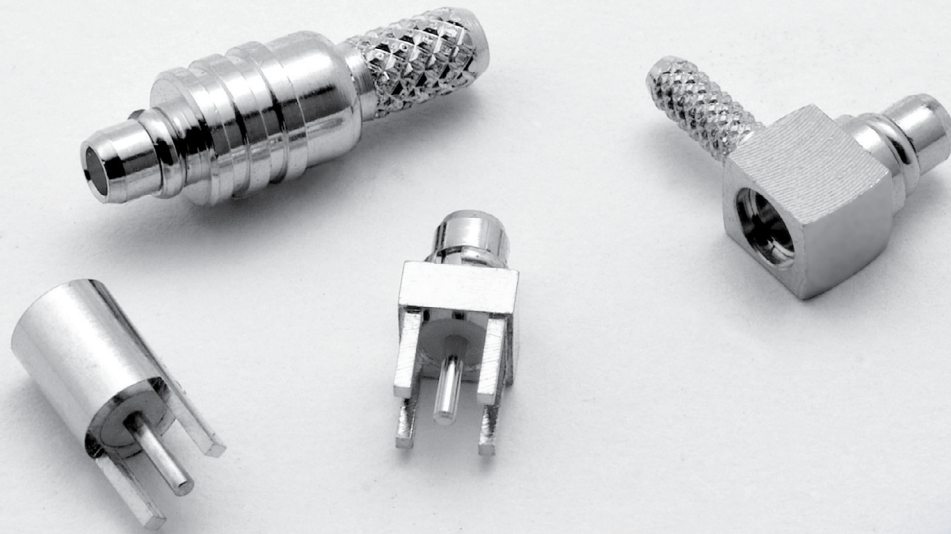


# MMCX Series - MM

MMCX



## **FEATURES :**

- Quick connect / disconnect
- Snap-on mating
- Low-Profile PCB receptacles
- Operates to 6GHz
- Works with standard RG cables
- 360Deg Rotation

## **APPLICATIONS :**

- Antennas
- Wireless Base Stations
- PCMCIA Cards
- GPS
- Telecom
- Radio Boards





## ***ELECTRICAL SPECIFICATIONS***

<u>Impedance</u>	<u>50 <math>\Omega</math></u>
<u>Frequency Range</u>	<u>0 – 6 GHz</u>
<u>Working Voltage</u>	<u><math>\leq</math> 170 VRMS at sea level</u>
<u>Dielectric Withstanding Voltage</u>	<u>500 VRMS at sea level</u>
<u>VSWR</u>	<u>Straight : 1.3 max</u>
	<u>Right Angle : 1.5 max</u>
<u>Contact Resistance</u>	<u>Center Contact : <math>\leq</math> 5 m<math>\Omega</math></u>
	<u>Outer Contact : <math>\leq</math> 2.5 m<math>\Omega</math></u>
<u>Insulator Resistance</u>	<u>1000 M<math>\Omega</math> min.</u>

## ***MATERIAL SPECIFICATIONS***

<u>Body and outer contacts</u>	<u>Brass, gold plated</u>
<u>Male contact</u>	<u>Brass, gold plated</u>
<u>Female contact</u>	<u>Beryllium Copper, gold plated</u>
<u>Insulator</u>	<u>PTFE</u>
<u>Crimp ferrule</u>	<u>Copper or brass, gold plated</u>

