



Microwave/Millimeter-Wave Components

- Passive Components
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Passive Components

There are many types of passive- components developed by Synergy Telecom Pvt. Ltd, with wide frequency range various connector types, and excellent performance.

The main products include coaxial adapters, waveguide to coaxial adapters, loads, calibration kits, attenuators, mechanical switches, DC blocks, etc. There are many connector types of coaxial components such as 7 mm, Type-N, 3.5 mm, 2.92 mm, 2.4 mm, and 1.85 mm etc., with frequency up to 67 GHz; Frequency of waveguide products is up to 500 GHz.

Customized products can be provided according to special needs.

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81108C	adapter, 2.92 mm(m) to Type-N(m)	10
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81115	adapter, 2.92 mm(f) to 1.85 mm(f)	10
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81115B	adapter, 2.92 mm(m) to 1.85 mm(f)	10
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81118	adapter, 1.85 mm(m) to 1.85 mm(m)	10
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81197	adapter, L16 (f) to Type-N(f)	10
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81197B	adapter, L16 (m) to Type-N(f)	10
81197C	adapter, L16 (m) to Type-N(m)	10
81503	fixed attenuator, DC~40 GHz, 3 dB, 2.4 mm	45
81503DE	fixed attenuator, DC~18 GHz, 5 dB, Type-N	45
81503EA	fixed attenuator, DC~26.5 GHz, 1 dB, 3.5 mm	45
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81503FA	fixed attenuator, DC~40 GHz, 1 dB, 2.92 mm	45
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81503FD	fixed attenuator, DC~40 GHz, 6 dB, 2.92 mm	45
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81518	programmable attenuator, DC~26.5 GHz, 110 dB, 3.5 mm	47
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83902	waveguide coaxial adapter, 7.5~18 GHz	25
83903	waveguide coaxial adapter, 40~60 GHz	25
83904	waveguide coaxial adapter, 33~50 GHz	25
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83906	waveguide coaxial adapter, 26.5~40 GHz	25
83906A	waveguide coaxial adapter, 26.5~40 GHz	25
83906B	waveguide coaxial adapter, 33~50 GHz	25
83906C	waveguide coaxial adapter, 40~60 GHz	25
87308	test cable, DC~26.5 GHz, 3.5 NMD/3.5 mm-KJ	73
87308A	test cable, DC~26.5 GHz, 3.5 NMD/3.5 mm-KK	73
87309	test cable, DC~40 GHz, 2.4 NMD/2.4 mm-KJ	73
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87603A	adapter, 2.92 mm(f) to SMP(m)	11
87603B	adapter, 2.92 mm(m) to SMP(f)	11
87603C	adapter, 2.92 mm(m) to SMP(m)	11
87603D	adapter, 2.92 mm(f) to SMP(f)	11

Coaxial Adapters



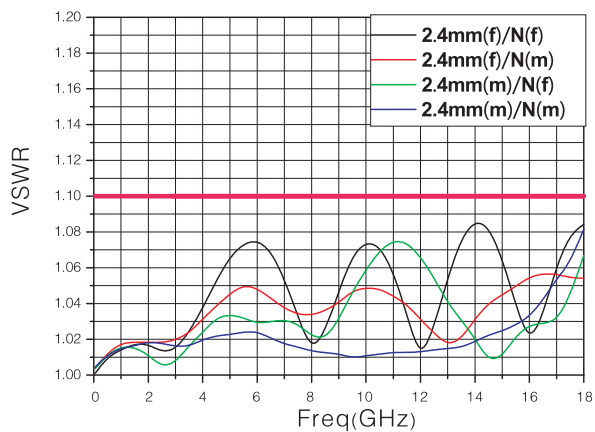
● Specifications

Model	Description	Connector Type	Frequency Range	SWR(Max.)
71101	coaxial adapter	Type-N (f) to Type-N (f)	DC ~ 18 GHz	1.083
71102	coaxial adapter	Type-N (m) to Type-N (m)	DC ~ 18 GHz	1.083
71103	coaxial adapter	Type-N (m) to 7 mm	DC ~ 18 GHz	1.083
71104	coaxial adapter	Type-N (f) to 7 mm	DC ~ 18 GHz	1.083
81101	coaxial adapter	Type-N (m) to Type-N (f)	DC ~ 18 GHz	1.083
81103	coaxial adapter	Type-N (m) 75 Ω to Type-N (f) 50 Ω	DC ~ 3 GHz	1.25
81103A	coaxial adapter	Type-N (m) 75 Ω to Type-N (m) 50 Ω	DC ~ 3 GHz	1.25
81103B	coaxial adapter	Type-N (f) 75 Ω to Type-N (m) 50 Ω	DC ~ 3 GHz	1.25
81103C	coaxial adapter	Type-N (f) 75 Ω to Type-N (f) 50 Ω	DC ~ 3 GHz	1.25
81104	coaxial adapter	7/16 (f) to Type-N (f)	DC ~ 7.5 GHz	1.083
81104A	coaxial adapter	7/16 (f) to Type-N (m)	DC ~ 7.5 GHz	1.083
81104B	coaxial adapter	7/16 (m) to Type-N (f)	DC ~ 7.5 GHz	1.083
81104C	coaxial adapter	7/16 (m) to Type-N (m)	DC ~ 7.5 GHz	1.083
71109	coaxial adapter	3.5 mm (f) to 3.5 mm (f)	DC ~ 26.5 GHz	1.106
71110	coaxial adapter	3.5 mm (m) to 3.5 mm (m)	DC ~ 26.5 GHz	1.106
71111	coaxial adapter	3.5 mm (m) to 3.5 mm (f)	DC ~ 26.5 GHz	1.106
71113	coaxial adapter	3.5 mm (f) to 7 mm	DC ~ 18 GHz	1.106
71114	coaxial adapter	3.5 mm (m) to 7 mm	DC ~ 18 GHz	1.106
71115	coaxial adapter	3.5 mm (m) to Type-N (f)	DC ~ 18 GHz	1.083
71116	coaxial adapter	3.5 mm (m) to Type-N (m)	DC ~ 18 GHz	1.083
71117	coaxial adapter	3.5 mm(f) to Type-N(m)	DC ~ 18 GHz	1.083
71118	coaxial adapter	3.5 mm(f) to Type-N(f)	DC ~ 18 GHz	1.083
71119	coaxial adapter	2.4 mm(m) to 2.4 mm(m)	DC ~ 40 GHz	1.12
71120	coaxial adapter	2.4 mm (f) to 2.4 mm (f)	DC ~ 40 GHz	1.12
71121	coaxial adapter	2.4 mm (m) to 2.4 mm (f)	DC ~ 40 GHz	1.12

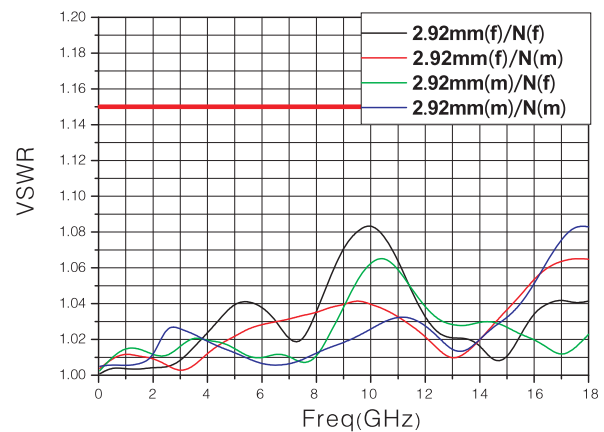
Model	Description	Connector Type	Frequency Range	SWR(Max.)
71122	coaxial adapter	2.4 mm (m) to 3.5 mm (m)	DC ~ 26.5 GHz	1.15
71123	coaxial adapter	2.4 mm (m) to 3.5 mm (f)	DC ~ 26.5 GHz	1.15
71124	coaxial adapter	2.4 mm (f) to 3.5 mm (m)	DC ~ 26.5 GHz	1.15
71125	coaxial adapter	2.4 mm (f) to 3.5 mm (f)	DC ~ 26.5 GHz	1.15
81105	coaxial adapter	2.4 mm (f) to 7 mm	DC ~ 18 GHz	1.10
81105A	coaxial adapter	2.4 mm (m) to 7 mm	DC ~ 18 GHz	1.10
81106	coaxial adapter	2.4 mm (f) to 2.92 mm (f)	DC ~ 40 GHz	1.15
81106A	coaxial adapter	2.4 mm (f) to 2.92 mm (m)	DC ~ 40 GHz	1.15
81106B	coaxial adapter	2.4 mm (m) to 2.92 mm (f)	DC ~ 40 GHz	1.15
81106C	coaxial adapter	2.4 mm (m) to 2.92 mm (m)	DC ~ 40 GHz	1.15
81107	coaxial adapter	2.4 mm (f) to Type-N (f)	DC ~ 18 GHz	1.10
81107A	coaxial adapter	2.4 mm (f) to Type-N (m)	DC ~ 18 GHz	1.10
81107B	coaxial adapter	2.4 mm (m) to Type-N (f)	DC ~ 18 GHz	1.10
81107C	coaxial adapter	2.4 mm (m) to Type-N (m)	DC ~ 18 GHz	1.10
81108	coaxial adapter	2.92 mm (f) to Type-N (f)	DC ~ 18 GHz	1.15
81108A	coaxial adapter	2.92 mm (f) to Type-N (m)	DC ~ 18 GHz	1.15
81108B	coaxial adapter	2.92 mm (m) to Type-N (f)	DC ~ 18 GHz	1.15
81108C	coaxial adapter	2.92 mm (m) to Type-N (m)	DC ~ 18 GHz	1.15
81109	coaxial adapter	2.92 mm (m) to 7 mm	DC ~ 18 GHz	1.10
81109A	coaxial adapter	2.92 mm (f) to 7 mm	DC ~ 18 GHz	1.10
81110	coaxial adapter	2.92 mm (m) to 2.92 mm (m)	DC ~ 40 GHz	1.12
81111	coaxial adapter	2.92 mm (m) to 2.92 mm (f)	DC ~ 40 GHz	1.12
81112	coaxial adapter	2.92 mm (f) to 2.92 mm (f)	DC ~ 40 GHz	1.12
81113	coaxial adapter	3.5 mm (f) to 1.85 mm (f)	DC ~ 26.5 GHz	1.15
81113A	coaxial adapter	3.5 mm (f) to 1.85 mm (m)	DC ~ 26.5 GHz	1.15
81113B	coaxial adapter	3.5 mm (m) to 1.85 mm (f)	DC ~ 26.5 GHz	1.15
81113C	coaxial adapter	3.5 mm (m) to 1.85 mm (m)	DC ~ 26.5 GHz	1.15
81114	coaxial adapter	2.4 mm (f) to 1.85 mm (f)	DC ~ 50 GHz	1.15
81114A	coaxial adapter	2.4 mm (f) to 1.85 mm (m)	DC ~ 50 GHz	1.15
81114B	coaxial adapter	2.4 mm (m) to 1.85 mm (f)	DC ~ 50 GHz	1.15
81114C	coaxial adapter	2.4 mm (m) to 1.85 mm (m)	DC ~ 50 GHz	1.15
81115	coaxial adapter	2.92 mm (f) to 1.85 mm (f)	DC ~ 40 GHz	1.15
81115A	coaxial adapter	2.92 mm (f) to 1.85 mm (m)	DC ~ 40 GHz	1.15
81115B	coaxial adapter	2.92 mm (m) to 1.85 mm (f)	DC ~ 40 GHz	1.15
81115C	coaxial adapter	2.92 mm (m) to 1.85 mm (m)	DC ~ 40 GHz	1.15
81118	coaxial adapter	1.85 mm (m) to 1.85 mm (m)	DC ~ 67 GHz	1.25
81119	coaxial adapter	1.85 mm (f) to 1.85 mm (f)	DC ~ 67 GHz	1.25
81120	coaxial adapter	1.85 mm (m) to 1.85 mm (f)	DC ~ 67 GHz	1.25
81197	coaxial adapter	L16 (f) to Type-N (f)	DC ~ 18 GHz	1.10
81197A	coaxial adapter	L16 (f) to Type-N (m)	DC ~ 18 GHz	1.10
81197B	coaxial adapter	L16 (m) to Type-N (f)	DC ~ 18 GHz	1.10
81197C	coaxial adapter	L16 (m) to Type-N (m)	DC ~ 18 GHz	1.10
87602A	coaxial adapter	2.4 mm (f) to SMPM (m)	DC ~ 50 GHz	1.25

Model	Description	Connector Type	Frequency Range	SWR(Max.)
87602B	coaxial adapter	2.4 mm (m) to SMPM (f)	DC ~ 50 GHz	1.25
87602C	coaxial adapter	2.4 mm (m) to SMPM (m)	DC ~ 50 GHz	1.25
87602D	coaxial adapter	2.4 mm (f) to SMPM (f)	DC ~ 50 GHz	1.25
87603A	coaxial adapter	2.92 mm (f) to SMP (m)	DC ~ 40 GHz	1.2
87603B	coaxial adapter	2.92 mm (m) to SMP (f)	DC ~ 40 GHz	1.2
87603C	coaxial adapter	2.92 mm (m) to SMP (m)	DC ~ 40 GHz	1.2
87603D	coaxial adapter	2.92 mm (f) to SMP (f)	DC ~ 40 GHz	1.2
71124EC	coaxial adapter	NMD 2.4 mm (f) to NMD 3.5 mm (m)	DC ~ 26.5 GHz	1.15
71125EC	coaxial adapter	NMD 2.4 mm (f) to 3.5 mm (f)	DC ~ 26.5 GHz	1.15

