For Electrical Schematic
see page # 2-6**

Part Number Selection

411C J - 4 2 08 02 A

Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
A = High Power B = Bypass (J2-J4) D = Bypass (J1-J2) E = Bypass (J3-J4) F = Bypass (J1-J3) I = Immersion Seal J = 'D' Connector N = No Mounting Bracket R = (+) Com S = Epoxy Seal T = -55°C to +85°C	3 = Pulse Latching 4 = Self Cutoff 7 = Pulse Latching with Suppression Diode	2 = 12Vdc 3 = 28Vdc 4 = 48Vdc 7 = 20Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female 71 = SMB Female	02 = No Indicators 32 = Indicators	A = TTL High L = TTL Low N = CANBus



C Commercial	M Military	A Avionics	S Space
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RF Characteristics



Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	85	0.15
1-2	1.20	80	0.20
2-4	1.25	70	0.25
4-8	1.45	60	0.40
8-12.4	1.60	60	0.50

Note: RF characteristics for Type N & TNC female connectors, consult Dow-Key for other connector configurations

412 Series Transfer Failsafe, N

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 320 mA

28 Vdc 185 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

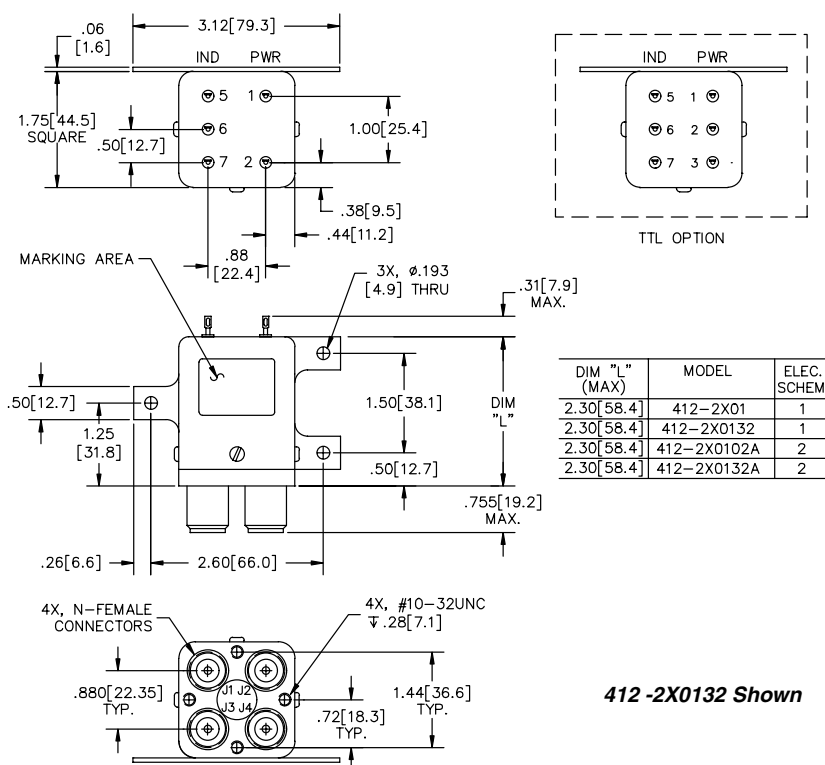
Mechanical Shock, Non-Operating:

30 G, 1/2 Sine, 11 mS

Nominal Weight:

14 oz., (397g.)

Mechanical



412-2X0132 Shown

For Electrical Schematic see page # 2-6

Part Number Selection

412 J - 2 2 01 02 A

Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
A = High Power C = Special Mounting Bracket J = 'D' Connector N = No Mounting Bracket P = Power Plug S = Epoxy Seal T = -55°C to + 85°C	2 = Failsafe 6 = Failsafe with Suppression Diode	2 = 12Vdc 3 = 28Vdc 7 = 20Vdc 8 = 24Vdc 9 = 15Vdc	01 = N Female 02 = BNC Female 03 = TNC Female 53 = SC Female*	02 = No Indicators 32 = Indicators	A = TTL High

*1" connector spacing
Consult Dow-Key for dimensions



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	85	0.15
1-2	1.20	80	0.20
2-4	1.25	70	0.25
4-8	1.45	60	0.40
8-12.4	1.60	60	0.50

Note: RF characteristics for Type N & TNC female connectors, consult Dow-Key for other connector configurations

**412 Series Latching****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

12 Vdc 320 mA

28 Vdc 185 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

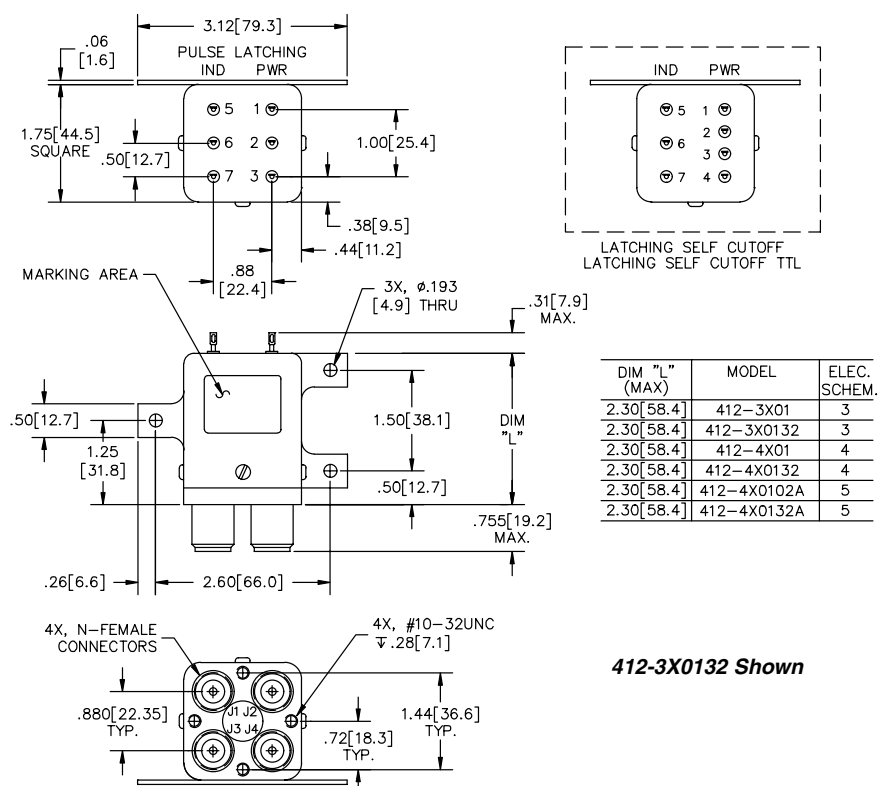
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

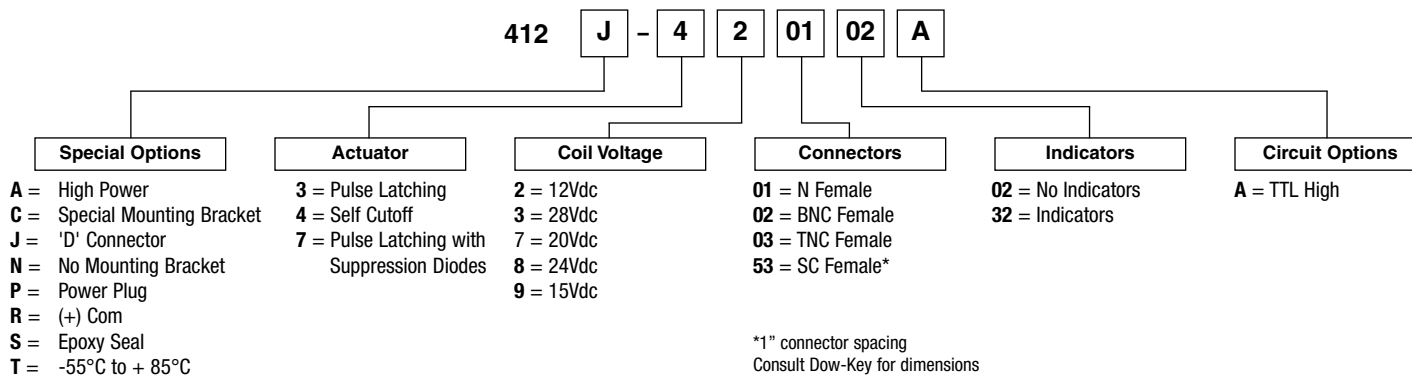
30 G, 1/2 Sine, 11 mS

Nominal Weight:

14 oz., (397g.)

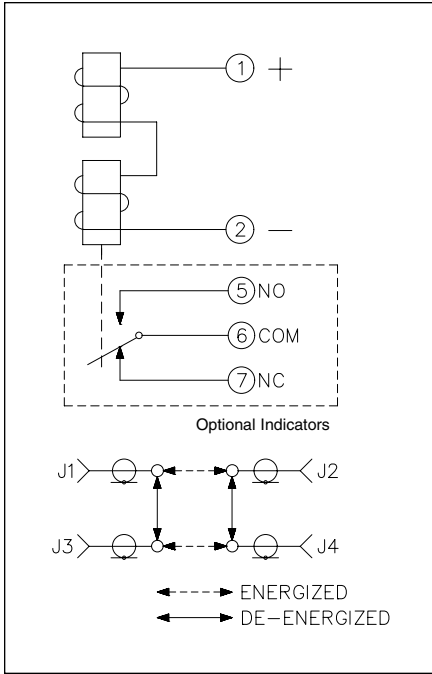
Mechanical**412-3X0132 Shown****Part Number Selection**

For Electrical Schematic
see page # 2-6

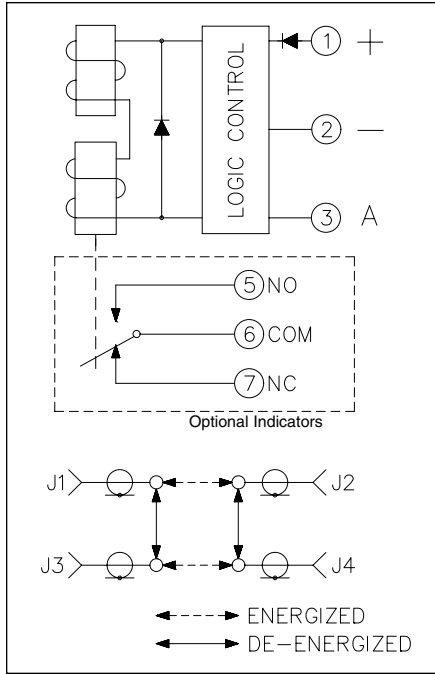




1 411C/412 Failsafe



2 411C/412 Failsafe TTL



LOGIC TRUTH TABLE

FAILSAFE TTL - SCH #2

LOGIC TRUTH TABLE		
RF PATH	INDICATOR PATH	LOGIC INPUT "A"
J1-J3/J2-J4	NC-COM	0
J1-J2/J3-J4	NO-COM	1

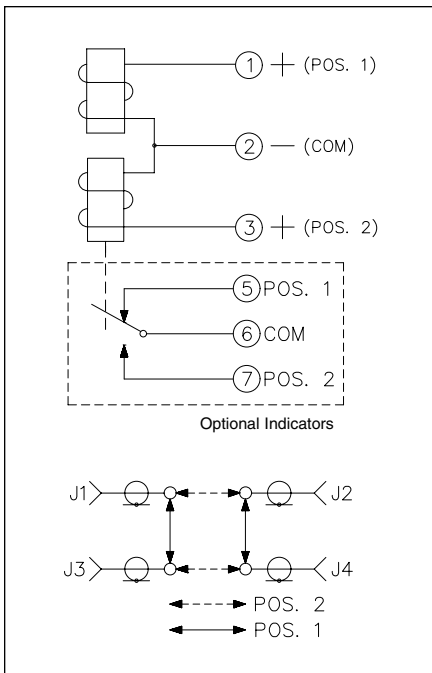
"0" = 0.0V-0.8V
"1" = 2.4V-5.5V

SELF CUTOFF TTL - SCH #5

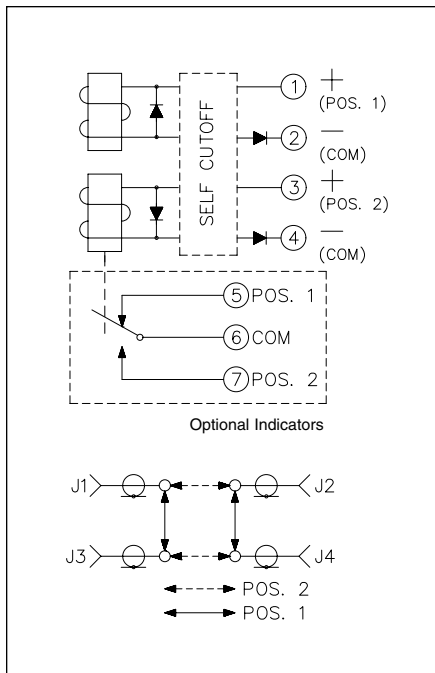
LOGIC TRUTH TABLE			
RF PATH	INDICATOR PATH	LOGIC INPUT "A"	LOGIC INPUT "B"
J1-J3/J2-J4	COM-1	1	0
J1-J2/J3-J4	COM-2	0	1

"0" = 0.0V-0.8V
"1" = 2.4V-5.5V

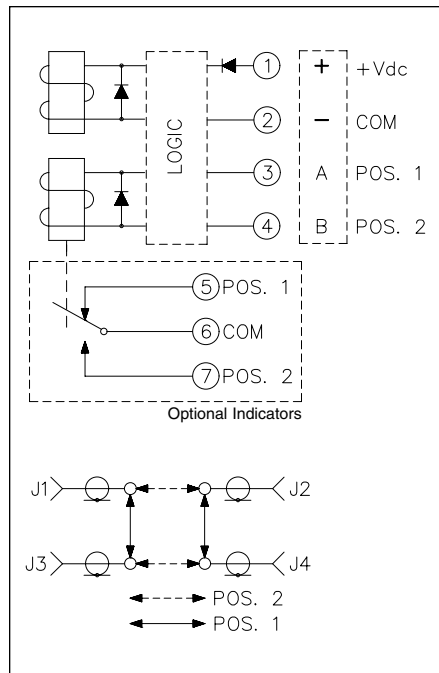
3 411C/412 Pulse Latch



4 411C/412 Self Cutoff



5 411C/412 Self Cutoff TTL





DowKey® Microwave
CORPORATION

C Commercial	M Military	A Avionics	S Space
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**300 Series
Transfer Latching**

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 650mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

20g's sine/random

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

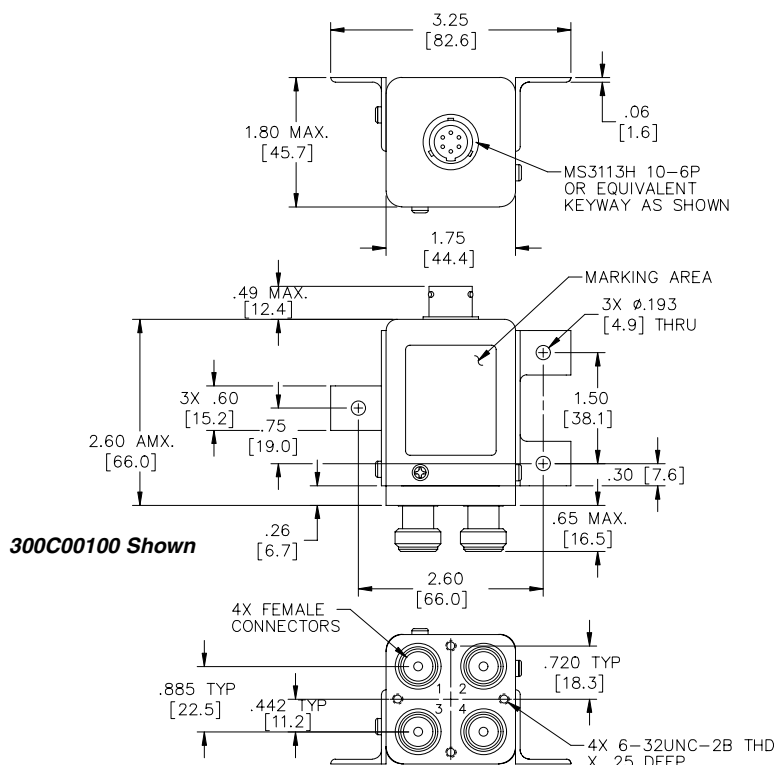
12 oz., (340g.)