## ***MECHANICAL SPECIFICATIONS***

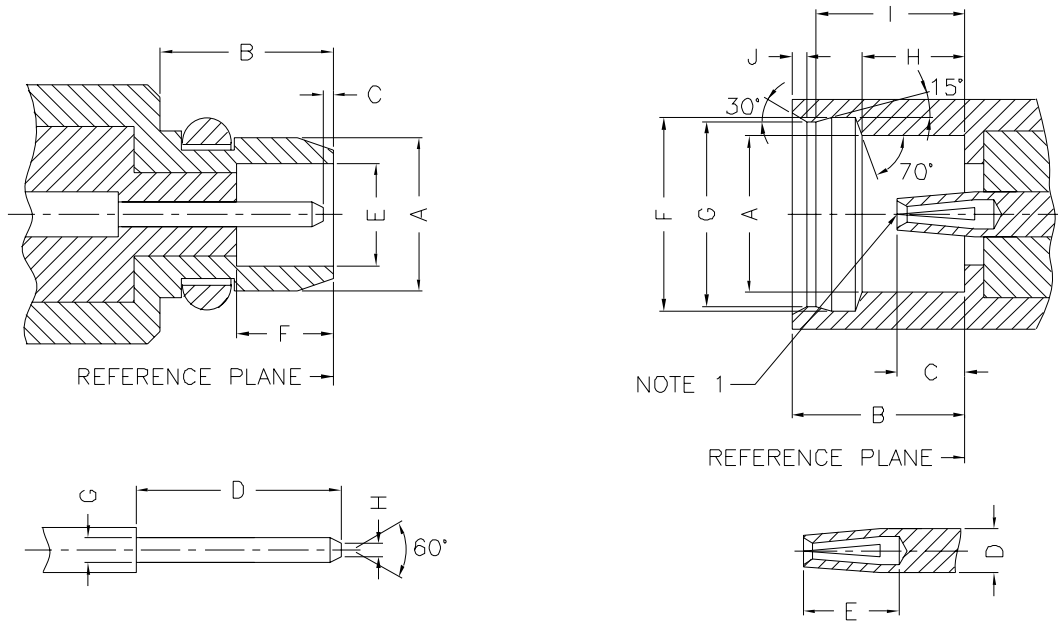
<u>Contact Retention</u>	<u><math>\geq</math> 2.3 lbs</u>
<u>Engagement Force</u>	<u><math>\leq</math> 3.4 lbs</u>
<u>Disengagement Force</u>	<u><math>\geq</math> 1.4 lbs</u>
<u>Durability (matings)</u>	<u>500 cycles min.</u>

## ***ENVIRONMENTAL***

<u>Temperature Range</u>	<u>-55°C to +155°C</u>
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## INTERFACE MATING DIMENSIONS



PLUG		
Letter	Millimeters	
	Minimum	Maximum
A	-	2.40
B	2.70	-
C	0.00	0.25
D	-	3.15
E	1.58	1.62
F	1.45	-
G	0.38	0.42
H	-	0.20

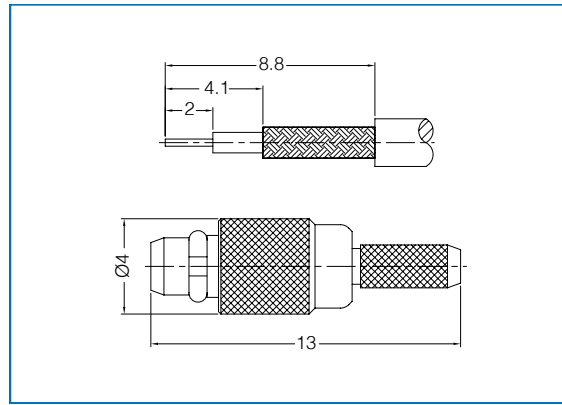
JACK		
Letter	Millimeters	
	Minimum	Maximum
A	2.41	-
B	2.60	-
C	0.90	1.20
D	0.68	0.72
E	1.40	-
F	3.00	3.04
G	2.87	2.90
H	1.57	1.63
I	2.30	2.34
J	-	0.23