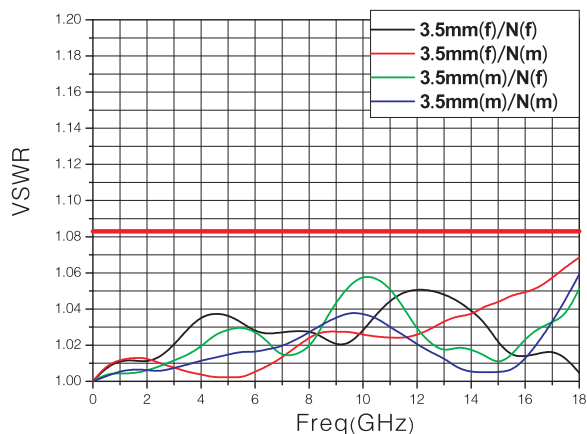
● Typical testing curve



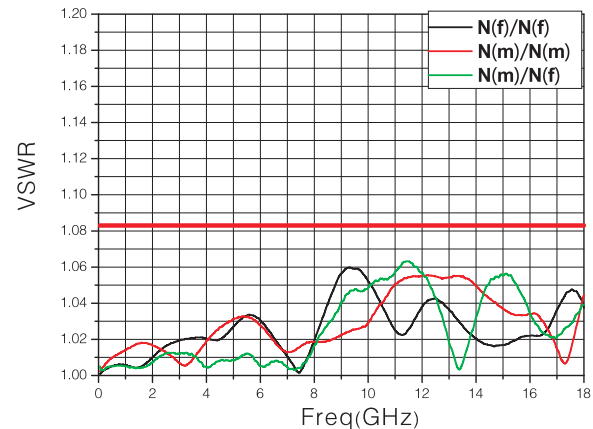
2.4 mm / Type-N series adapters port SWR (typical)



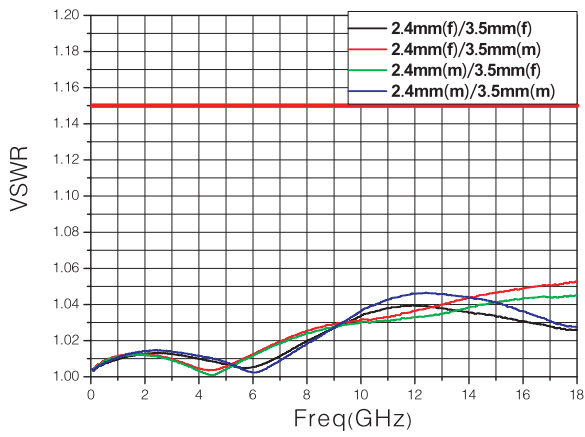
2.92 mm / Type-N series adapters port SWR (typical)



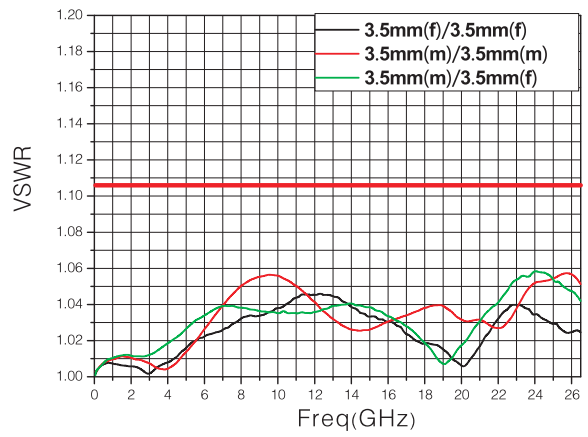
3.5 mm / Type-N series adapters port SWR (typical)



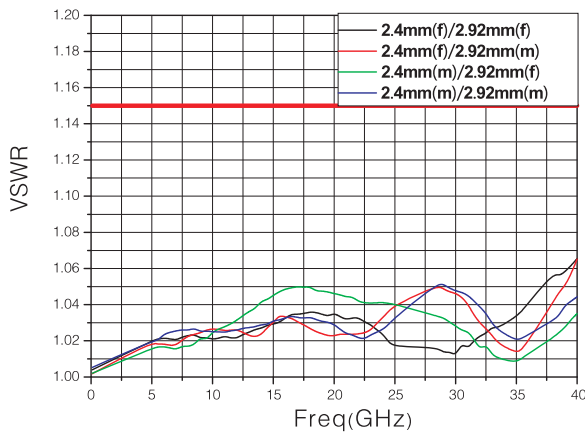
Type-N / N series adapters port SWR (typical)



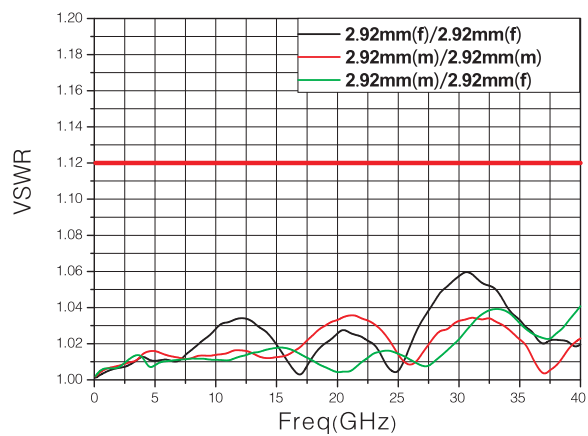
2.4 mm/3.5 mm series adapters port SWR (typical)



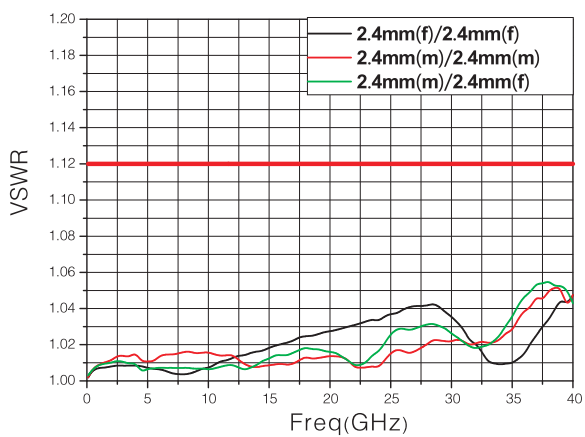
3.5 mm/3.5 mm series adapters port SWR (typical)



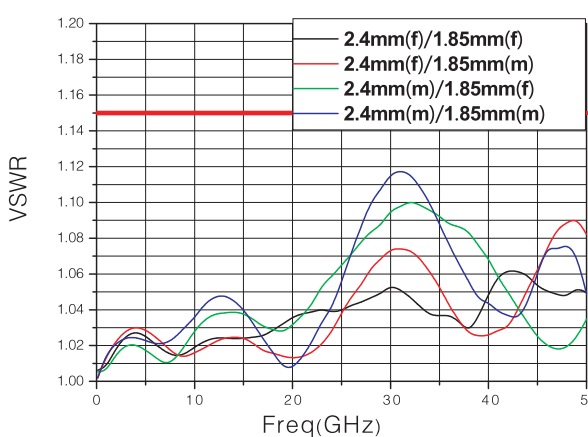
2.4 mm/2.92 mm series adapters port SWR (typical)



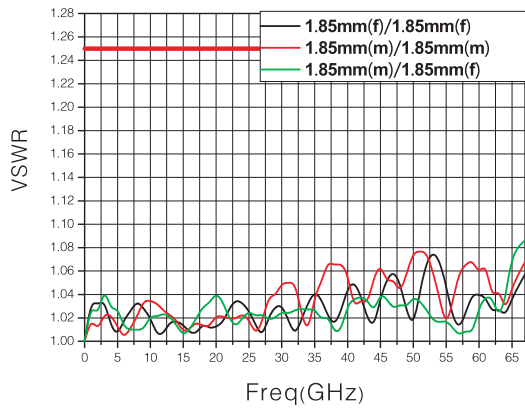
2.92 mm/2.92 mm series adapters port SWR (typical)



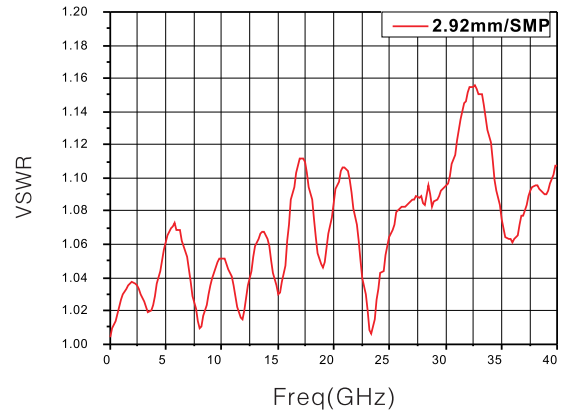
2.4 mm/2.4 mm series adapters port SWR (typical)



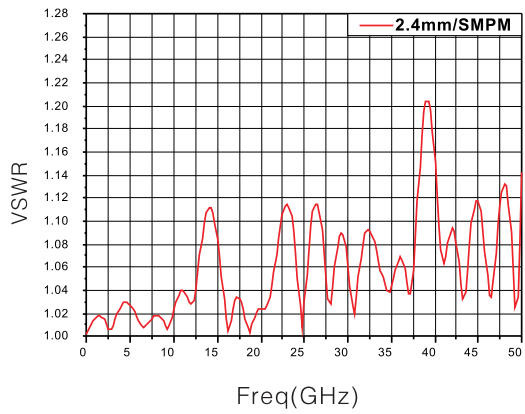
2.4 mm/1.85 mm series adapters port SWR (typical)



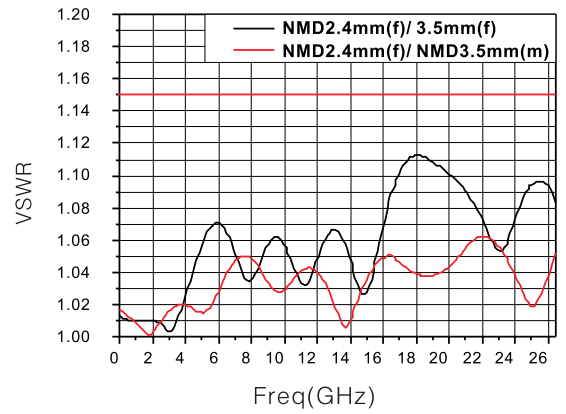
1.85 mm/1.85 mm series adapters port SWR (typical)



2.92 mm/SMP adapter port SWR (typical)



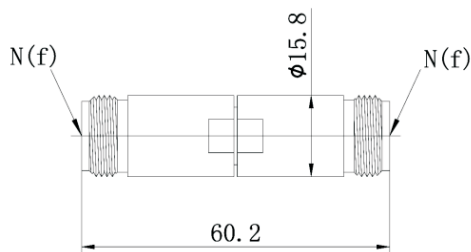
2.4 mm/SMPM adapter port SWR (typical)



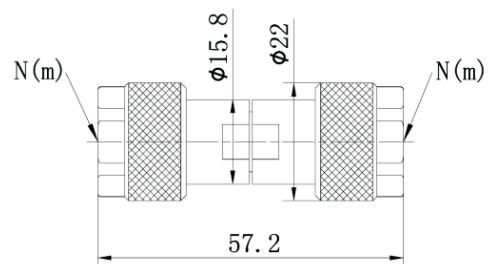
NMD2.4 mm/3.5 mm series adapters port SWR (typical)

• Dimensions

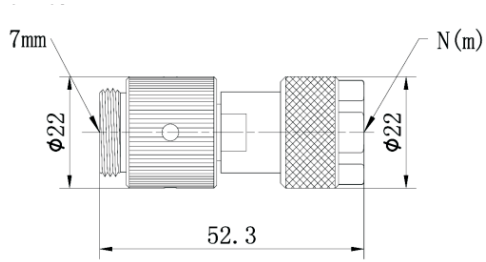
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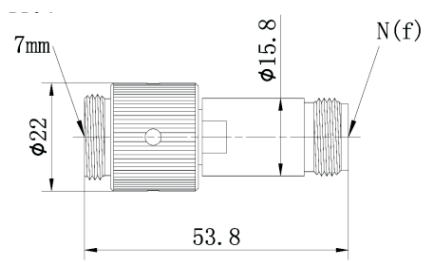
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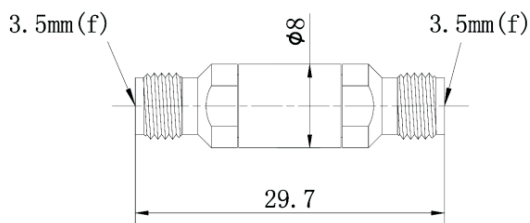
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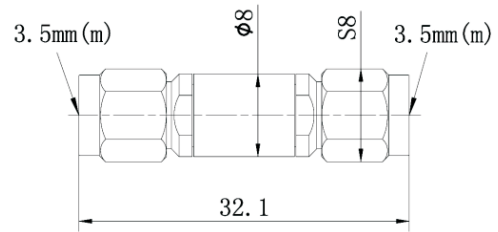
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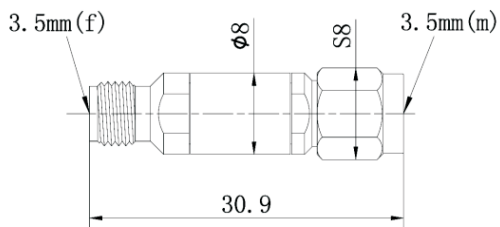
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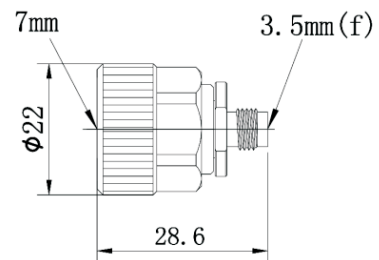
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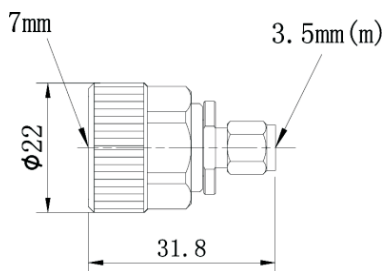
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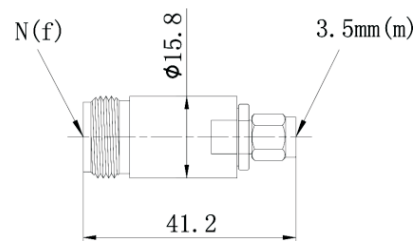
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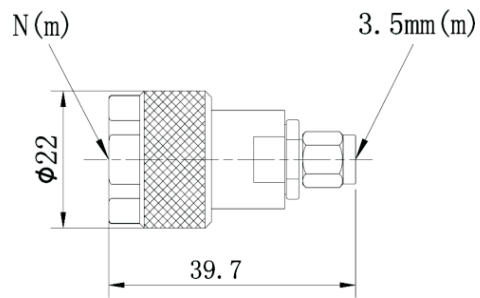
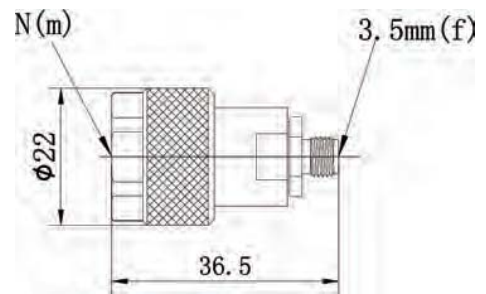
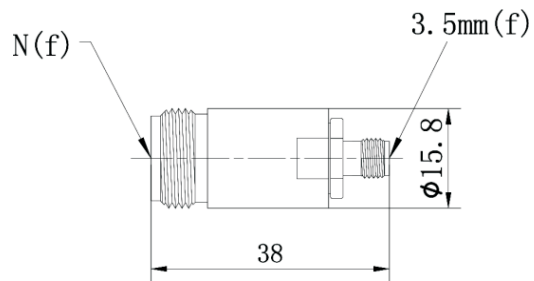
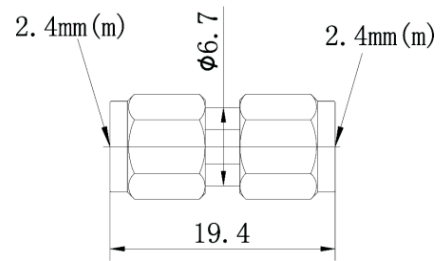
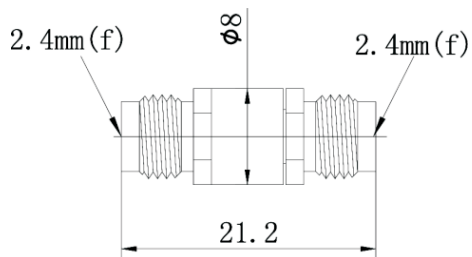
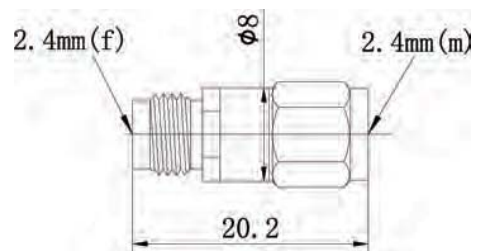
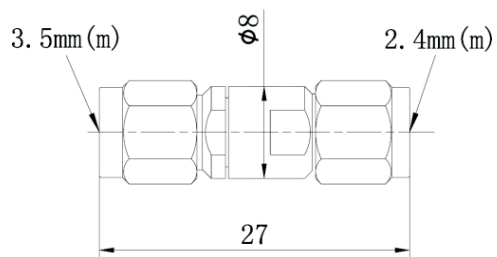
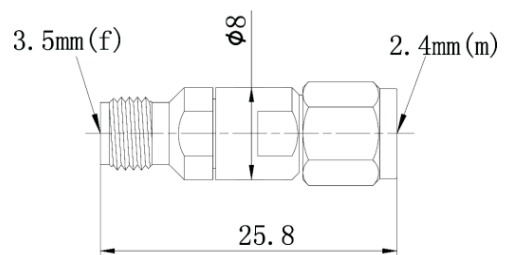