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.20	60	0.15
1-4	1.35	60	0.25
4-8	1.45	60	0.35
8-12.4	1.50	60	0.50

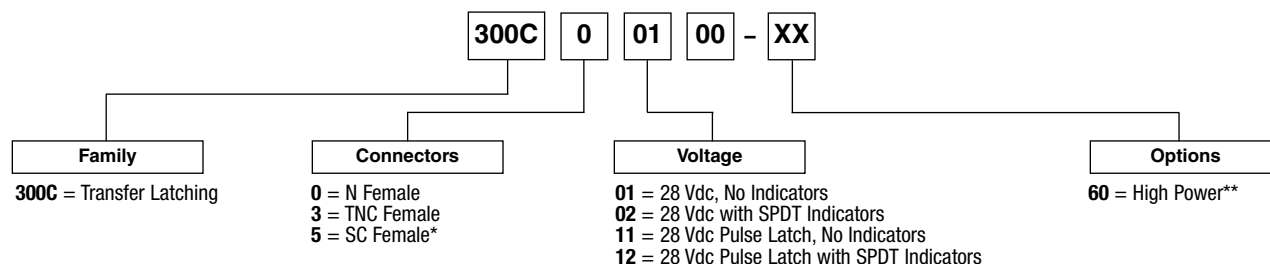
Note: RF Characteristics are for type N & TNC Female connectors, consult Dow-Key for other connector configurations

Mechanical



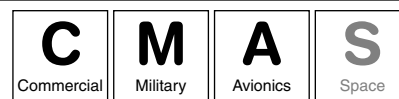
Part Number Selection

For Electrical Schematic
see page # 2-11



*1" connector spacing
Consult Dow-Key for Dimensions

**Consult Power Chart on page #



**310 Series
Transfer Failsafe**

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 250mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

20g's sine/random

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

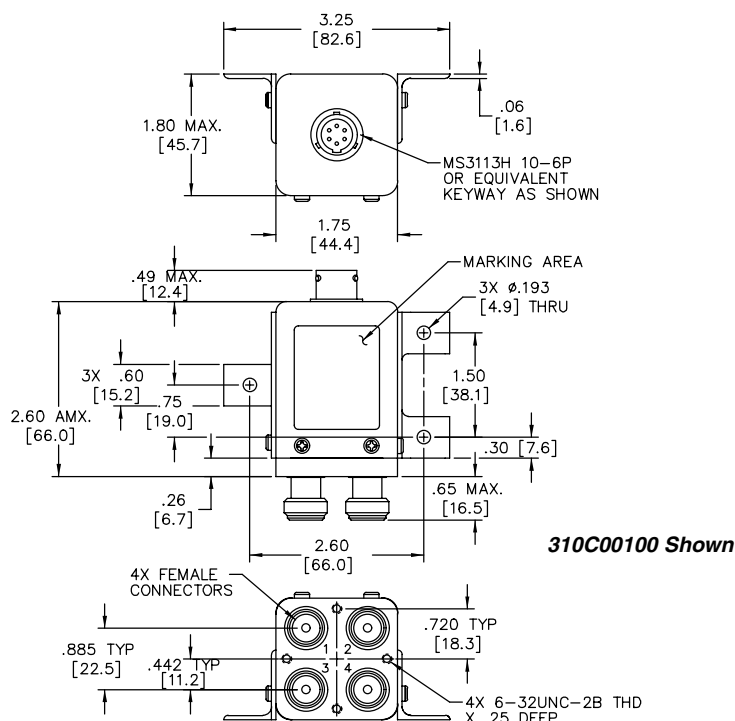
12 oz., (340g.)

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.20	60	0.15
1-4	1.35	60	0.25
4-8	1.45	60	0.35
8-12.4	1.50	60	0.50

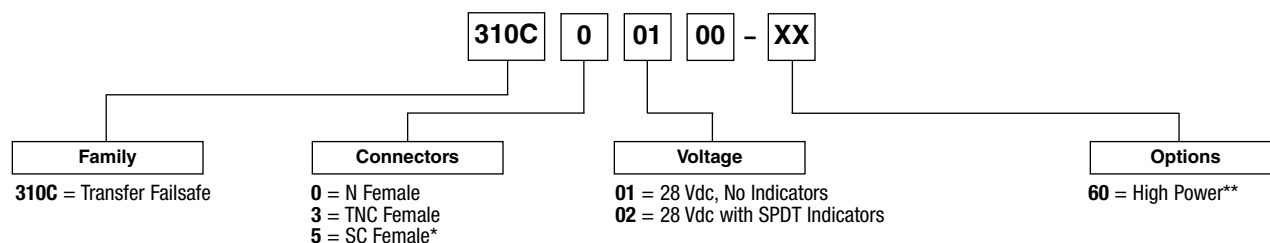
Note: RF Characteristics are for type N & TNC Female connectors, consult Dow-Key for other connector configurations

Mechanical



Part Number Selection

For Electrical Schematic
see page # 2-11



*1" connector spacing
Consult Dow-Key for Dimensions

**Consult Power Chart on page #



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	75	0.15
1-4	1.25	60	0.20
4-8	1.35	60	0.35
8-12.4	1.50	60	0.50
12.4-18	1.50	60	0.50

**700 Series
Transfer Latching****Specifications****Operating Voltage:**

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 65mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

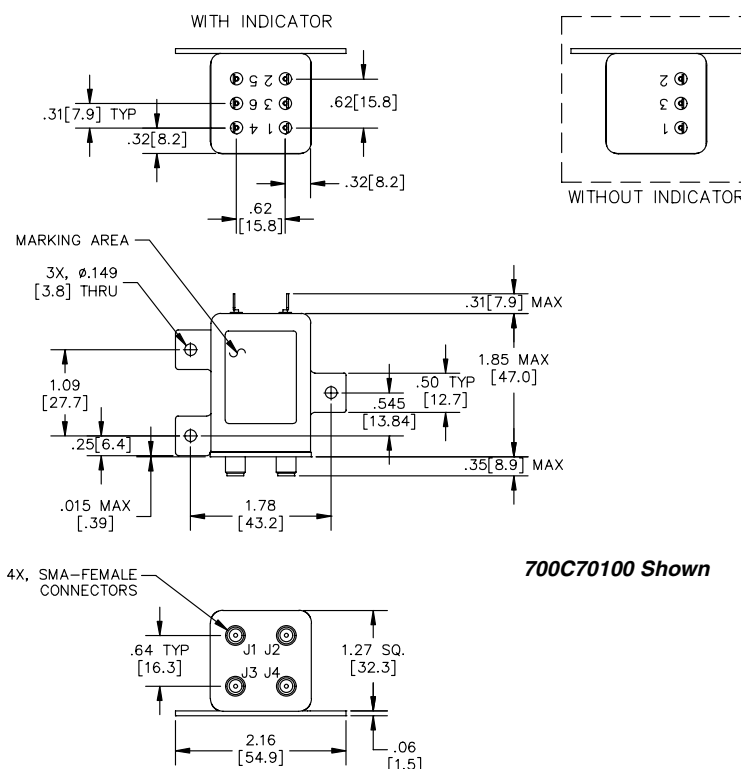
20g's sine/random

Mechanical Shock, Non-Operating:

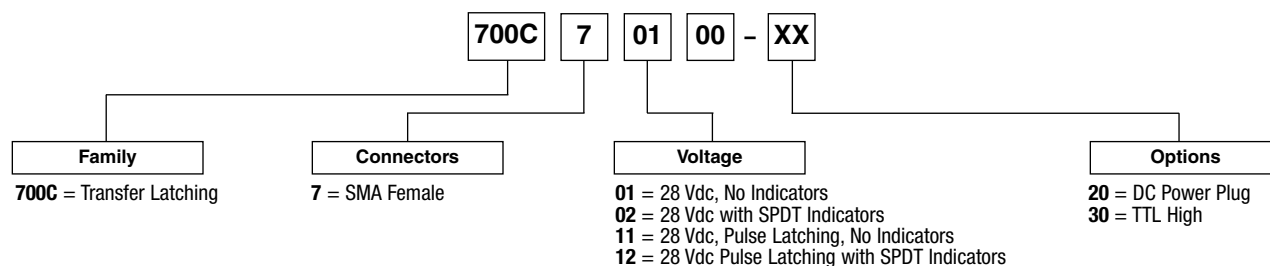
50G, 1/2 Sine, 11mS

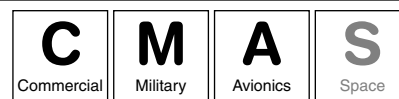
Nominal Weight:

3.5 oz., (100g.)

Mechanical**Part Number Selection**

For Electrical Schematic
see page # 2-11





**710 Series
Transfer Failsafe**

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (20-30 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 120mA

Switching Time:

20 mS maximum

Operating Temperature:

-55°C to +85°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

20g's sine/random

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

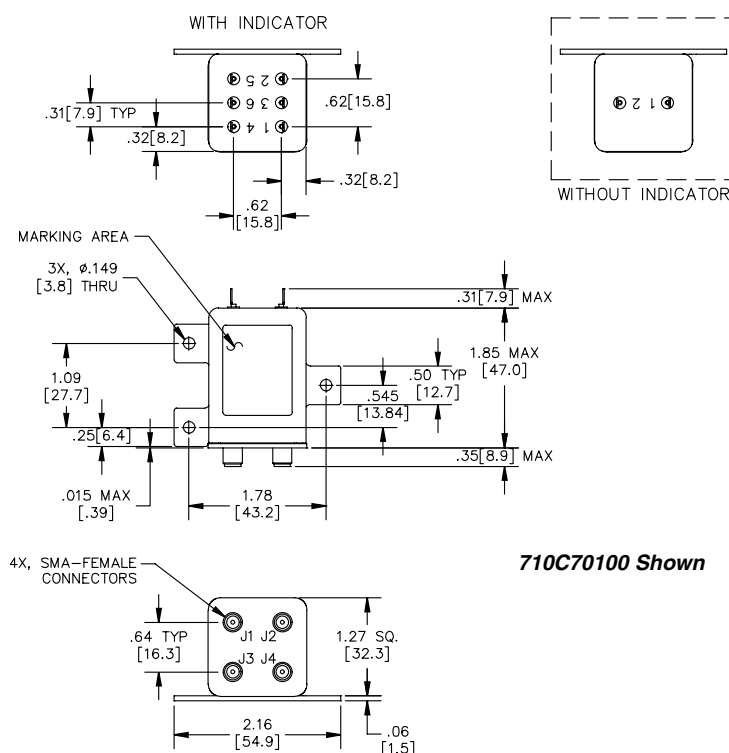
Nominal Weight:

3.5 oz., (100g.)

RF Characteristics

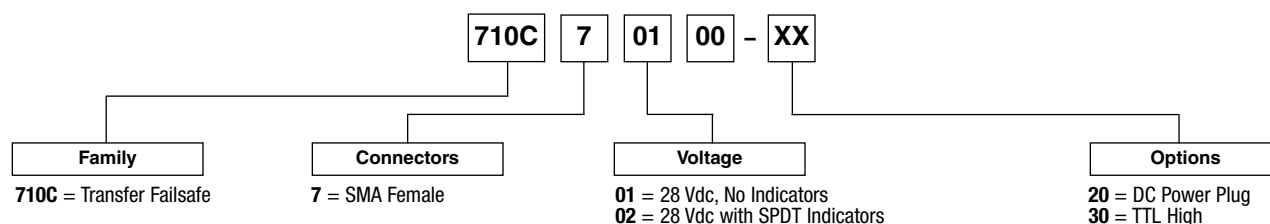
Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
0-1	1.15	75	0.15
1-4	1.25	60	0.20
4-8	1.35	60	0.35
8-12.4	1.50	60	0.50
12.4-18	1.50	60	0.50

Mechanical



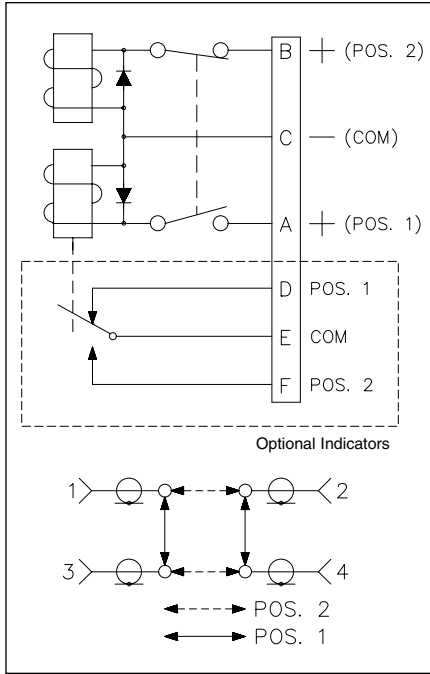
For Electrical Schematic
see page # 2-11

Part Number Selection

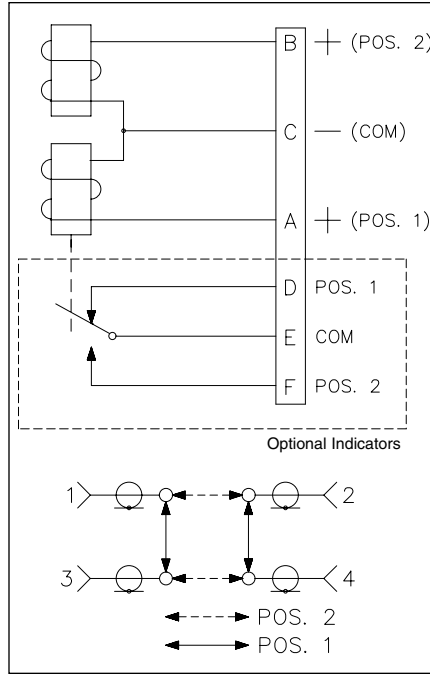




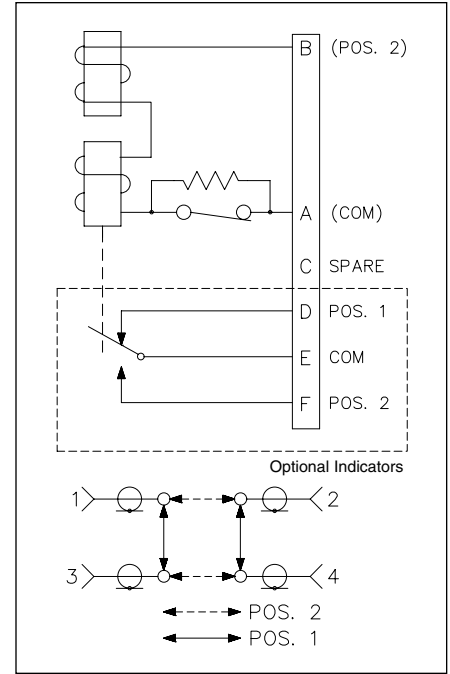
1 300 Latching



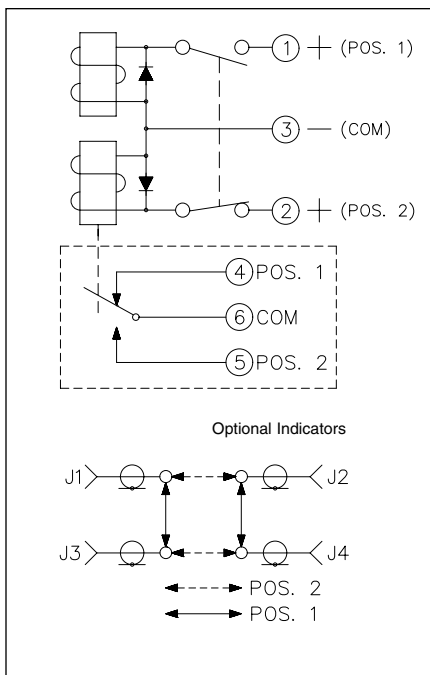
2 300 Pulse Latch



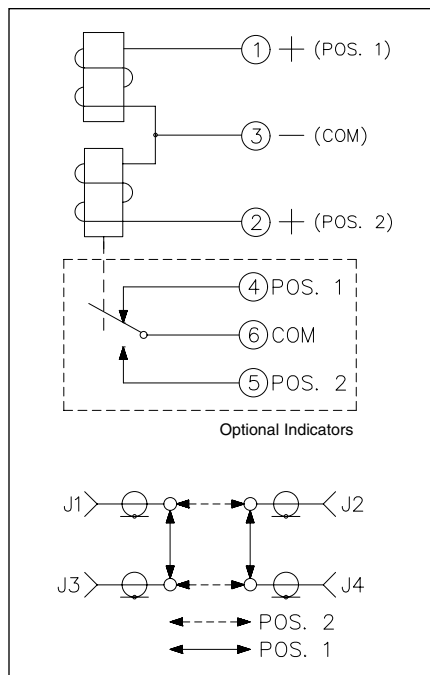
3 310 Failsafe



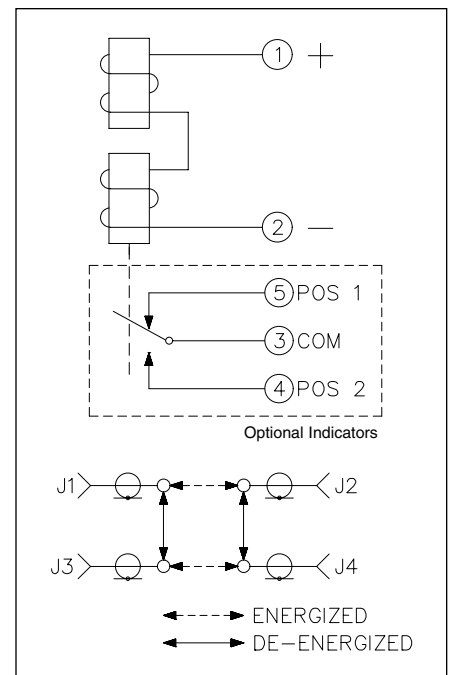
4 700 Latching



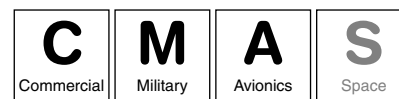
5 700 Pulse Latch



6 710 Failsafe



MULTIPOSITION SECTION



**535-565 Series
Normally Open, SMA**

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12.4	1.40	60	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	50	0.60
*22-26.5	1.80	40	0.70

* "K" option only.

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (Nominal):

12 Vdc 110 mA

28 Vdc 65 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

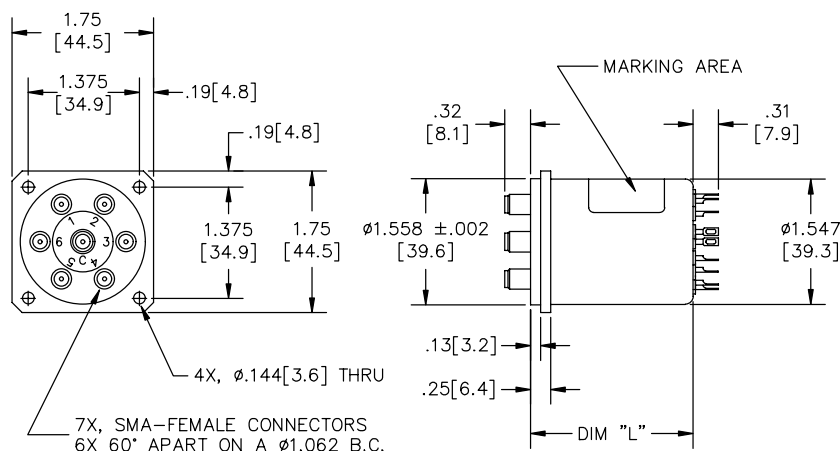
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

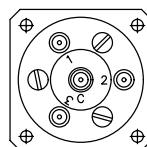
50G, 1/2 Sine, 11mS

Nominal Weight:

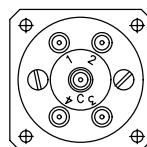
4.0 oz., (115g.)



