

COAXIAL SUBMINIATURE SPnT up to 40 GHz
Issue: Feb-3-2011

R591 RADIALL coaxial subminiature switches have a typical operating life exceeding 25 million cycles. Excellent RF & repeatability characteristics along with a guaranteed life of 10 million cycles make these switches ideal for Automated Test Equipment (ATE) and other measurement applications. These miniature switches are also an excellent choice for Mil/Aero applications due to their small size, light weight, as well as outstanding shock and vibration handling capabilities.

PART NUMBER SELECTION

R 591

Updated revision
RF connectors :

3 : SMA up to 6 GHz
7 : SMA up to 26.5 GHz
8 : SMA 2.9 up to 40GHz (5)
E : QMA up to 6 GHz (4)

Type :

0 : Normally open
2 : Latching, global reset
6 : Latching, separated reset (1)

Actuator voltage :

2 : 12 Vdc
3 : 28 Vdc

Actuator Terminal :

0 : Solder pins
5 : Micro-D connector

Options :

0 : Without option
1 : Positive common
2 : Normally open with TTL driver (high level) (2)&(3)
3 : With suppression diodes
4 : With suppression diodes and positive common

Number of positions :

4 : 4 positions
6 : 6 positions

- (1) : Available with "solder pins" models only
(2) : Polarity is not relevant to application for switches with TTL driver
(3) : Suppression diodes are already included with TTL option



(4) : The "QLF" trademark (quick lock formula®) standard applies to QMA and QN series and guarantees the full intermateability between suppliers using this trademark. Using QLF certified connectors also guarantees the specified level of RF performances.

(5) : Connector SMA 2.9 is equivalent to "K connector®", registered trademark of Anritsu.



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GENERAL SPECIFICATIONS

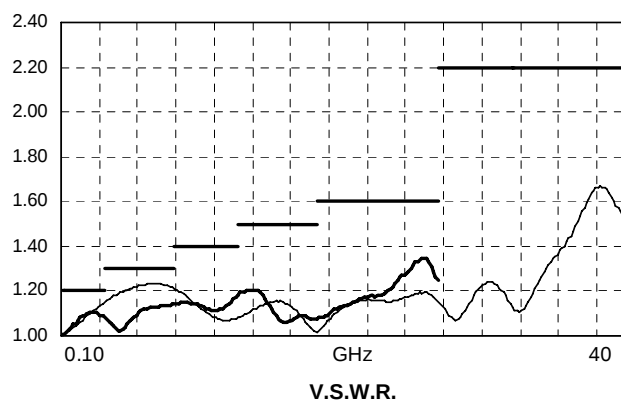
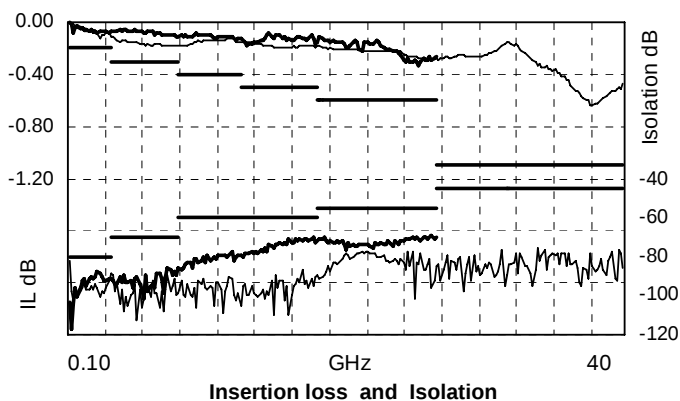
Operating mode		Normally open		Latching	
Nominal operating voltage (across operating temperature) Vdc		12 (10.2 / 13)	28 (21 / 30)	12 (10.2 / 13)	28 (21 / 30)
Coil resistance (+/-10%) Ohms		48	250	60	285
Operating current at 23°C mA		250	110	200	98
Average power		See Power Rating Chart on general catalog			
TTL input	High Level	2.2 to 5.5 Volts			
	Low Level	0 to 0.8 Volts			
Switching time (max) ms		10			
Life		10 million cycles (SMA, QMA) / 2 million cycles (SMA 2.9)			
Connectors		SMA / QMA / SMA 2.9			
Actuator terminals		Solder Pins : double row connector for wrapping, soldering (250°C max / 30 sec), or connecting to 2.54 mm pitch female connector. 9 pin micro-D receptacle M83513/07-A according to MIL-C-85513.			
Operating temperature range °C		-40 to +85			
Storage temperature range °C		-55 to +85			
Sine vibration (According to MIL STD 202, Method 204D, Cond. D)		10-2000 Hz, 20g	operating		
Random vibration (According to MIL STD 202, Method 214A, Profile I, Cond. F)		50-2000 Hz, 20.71grms	operating		
Shock (According to MIL STD 202, Method 213B, Cond. C)		100g / 6 ms, ½ sine	operating		