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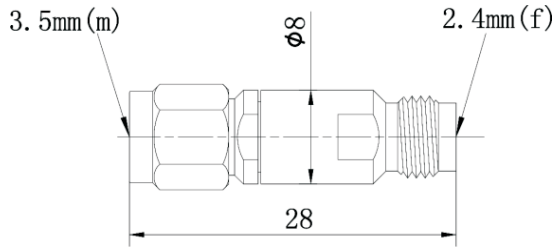


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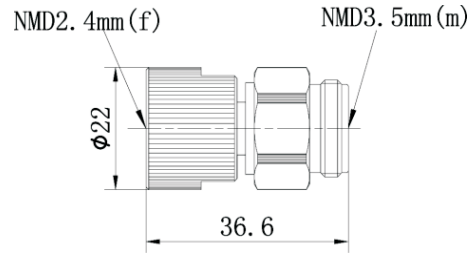


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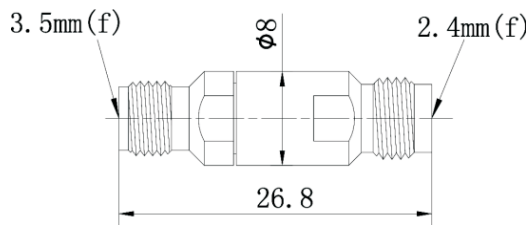
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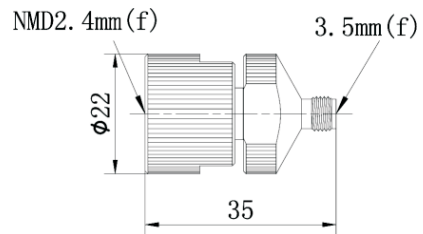
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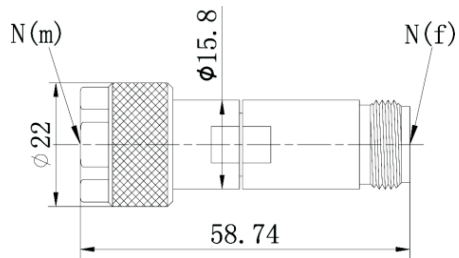
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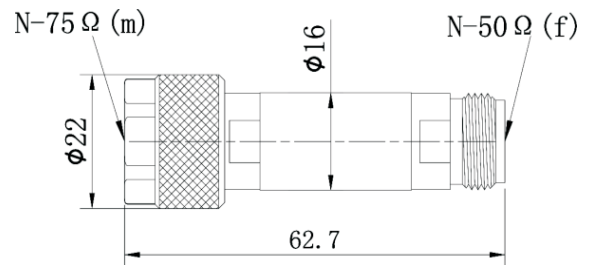
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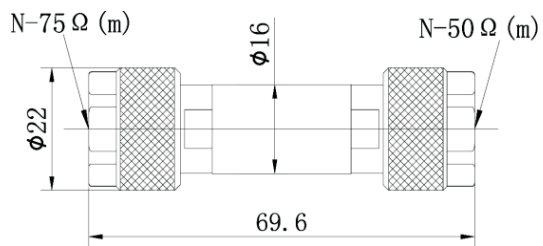
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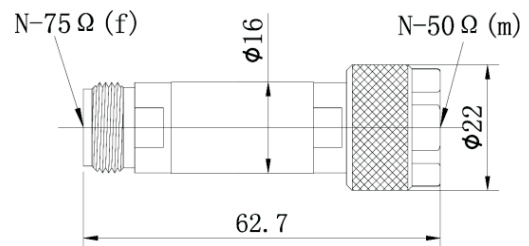
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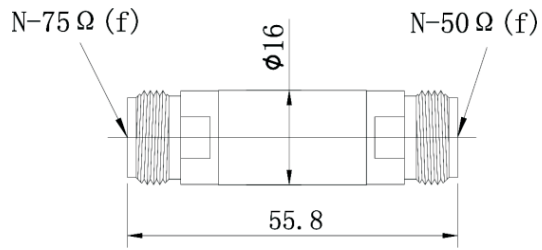
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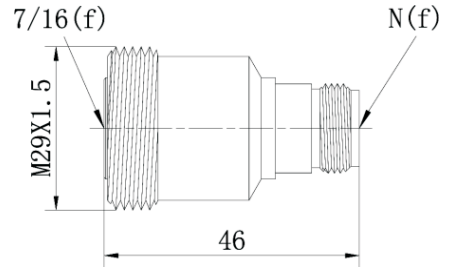
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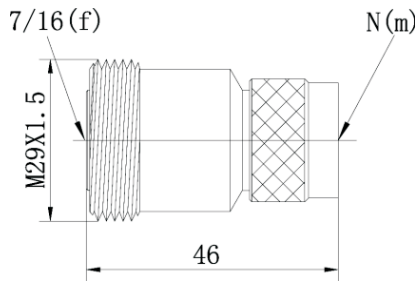
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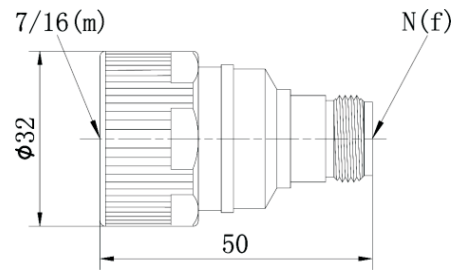
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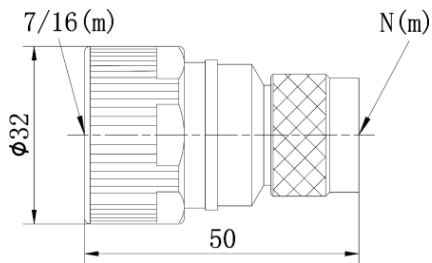
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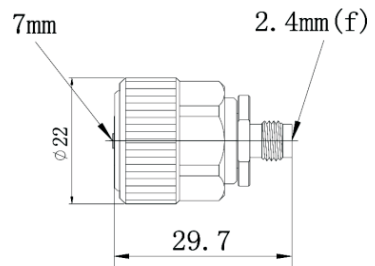
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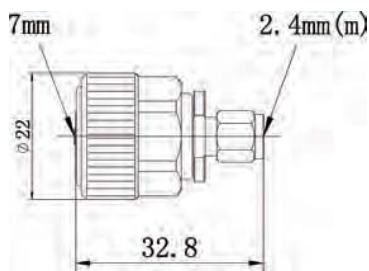
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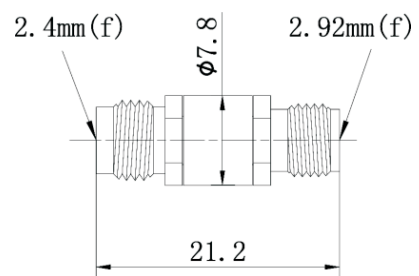
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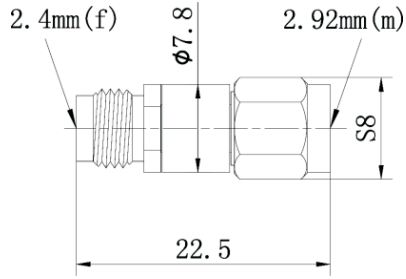
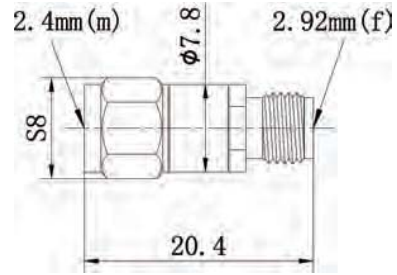
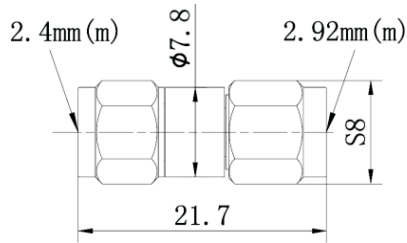
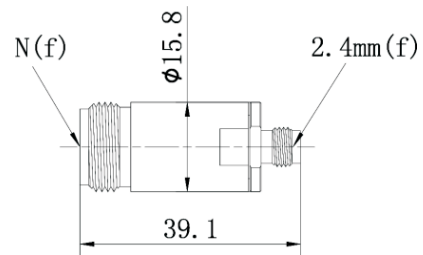
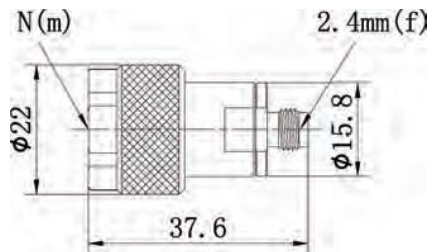
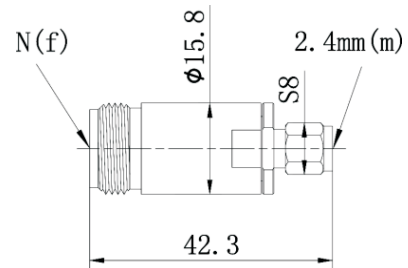
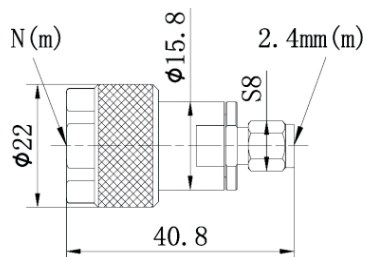
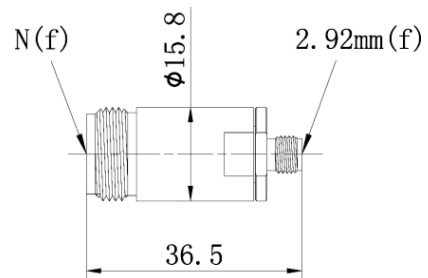