565-530822 Shown



3 POSITION



4 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.41[35.8]	5X5-5X08	1
1.90[48.3]	5X5-5X0822	1
1.70[43.2]	5X5-5X0802A	2
2.08[52.8]	5X5-5X0822A	2

**For Electrical Schematic
see page # 3-9**

Part Number Selection

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
535 = SP3T 545 = SP4T 565 = SP6T	C = Mounting Bracket J = 9 or 15* Pin 'D' Connector K = 26.5 GHz P = Power Plug R = (-) Com T = -55° to +85° C	2 = Failsafe, Position 1 5 = Normally Open 6 = Failsafe, Position 1 Suppression Diodes (Com +) 9 = Normally Open Suppression Diodes (Com +)	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	07 = BMA Female 08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High E = BCD Decoding L = TTL low



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	70	0.30
8-12.4	1.40	65	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.60	55	0.60

Note: RF Power for the terminated port is limited by the termination.

* "K" option only

**461 Series Normally Open Terminated****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 400 mA

28 Vdc 160 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

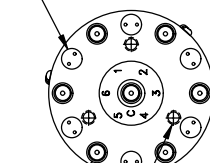
Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

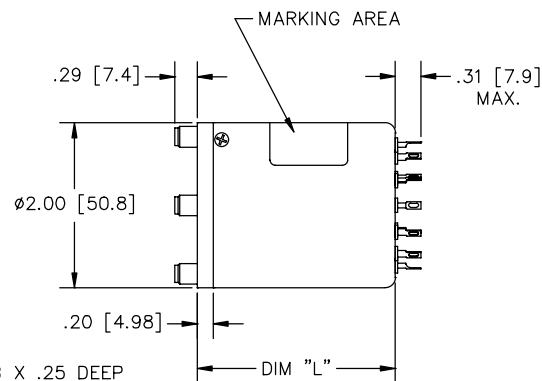
10.0 oz., (275g.)

6X, 50 OHM [2 WATT]
TERMINATION

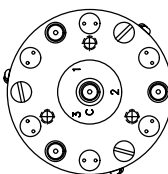


3X, 8-32UNC-2B X .25 DEEP
EQUALLY SPACED ON Ø1.187 B.C.

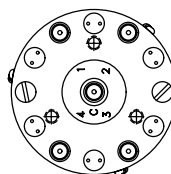
7X, SMA-FEMALE CONNECTORS
6X EQUALLY SPACED ON A Ø1.660 B.C.



461-530823 Shown



3 POSITION



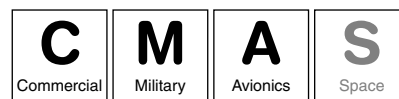
4 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.95 [49.5]	4X1-5X0803	3
2.29 [58.2]	4X1-5X0823	3
2.29 [58.2]	4X1-5X0803A	4
2.58 [65.5]	4X1-5X0823A	4

For Electrical Schematic
see page # 3-9

Part Number Selection

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators / Terminations	Circuit Options
431 = SP3T 441 = SP4T 461 = SP6T	C = Mounting Bracket J = 9 or 15 Pin 'D' Connector K = 26.56 GHz L = Flange Mount P = Power Plug R = (-) Com (Used with Supp. Diodes Only) S = Epoxy Seal T = -55° to +85° C	2 = Failsafe, Position 1 5 = Normally Open 6 = Failsafe, Position 1 Suppression Diodes (Com +) 9 = Normally Open Suppression Diodes (Com +)	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	03 = No Indicators 2W Terminations 08 = No Indicators SMA Female 23 = SPST Indicators 2W Terminations 28 = SPST Indicators SMA Female	A = TTL High L = TTL Low

**RF Characteristics**

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.25	70	0.30
4-8	1.35	60	0.40
8-12.4	1.70	55	0.70

**531-561 Series
Normally Open, N****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (Nominal):

12 Vdc 110 mA

28 Vdc 65 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

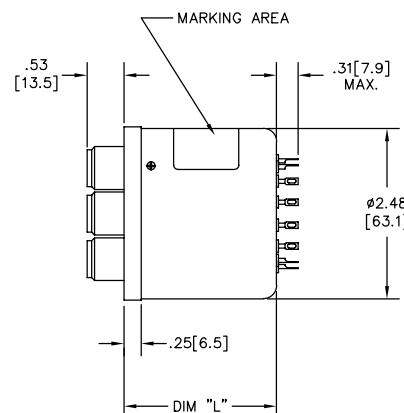
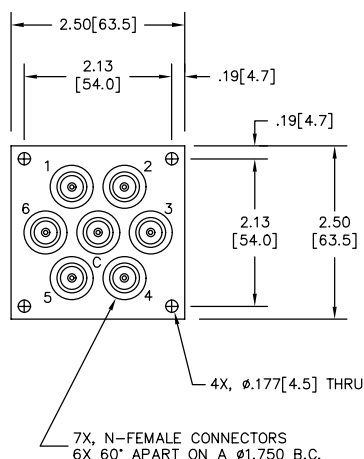
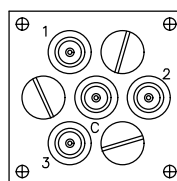
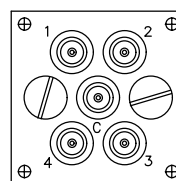
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

17.0 oz., (482g.)

Mechanical**561-530122 Shown****3 POSITION****4 POSITION**

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.20[55.9]	5X1-5X01	1
2.62[66.5]	5X1-5X0122	1
2.57[65.3]	5X1-5X0102A	2
2.90[73.7]	5X1-5X0122A	2

Part Number Selection**For Electrical Schematic
see page # 3-9**

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
531 = SP3T 541 = SP4T 561 = SP6T	A = High Power J = 9 or 15 Pin 'D' Connector T = -55° to +85° C	5 = Normally Open	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	01 = N Female 02 = BNC Female 03 = TNC Female 53 = SC Female*	02 = No Indicators 22 = SPST Indicators	A = TTL High

* 1" Connector Spacing Consult Dow-Key for dimensions



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12.4	1.40	60	0.40
12.4-18	1.50	60	0.50

**571-581 Series Normally Open, SMA****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (Nominal):

12 Vdc 286 mA

28 Vdc 122 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

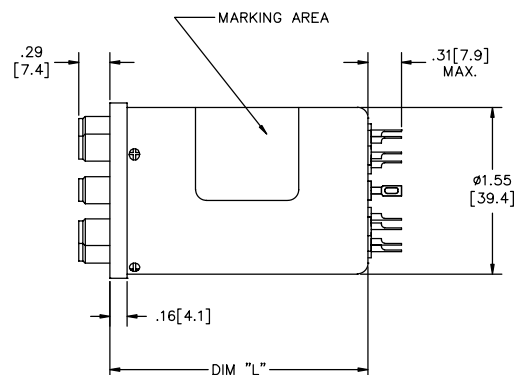
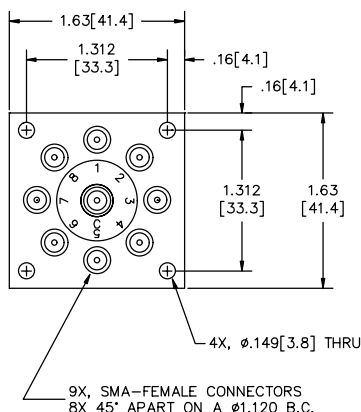
-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

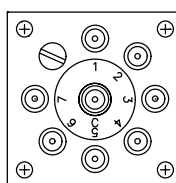
1,000,000 minimum

Nominal Weight:

5.0 oz., (142g.)



581-530822 Shown



7 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.95[49.5]	5X1-5X08	1
2.29[58.2]	5X1-5X0822	1
2.29[58.2]	5X1-5X0802A	2
2.58[65.5]	5X1-5X0822A	2

Part Number SelectionFor Electrical Schematic
see page # 3-9

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Option
571 = SP7T 581 = SP8T	C = Mounting Bracket J = 9 OR 20* Pin "D" connector S = Epoxy Seal T = -55° to +85° C	5 = Normally Open	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High

* 26-Pin 'O' Connector is 3 row high density



DowKey® Microwave
CORPORATION

C

Commercial

M

Military

A

Avionics

S

Space



RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	75	0.30
8-12.4	1.40	70	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.70	55	0.70

Note: RF Power for the terminated port is limited by the termination.

* "K" option only

Mechanical

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

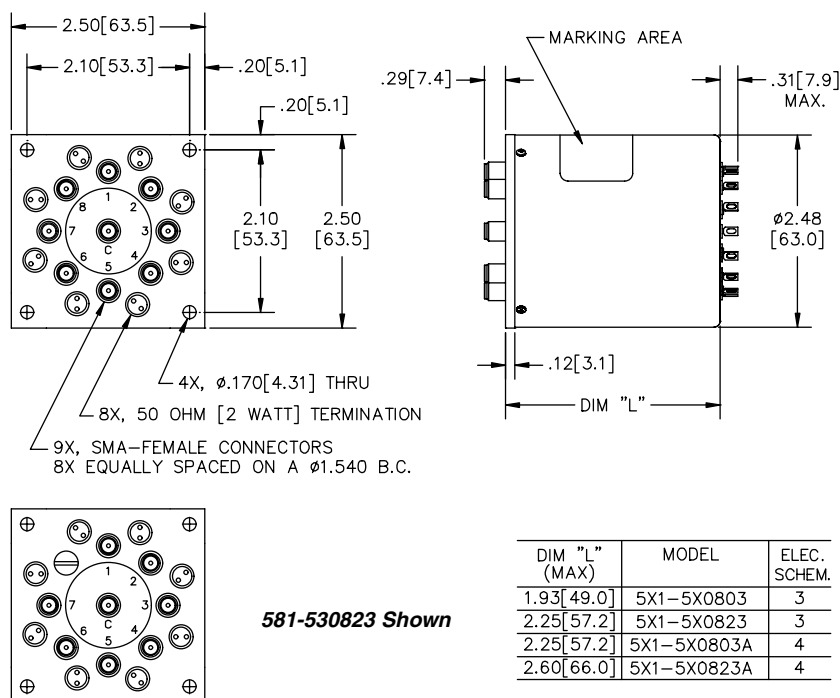
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

16.5 oz., (470g.)



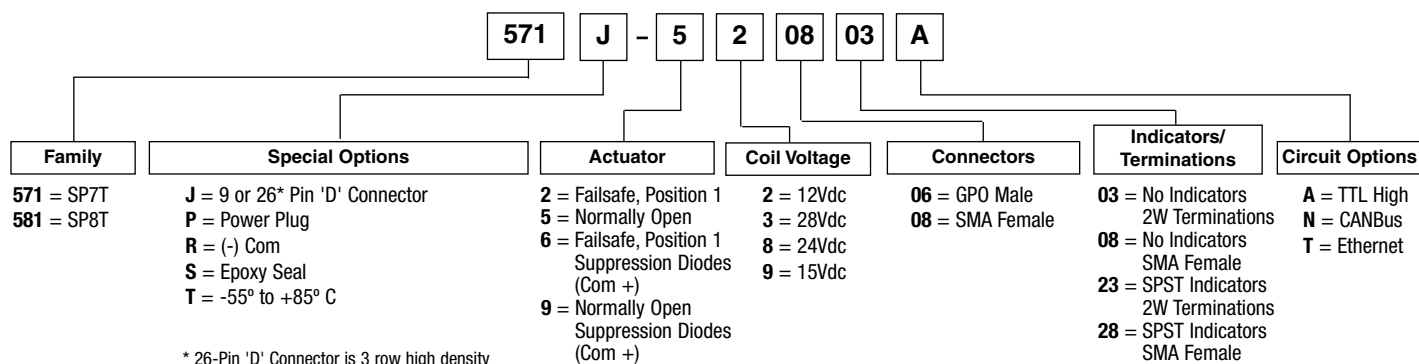
581-530823 Shown

DIM "L" (MAX)	MODEL	ELEC SCHEM.
1.93[49.0]	5X1-5X0803	3
2.25[57.2]	5X1-5X0823	3
2.25[57.2]	5X1-5X0803A	4
2.60[66.0]	5X1-5X0823A	4

7 POSITION

Part Number Selection

**For Electrical Schematic
see page # 3-9**




DowKey® Microwave
CORPORATION

C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12.4	1.40	60	0.40
12.4-18	1.60	55	0.60


591 Normally Open, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

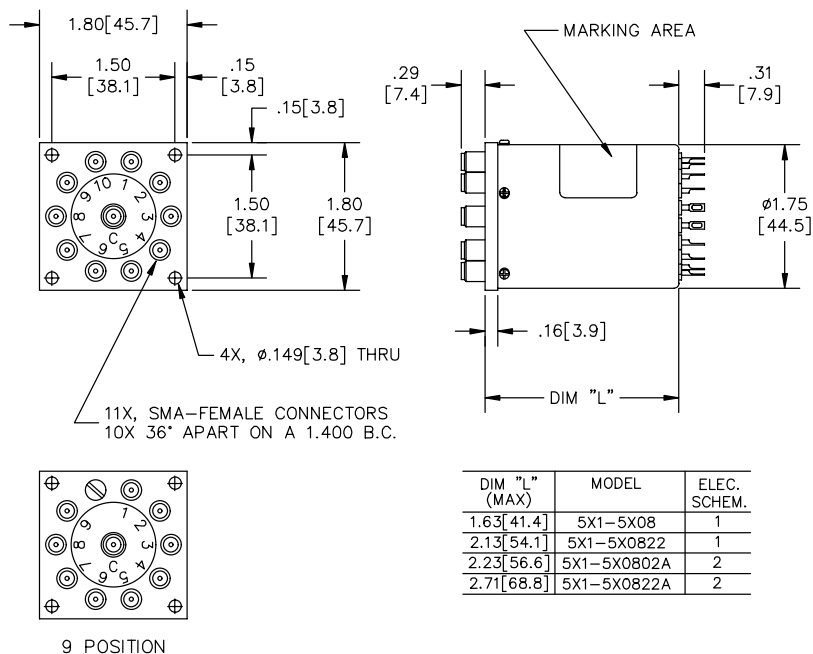
Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

5.5 oz., (156g.)

Mechanical


5A1-530822 Shown

Part Number Selection

**For Electrical Schematic
see page # 3-9**

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
591 = SP9T 5A1 = SP10T	J = 9 or 26* Pin 'D' Connector R = (-) Com S = Epoxy Seal T = -55° to +85° C	5 = Normally Open	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High

* 26-Pin 'D' Connector is 3 row high density



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
*8-12.4	1.40	60	0.40
*12.4-18	1.60	55	0.60

Note: RF Power for the terminated port is limited by the termination.

* "K" option only



**5A1 Normally Open
Terminated, SMA**

Specifications**Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

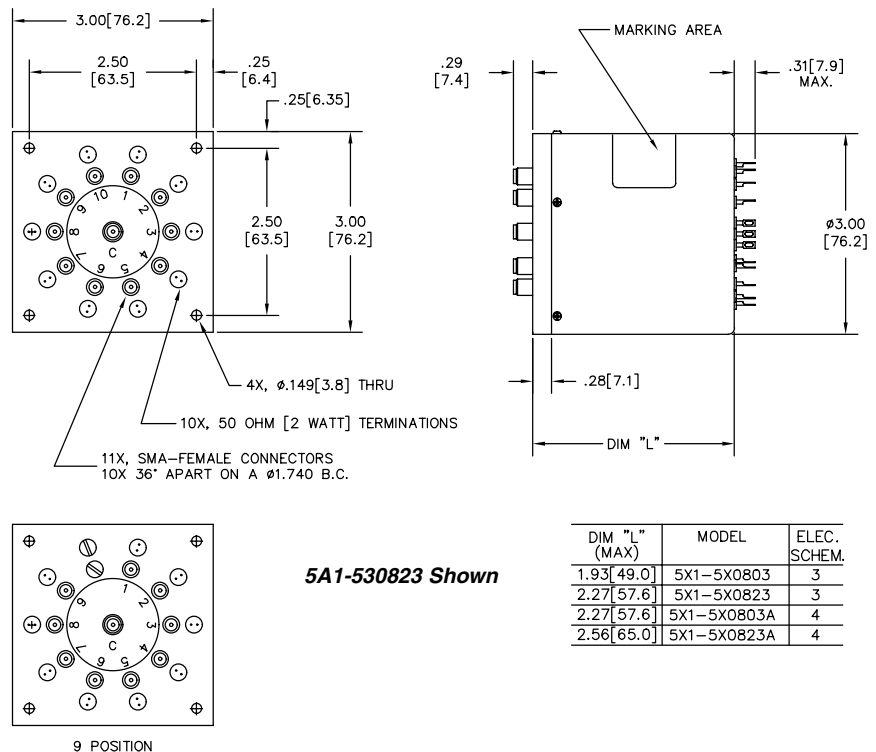
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

17.5 oz., (496g.)