**Note 1** : I.D. to meet VSWR and contact resistance when mated with 0.38/0.42 mm dia. pin.

**Straight Plug, Crimp**

MMM11A-AXXG01

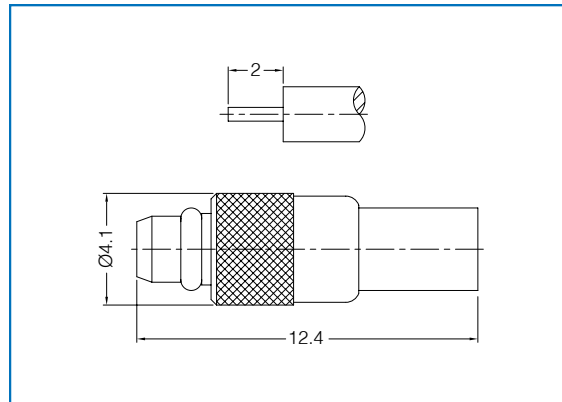
Cable group : 01, 02, 04, 06, 07



**Straight Plug, Solder**

MMM11B-AXXG01

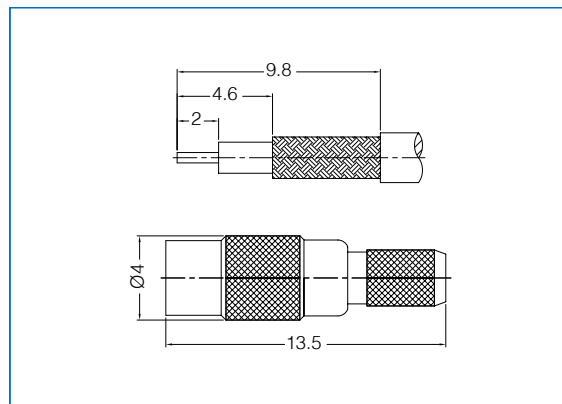
Cable group : 28, 33



**Straight Jack, Crimp**

MMF11A-AXXG01

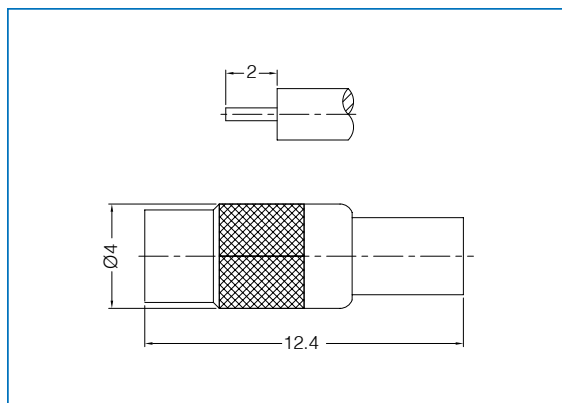
Cable group : 01, 02, 04, 06, 07



**Straight Jack, Solder**

MMF11B-AXXG01

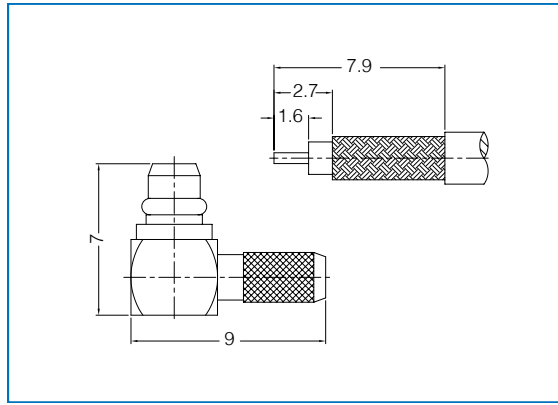
Cable group : 28, 33



### Right Angle Plug, Crimp

MMM21A-AXXG01

Cable group : [01](#), [02](#), [04](#)

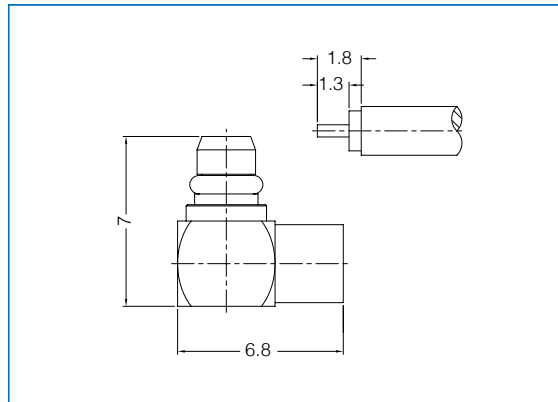


Cable Groups

### Right Angle Plug, Solder

MMM21B-AXXG01

Cable group : [28](#), [33](#)