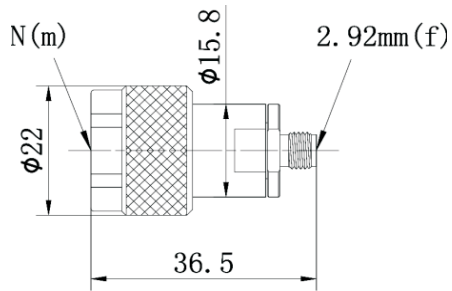
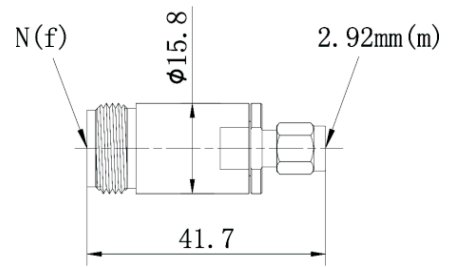
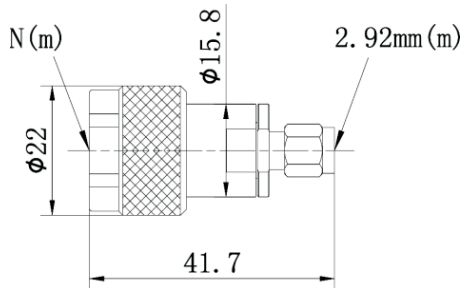
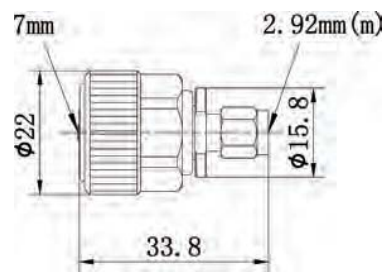
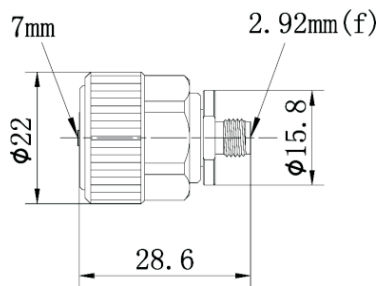
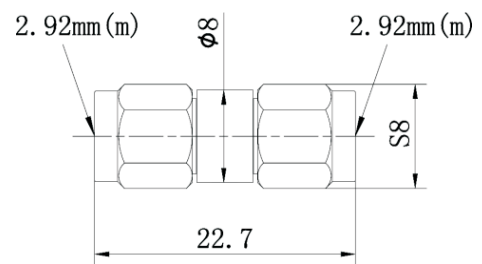
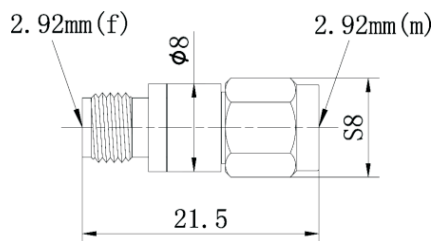
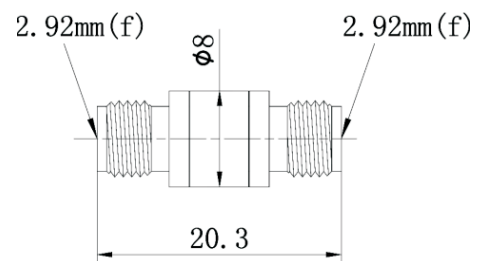
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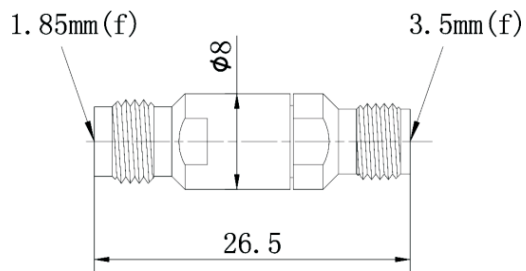
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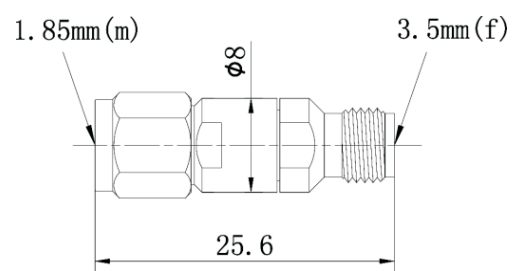
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81106B

81106C

81107

81107A

81107B

81107C

81108


81108A

81108B

81108C

81109

81109A

81110

81111

81112


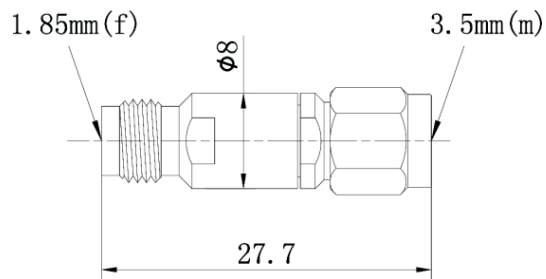
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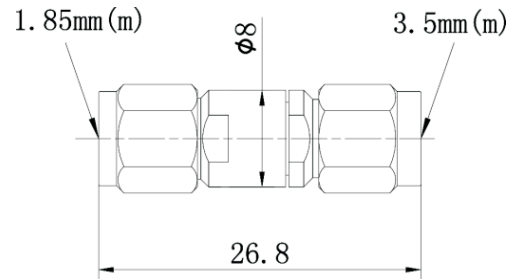
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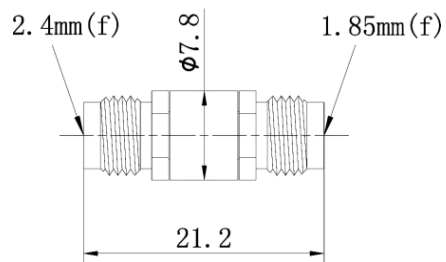
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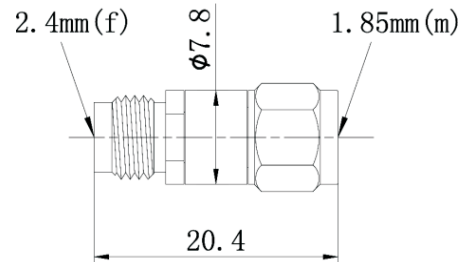
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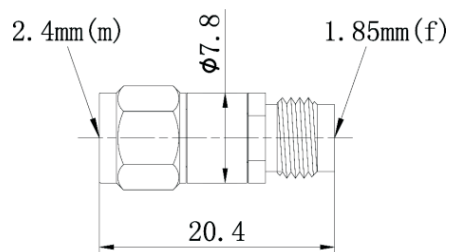
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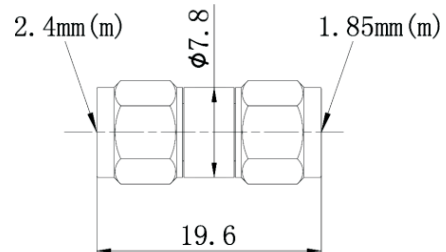
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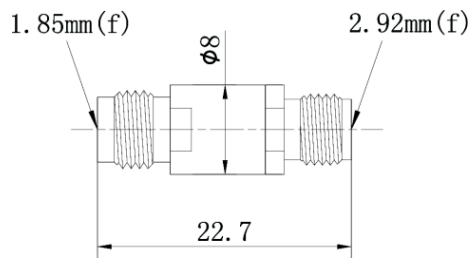
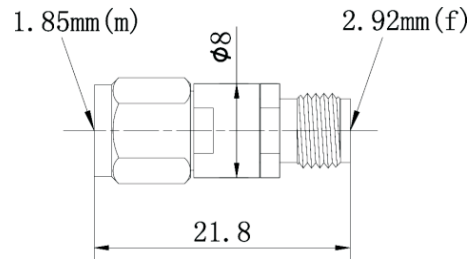
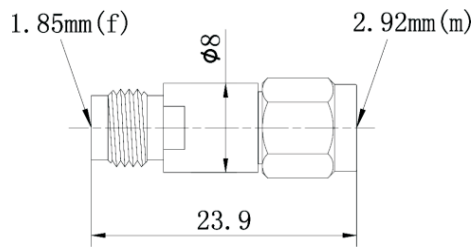
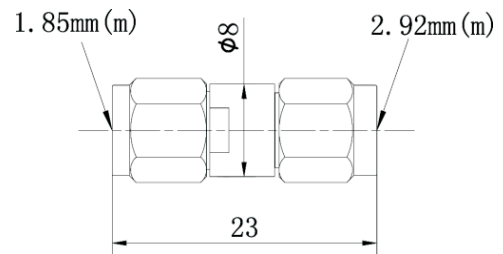
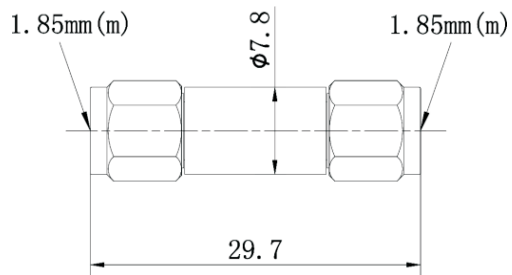
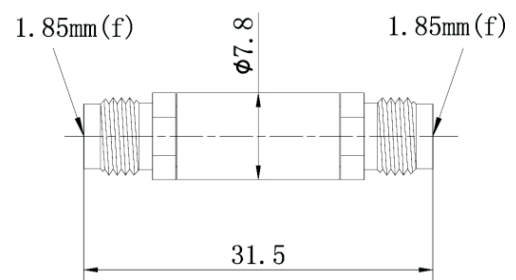
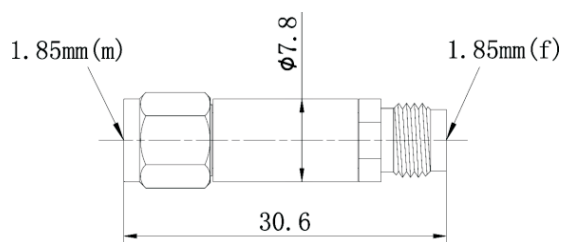
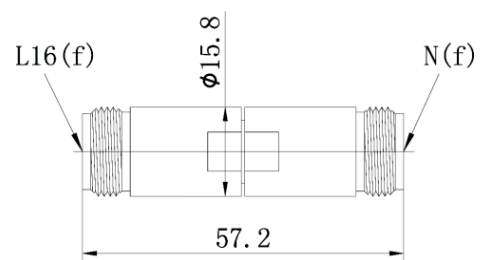


81114B

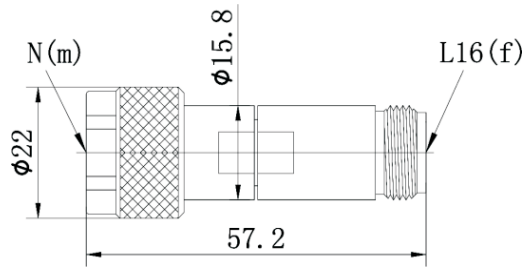


81114C

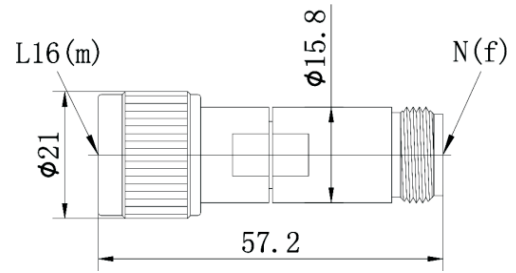


81115

81115A

81115B

81115C

81118

81119

81120

81197


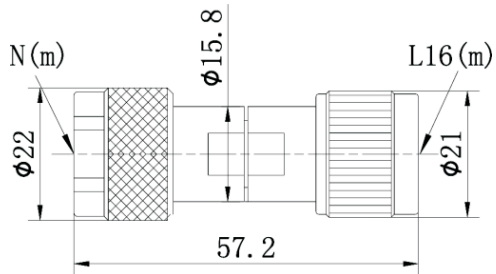
81197A



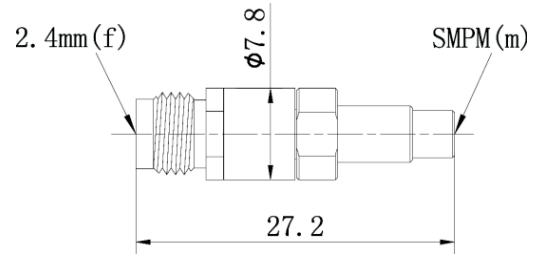
81197B



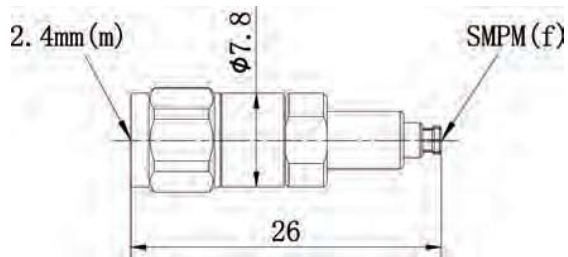
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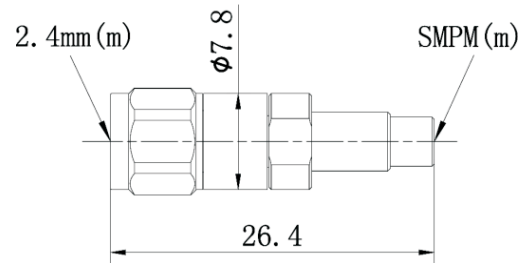
87602A



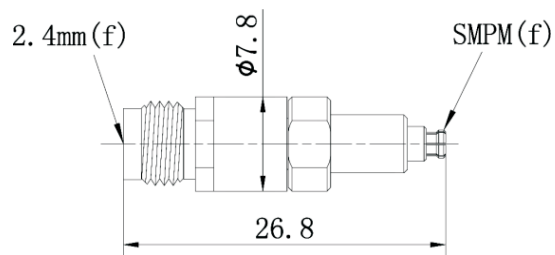
87602B



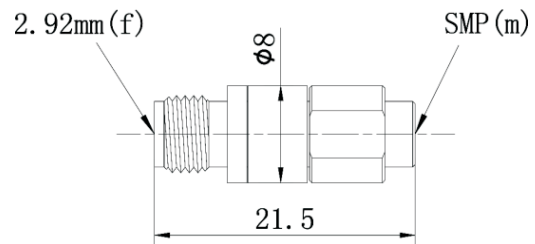
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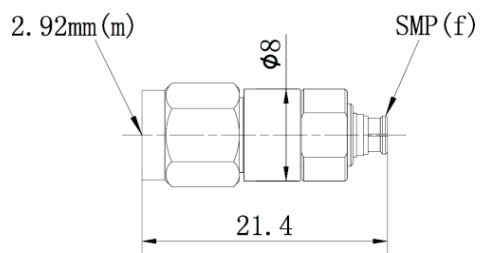
87602D