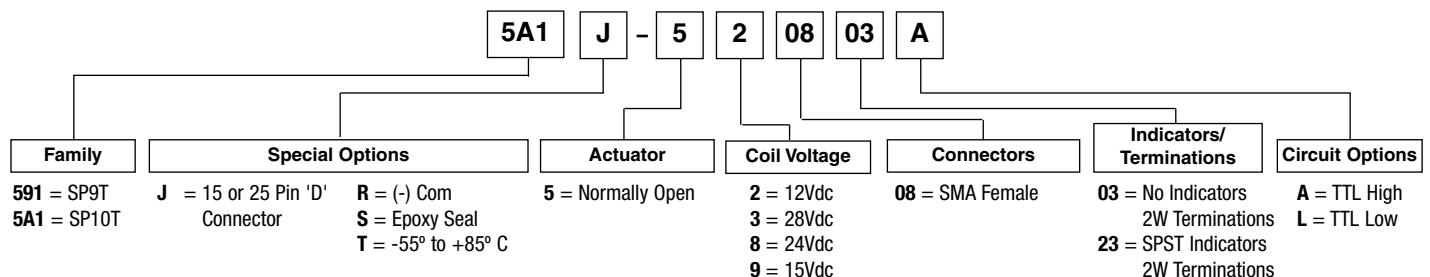


5A1-530823 Shown

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.93 [49.0]	5X1-5X0803	3
2.27 [57.6]	5X1-5X0823	3
2.27 [57.6]	5X1-5X0803A	4
2.56 [65.0]	5X1-5X0823A	4

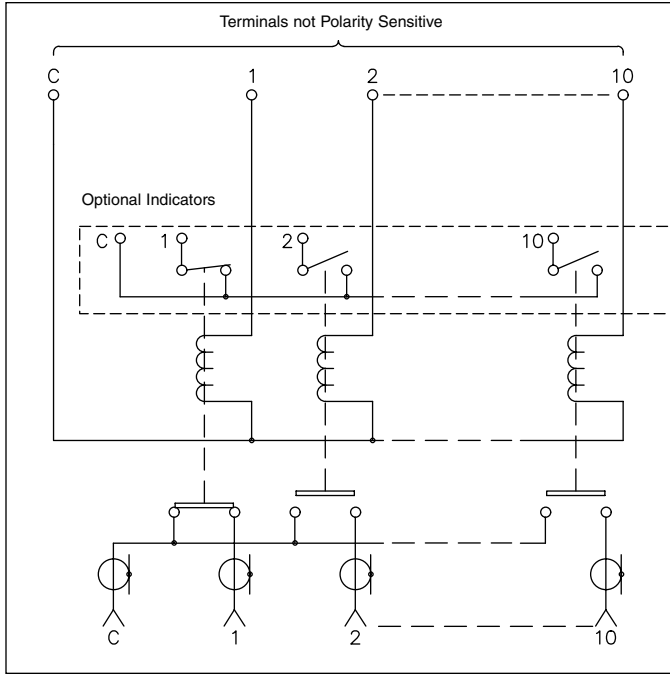
Part Number Selection

For Electrical Schematic
see page # 3-9

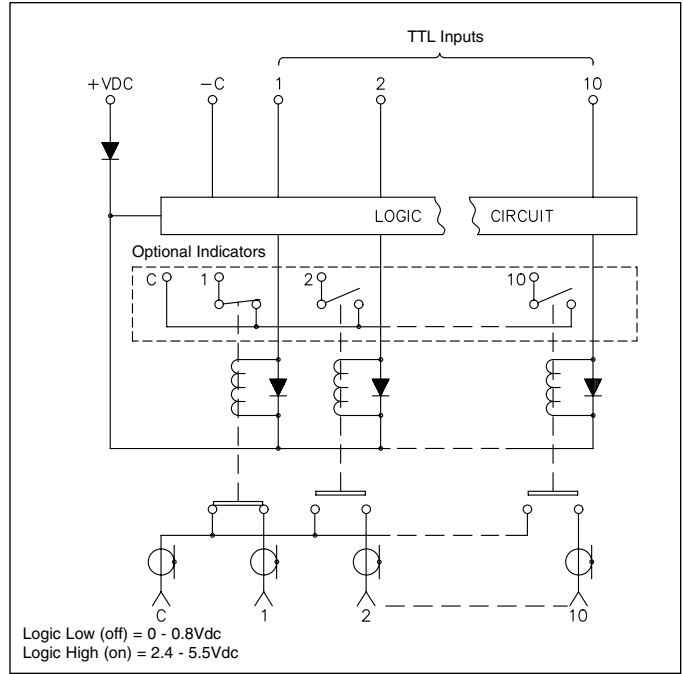




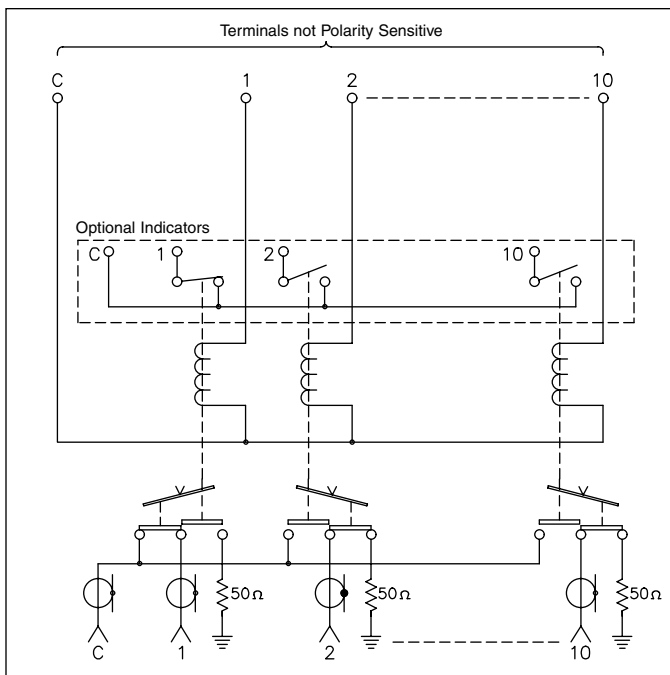
1 Normally Open



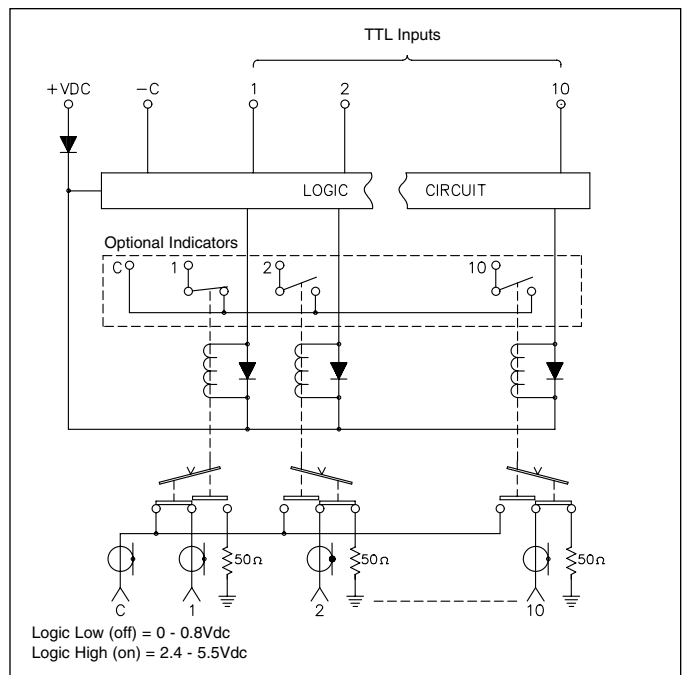
2 Normally Open TTL



3 N.O. Terminated



4 N.O. Terminated TTL



ALL SCHEMATICS SHOWN IN POSITION 1 ENERGIZED.



C Commercial	M Military	A Avionics	S Space
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**RF Characteristics**

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	75	0.30
8-12.4	1.40	70	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.60	55	0.60

* "K" option only

461 Latching Series, SMA**Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 375 mA

28 Vdc 200 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

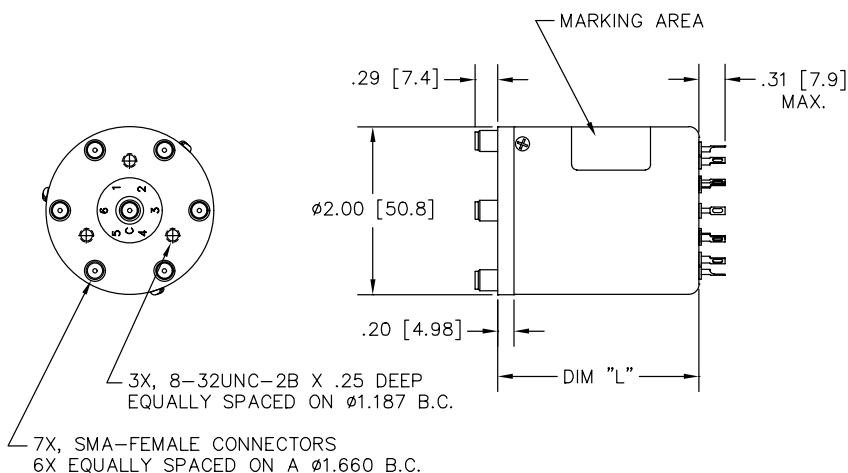
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

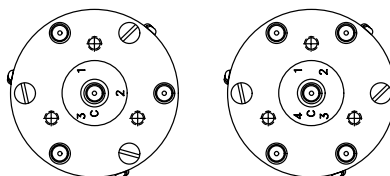
50 G, 1/2 Sine, 11 mS

Nominal Weight:

11 oz., (312g.)

Mechanical

461-430822 Shown



3 POSITION

4 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.40[61.0]	4X1-4X08	1
2.70[68.6]	4X1-4X0822	1
2.70[68.6]	4X1-4X0802A	2
3.00[76.2]	4X1-4X0822A	2

For Electrical Schematic
see page # 3-17**Part Number Selection**

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
431 = SP3T 441 = SP4T 461 = SP6T	C = Mounting Bracket J = 9 or 15 Pin 'D' Connector	4 = Latching Self Cutoff Set/Reset	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High N = CANBus T = Ethernet
	L = Flange Mount P = Power Plug R = (-) Com S = Epoxy Seal T = -55° to +85° C					



DowKey® Microwave
CORPORATION

C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	75	0.30
8-12.4	1.40	70	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.60	55	0.60

Note: RF Power for the terminated port is limited by the termination.

* "K" option only



461 Latching Terminated Series, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 375 mA

28 Vdc 200 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

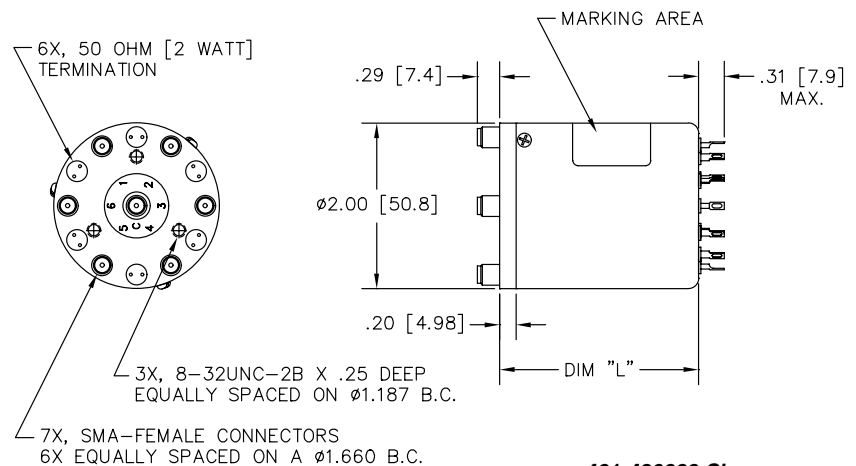
Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

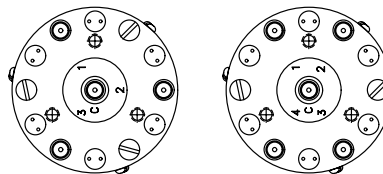
Nominal Weight:

11 oz., (312g.)

Mechanical



461-430823 Shown



3 POSITION

4 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.40 [61.0]	4X1-4X0803	3
2.70 [68.6]	4X1-4X0823	3
2.70 [68.6]	4X1-4X0803A	4
3.00 [76.2]	4X1-4X0823A	4

For Electrical Schematic
see page # 3-17

Part Number Selection

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators/ Terminations	Circuit Options
431 = SP3T 441 = SP4T 461 = SP6T	C = Mounting Bracket J = 9 or 15 Pin 'D' Connector	4 = Latching Self Cutoff Set/Reset	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	03 = No Indicators 2W Terminations 23 = SPST Indicators 2W Terminations	A = TTL High N = CANBus T = Ethernet
	L = Flange Mount P = Power Plug R = (-) Com S = Epoxy Seal T = -55° to +85° C					



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.25	70	0.30
4-8	1.35	65	0.40
8-12.4	1.40	55	0.70

Note: RF Characteristics are for type N & TNC female connectors, consult Dow-Key for other connector configurations.

**561 Latching Series, N****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

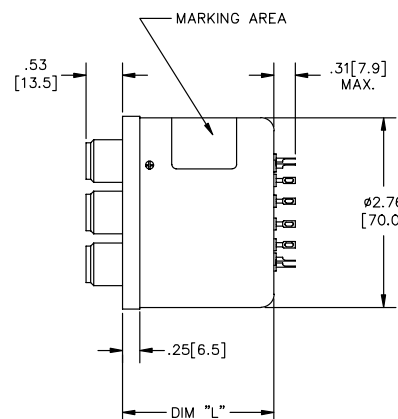
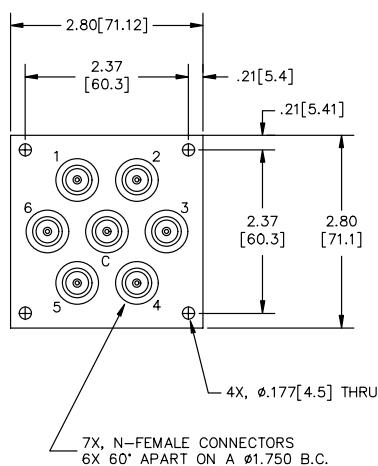
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

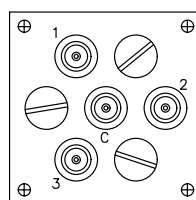
50 G, 1/2 Sine, 11 mS

Nominal Weight:

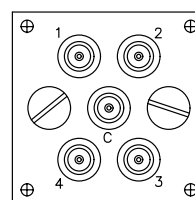
22.0 oz., (624g.)

Mechanical

461-430122A Shown



3 POSITION



4 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.20 [55.9]	5X1-4X01	1
2.60 [66.0]	5X1-4X0122	1
2.72 [69.1]	5X1-4X0102A	2
2.91 [73.9]	5X1-4X0122A	2

For Electrical Schematic
see page # 3-17

Part Number Selection

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
531 = SP3T 541 = SP4T 561 = SP6T	A = High Power J = 9 or 15 Pin 'D' Connector P = Power Plug R = (-) Com S = Epoxy Seal T = -55° to +85° C	4 = Latching Self Cutoff Set/Reset	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	01 = N Female 02 = BNC Female 03 = TNC Female 53 = SC Female*	02 = No Indicators 22 = SPST Indicators	A = TTL High

* 1" Connector Spacing Consult Dow-Key for dimensions



C Commercial	M Military	A Avionics	S Space
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581 Latching Series, SMA

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	75	0.30
8-12.4	1.40	70	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.70	55	0.70

* "K" option only

Specifications**Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

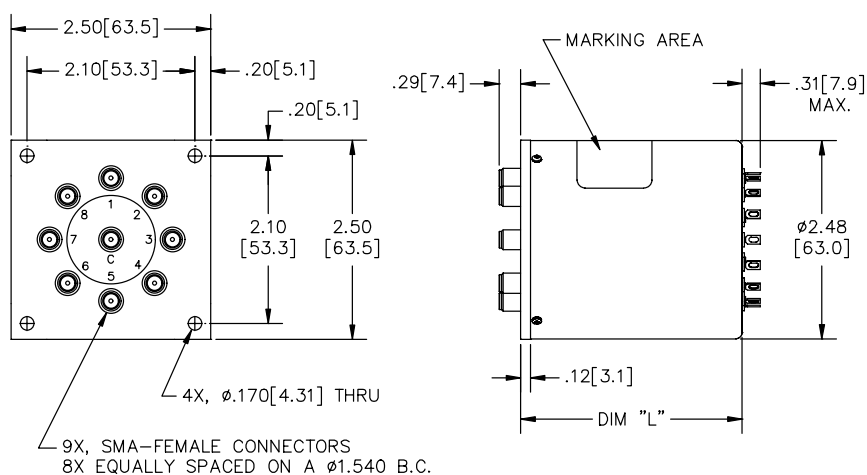
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

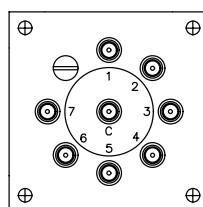
50 G, 1/2 Sine, 11 mS

Nominal Weight:

18 oz., (510g.)

Mechanical

581-430822 Shown



7 POSITION

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.40 [61.0]	5X1-4X08	1
2.70 [68.6]	5X1-4X0822	1
2.70 [68.6]	5X1-4X0802A	2
3.00 [76.2]	5X1-4X0822A	2

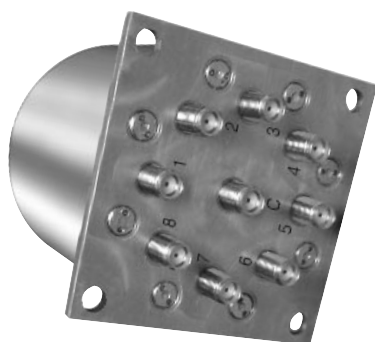
Part Number SelectionFor Electrical Schematic
see page # 3-17

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Options
571 = SP7T 581 = SP8T	J = 9 or 26* Pin 'D' Connector P = Power Plug R = (-) Com S = Epoxy Seal T = -55° to +85° C	4 = Latching Self Cutoff Set/Reset	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	06 = GPO Male 08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High N = CANBus T = Ethernet

* 26-Pin 'D' Connector is 3 row high density



C Commercial	M Military	A Avionics	S Space
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**581 Latching Terminated
Series SMA**

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

18 oz., (510g.)