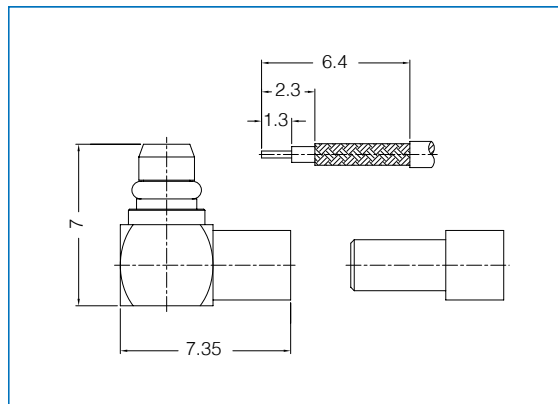


- |                                          |                                |                                   |                                  |                             |                            |
|------------------------------------------|--------------------------------|-----------------------------------|----------------------------------|-----------------------------|----------------------------|
| A01 - 50Ω - RG-178, 198                  | A08 - 50Ω - LMR200             | A15 - 75Ω - RG-6                  | A22 - 75Ω - AT&T 734A            | A29 - 50Ω - 141SR - RG-402U | A37 - 75Ω - FLEX 5         |
| A02 - 50Ω - RG-174, 188A, 316, LMR100    | A09 - 50Ω - RG-59U Plenum      | A16 - 50Ω - 8X - LMR240           | A23 - 75Ω - AT&T 735A            | A30 - 50Ω - 1.13mm OD micro | A38 - 50Ω - 3D-2V          |
| A03 - 75Ω - RG-179, 187                  | A10 - 75Ω - RG-59, 62          | A17 - 50Ω - LMR400, Belden 9913   | A24 - 50Ω - LMR600               | A31 - 50Ω - 1.32mm OD micro | A39 - 50Ω - 5D-2V          |
| A04 - 50Ω - RD-316U                      | A11 - 75Ω - Belden 1505A       | A18 - 50Ω - RG-8, 9A, 9, 213, 214 | A25 - 75Ω - Belden 1696A         | A32 - 50Ω - 1.37mm OD micro | A40 - 50Ω - 8D-2V          |
| A05 - 75Ω - RD-179U                      | A12 - 75Ω - Belden 8281        | A19 - 75Ω - RG6U, Quad            | A26 - 75Ω - Belden 8218          | A33 - 50Ω - 047SR cable     | A41 - 50Ω - 5D-FB, LMR300  |
| A06 - 50Ω - RG-58, 58A, 58C, 141, LMR195 | A13 - 75Ω - RG-59U Quad Shield | A20 - 75Ω - RG-11                 | A27 - 75Ω - BT-3002              | A34 - 75Ω - FLEX 2          | A42 - 50Ω - 1/4" Superflex |
| A07 - 50Ω - RG-55, 142, 223, 400         | A14 - 75Ω - RG-59U Plenum      | A21 - 75Ω - Belden 1694A          | A28 - 50Ω - 0885/0885RF, RG-405U | A35 - 75Ω - FLEX 3          | A43 - 50Ω - 1/2" Superflex |

### Right Angle Plug, Crimp

MMM21C-AXXG01

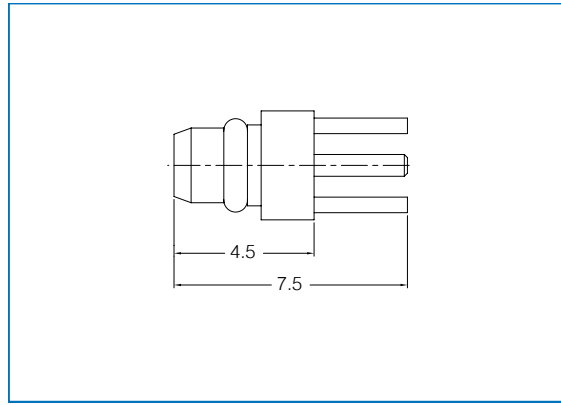
Cable group : [30](#), [31](#), [32](#)



**Straight Plug, PCB Mount**

MMM11A-TPCG01

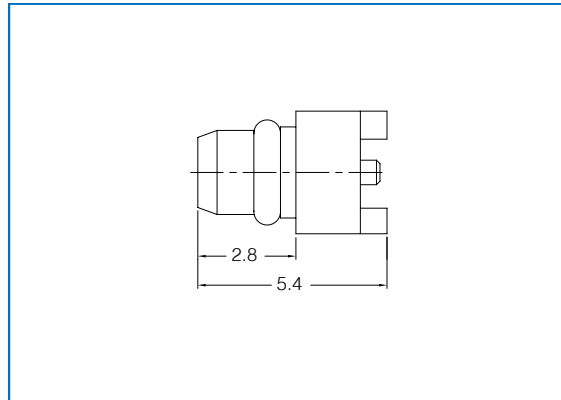
\* Mounting hole : "N"