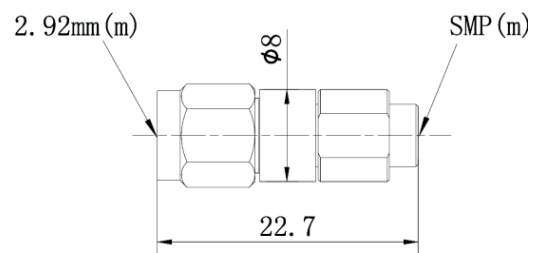
87603A



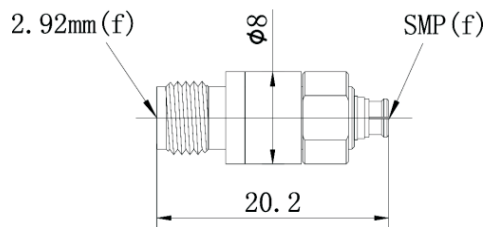
87603B



87603C



87603D



Waveguide to Coaxial Adapters



• Specifications

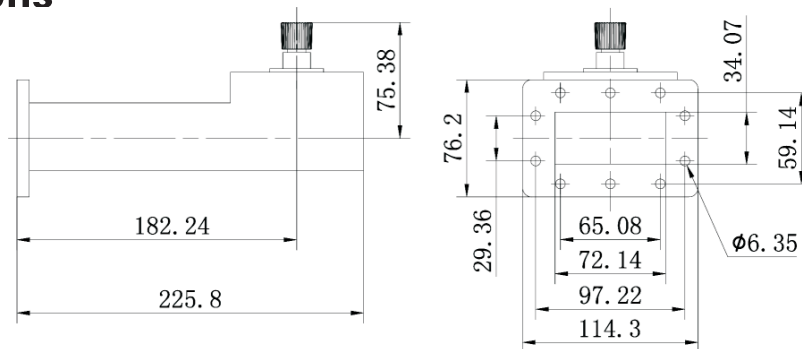
Model	Description	Frequency Range (GHz)	SWR (Max.)	Waveguide Model	WG Flange	Coaxial Connector Type
71130	WG to coaxial adapter	2.6~3.95	1.15	WR284	FDP32	APC-7
71130A	WG to coaxial adapter	2.6~3.95	1.15	WR284	FDP32	Type-N (f)
71130B	WG to coaxial adapter	2.6~3.95	1.15	WR284	FDP32	Type-N (m)
71131	WG to coaxial adapter	3.94~6	1.15	WR187	FDP48	APC-7
71131A	WG to coaxial adapter	3.94~6	1.15	WR187	FDP48	Type-N (f)
71131B	WG to coaxial adapter	3.94~6	1.15	WR187	FDP48	Type-N (m)
71132	WG to coaxial adapter	4.64~7.05	1.15	WR159	FDP58	APC-7
71132A	WG to coaxial adapter	4.64~7.05	1.15	WR159	FDP58	Type-N (f)
71132B	WG to coaxial adapter	4.64~7.05	1.15	WR159	FDP58	Type-N (m)
71133	WG to coaxial adapter	5.88~8.17	1.15	WR137	FDP70	APC-7
71133A	WG to coaxial adapter	5.88~8.17	1.15	WR137	FDP70	Type-N (f)
71133B	WG to coaxial adapter	5.88~8.17	1.15	WR137	FDP70	Type-N (m)
71134	WG to coaxial adapter	7~10	1.20	WR112	FBP84	APC-7
71134A	WG to coaxial adapter	7~10	1.20	WR112	FBP84	Type-N (f)
71134B	WG to coaxial adapter	7~10	1.20	WR112	FBP84	Type-N (m)
71135	WG to coaxial adapter	8~12.4	1.20	WR90	FBP100	APC-7
71135A	WG to coaxial adapter	8~12.4	1.20	WR90	FBP100	Type-N (f)
71135B	WG to coaxial adapter	8~12.4	1.20	WR90	FBP100	Type-N (m)
71136	WG to coaxial adapter	10~15	1.20	WR75	FBP120	APC-7
71136A	WG to coaxial adapter	10~15	1.20	WR75	FBP120	Type-N (f)
71136B	WG to coaxial adapter	10~15	1.20	WR75	FBP120	Type-N (m)
71137	WG to coaxial adapter	12~18	1.20	WR62	FBP140	APC-7
71137A	WG to coaxial adapter	12~18	1.20	WR62	FBP140	Type-N (f)
71137B	WG to coaxial adapter	12~18	1.20	WR62	FBP140	Type-N (m)
71138	WG to coaxial adapter	18~26.5	1.20	WR42	FBP220	3.5 mm (f)

○ Continued

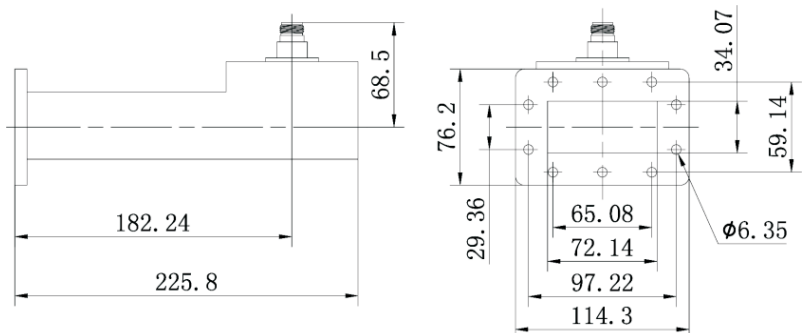
Model	Description	Frequency Range (GHz)	SWR (Max.)	Waveguide Model	WG Flange	Coaxial Connector Type
71138A	WG to coaxial adapter	18~26.5	1.20	WR42	FBP220	3.5 mm (m)
71139	WG to coaxial adapter	26.5~40	1.20	WR28	FBP320	2.4 mm (f)
81102	WG to coaxial adapter	26.5~40	1.20	WR28	FBP320	2.4 mm (m)
83904	WG to coaxial adapter	33~50	1.25	WR22	FAP400	2.4 mm (f)
83903	WG to coaxial adapter	40~60	1.30	WR19	FAP500	1.85 mm (f)
83901	WG to coaxial adapter	2.5~7.5	1.30	WRD250	FLG250-1	Type-N (f)
83902	WG to coaxial adapter	7.5~18	1.30	WRD750	FLG750-1	Type-N (f)
83905	WG to coaxial adapter	22~33	1.12	WR34	FBP260	2.92 mm (f)
83906	WG to coaxial adapter	26.5~40	1.20	WR28	FBP320	2.92 mm (f)
83906A	WG to coaxial adapter	26.5~40	1.20	WR28	FBP320	2.4 mm (f)
83906B	WG to coaxial adapter	33~50	1.25	WR22	FAP400	2.4 mm (f)
83906C	WG to coaxial adapter	40~60	1.30	WR19	FAP500	1.85 mm (f)

● Dimensions

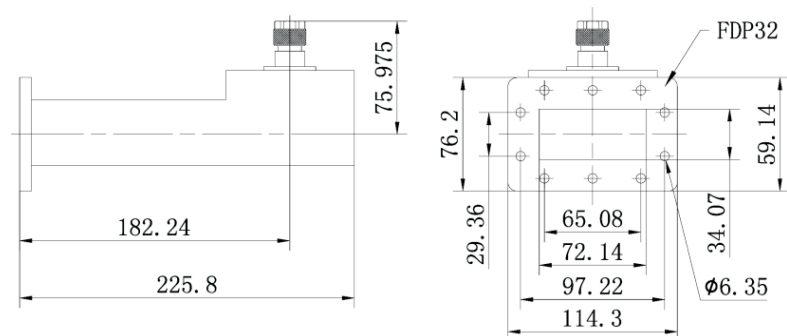
71130

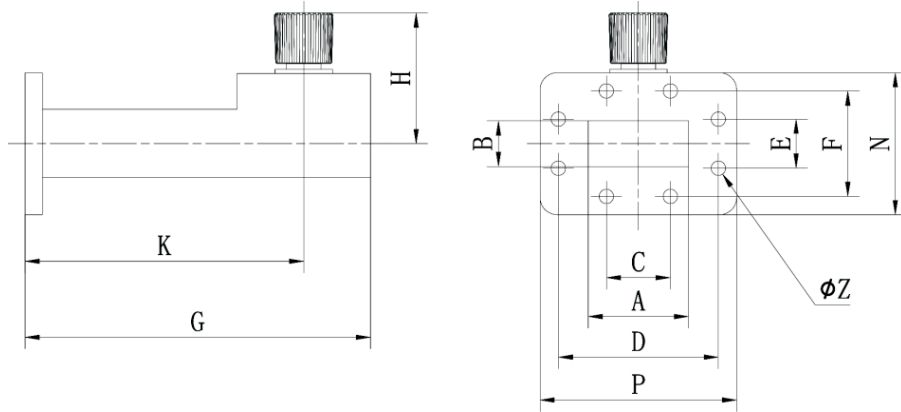


71130A

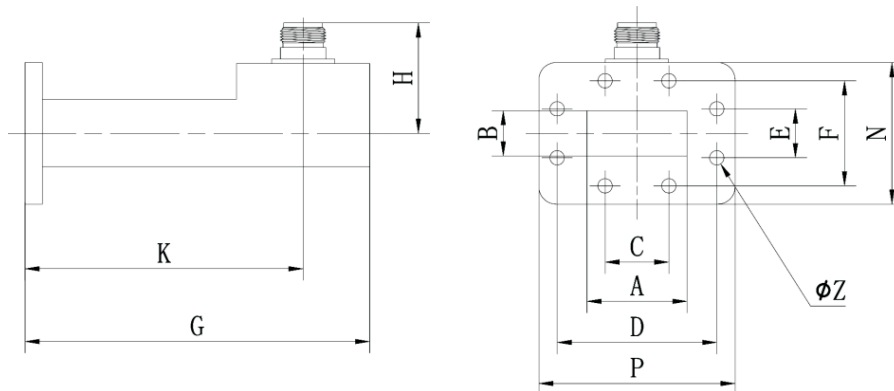


71130B

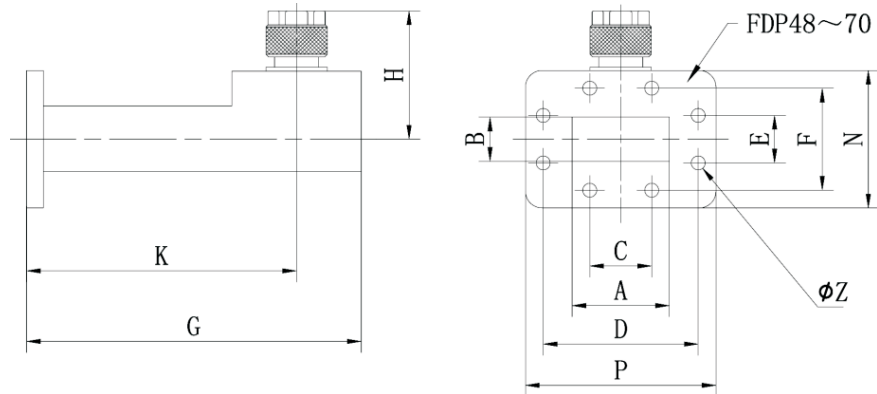


71131~71133


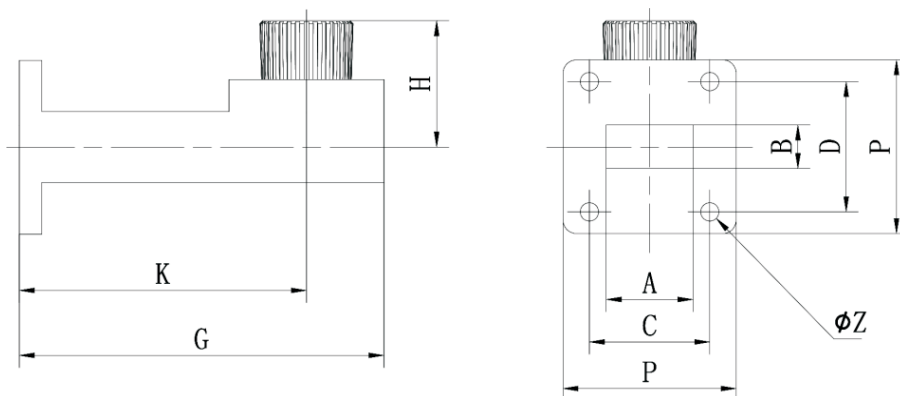
Models	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)	K(mm)	N(mm)	P(mm)	Z(mm)
71131	47.55	22.15	28.58	71.82	22.22	46.44	150	50.93	122.87	63.5	88.9	6.35
71132	40.39	20.19	25.4	64.66	19.04	44.46	126	43.6	99.7	61.9	88.0	6.35
71133	34.85	15.8	22.22	55.58	15.88	36.52	120	45.28	96.8	49.2	68.3	5.00

71131A~71133A


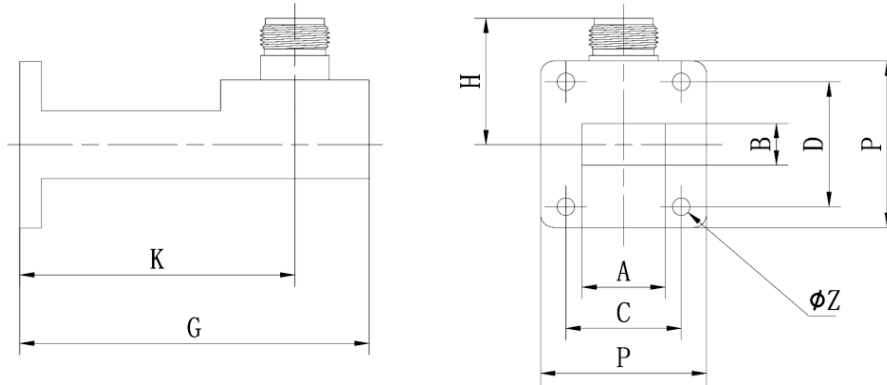
Models	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)	K(mm)	N(mm)	P(mm)	Z(mm)
71131A	47.55	22.15	28.58	71.82	22.22	46.44	150	50.4	122.87	63.5	88.9	6.35
71132A	40.39	20.19	25.4	64.66	19.04	44.46	126	36.7	99.7	61.9	81.0	6.35
71133A	34.85	15.8	22.22	55.58	15.88	36.52	120	38.4	96.8	49.2	68.3	5.00