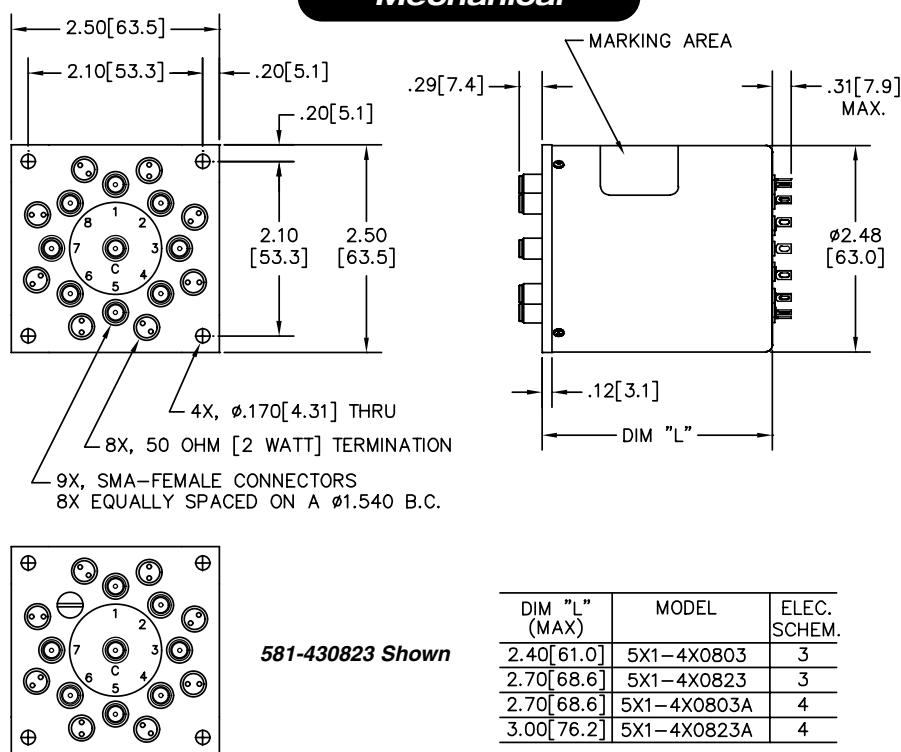
RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	80	0.20
4-8	1.30	75	0.30
8-12.4	1.40	70	0.40
12.4-18	1.50	60	0.50
*18-22	1.60	60	0.60
*22-26	1.70	55	0.70

Note: RF power for the terminated port is limited by the termination.

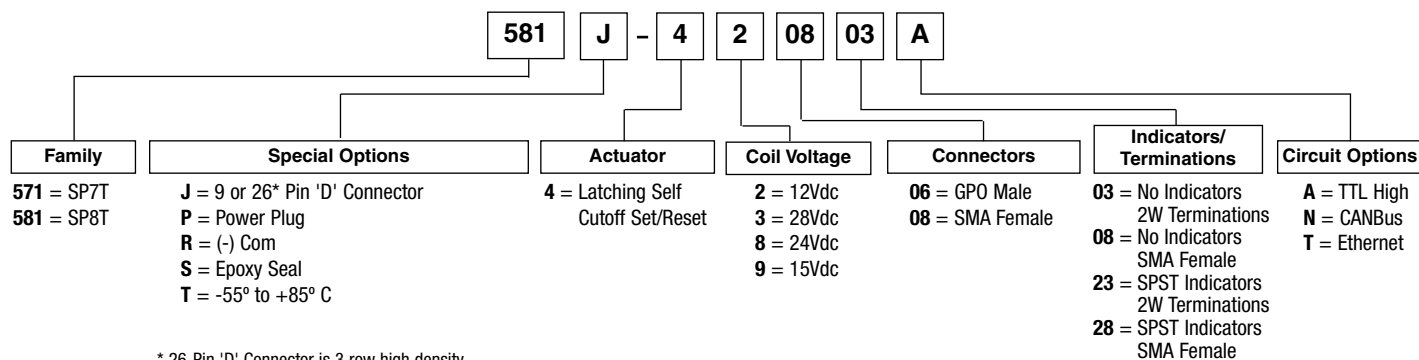
* "K" option only

Mechanical



7 POSITION

Part Number Selection



For Electrical Schematic
see page # 3-17



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12.4	1.40	60	0.40
12.4-18	1.60	55	0.60

**5A1 Latching Series, SMA****Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

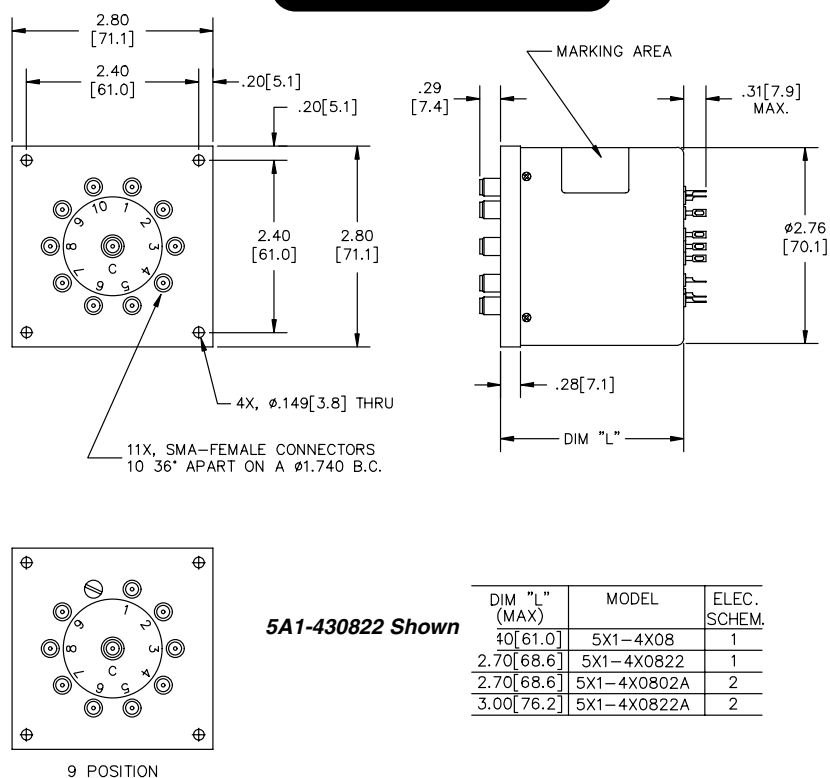
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

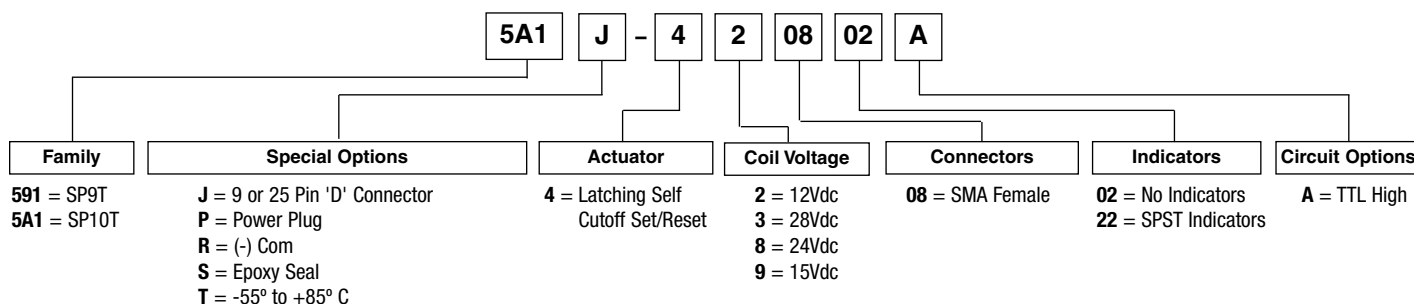
Nominal Weight:

15 oz., (425g.)

Mechanical

5A1-430822 Shown

DIM "L" (MAX)	MODEL	ELEC. SCHEM.
4.0 [101.6]	5X1-4X08	1
2.70 [68.6]	5X1-4X0822	1
2.70 [68.6]	5X1-4X0802A	2
3.00 [76.2]	5X1-4X0822A	2

Part Number Selection**For Electrical Schematic
see page # 3-17**



C Commercial	M Military	A Avionics	S Space
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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.30	65	0.30
8-12.4	1.40	60	0.40
12.4-18	1.60	55	0.60

Note: RF power for the terminated port is limited by the termination.

5A1 Latching, Terminated Series, SMA**Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 550 mA

28 Vdc 240 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

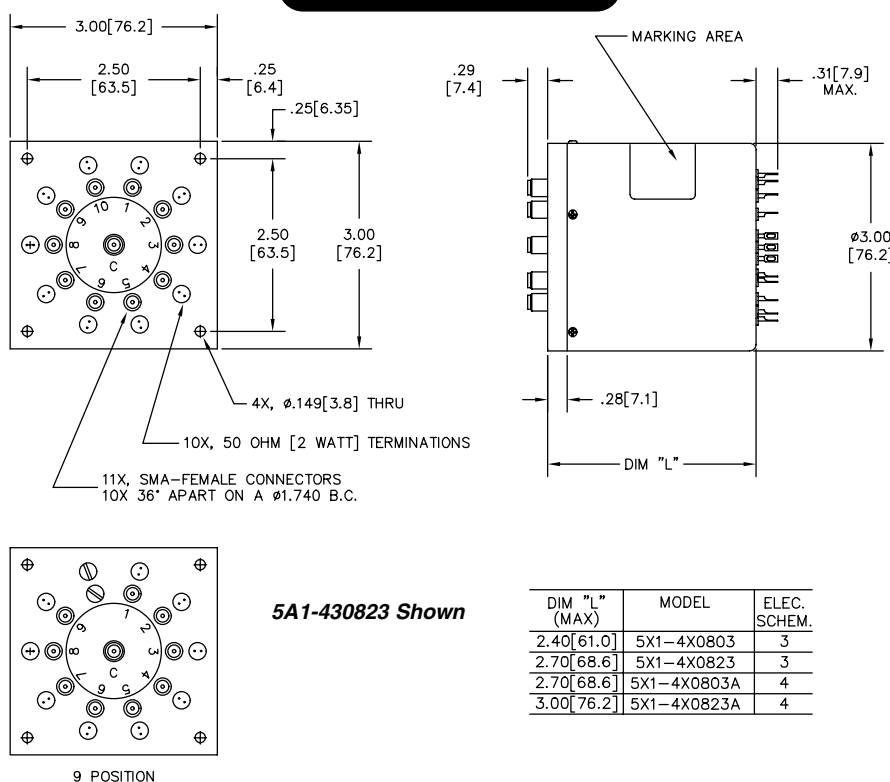
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

Nominal Weight:

15.3 oz., (434g.)

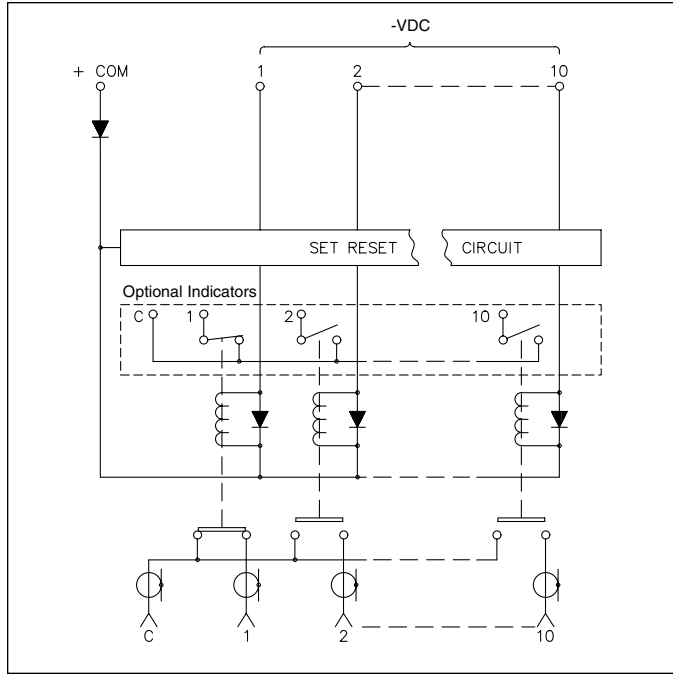
Mechanical**Part Number Selection**

For Electrical Schematic see page # 3-17

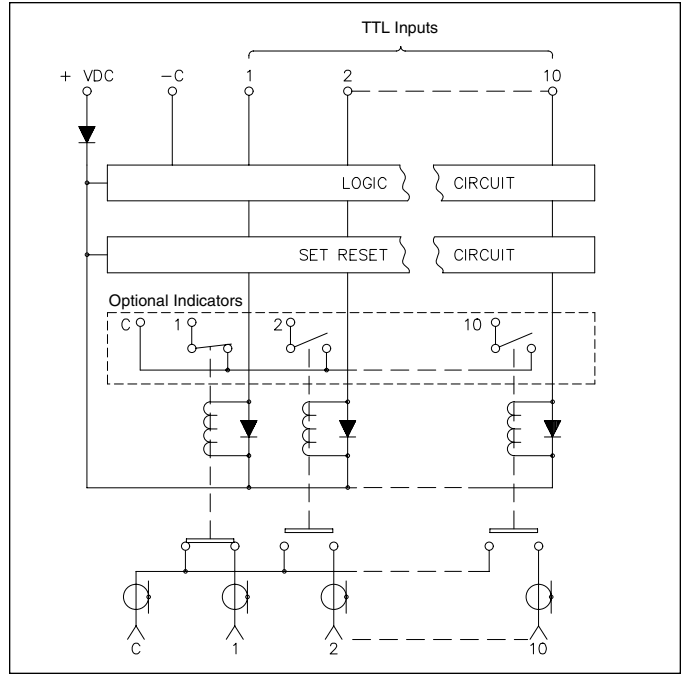
Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators/Terminations	Circuit Options
591 = SP9T 5A1 = SP10T	J = 9 or 25 Pin 'D' Connector P = Power Plug R = (-) Com S = Epoxy Seal T = -55° to +85° C	4 = Latching Self Cutoff Set/Reset	2 = 12Vdc 3 = 28Vdc 8 = 24Vdc 9 = 15Vdc	08 = SMA Female	03 = No Indicators 2W Terminations 23 = SPST Indicators 2W Terminations	A = TTL High E = BCD Decoding



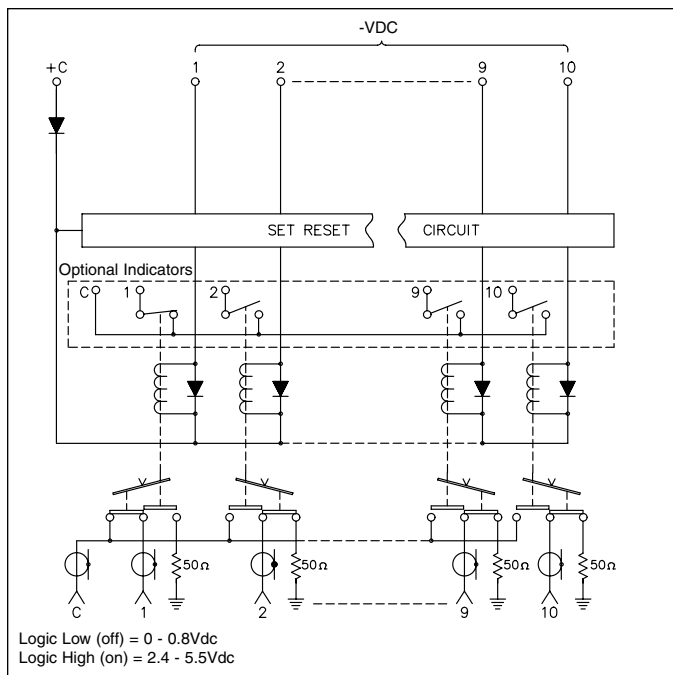
1 Latching Self Cutoff



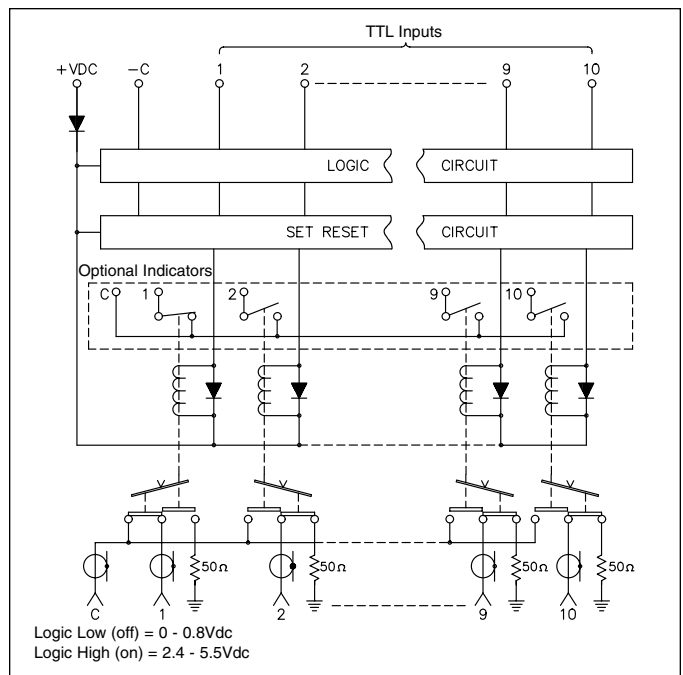
2 Latching Self Cutoff TTL

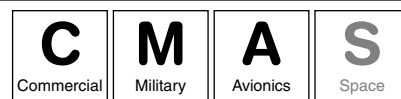


3 Latching SCO Terminated



4 Latching SCO Terminated TTL





5C1 Series Normally Open, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 310 mA

28 Vdc 130 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 ms

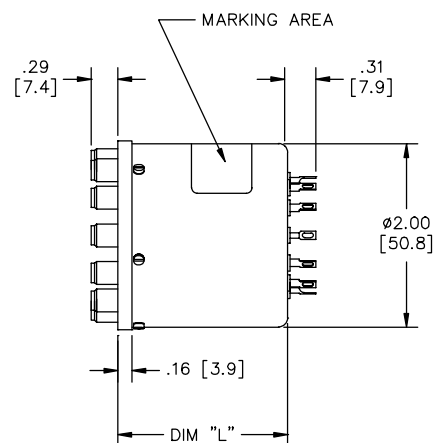
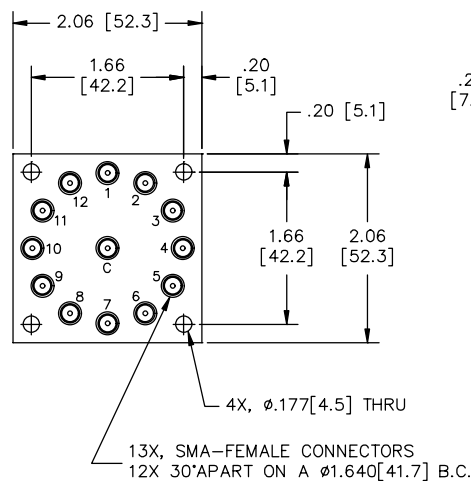
Nominal Weight:

7.0 oz., (200g.)