**Straight Plug, Surface Mount**

MMM11A-SPCG01

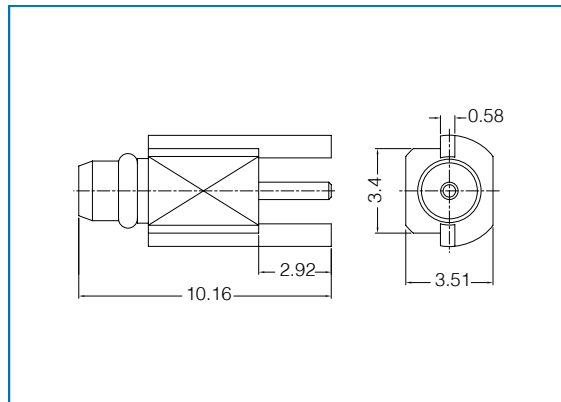
\* Mounting Details : "See Drawing"



**Straight Plug, Edgecard Mount**

MMM11A-EPCG01

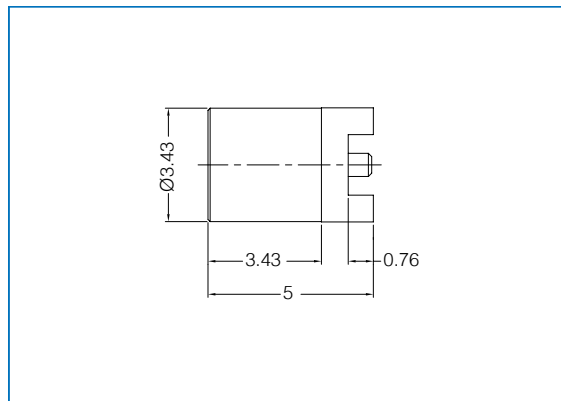
\* Mounting Details : "See Drawing"



**Straight Jack, PCB Mount**

MMF11A-SPCG01

\* Mounting Details : "See Drawing"

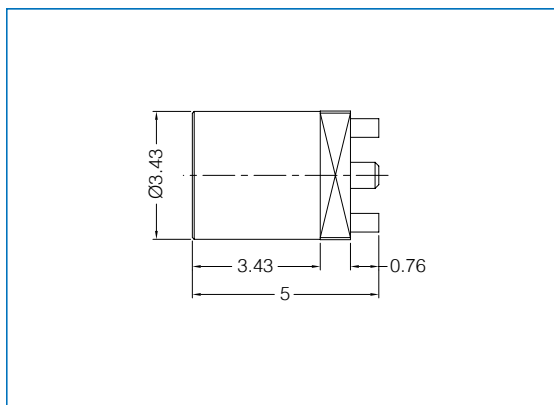




**Straight Jack, Surface Mount Square Base**

MMF12A-SPCG01

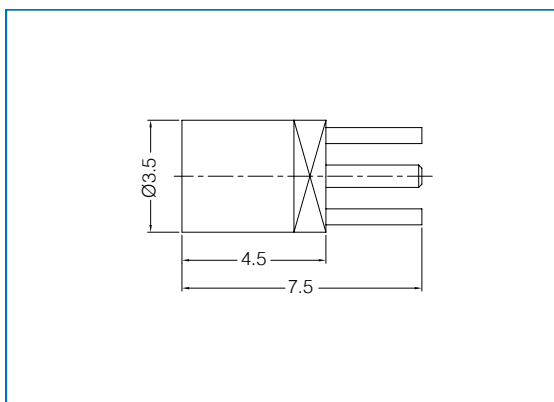
\* Mounting Details : "See Drawing"



**Straight Jack, PCB Mount Square Base**

MMF12A-TPCG01

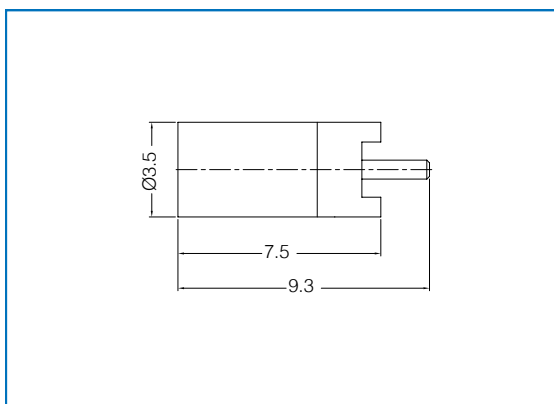
\* Mounting Details : "See Drawing"



