RADIALL | TECHNICAL DATA SHEET | R 591 --- --- ---

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)

Actuator Terminal :
- 0 : Solder pins
- 5 : Micro-D connector

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

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

Actuator voltage :
- 2 : 12 Vdc
- 3 : 28 Vdc

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.*

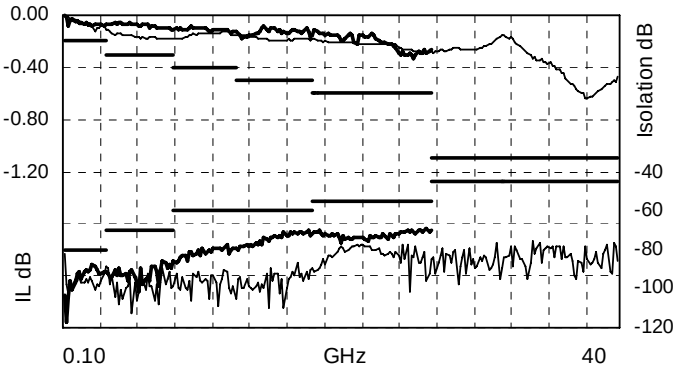
GENERAL SPECIFICATIONS

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			

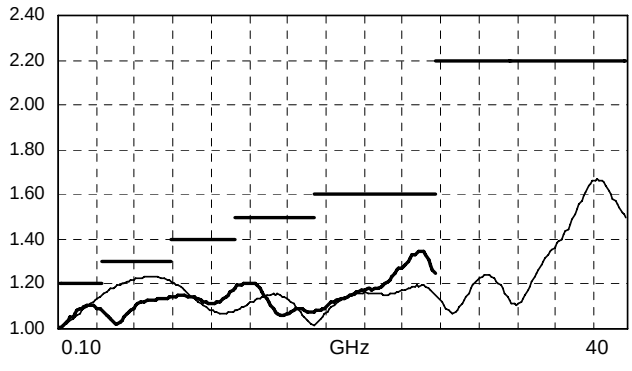
RF PERFORMANCES

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	

TYPICAL RF PERFORMANCES



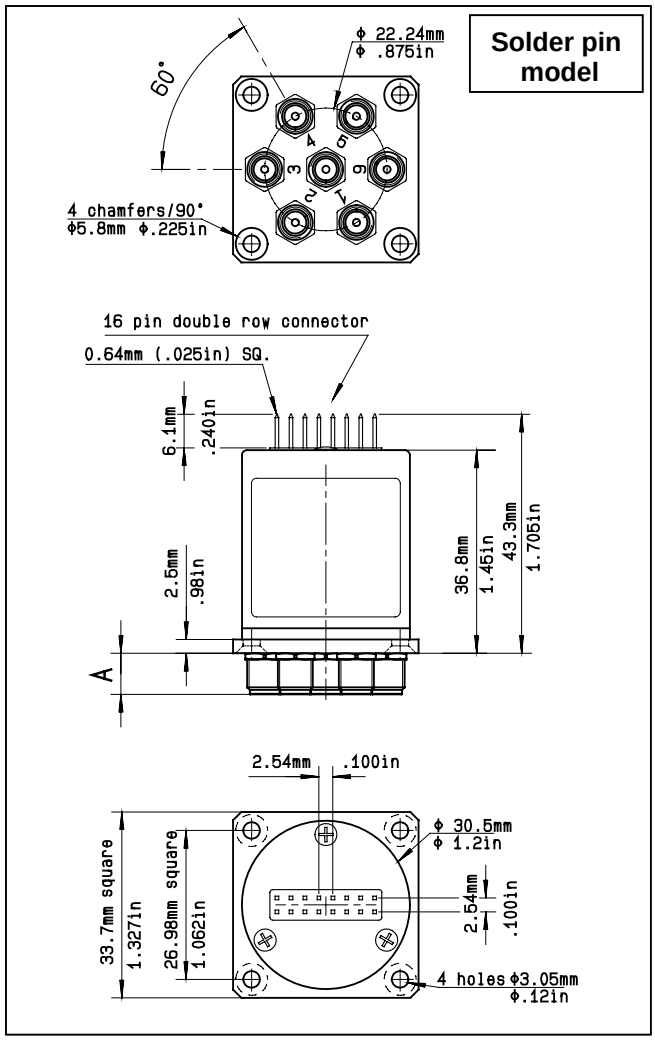
Insertion loss and Isolation

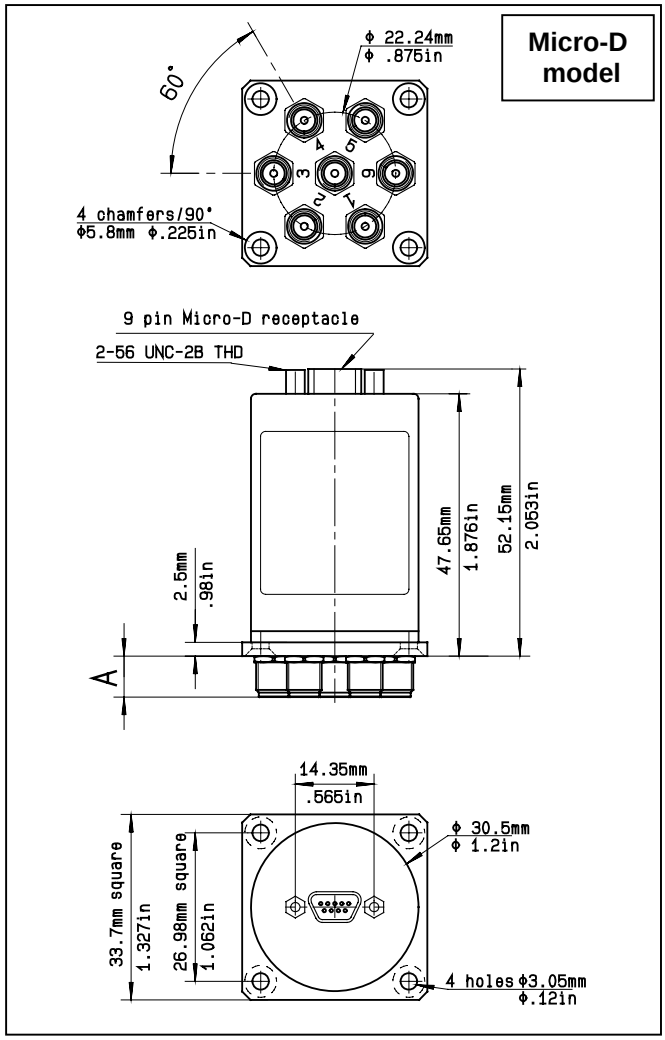


V.S.W.R.