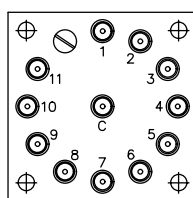
RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.20	70	0.20
4-8	1.40	65	0.40
8-12.4	1.50	60	0.60
12.4-18	1.80	60	0.80

Mechanical



5C1-5X0822 Shown



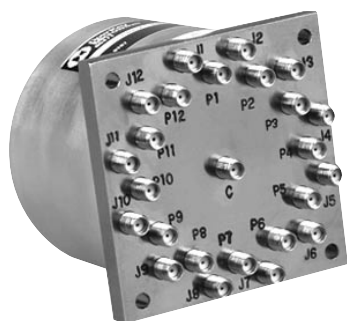
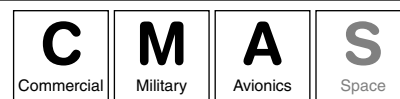
DIM "L" (MAX)	MODEL	ELEC. SCHEM.
1.90 [48.2]	5C1-5X08	1
2.50 [63.5]	5C1-5X0802A	2

For Electrical Schematic
see page # 3-21

Part Number Selection

Family	Special Options	Actuator	Coil Voltage	Connectors	Indicators	Circuit Option
5B1 = SP11T 5C1 = SP12T	J = 15 or 26* Pin 'D' Connector S = Epoxy Seal T = -55°C to +85°C	5 = Normally Open	2 = 12 Vdc 3 = 28 Vdc 8 = 24 Vdc 9 = 15 Vdc	08 = SMA Female	02 = No Indicators 22 = SPST Indicators	A = TTL High E = BCD Decoding N = CANBus T = Ethernet

*26-Pin 'D' Connector is 3 row high density



5C1 Series Latching Self Cutoff, SMA with Optional SMA's

Specifications

Operating Voltage:

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

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 310 mA
28 Vdc 130 mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)
-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11 mS

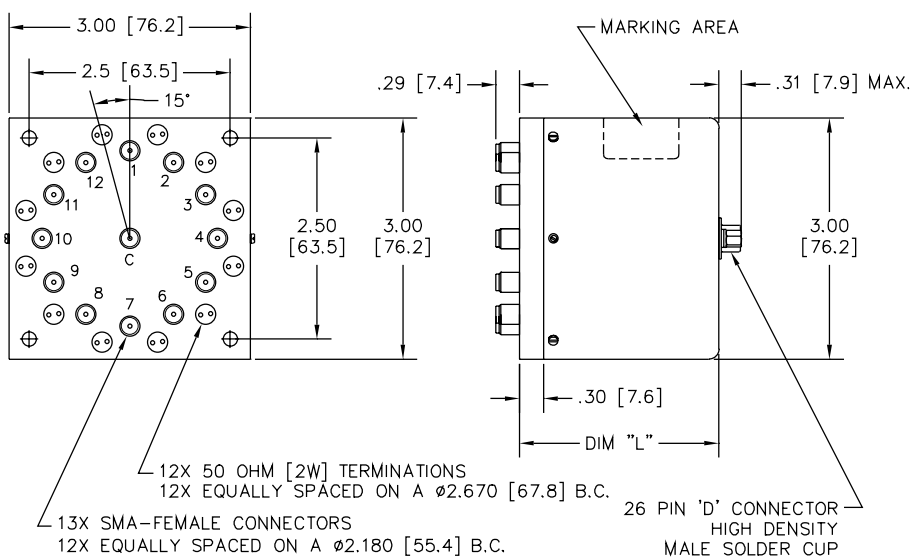
Nominal Weight:

7.0 oz., (200g.)

RF Characteristics

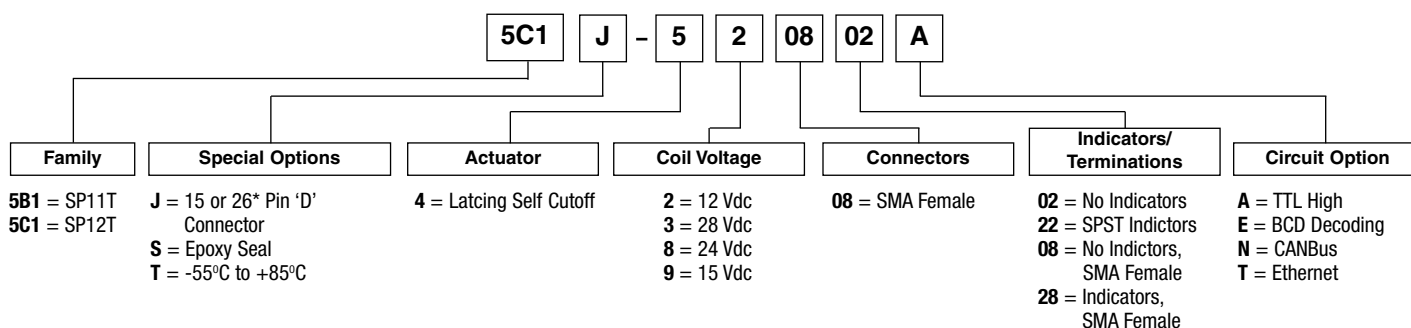
Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)	RF Power Watts (CW)
DC-4	1.20	70	0.20	100
4-8	1.40	65	0.40	70
8-12.4	1.50	60	0.60	60
12.4-18	1.80	60	0.80	50

Mechanical



For Electrical Schematic
see page # 3-21

Part Number Selection



*26-Pin 'D' Connector is 3 row high density


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RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-4	1.30	70	0.30
4-8	1.40	65	0.40
8-12	1.60	60	0.60
12-18	1.80	60	0.80

5E1 Series Normally Open, SMA
Specifications
Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 310 mA

28 Vdc 130 mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

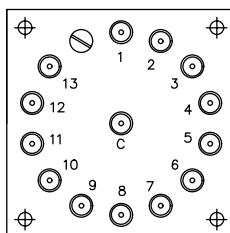
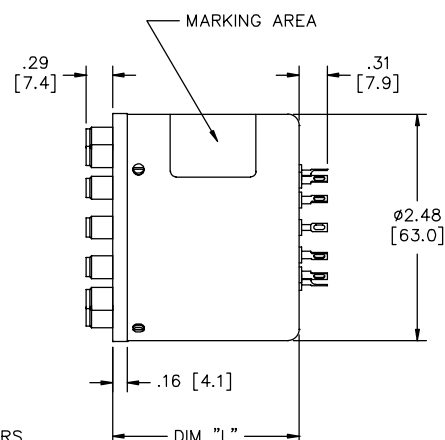
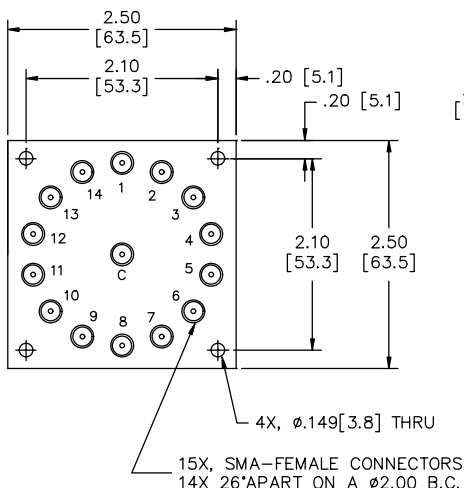
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

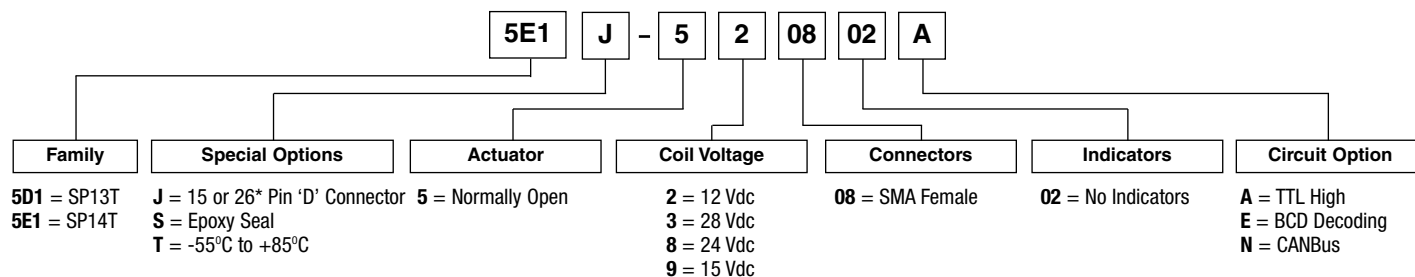
Nominal Weight:

9.0 oz., (250g.)

Mechanical


DIM "L" (MAX)	MODEL	ELEC. SCHEM.
2.04 [52.0]	5E1-5X08	1
2.50 [63.5]	5E1-5X0802A	2

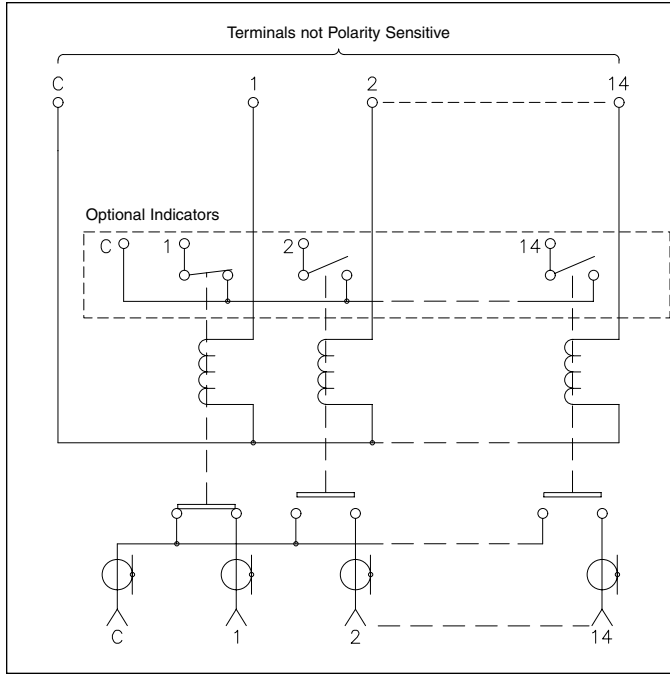
 For Electrical Schematic
 see page # 3-21

Part Number Selection


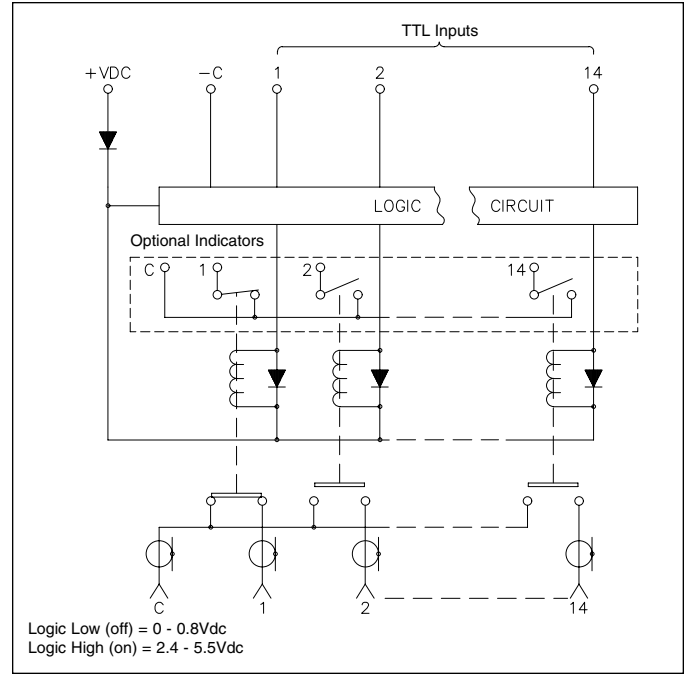
*26-Pin 'D' Connector is 3 row high density



1 Normally Open

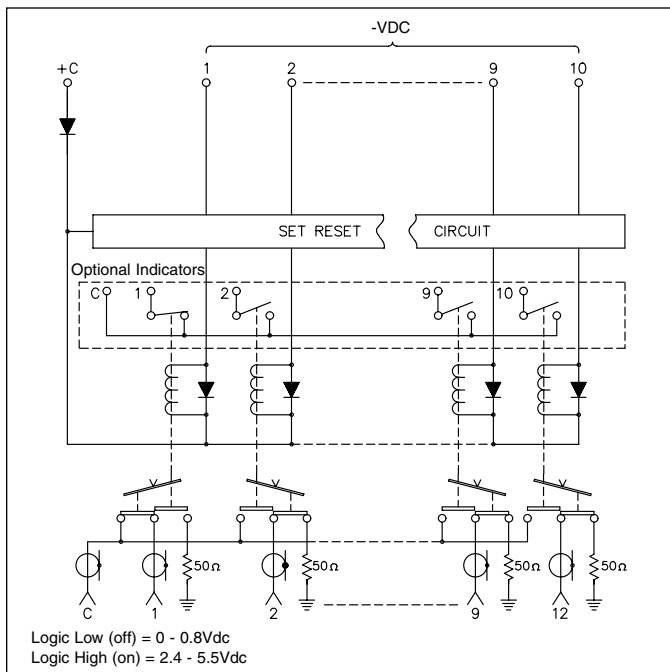


2 Normally Open TTL

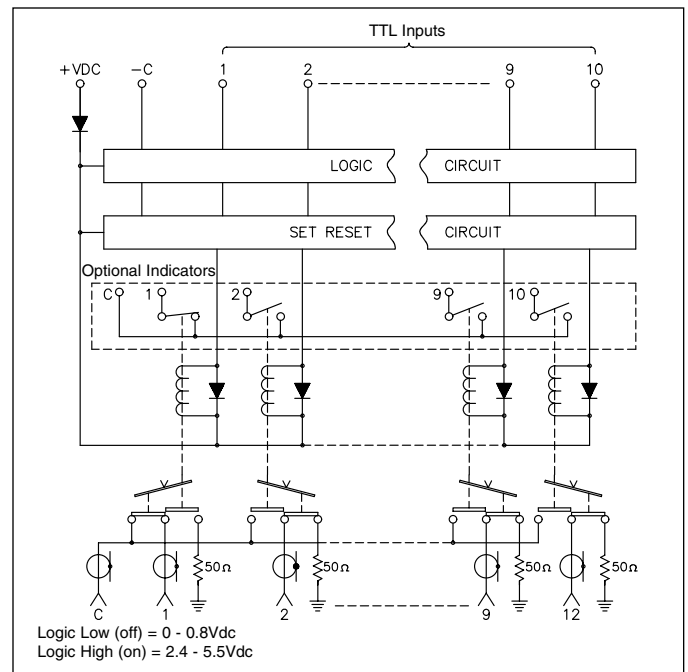


ALL SCHEMATICS SHOWN IN POSITION 1 ENERGIZED.

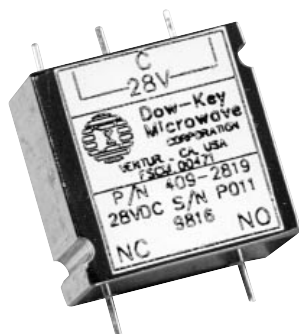
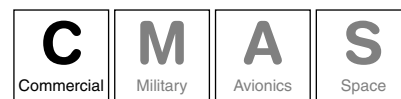
3 Latching SCO Terminated



4 Latching SCO Terminated TTL



SPECIAL SECTION

**RF Characteristics**

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)	RF Power Watts (CW)
DC-1	1.10	80	0.10	80
1-2	1.15	75	0.15	75
2-3	1.20	70	0.30	70

Note: Higher frequency performance available, consult factory.

409 Series SPDT Failsafe**Specifications****Operating Voltage:**

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 130 mA

28 Vdc 55 mA

Switching Time:

20 mS maximum

Operating Temperature:

-30°C to +70°C (Standard)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

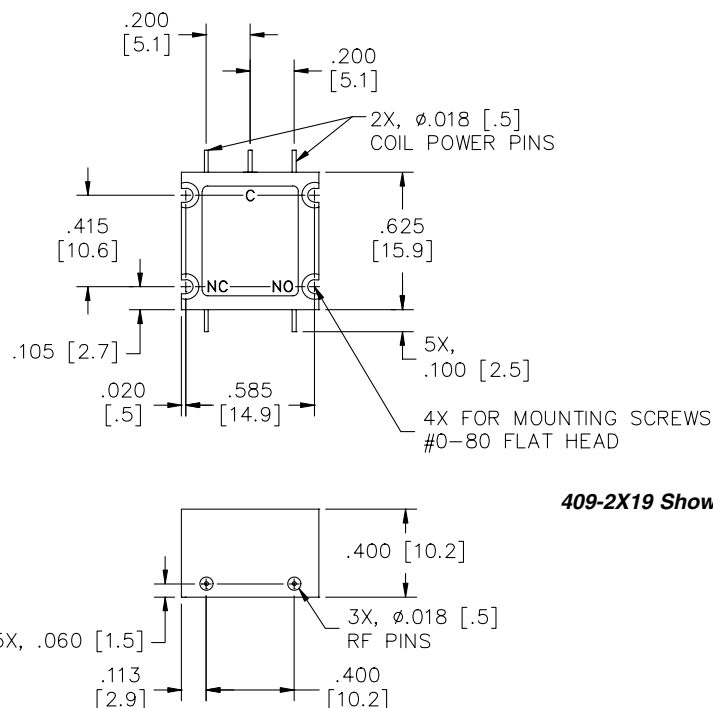
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 ms

Nominal Weight:

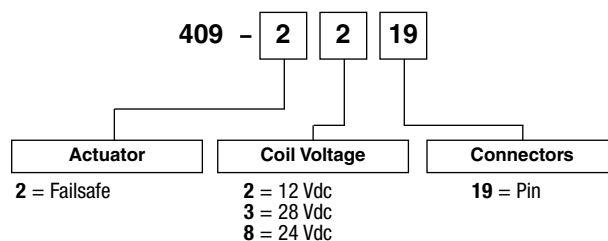
.3 oz., (7.6g.)