71131B~71133B


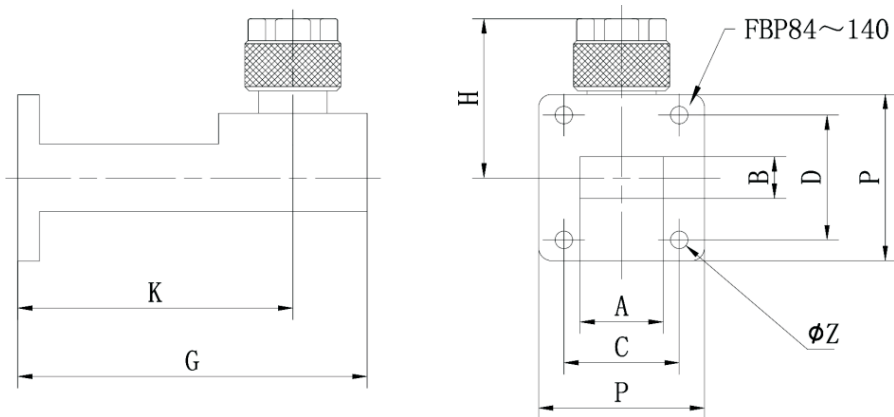
Models	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)	K(mm)	N(mm)	P(mm)	Z(mm)
71131B	47.55	22.15	28.58	71.82	22.22	46.44	150	54.9	122.87	63.5	88.9	6.35
71132B	40.39	20.19	25.4	64.66	19.04	44.46	126	44.2	99.7	61.9	88.0	6.35
71133B	34.85	15.8	22.22	55.58	15.88	36.52	120	45.9	96.8	49.2	68.3	5.00

71134~71137


Models	A(mm)	B(mm)	C(mm)	D(mm)	G(mm)	H(mm)	K(mm)	P(mm)	Z(mm)
71134	28.50	12.62	34.34	37.44	107.5	30.1	87.5	47.8	4.17
71135	22.86	10.16	30.99	32.51	84.5	30.2	66.16	41.4	4.17
71136	19.05	9.53	26.42	28.50	80	27.6	63	38.0	4.00
71137	15.80	7.90	25.25	24.28	77.5	28	59.9	33.3	4.00

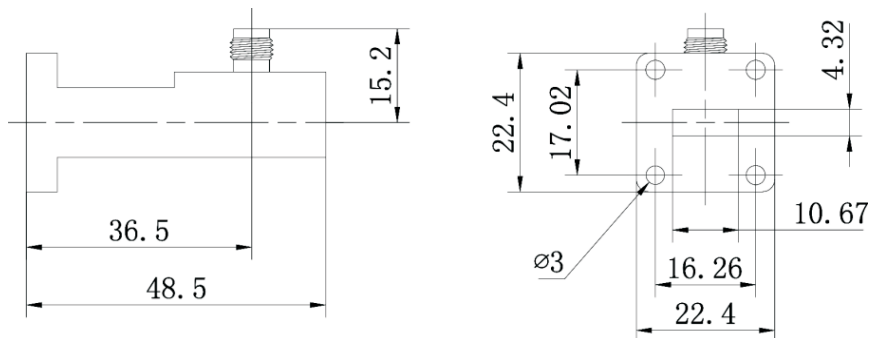
71134A~71137A


Models	A(mm)	B(mm)	C(mm)	D(mm)	G(mm)	H(mm)	K(mm)	P(mm)	Z(mm)
71134A	28.50	12.62	34.34	37.44	107.5	31.4	87.5	47.8	4.17
71135A	22.86	10.16	30.99	32.51	84.5	30.2	66.16	41.4	4.17
71136A	19.05	9.53	26.42	28.50	80	28.9	63	38.0	4.00
71137A	15.80	7.90	25.25	24.28	77.5	29.6	59.9	33.3	4.00

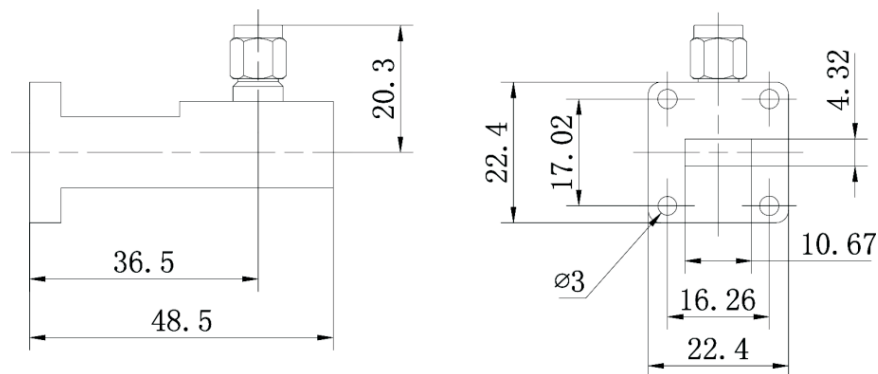
71134B~71137B


Models	A(mm)	B(mm)	C(mm)	D(mm)	G(mm)	H(mm)	K(mm)	P(mm)	Z(mm)
71134B	28.50	12.62	34.34	37.44	107.5	31.4	87.5	47.8	4.17
71135B	22.86	10.16	30.99	32.51	84.5	30.2	66.16	41.4	4.17
71136B	19.05	9.53	26.42	28.50	80	36.4	63	38.0	4.00
71137B	15.80	7.90	25.25	24.28	77.5	29.6	59.9	33.3	4.00

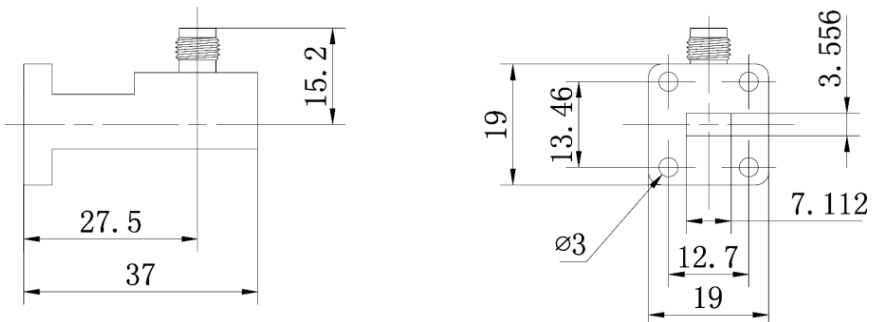
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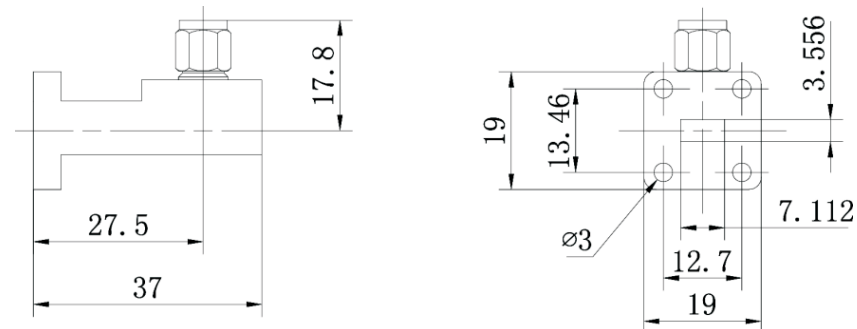
71138A



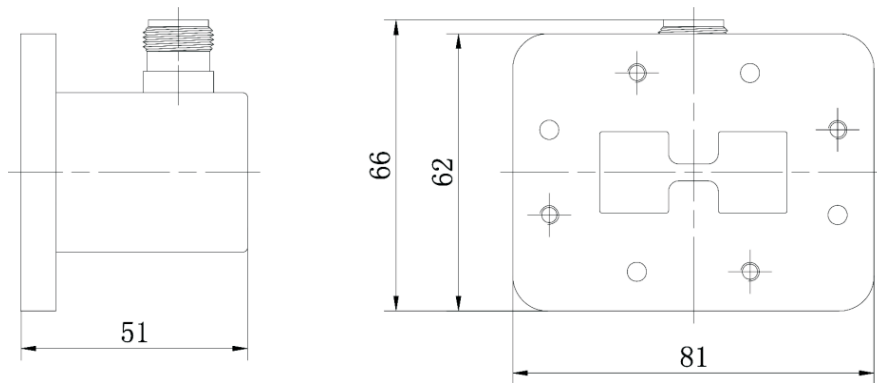
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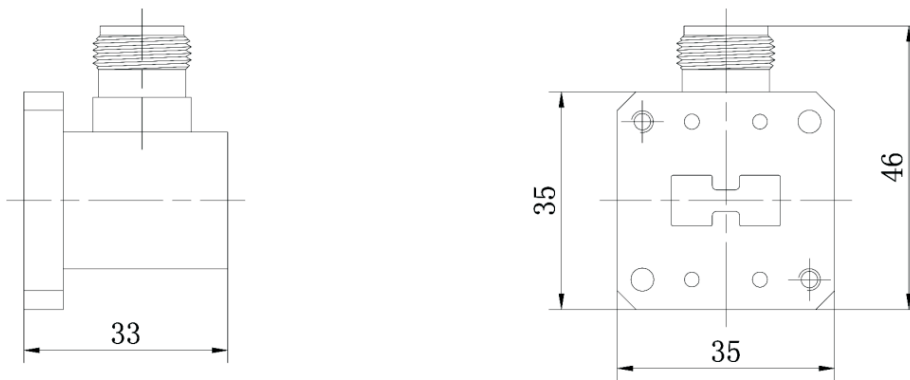
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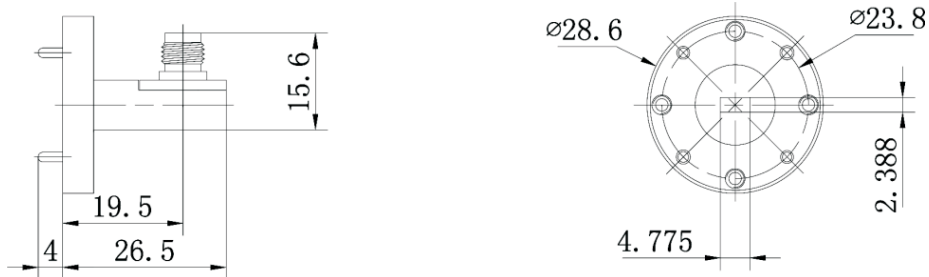
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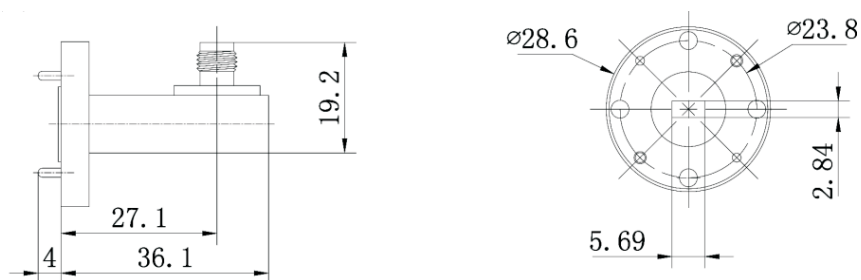
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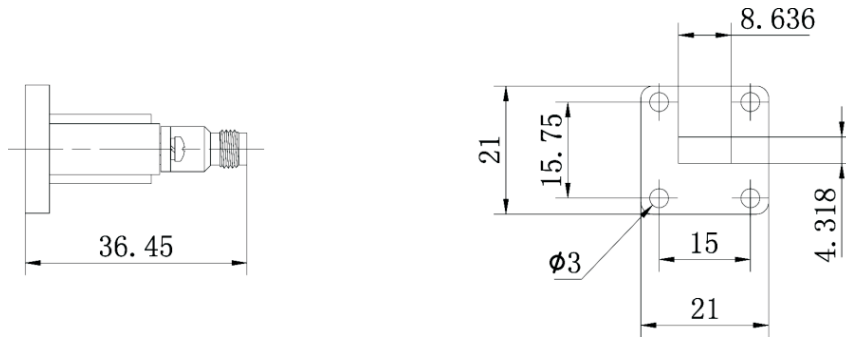
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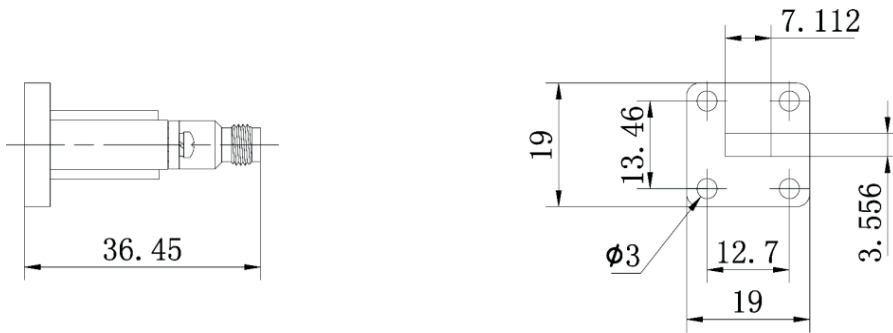
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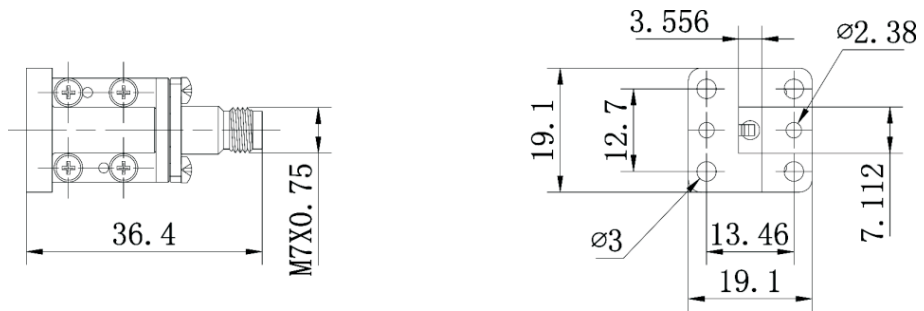
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83906



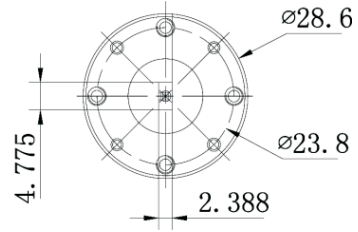
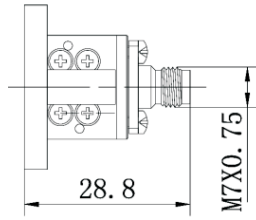
83906A