RF PERFORMANCES

Connectors	Frequency Range GHz		V.S.W.R. (max)	Insertion Loss (max) dB	Isolation (min) dB	Impedance Ohms
SMA / QMA	DC – 6	DC – 3	1.20	0.20	80	50
		3 – 6	1.30	0.30	70	
SMA	DC – 26.5	DC – 3	1.20	0.20	80	50
		3 – 8	1.30	0.30	70	
		8 – 12.4	1.40	0.40	60	
		12.4 – 18	1.50	0.50	60	
		18 – 26.5	1.60	0.60	55	
SMA2.9	DC – 40	DC – 3	1.20	0.20	80	50
		3 – 8	1.30	0.30	70	
		8 – 12.4	1.40	0.40	60	
		12.4 – 18	1.50	0.50	60	
		18 – 26.5	1.70	0.70	55	
		26.5 – 40	2.20	1.10	45	

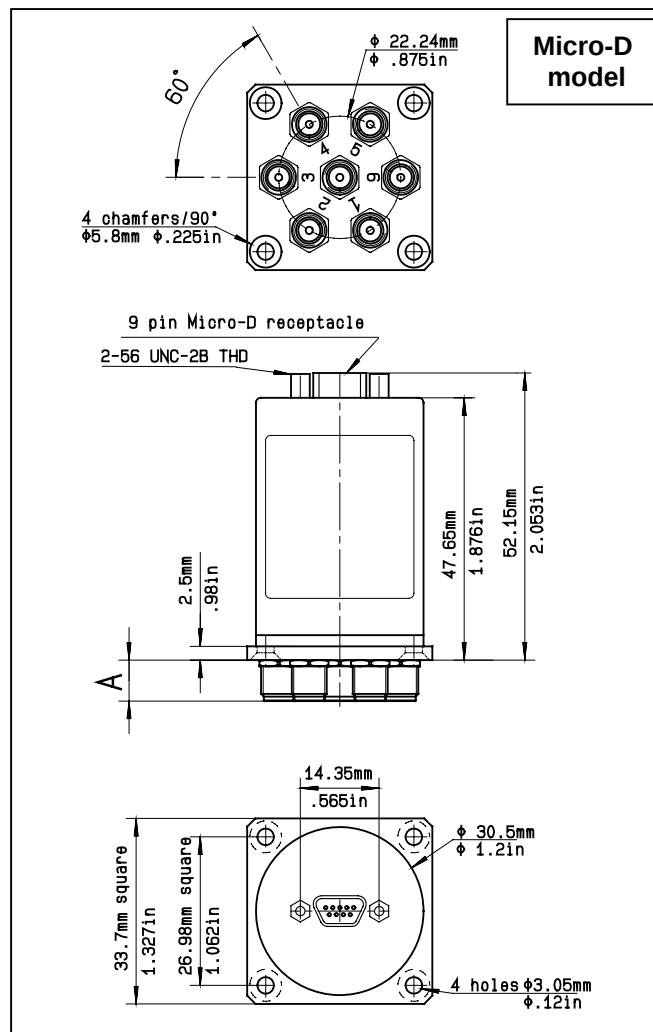
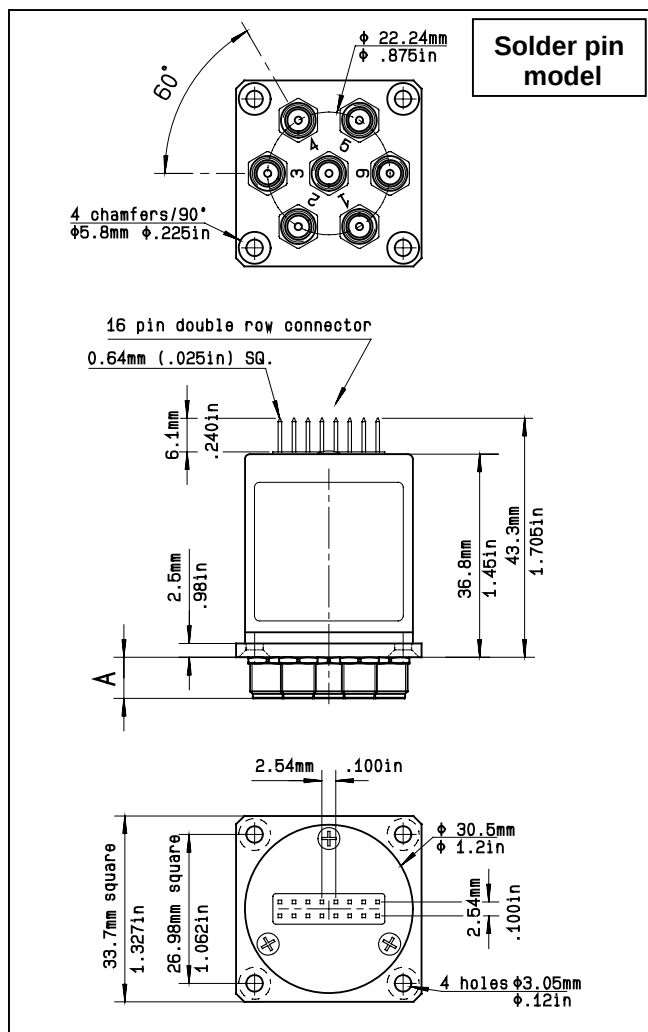
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TYPICAL RF PERFORMANCES