Mechanical

409-2X19 Shown

Part Number Selection

For Electrical Schematic
see page # 4-7





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**411FL-2308 Failsafe
Transfer Bypass, SMA**

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 220mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C

Mechanical Life, Cycles:

2,000,000 minimum

Vibration, Operating:

10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

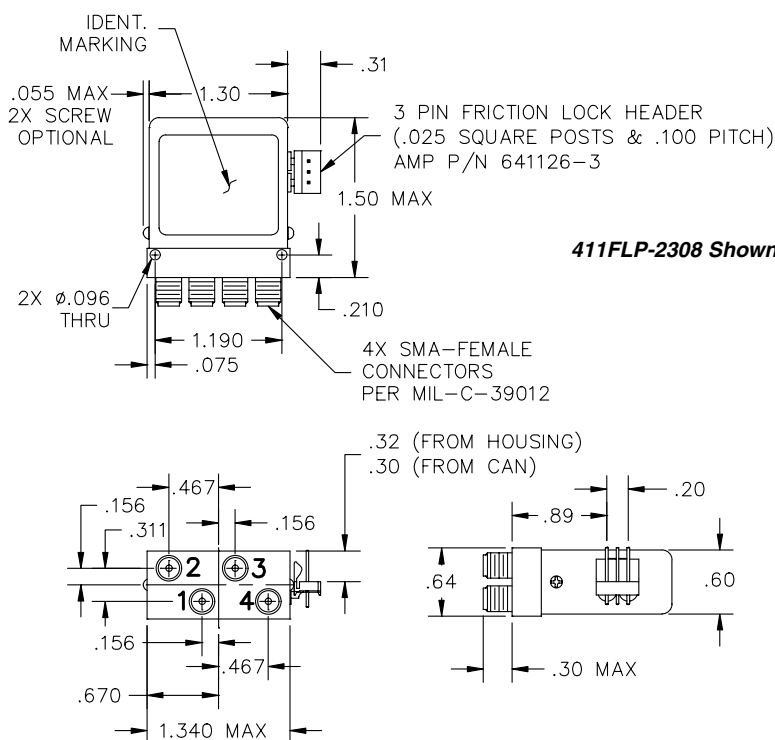
1.6 oz., (46g.)

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-1	1.10	80	0.10
1-2	1.15	80	0.15
2-3	1.20	80	0.20
3-4	1.25	80	0.25

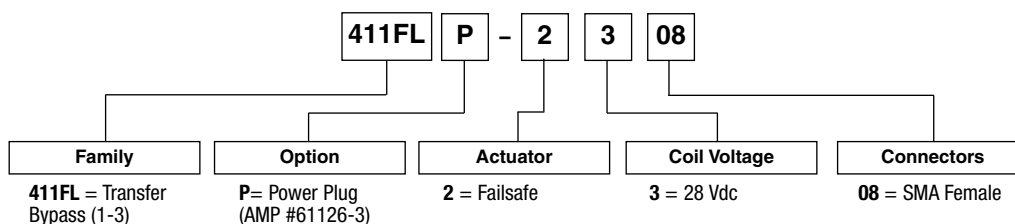
Note: Specify frequency range shown in "Special Options" under Part Number Selection

Mechanical

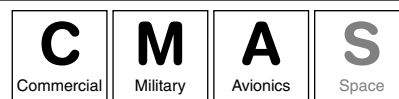


411FLP-2308 Shown

Part Number Selection



For Electrical Schematic
see page # 4-7

**RF Characteristics**

Frequency MHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-3	1.30	75	0.25

**411JNT-330832 Pulse Latching Transfer, SMA****Specifications****Operating Voltage:**

(across temperature range)
28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 200mA

Switching Time:

20 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

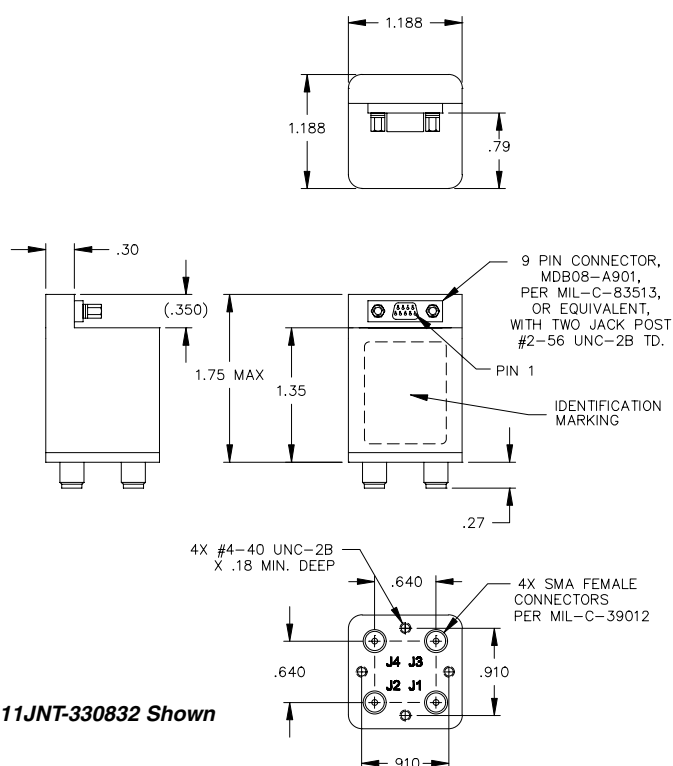
10 G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11mS

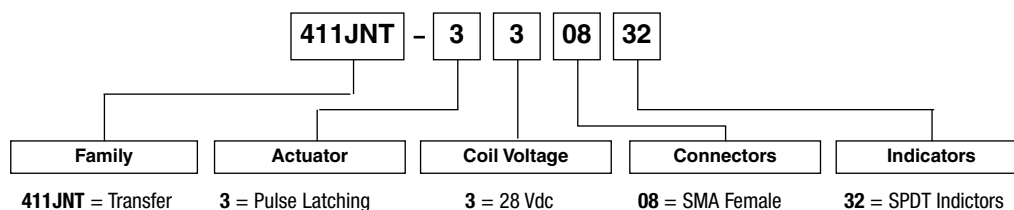
Nominal Weight:

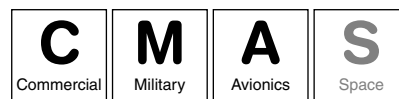
4.0oz., (115g.)

Mechanical

411JNT-330832 Shown

**For Electrical Schematic
see page # 4-7**

Part Number Selection



**417LP Series Transfer
Latching Self Cutoff**

RF Characteristics

Frequency MHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
20-2000	1.5:1	65	0.30

RF Power Watts
20-100 4Kw Continuous
100-1200 3Kw Continuous
1200-2000 1Kw Continuous

Specifications

Operating Voltage:

(across temperature range)

28 Vdc (25-31 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

28 Vdc 3 Amps

Switching Time:

500 mS maximum

Operating Temperature:

-40°C to +70°C

Mechanical Life, Cycles:

100,000 minimum

Vibration, Operating:

10 G RMS, 20-2000 Hz

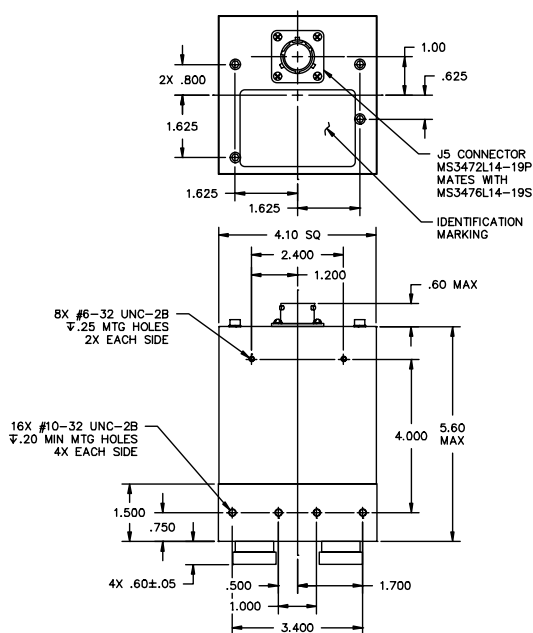
Mechanical Shock, Non-Operating:

50 G, 1/2 Sine, 11 mS

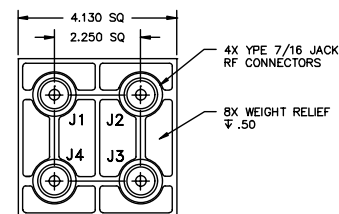
Nominal Weight:

5 lbs.

Mechanical



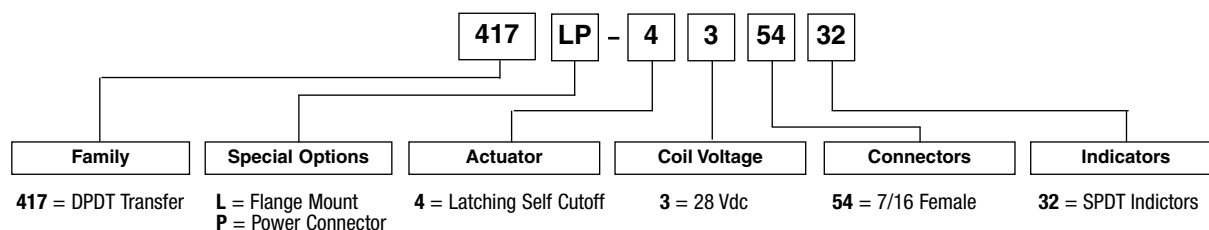
417LP-435432 Shown



BOTTOM VIEW

**For Electrical Schematic
see page # 4-7**

Part Number Selection





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CORPORATION

C

Commercial

M

Military

A

Avionics

S

Space



RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
DC-1	1.10	85	0.10
1-4	1.20	80	0.20
4-8	1.30	70	0.30
8-12	1.40	65	0.40
12-18	1.50	60	0.50

5X7 Series Normally Open, SMA

Specifications

Operating Voltage:

(across temperature range)

12 Vdc (11-14 Vdc)

28 Vdc (24-32 Vdc)

Coil Current (max @ nom.Vdc & 20°C):

12 Vdc 310mA

28 Vdc 140mA

Switching Time:

15 mS maximum

Operating Temperature:

-25°C to +65°C (Standard)

-55°C to +85°C (Extended "T" Option)

Mechanical Life, Cycles:

1,000,000 minimum

Vibration, Operating:

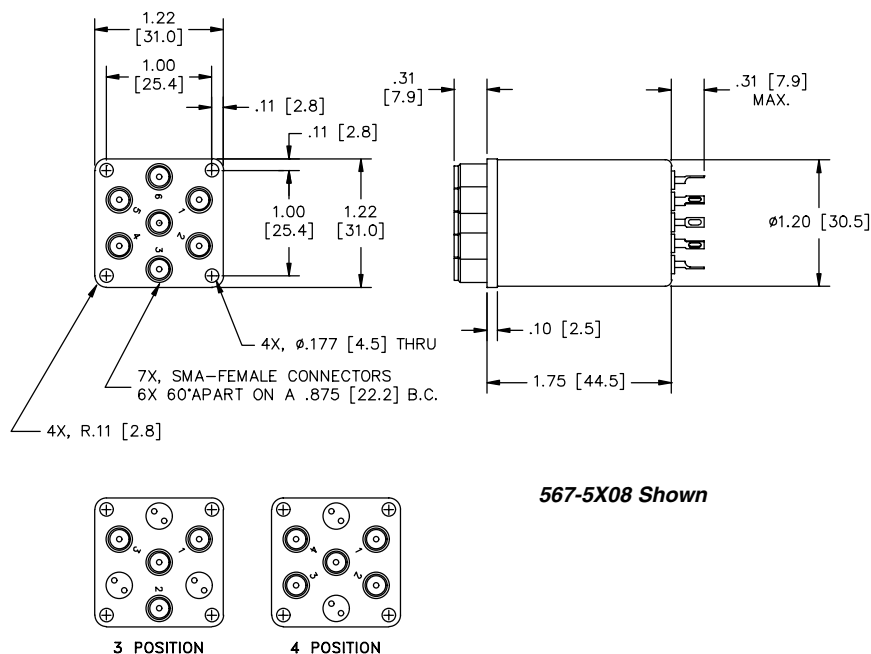
10G RMS, 20-2000 Hz

Mechanical Shock, Non-Operating:

50G, 1/2 Sine, 11mS

Nominal Weight:

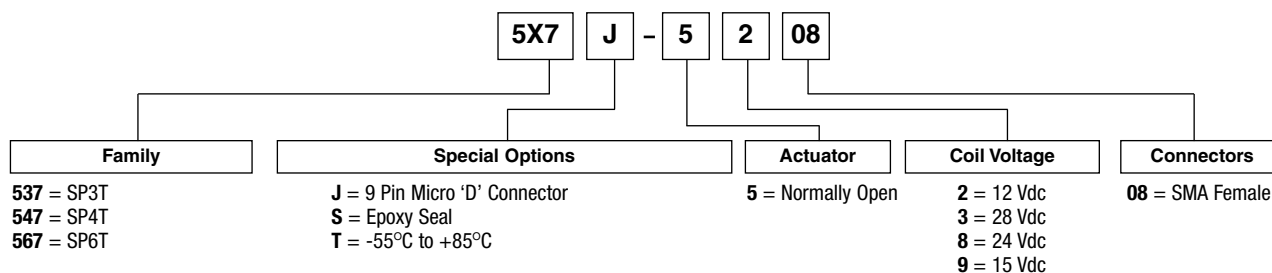
3.0 oz., (85g.)



567-5X08 Shown

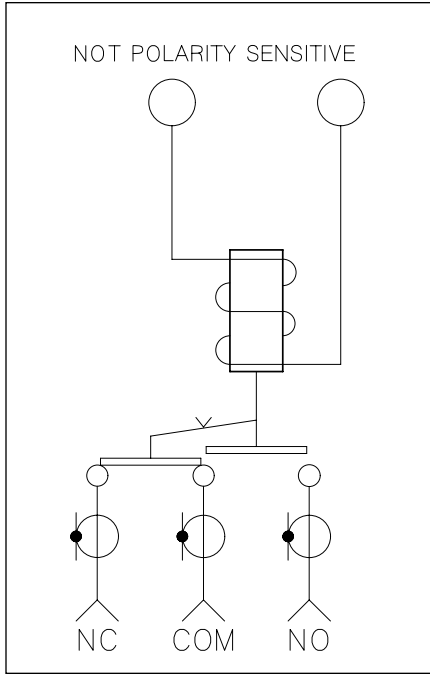
Part Number Selection

**For Electrical Schematic
see page # 4-7**

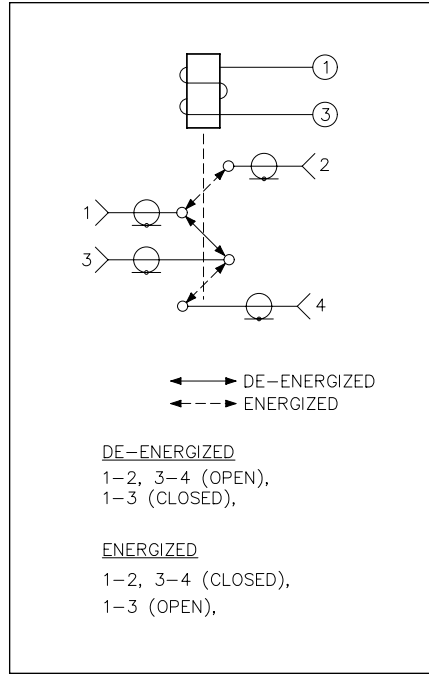




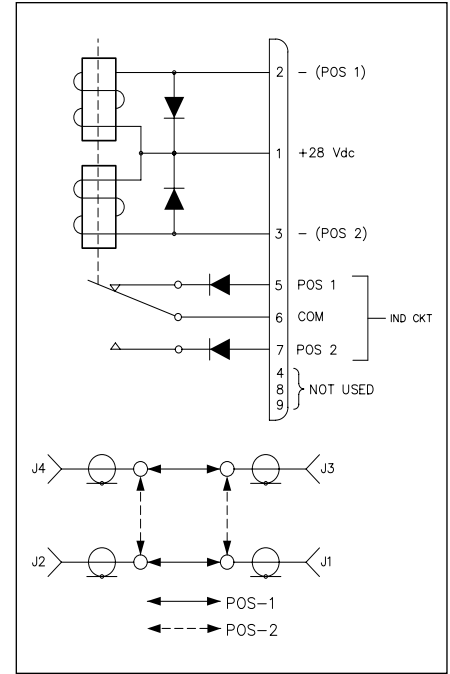
1 409 Failsafe



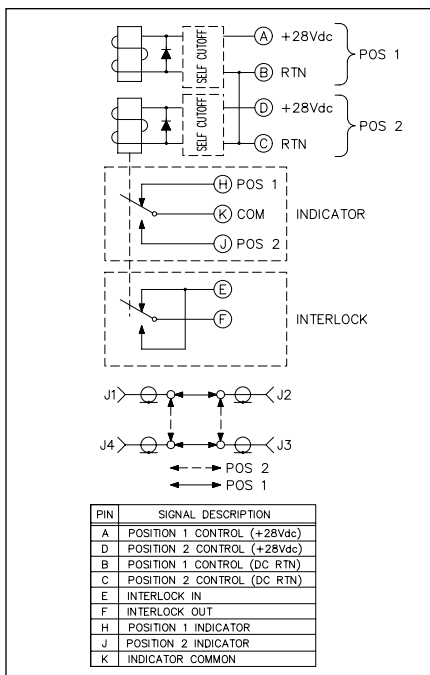
2 411FL Failsafe



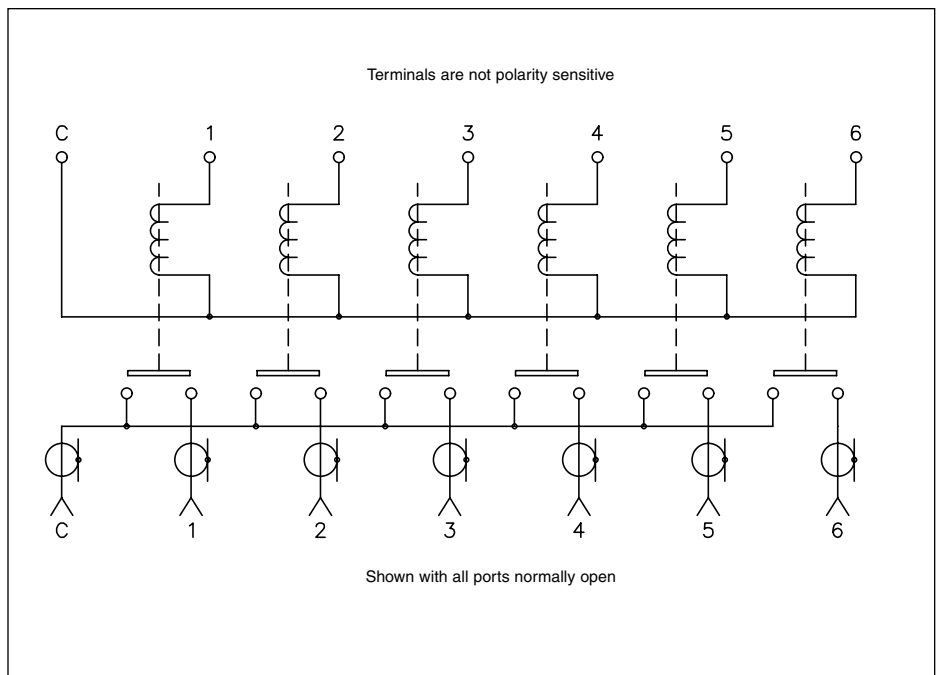
3 411JNT Pulse Latching



4 417LP Latching



5 537-567 N.O.