**Straight Jack, PCB Mount Thru' Hole Center Pin**

MMF13A-TPCG01

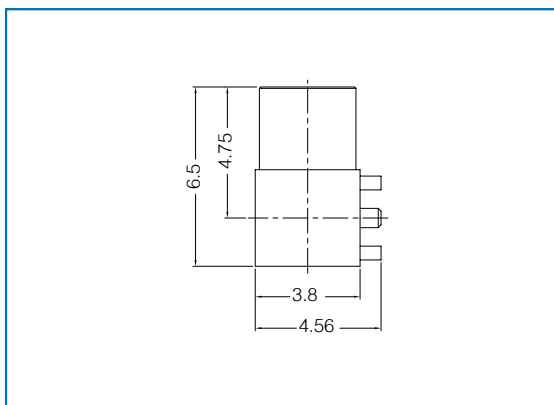
\* Mounting Details : "See Drawing"



**Right Angle Jack, PCB Surface Mount**

MMF21A-SPCG01

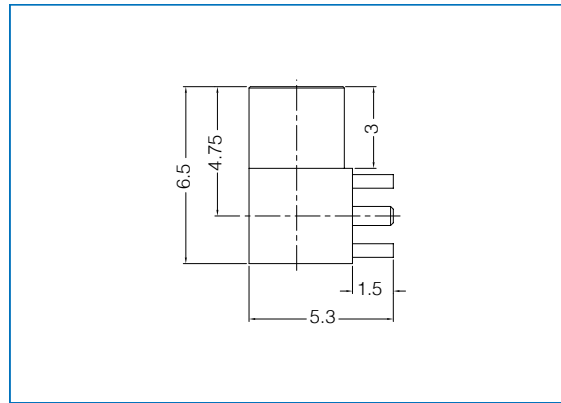
\* Mounting Details : "See Drawing"



**Right Angle Jack, PCB Mount**

MMF21A-TPCG01

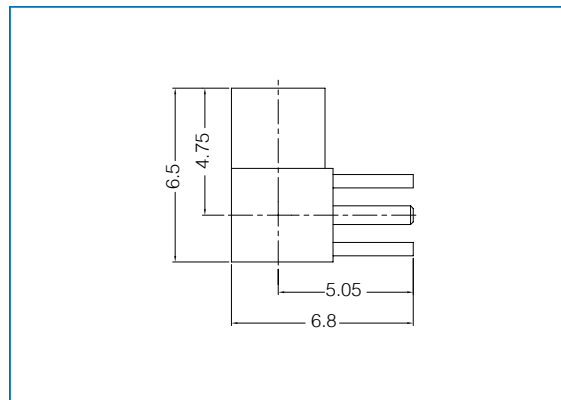
\* Mounting Details : “See Drawing”



**Right Angle Jack, PCB Mount**

MMF21B-TPCG01

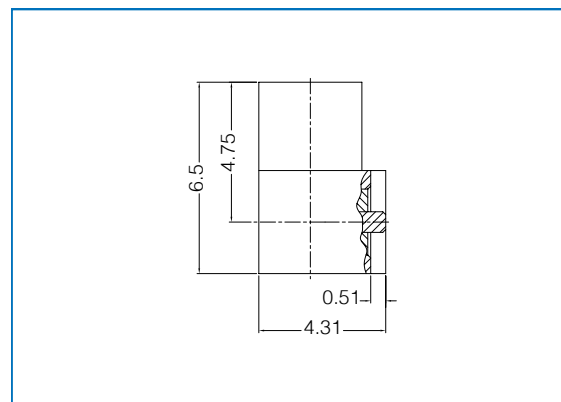
\* Mounting hole : “N”



**Right Angle Jack, PCB Mount  
Modified Surface Mount**

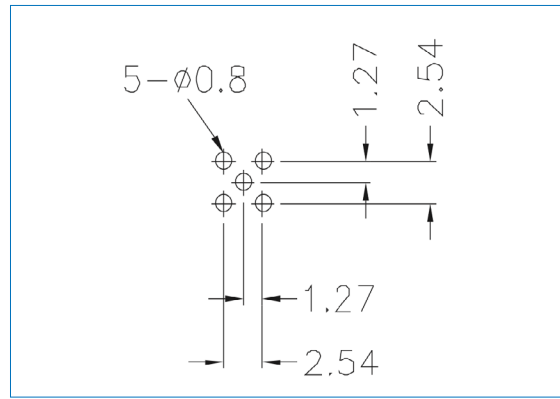
MMF22A-SPCG01

\* Mounting Details : “See Drawing”