TYPICAL OUTLINE DRAWING (1)

Connectors	SMA	SMA 2.9	QMA
A max (mm/ inches)	7.4/ 0.291	6.5/0.26	10.8/ 0.425



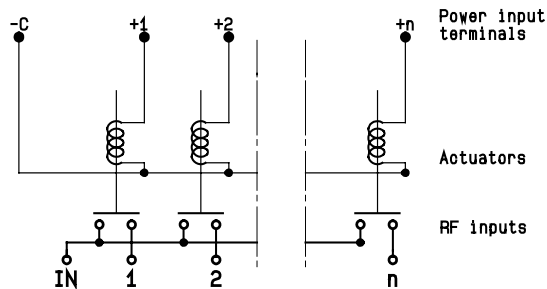
(1) : For SP4T, ways 3 and 6 not connected

all dimensions are in mm/ inches

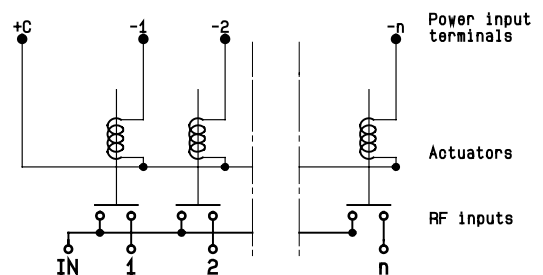
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R591 series electrical schematics

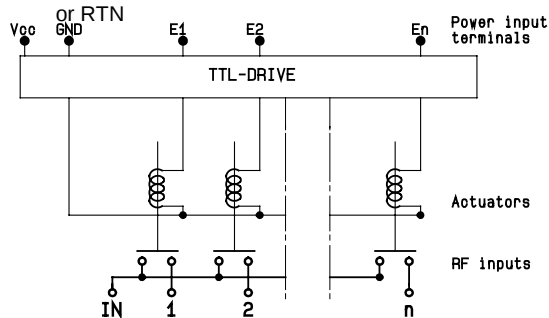
NORMALLY OPEN WITHOUT OPTION
R591 -0- -0-