WAVEGUIDE SECTION



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C Commercial	M Military	A Avionics	S Space
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Mechanical



Waveguide Latching Transfer

Specifications

Operating Voltage:

(across temperature range)
28 Vdc (24-30 Vdc)

RF Characteristics:

Freq. Range: See Chart
VSWR: 1.0:1 Max
Isolation: 60dB Min.
Insertion Loss: See Chart

Operating Temperature:

-54°C to +84°C

Mechanical Life, Cycles:

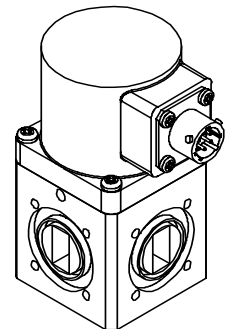
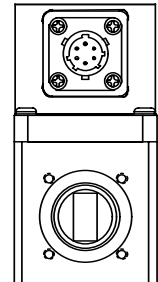
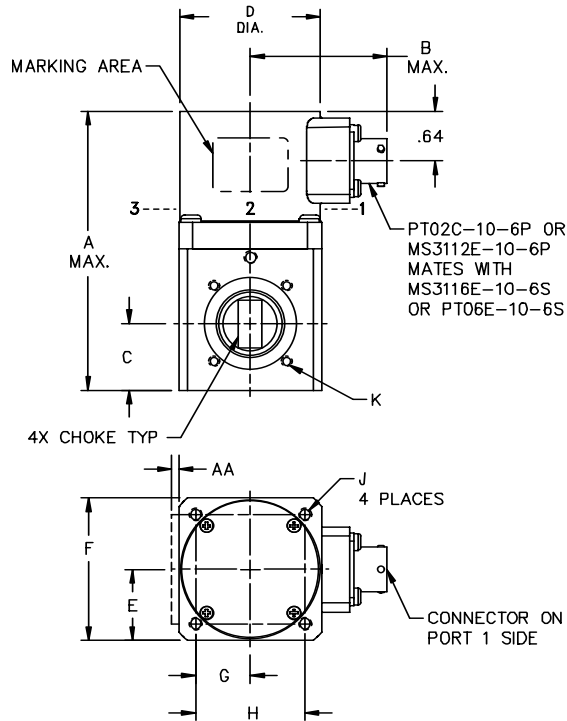
200,000 minimum

Duty:

Continuous Operation

Pressurized:

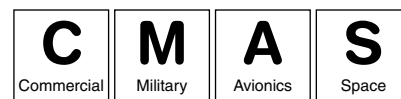
20 psig



For Electrical Schematic
see page # 5-5

Part Number Selection

Part No.	Waveguide Size	Sch. Dia.	Switch Type	Frequency Range, GHz	Switching Time, Max. (mS)	Current, AMP Max (28Vdc, 20 C)	Insertion Loss, Max. (dB)	AA Max.	A	B	C	D	E	F	G	H	J	K	Weight, Max. (lbs)
33D00100	WR 62	2	Failsafe	12.4 - 18.0	100	0.5	0.10	-	3.80	1.87	0.877	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.3
33D00200	WR 62	1	Latching	12.4 - 18.0	100	1.0	0.10	-	4.00	1.87	0.877	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.3
33D00300	WR 62	4	Failsafe	12.4 - 18.0	100	0.5	0.10	0.10	3.80	1.87	0.877	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.3
33D00400	WR 62	3	Latching	12.4 - 18.0	100	1.0	0.10	0.10	4.00	1.87	0.877	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.3
33D09100	WR 75	2	Failsafe	10.0 - 15.0	100	0.5	0.10	-	3.95	1.87	0.941	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D09200	WR 75	1	Latching	10.0 - 15.0	100	1.0	0.10	-	4.15	1.87	0.941	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D09300	WR 75	4	Failsafe	10.0 - 15.0	100	0.5	0.10	0.10	3.95	1.87	0.941	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D09400	WR 45	3	Latching	10.0 - 15.0	100	1.0	0.10	0.10	4.15	1.87	0.941	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D01100	WR 90	2	Failsafe	8.20 - 12.40	100	0.5	0.10	-	4.05	1.87	1.016	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D01200	WR 90	1	Latching	8.20 - 12.40	100	1.0	0.10	-	4.30	1.87	1.016	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D01300	WR 90	4	Failsafe	8.20 - 12.40	100	0.5	0.10	0.13	4.05	1.87	1.016	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D01400	WR 90	3	Latching	8.20 - 12.40	100	1.0	0.10	0.13	4.30	1.87	1.016	1.85	0.9375	1.875	0.718	1.437	#8-32 x 25 Deep	#6-32 x 22 Deep	1.4
33D03200	WR 112	1	Latching	7.05 - 10.0	100	1.0	0.08	-	5.10	2.07	1.245	2.25	1.187	2.375	1.000	2.000	#10-32 x 31 Deep	#8-32 x 28 Deep	2.3
33D03400	WR 112	3	Latching	7.05 - 10.0	100	1.0	0.08	0.13	5.10	2.07	1.245	2.25	1.187	2.375	1.000	2.000	#10-32 x 31 Deep	#8-32 x 28 Deep	2.3
33D04200	WR 137	1	Latching	5.85 - 8.20	150	1.0	0.08	-	7.00	2.57	1.750	3.25	2.125	4.250	1.750	3.500	#1/4-20 x 40 Deep	#10-32 x 30 Deep	8.3
33D04400	WR 137	3	Latching	5.85 - 8.20	150	1.0	0.08	0.13	7.00	2.57	1.750	3.25	2.125	4.250	1.750	3.500	#1/4-20 x 40 Deep	#10-32 x 30 Deep	8.3
33D06200	WR 187	1	Latching	3.95 - 5.85	150	1.0	0.05	-	7.50	2.57	2.000	3.25	2.125	4.250	1.750	3.500	#1/4-20 x 40 Deep	#10-32 x 30 Deep	9.0
33D06400	WR 187	3	Latching	3.95 - 5.85	150	1.0	0.05	0.13	7.50	2.57	2.000	3.25	2.125	4.250	1.750	3.500	#1/4-20 x 40 Deep	#10-32 x 30 Deep	9.0
33D08200	WR 284	1	Latching	2.60 - 3.95	500	1.5	0.05	-	9.00	2.57	2.750	3.25	2.937	5.875	2.375	4.750	#1/4-20 x 50 Deep	#1/4-20 x 40 Deep	17.0
33D08400	WR284	3	Latching	2.60 - 3.95	500	1.5	0.05	0.15	9.00	2.57	2.750	3.25	2.937	5.875	2.375	4.750	#1/4-20 x 50 Deep	#1/4-20 x 40 Deep	17.0



30C01200 Waveguide Latching Transfer

Specifications

Operating Voltage:

(across temperature range)

28 Vdc (24-30 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

28 Vdc (24-30 Vdc)

Switching Time:

100 mS maximum

Operating Temperature:

-54°C to +84°C

Mechanical Life, Cycles:

200,000 minimum

Duty:

Continuous Operation

Pressurized:

20 psig

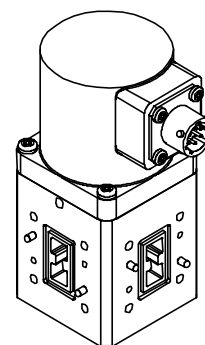
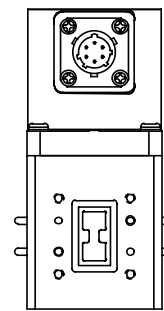
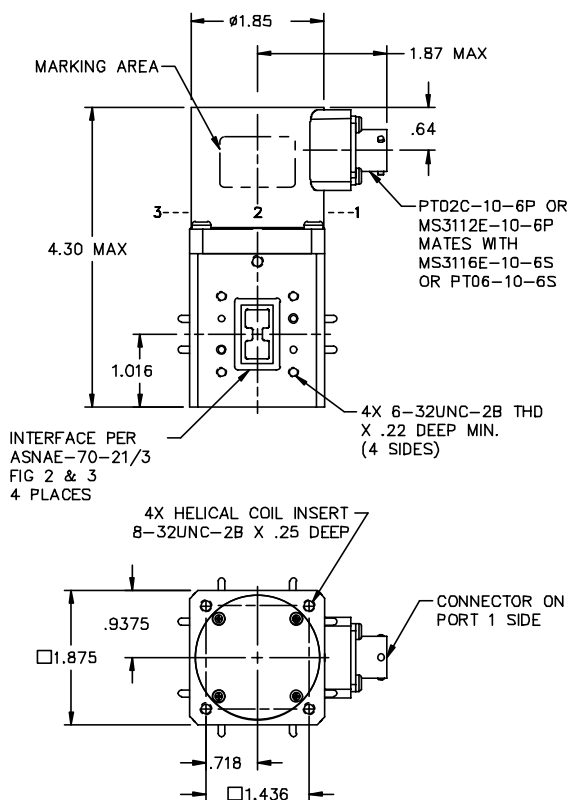
Max. Weight:

1.3 lbs

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
7.5 - 17.5	1.25	60	0.25

Mechanical



For Electrical Schematic
see page # 5-5

Part Number Selection

Part Number	Part Description	Sch. Dia.
30C01200	Latching, Transfer, Ind. Ckt.	1
30C01300	Latching, SPDT, Ind. Ckt.	3
30C02000	Failsafe, Transfer, Ind. Ckt.	2
30C02100	Failsafe, SPDT, Ind. Ckt.	4



**30D01900 Waveguide
Latching Transfer**

Specifications

Operating Voltage:

(across temperature range)

28 Vdc (24-30 Vdc)

Coil Current (max @ nom. Vdc & 20°C):

28 Vdc (24-30 Vdc)

Switching Time:

150 mS maximum

Operating Temperature:

-54°C to +84°C

Mechanical Life, Cycles:

200,000 minimum

Duty:

Continuous Operation

Pressurized:

20 psig

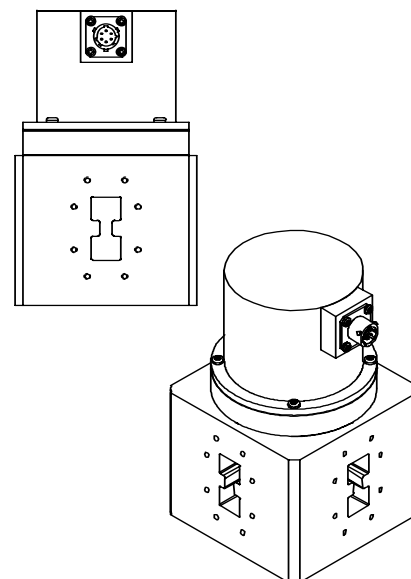
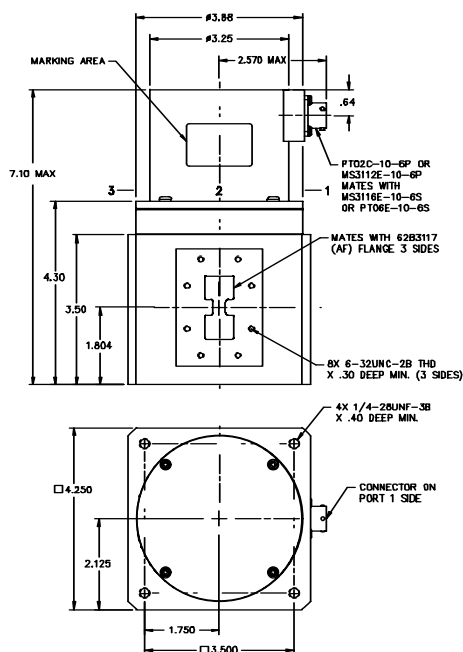
Max. Weight:

9 lbs

RF Characteristics

Frequency GHz	VSWR (max)	Isolation dB (min)	Ins. Loss dB (max)
3.5 - 8.2	1.20	40	0.20

Mechanical



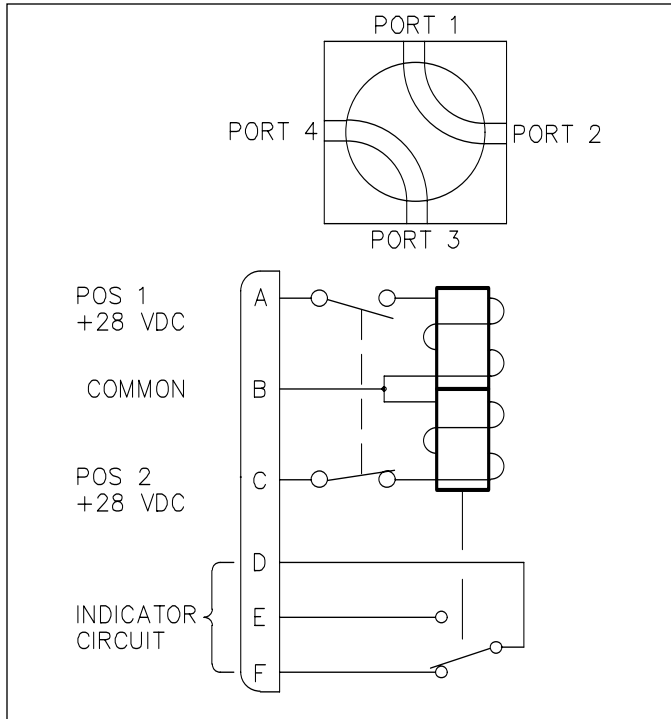
*For Electrical Schematic
see page # 5-5*

Part Number Selection

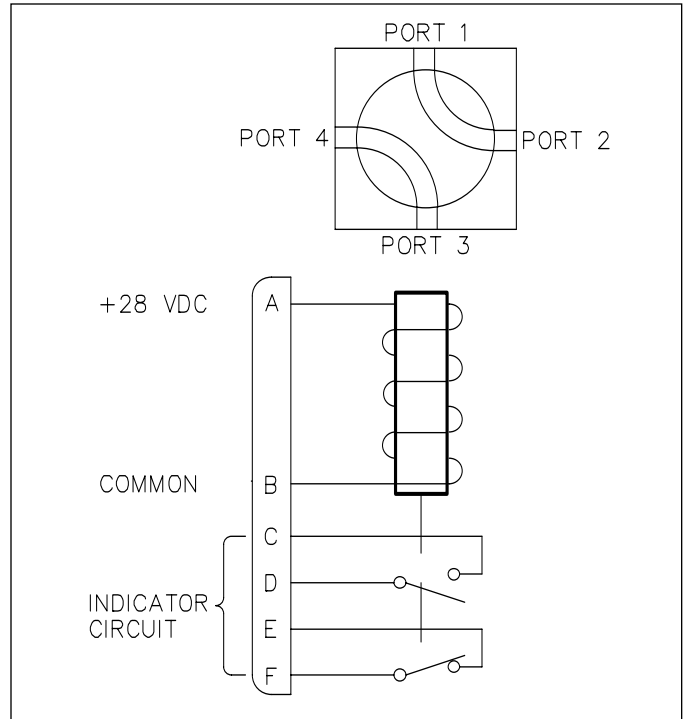
Part Number	Part Description	Sch. Dia.
30D01900	Latching, Transfer, Ind. Ckt.	1
30D01400	Latching, SPDT, Ind. Ckt.	3
30C00500	Failsafe, SPDT, Ind. Ckt.	4



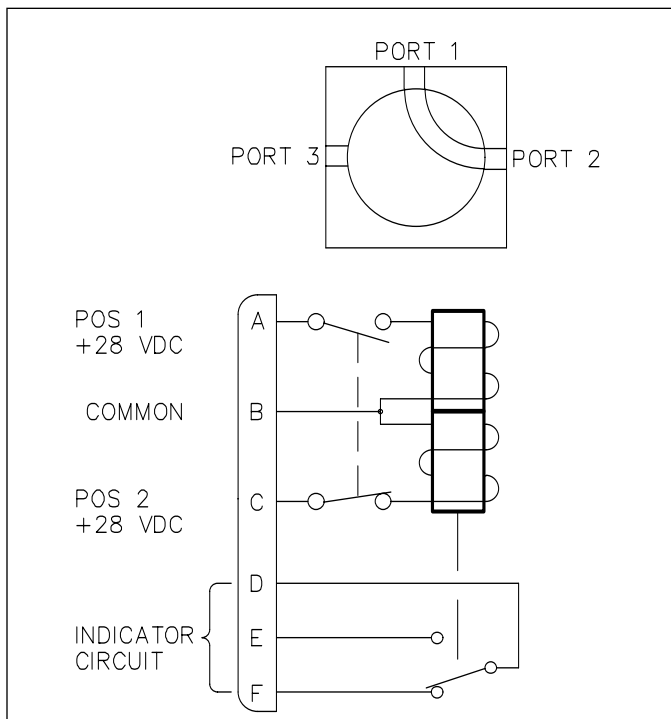
1 Latching Transfer



2 Failsafe Transfer



3 Latching SPDT



4 Failsafe SPDT