## PCB Layouts

### Layout-N

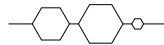




## Application Chart of Crimping Dies

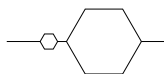


### Die Set No. 1317



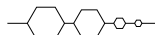
**Hex Sizes :** .213 / .255 / .068  
**Ferrule O.D. :** 7.5mm / 6.5mm  
**Contact O.D. :** 2.1mm  
**Cable Group :** RG-58, 59, 62, 223, LMR-195, LMR-200, LMR-240  
**For :** BNC, TNC, N, Mini-UHF

### Die Set No. 1319



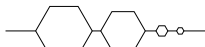
**Hex Sizes :** .10 / .429  
**Ferrule O.D. :** 12.4mm  
**Contact O.D. :** 3.0mm  
**Cable Group :** RG-8, 11, 213, 214  
**For :** N

### Die Set No. 1346



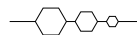
**FHex Sizes :** .213 / .178 / .068 / .042  
**ferrule O.D. :** 6.5mm / 5.3mm  
**Contact O.D. :** 2.1mm / 1.35mm  
**Cable Group :** RG-58, 174, Belden-1855A, Belden-8218, AT&T 735A, BT-3002  
**For :** BNC, True 75Ω BNC, TNC, N, SMA

### Die Set No. 1347



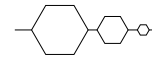
**Hex Sizes :** .324 / .255 / .068 / .042  
**Ferrule O.D. :** 9.5mm / 7.5mm  
**Contact O.D. :** 2.1mm / 1.35mm  
**Cable Group :** RG-6, 59, Belden-8241, Belden-8281, AT&T 734A, LMR-240  
**For :** BNC, True 75Ω BNC, TNC, N, SMA

### Die Set No. 1351



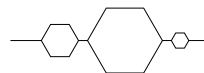
**Hex Sizes :** .178 / .128 / .068  
**Ferrule O.D. :** 5.3mm / 3.9mm  
**Contact O.D. :** 2.1mm  
**Cable Group :** RG-174, 188, 196, 316, 179, LMR-100  
**For :** BNC, TNC, SMA, SMB, SMC, MCX, MMCX

### Die Set No. 1352



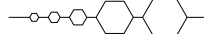
**Hex Sizes :** .324 / .178 / .068  
**Ferrule O.D. :** 9.5mm / 5.3mm  
**Contact O.D. :** 2.1mm  
**Cable Group :** RG-174, 179, 316, LMR-100, Belden-8281, RG-6, LMR-300  
**For :** BNC, TNC, N, SMA, SMB, SMC

### Die Set No. 1353



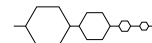
**Hex Sizes :** .213 / .429 / .10  
**Ferrule O.D. :** 6.5mm / 12.4mm  
**Contact O.D. :** 3.0mm  
**Cable Group :** RG-58, 8, 223, LMR-195, LMR-200  
**For :** N

### Die Set No. 1355



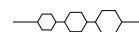
**Hex Sizes :** .052 / .068 / .10 / .213 / .255  
**Ferrule O.D. :** 7.5mm / 6.5mm  
**Contact O.D. :** 3.0mm / 2.1mm / 1.5mm  
**Cable Group :** RG-58, 59, 62, 223, LMR-195  
**For :** BNC, TNC, SMA, SMB, SMC, Mini-UHF, N

### Die Set No. 1376



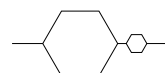
**Hex Sizes :** .255 / .178 / .068 / .052  
**Ferrule O.D. :** 7.5mm / 5.3mm  
**Contact O.D. :** 2.1mm / 1.5mm  
**Cable Group :** RG-59, 62, 223, 174, 179, 316, LMR-100  
**For :** BNC, TNC, N, SMA, SMB, SMC

### Die Set No. 1377



**Hex Sizes :** .105 / .128 / .151  
**Ferrule O.D. :** 4.4mm / 3.9mm  
**Contact O.D. :** 3.0mm  
**Cable Group :** RG-178, 316, 179, RD-179, RD-316, LMR-100  
**For :** SMA, SMB, SMC, MCX, MMCX