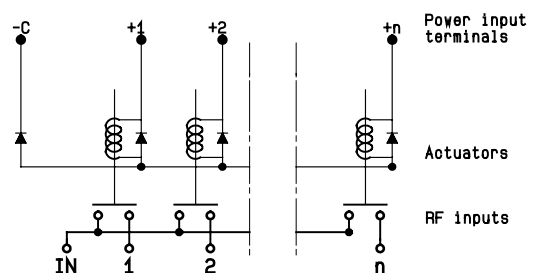
NORMALLY OPEN WITH POSITIVE COMMON
R591 -0- -1-



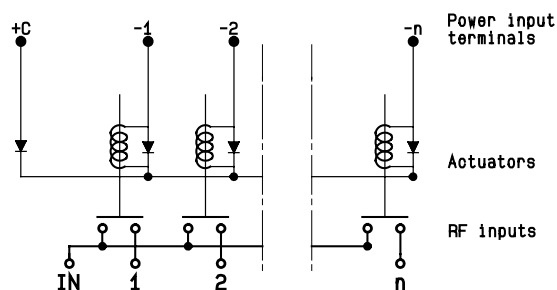
NORMALLY OPEN WITH TTL DRIVE
R591 -0- -2-



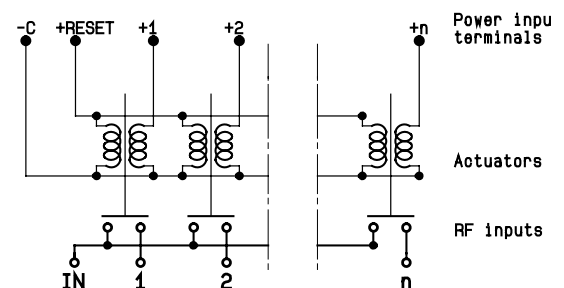
NORMALLY OPEN WITH SUPPRESSION DIODES
R591 -0- -3-



NORMALLY OPEN WITH POSITIVE COMMON AND SUPPRESSION DIODES
R591 -0- -4-



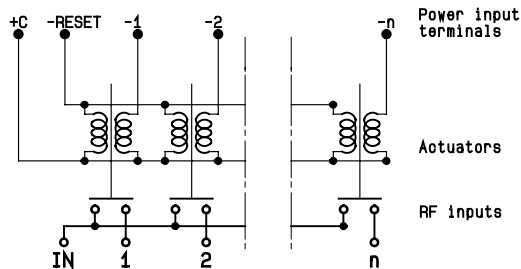
LATCHING GLOBAL RESET WITHOUT OPTION
R591 -2- -0-



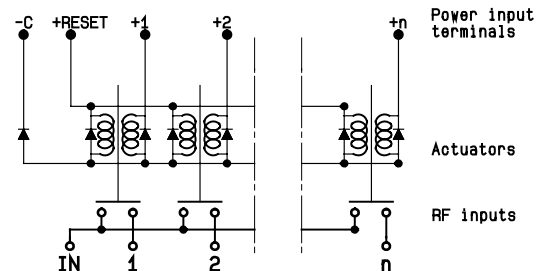
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R591 series electrical schematics

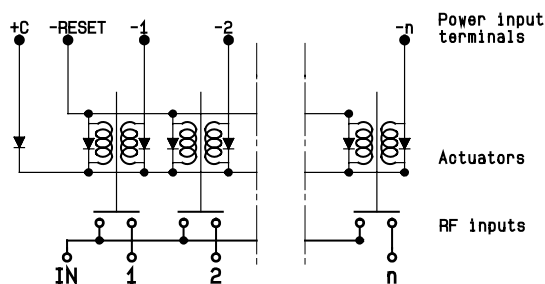
**LATCHING GLOBAL RESET WITH POSITIVE COMMON
R591 -2- -1-**



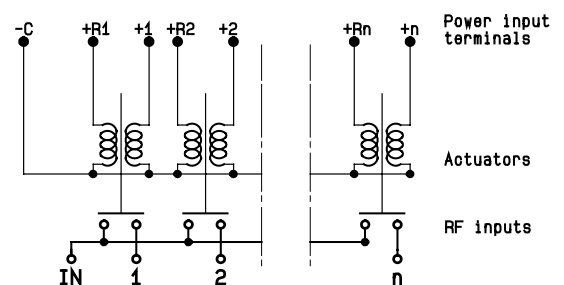
**LATCHING GLOBAL RESET WITH SUPPRESSION DIODES
R591 -2- -3-**