83906B



83906C



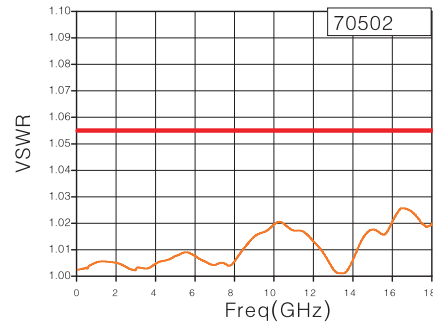
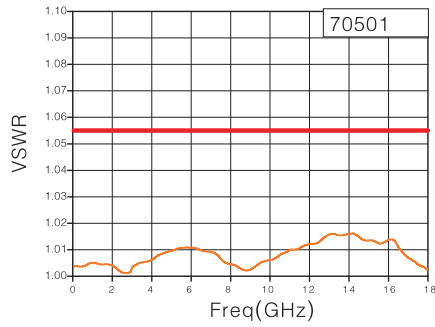
Coaxial Loads



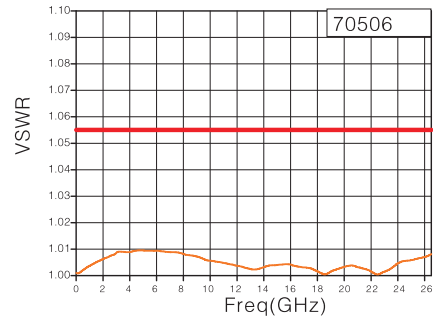
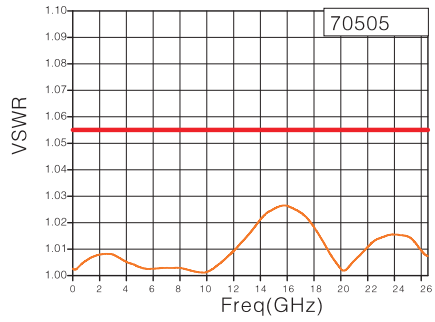
● Specifications

Model	Description	Impedance (Ω)	Frequency Range (GHz)	SWR (Max.)	Input Power (W)(Max.)	Connector Type
70501	coaxial load	50	DC~18	1.055	1	Type-N (f)
70502	coaxial load	50	DC~18	1.055	1	Type-N (m)
70503	coaxial load	50	DC~2	1.02	1	Type-N (f)
70504	coaxial load	50	DC~2	1.02	1	Type-N (m)
70505	coaxial load	50	DC~26.5	1.041	1	3.5 mm (f)
70506	coaxial load	50	DC~26.5	1.041	1	3.5 mm (m)
70507	coaxial load	50	DC~18	1.04	1	7 mm
70508	coaxial load	50	DC~40	1.12	0.5	2.4 mm (f)
70509	coaxial load	50	DC~40	1.12	0.5	2.4 mm (m)
80501H	coaxial load	50	DC~50	1.106	0.5	2.4 mm (m)
80502H	coaxial load	50	DC~50	1.106	0.5	2.4 mm (f)
70510	coaxial load	75	DC~3	1.03	1	Type-N (f)
70511	coaxial load	75	DC~3	1.03	1	Type-N (m)
80501	coaxial load	50	DC~67	1.15	0.5	1.85 mm (m)
80502	coaxial load	50	DC~67	1.15	0.5	1.85 mm (f)
80504	coaxial load	50	DC~40	1.17	0.5	2.92 mm (m)
80505	coaxial load	50	DC~40	1.17	0.5	2.92 mm (f)
70518	coaxial load	50	DC~18	1.25	25	Type-N (f)
70518A	coaxial load	50	DC~18	1.25	25	Type-N (m)
70519	coaxial load	50	DC~18	1.3	50	Type-N (f)
70519A	coaxial load	50	DC~18	1.3	50	Type-N (m)
80506FA	coaxial load	50	DC~40	1.25	0.5	2.92 mm (m)

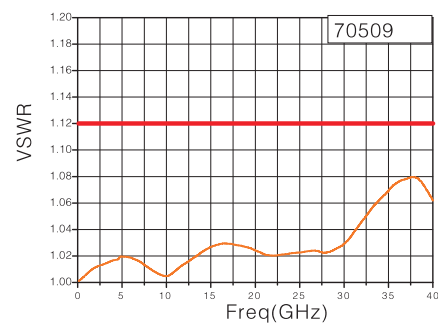
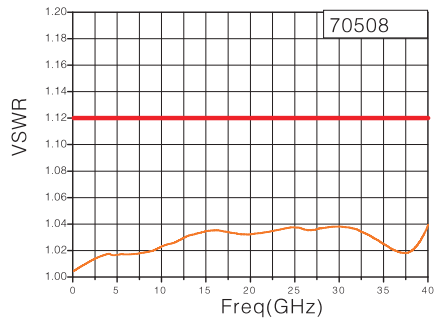
● Typical Testing Curve



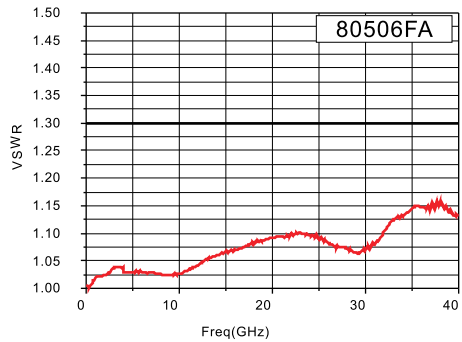
Type-N coaxial load SWR testing curve



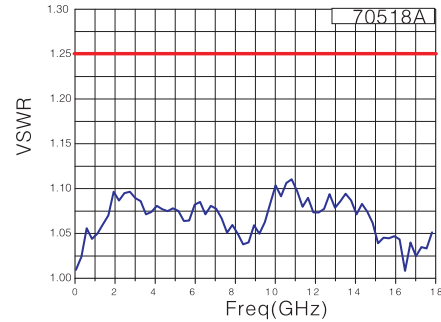
3.5 mm coaxial load SWR testing curve



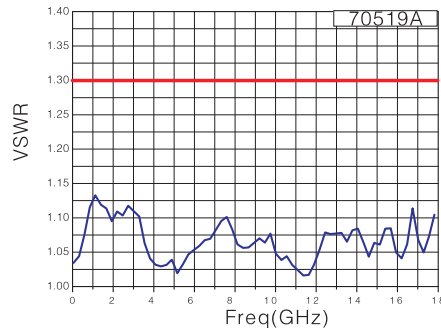
2.4 mm coaxial load SWR testing curve



2.92 mm fixed load SWR testing curve



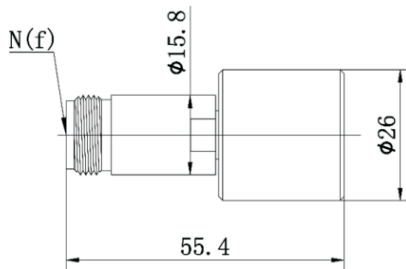
25 W load SWR testing curve (70518 & 70518A)



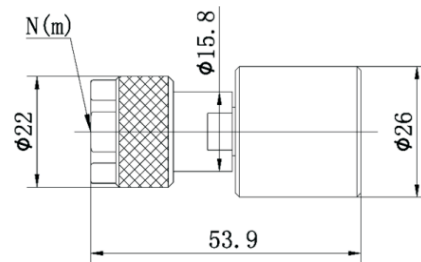
50 W load SWR testing curve (70519 & 70519A)

● Dimensions

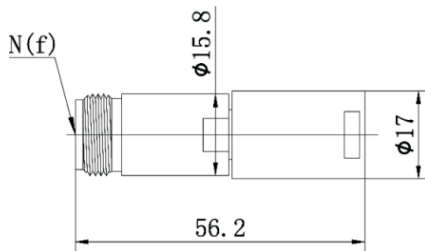
70501



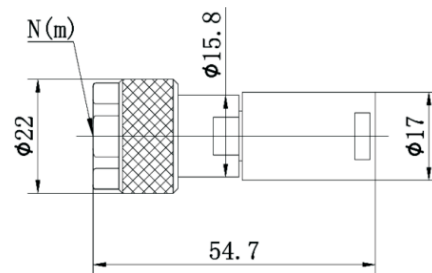
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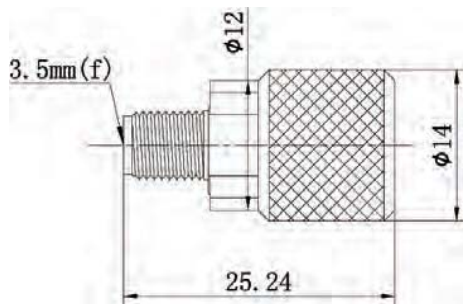
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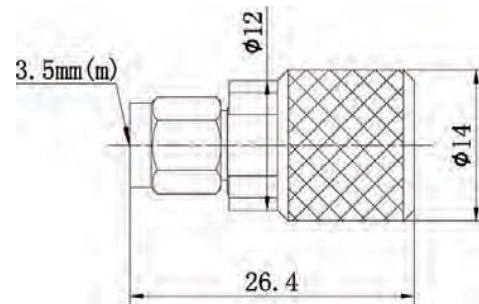
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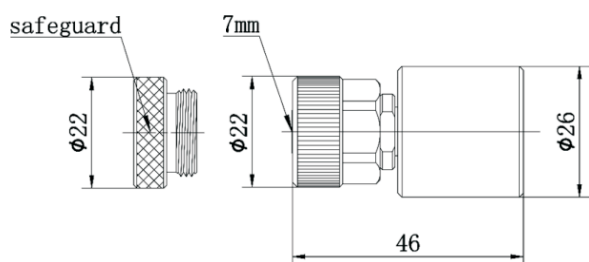
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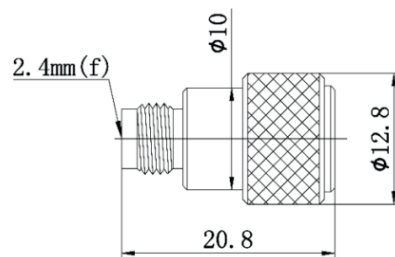
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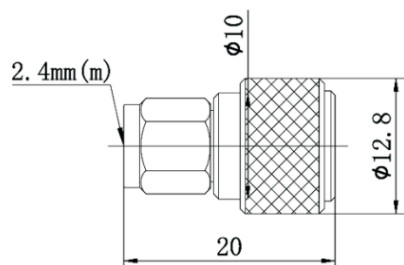
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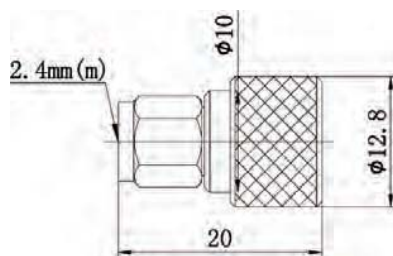
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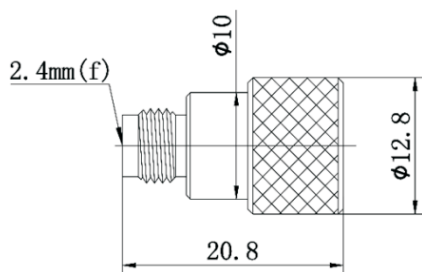
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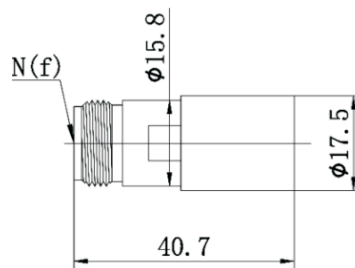
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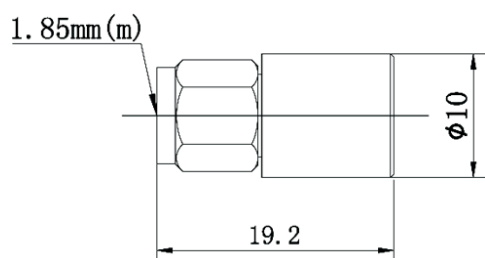
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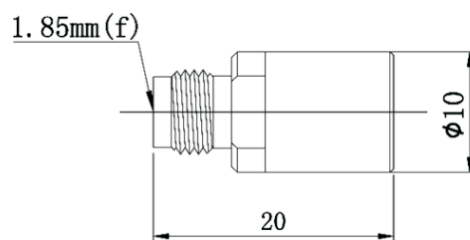
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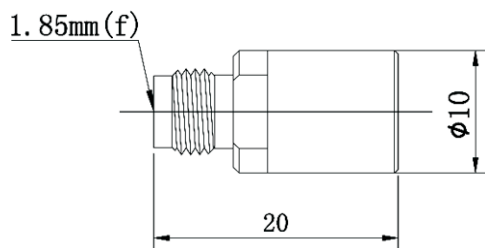
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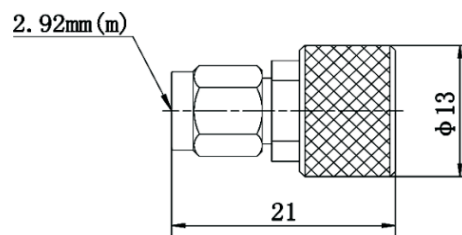
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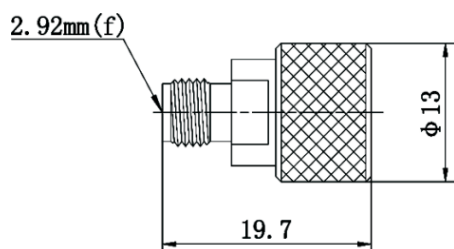
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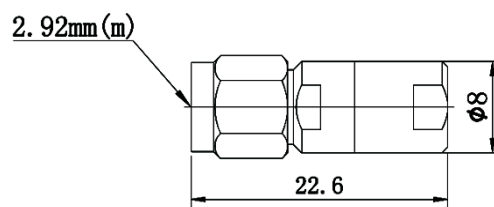
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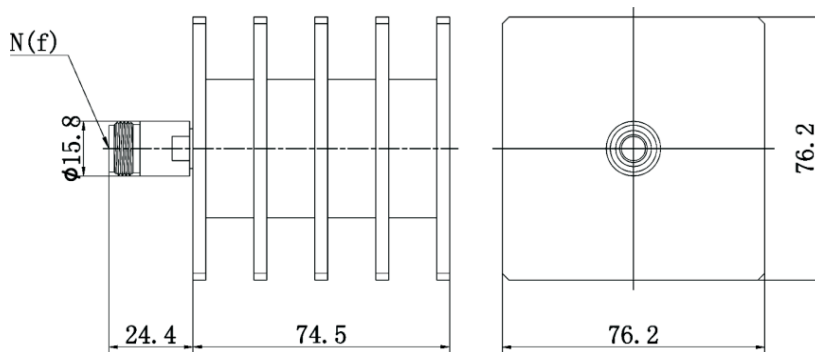
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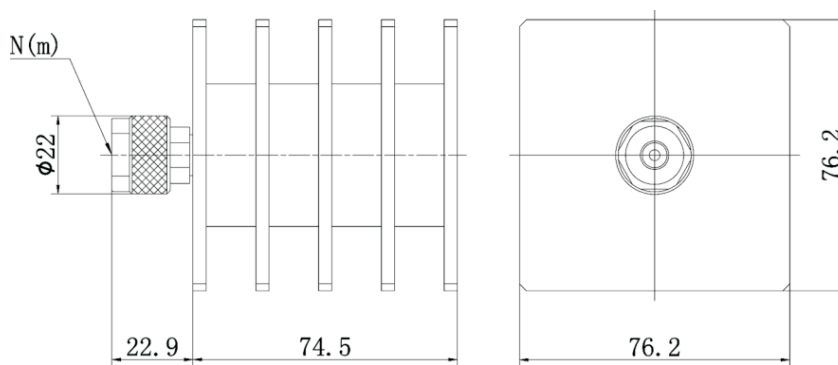
80506FA