### Die Set No. 1380



**Hex Sizes :** .429 / .118  
**Ferrule O.D. :** 12.4mm  
**Contact O.D. :** 3.5mm  
**Cable Group :** Belden-9913, LMR-400  
**For :** BNC, TNC, N

Reflection → Conversion Table

VSWR	Rf	RL (dB)
1.010	0.005	46.06
1.020	0.0099	40.09
1.030	0.0148	36.61
1.040	0.0196	34.15
1.050	0.0244	32.26
1.060	0.0291	30.71
1.070	0.0338	29.42
1.080	0.0385	28.30
1.090	0.0431	27.32
1.100	0.0476	26.44
1.110	0.0521	25.66
1.120	0.0566	24.94
1.130	0.061	24.29
1.140	0.0654	23.69
1.150	0.0698	23.13
1.160	0.0741	22.61
1.170	0.0783	22.12
1.180	0.0826	21.66
1.190	0.0868	21.23
1.200	0.0909	20.83
1.210	0.095	20.44
1.220	0.0991	20.08
1.230	0.1031	19.73
1.240	0.1071	19.40
1.250	0.1111	19.08
1.260	0.115	18.78
1.270	0.1189	18.49
1.280	0.1228	18.22
1.290	0.1266	17.95
1.300	0.1304	17.69
1.310	0.1342	17.45
1.320	0.1379	17.21
1.330	0.1416	16.98
1.340	0.1453	16.75
1.350	0.1489	16.54
1.360	0.1525	16.33
1.370	0.1561	16.13
1.380	0.1597	15.94
1.390	0.1632	15.75

RL (dB)	Rf	VSWR
50.00	0.0032	1.006
49.00	0.0035	1.007
48.00	0.004	1.008
47.00	0.0045	1.009
46.00	0.005	1.010
45.00	0.0056	1.011
44.00	0.0063	1.013
43.00	0.0071	1.014
42.00	0.0079	1.016
41.00	0.0089	1.018
40.00	0.01	1.020
39.00	0.0112	1.023
38.00	0.0126	1.025
37.00	0.0141	1.029
36.00	0.0158	1.032
35.00	0.0178	1.036
34.00	0.02	1.041
33.00	0.0224	1.046
32.00	0.0251	1.052
31.00	0.0282	1.058
30.00	0.0316	1.065
29.00	0.0355	1.074
28.00	0.0398	1.083
27.00	0.0447	1.094
26.00	0.0501	1.106
25.00	0.0562	1.119
24.00	0.0631	1.135
23.00	0.0708	1.152
22.00	0.0794	1.173
21.00	0.0891	1.196
20.00	0.1	1.222
19.00	0.1122	1.253
18.00	0.1259	1.288
17.00	0.1413	1.329
16.00	0.1585	1.377
15.00	0.1778	1.433
14.00	0.1995	1.499
13.00	0.2239	1.577
12.00	0.2512	1.671

Rf	RL (dB)	VSWR
0.005	46.02	1.010
0.010	40.00	1.020
0.015	36.48	1.030
0.020	33.98	1.041
0.025	32.04	1.051
0.030	30.46	1.062
0.035	29.12	1.073
0.040	27.96	1.083
0.045	26.94	1.094
0.050	26.02	1.105
0.055	25.19	1.116
0.060	24.44	1.128
0.065	23.74	1.139
0.070	23.10	1.151
0.075	22.50	1.162
0.080	21.94	1.174
0.085	21.41	1.186
0.090	20.92	1.198
0.095	20.45	1.210
0.100	20.00	1.222
0.105	19.58	1.235
0.110	19.17	1.247
0.115	18.79	1.260
0.120	18.42	1.273
0.125	18.06	1.286
0.130	17.72	1.299
0.135	17.39	1.312
0.140	17.08	1.326
0.145	16.77	1.339
0.150	16.48	1.353
0.155	16.19	1.367
0.160	15.92	1.381
0.165	15.65	1.395
0.170	15.39	1.410
0.175	15.14	1.424
0.180	14.88	1.439
0.185	14.66	1.454
0.190	14.42	1.469
0.195	14.20	1.484

VSWR = Voltage Standing Wave Ratio    Rf = Reflection Coefficient    RL = Return Loss