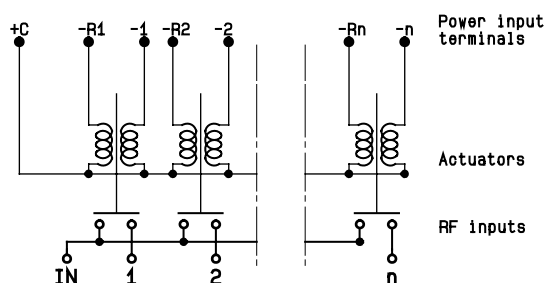
**LATCHING GLOBAL RESET WITH POSITIVE COMMON AND
SUPPRESSION DIODES
R591 -2- -4-**



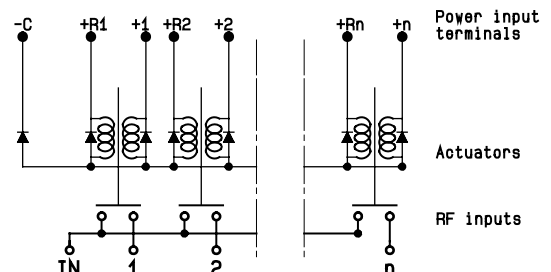
**LATCHING SEPARATED RESET WITHOUT OPTION
R591 -6- -0-**



**LATCHING SEPARATED RESET WITH POSITIVE COMMON
R591 -6- -1-**



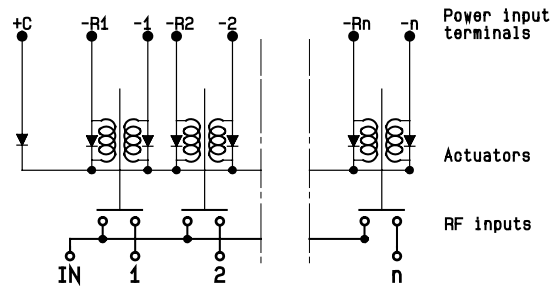
**LATCHING SEPARATED RESET WITH SUPPRESSION
DIODES
R591 -6- -3-**



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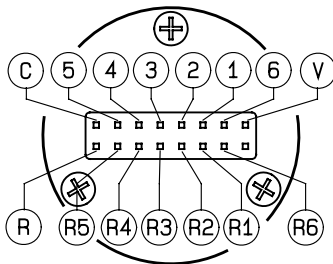
R591 series electrical schematics

LATCHING SEPARATED RESET WITH POSITIVE COMMON AND SUPPRESSION DIODES R591 -6- -4-

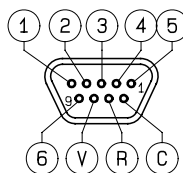


Pin identification

Solder pins (top view)*



9 pin Micro-D (top view)



- NC : not connected
- For SP4T, ways 3 and 6 not connected
- Pin R = reset of all paths



* : compatible with 2.54 mm pitch double row 16 contact femelle connector

		PIN														
Type		C	V	1	2	3	4	5	6	R	R1	R2	R3	R4	R5	R6
Normally open	negative common	-C	NC	+1	+2	+3	+4	+5	+6	NC	NC	NC	NC	NC	NC	NC
	positive common	+C	NC	-1	-2	-3	-4	-5	-6	NC	NC	NC	NC	NC	NC	NC
Latching	negative common	-C	NC	+1	+2	+3	+4	+5	+6	+reset	NC	NC	NC	NC	NC	NC
global reset	positive common	+C	NC	-1	-2	-3	-4	-5	-6	-reset	NC	NC	NC	NC	NC	NC
Latching	negative common	-C	NC	+1	+2	+3	+4	+5	+6	NC	+res.1	+res.2	+res.3	+res.4	+res.5	+res.6
individual reset	positive common	+C	NC	-1	-2	-3	-4	-5	-6	NC	-res.1	-res.2	-res.3	-res.4	-res.5	-res.6
Normally open with TTL drive		Gnd or RTN	Vcc	E1	E2	E3	E4	E5	E6	NC	NC	NC	NC	NC	NC	NC

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