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



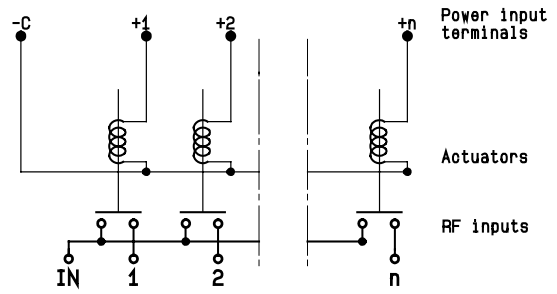


(1) : For SP4T, ways 3 and 6 not connected

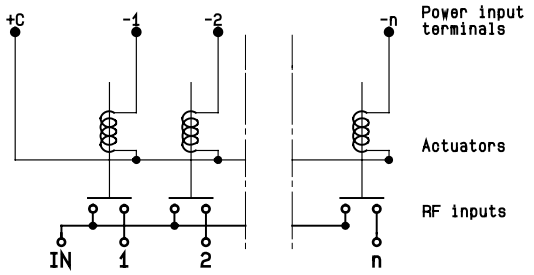
all dimensions are in mm/ inches

R591 series electrical schematics

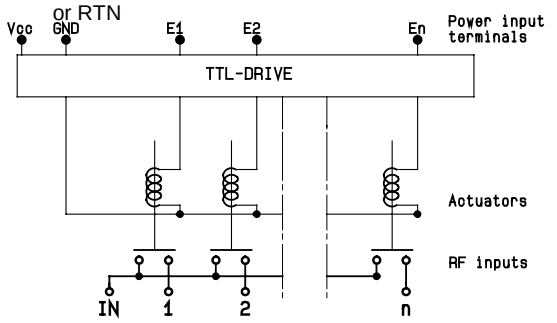
NORMALY OPEN WITHOUT OPTION
R591 -0- -0-



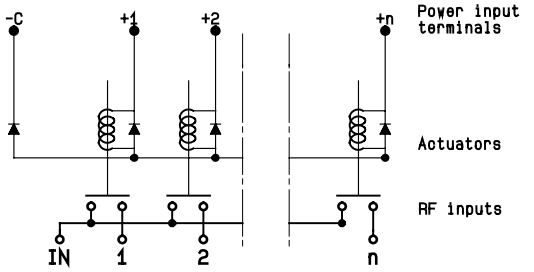
NORMALLY OPEN WITH POSITIVE COMMON
R591 -0- -1-



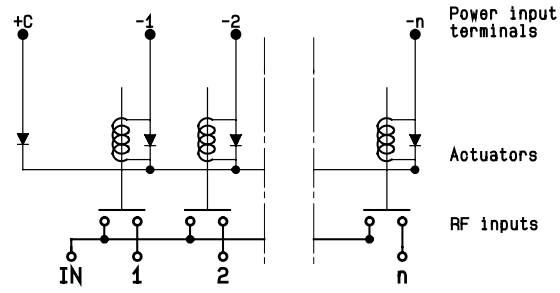
NORMALLY OPEN WITH TTL DRIVE
R591 -0- -2-



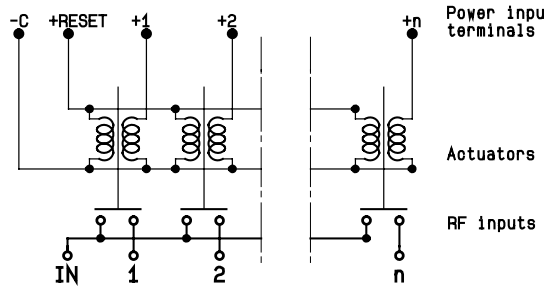
NORMALLY OPEN WITH SUPPRESSION DIODES
R591 -0- -3-



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

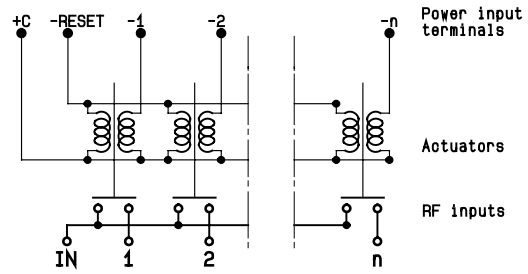


LATCHING GLOBAL RESET WITHOUT OPTION
R591 -2- -0-

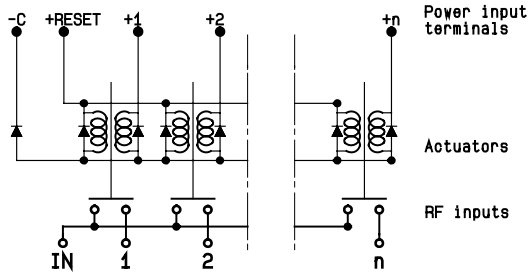


R591 series electrical schematics

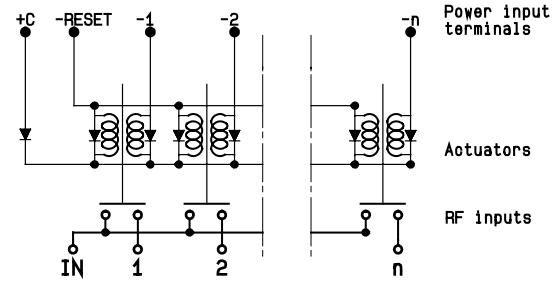
LATCHING GLOBAL RESET WITH POSITIVE COMMON
R591 -2- -1-



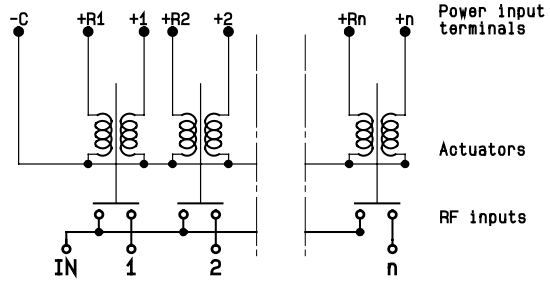
LATCHING GLOBAL RESET WITH SUPPRESSION DIODES
R591 -2- -3-



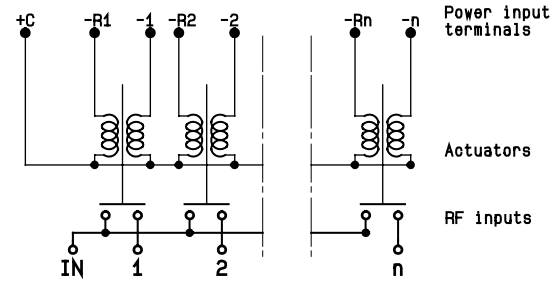
LATCHING GLOBAL RESET WITH POSITIVE COMMON AND SUPPRESSION DIODES
R591 -2- -4-



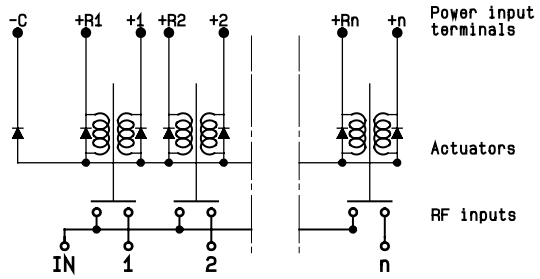
LATCHING SEPARATED RESET WITHOUT OPTION
R591 -6- -0-



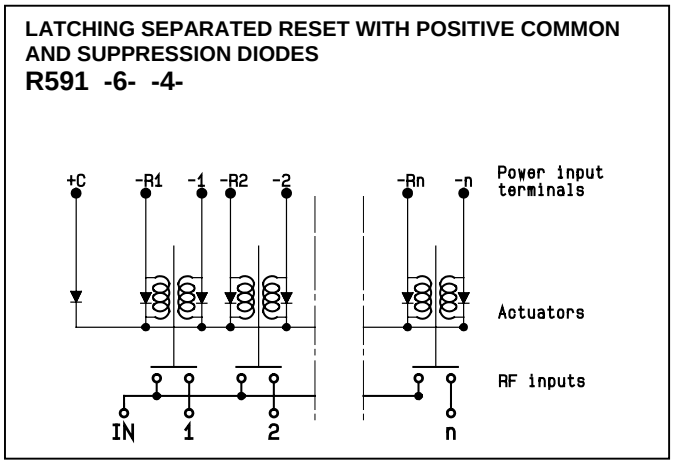
LATCHING SEPARATED RESET WITH POSITIVE COMMON
R591 -6- -1-



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

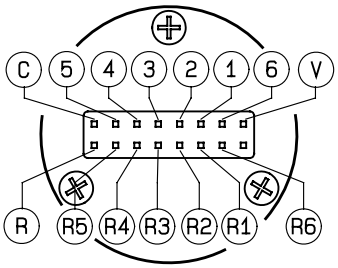


R591 series electrical schematics

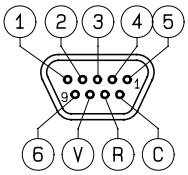


Pin identification

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

Type		PIN 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

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9