70518/70519



70518A/70519A



Mechanical Calibration Kits



● Coaxial Mechanical Calibration Kits Specifications

Model	Description	Frequency Range	Specifications★	Configuration List
31101	calibration kit, Type-N, 50 Ω	DC ~ 18GHz	Open: ± 1.5° Short: ± 1.5° Broadband load: SWR < 1.055 Adapter: SWR < 1.083	open, Type-N (m) 1 open, Type-N (f) 1 short, Type-N (m) 1 short, Type-N (f) 1 load, Type-N (f) 1 load, Type-N (m) 1 adapter, Type-N (f) to Type-N (f) 1 adapter, Type-N (m) to Type-N (m) 1 adapter, 7 mm to Type-N (m) 2 adapter, 7 mm to Type-N (f) 2 torque wrench, Type-N 1 hook spanner 1
31101A	T-calibration kit, Type-N (m), 50 Ω	DC ~ 18GHz	Open: ± 1.5° Short: ± 1.0° Broadband load: SWR < 1.055	T-calibration kit, Type-N (m), 50 Ω
31101B	T-calibration kit, Type-N (f), 50 Ω	DC ~ 18GHz	Open: ± 1.5° Short: ± 1.0° Broadband load: SWR < 1.055	T-calibration kit, Type-N (f), 50 Ω

Model	Description	Frequency Range	Specifications ★	Configuration List
20204	calibration kit, Type-N, 75 Ω	DC ~3GHz	Open: ± 1.6° Short: ± 1.2° Broadband load: SWR < 1.04 adapter 75Ω: SWR < 1.04	open, Type-N (m), 75 Ω 1 short, Type-N (m), 75 Ω 1 open, Type-N (f), 75 Ω 1 short, Type-N (f), 75 Ω 1 load, Type-N (f), 75 Ω 1 load, Type-N (m), 75 Ω 1 adapter, Type-N (f), 75 Ω to Type-N(f), 75 Ω 1 adapter, Type-N (m), 75 Ω to Type-N(m), 75 Ω 1 adapter, Type-N (m), 75 Ω to Type-N(f), 75 Ω 1 Type-N torque wrench 1 options: adapter, Type-N (f), 50 Ω to Type-N (m), 75 Ω 2 adapter, Type-N (m), 50 Ω to Type-N (m), 75 Ω 2 adapter, Type-N (m), 50 Ω to Type-N (f), 75 Ω 2 adapter, Type-N (f), 50 Ω to Type-N (f), 75 Ω 2
20205	calibration kit, Type-N, 50 Ω	DC ~3GHz	Open: ± 0.85° Short: ± 0.65° Broadband load: SWR < 1.014 Adapter: SWR < 1.029	open, Type-N (m) 1 open, Type-N (f) 1 short, Type-N (m) 1 short, Type-N (f) 1 load, Type-N (f) 1 load, Type-N (m) 1 adapter, Type-N (f) to Type-N (f) 1 adapter, Type-N (m) to Type-N (m) 1 adapter, Type-N (m) to Type-N (f) 1 torque wrench, Type-N 1
20207	T-calibration kit, Type-N (m), 50 Ω	DC ~3GHz	Open: ± 0.85° Short: ± 0.65° Broadband load: SWR < 1.014	T-calibration kit, Type-N (m), 50 Ω
20207A	T-calibration kit, Type-N (f), 50 Ω	DC ~3GHz	Open: ± 0.85° Short: ± 0.65° Broadband load: SWR < 1.014	T-calibration kit, Type-N (f), 50 Ω
31104	calibration kit, Type-N, 50 Ω	DC ~6GHz	Open: ± 1.0° Short: ± 1.0° Fixed load: SWR < 1.023 Adapter: SWR < 1.029	open, Type-N (m) 1 open, Type-N (f) 1 short, Type-N (m) 1 short, Type-N (f) 1 load, Type-N (f) 1 load, Type-N (m) 1 adapter, Type-N (f) to Type-N (f) 1 adapter, Type-N (m) to Type-N (m) 1 adapter, Type-N (m) to Type-N (f) 1 torque wrench, Type-N 1

Model	Description	Frequency Range	Specifications★	Configuration List
20201	economical calibration kit, Type-N	DC~9 GHz	open: $\pm 1.2^\circ$ short: $\pm 1.0^\circ$ fixed load: SWR < 1.029 adapter: SWR < 1.052	open, Type-N (m) 1 open, Type-N (f) 1 short, Type-N (m) 1 short, Type-N (f) 1 load, Type-N (f) 1 load, Type-N (m) 1 adapter, Type-N (f) to Type-N (f) 1 adapter, Type-N (m) to Type-N (m) 1 adapter, Type-N (m) to Type-N (f) 1 torque wrench, Type-N 1
20201A	economical calibration kit, Type-N (m)	DC ~9GHz	open: $\pm 1.2^\circ$ short: $\pm 1.0^\circ$ fixed load: SWR < 1.029	T-calibration kit, Type-N (m), 50 Ω
20201B	economical calibration kit, Type-N (f)	DC ~9GHz	open: $\pm 1.2^\circ$ short: $\pm 1.0^\circ$ fixed load: SWR < 1.029	T-calibration kit, Type-N (f), 50 Ω
31111	calibration kit, 7 mm	DC ~18GHz	open: $\pm 0.5^\circ$ short: $\pm 0.5^\circ$ fixed load: SWR < 1.04	open, 7 mm 1 short, 7 mm 1 load, 7 mm 1 torque wrench, Type-N 1
31121	calibration kit, 3.5 mm	DC ~26.5GHz	open: $\pm 1.5^\circ$ short: $\pm 1.5^\circ$ fixed load: SWR < 1.055 adapter: SWR < 1.106	open, 3.5 mm (m) 1 open, 3.5 mm (f) 1 short, 3.5 mm (m) 1 short, 3.5 mm (f) 1 load, 3.5 mm (f) 1 load, 3.5 mm (m) 1 adapter, 3.5 mm (f) to 3.5 mm (f) 1 adapter, 3.5 mm (m) to 3.5 mm (m) 1 adapter, 3.5 mm (m) to 3.5 mm (f) 1 torque wrench, 3.5 mm 1
31121A	calibration kit, 3.5 mm	DC ~6GHz	open: $\pm 0.85^\circ$ short: $\pm 0.55^\circ$ fixed load: SWR < 1.029 adapter: SWR < 1.04	open, 3.5 mm (m) 1 open, 3.5 mm (f) 1 short, 3.5 mm (m) 1 short, 3.5 mm (f) 1 load, 3.5 mm (f) 1 load, 3.5 mm (m) 1 adapter, 3.5 mm (f) to 3.5 mm (f) 1 adapter, 3.5 mm (m) to 3.5 mm (m) 1 adapter, 3.5 mm (m) to 3.5 mm (f) 1 adapter, Type-N (m) to 3.5 mm (m) 1 adapter, Type-N (m) to 3.5 mm (f) 1 adapter, Type-N (f) to 3.5 mm (m) 1 adapter, Type-N (f) to 3.5 mm (f) 1 torque wrench, 3.5 mm 1

Model	Description	Frequency Range	Specifications ★	Configuration List
20202	calibration kit, 3.5 mm	DC ~9GHz	Open: $\pm 1.0^\circ$ Short: $\pm 0.85^\circ$ Fixed load: SWR < 1.029 Adapter: SWR < 1.052	open, 3.5 mm (m) 1 open, 3.5 mm (f) 1 short, 3.5 mm (m) 1 short, 3.5 mm (f) 1 load, 3.5 mm (f) 1 load, 3.5 mm (m) 1 adapter, 3.5 mm (f) to 3.5 mm (f) 1 adapter, 3.5 mm (m) to 3.5 mm (m) 1 adapter, 3.5 mm (m) to 3.5 mm (f) 1 adapter, Type-N (m) to 3.5 mm (m) 1 adapter, Type-N (m) to 3.5 mm (f) 1 adapter, Type-N (f) to 3.5 mm (m) 1 adapter, Type-N (f) to 3.5 mm (f) 1 torque wrench, 3.5 mm 1
20206	calibration kit, 2.92 mm	DC ~40GHz	Open: $\pm 6.0^\circ$ Short: $\pm 4.5^\circ$ Fixed load: SWR ≤ 1.17 Adapter: SWR ≤ 1.15	open, 2.92 mm (m) 1 open, 2.92 mm (f) 1 short, 2.92 mm (m) 1 short, 2.92 mm (f) 1 load, 2.92 mm (f) 1 load, 2.92 mm (m) 1 adapter, 2.92 mm (f) to 2.92 mm (f) 1 adapter, 2.92 mm (m) to 2.92 mm (m) 1 adapter, 2.92 mm (m) to 2.92 mm (f) 1 torque wrench, 3.5 mm 1
31123	calibration kit, 2.4 mm	DC ~40GHz	Open: $\pm 1.5^\circ$ Short: $\pm 1.5^\circ$ Fixed load: SWR < 1.105 Adapter: SWR < 1.119	open, 2.4 mm (m) 1 open, 2.4 mm (f) 1 short, 2.4 mm (m) 1 short, 2.4 mm (f) 1 load, 2.4 mm (f) 1 load, 2.4 mm (m) 1 adapter, 2.4 mm (f) to 2.4 mm (f) 1 adapter, 2.4 mm (m) to 2.4 mm (m) 1 adapter, 2.4 mm (m) to 2.4 mm (f) 1 torque wrench, 3.5 mm 1
31123A	calibration kit, 2.4 mm	DC ~50GHz	Open: $\pm 2.25^\circ$ Short: $\pm 2^\circ$ Fixed load: SWR < 1.106 Adapter: SWR < 1.222	open, 2.4 mm (m) 1 open, 2.4 mm (f) 1 short, 2.4 mm (m) 1 short, 2.4 mm (f) 1 load, 2.4 mm (f) 1 load, 2.4 mm (m) 1 adapter, 2.4 mm (f) to 2.4 mm (f) 1 adapter, 2.4 mm (m) to 2.4 mm (m) 1 adapter, 2.4 mm (m) to 2.4 mm (f) 1 torque wrench, 3.5 mm 1
31128	calibration kit, 1.85 mm	DC ~67GHz	Open: $\pm 2.0^\circ$ Short: $\pm 2.0^\circ$ Fixed load: SWR < 1.15 Adapter: SWR < 1.25	open, 1.85 mm (m) 1 open, 1.85 mm (f) 1 short, 1.85 mm (m) 1 short, 1.85 mm (f) 1 load, 1.85 mm (f) 1 load, 1.85 mm (m) 1 adapter, 1.85 mm (f) to 1.85 mm (f) 1 adapter, 1.85 mm (m) to 1.85 mm (m) 1 adapter, 1.85 mm (m) to 1.85 mm (f) 1 torque wrench, 3.5 mm 1

● Waveguide Mechanical Calibration Kits Specifications

Model	Description	Frequency Range (GHz)	Specifications	Configuration List
32112	WG mechanical calibration kit	2.6 ~ 3.95	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.15	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR284 to 7 mm 2
32113	WG mechanical calibration kit	3.94 ~ 6	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.15	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR187 to 7 mm 2
32151	WG mechanical calibration kit	3.94 ~ 6	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.15	short 2 offset, 1/8 λ g 1 offset, 3/8 λ g 1 fixed load 2 WG to coaxial adapter, WR187 to Type-N (m) 1 WG to coaxial adapter, WR187 to Type-N (f) 1
32114	WG mechanical calibration kit	4.64 ~ 7.05	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR159 to 7 mm 2
32115	WG mechanical calibration kit	5.88 ~ 8.17	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR137 to 7 mm 2
32116	WG mechanical calibration kit	7 ~ 10	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR112 to 7 mm 2
32117	WG mechanical calibration kit	8 ~ 12	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR90 to 7 mm 2
32152	WG mechanical calibration kit	9 ~ 10	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/8 λ g 1 offset, 3/8 λ g 1 fixed load 2 WG to coaxial adapter, WR90 to Type-N (m) 1 WG to coaxial adapter, WR90 to Type-N (f) 1

Model	Description	Frequency Range (GHz)	Specifications	Configuration List
32154	WG mechanical calibration kit	10~15	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR62 to 7 mm 2
32118	WG mechanical calibration kit	12~18	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR75 to 7 mm 2
32119	WG mechanical calibration kit	18~26.5	Fixed load: SWR < 1.03 WG to coaxial adapter: SWR < 1.20	short 2 offset, 1/4 λ g 2 fixed load 2 WG to coaxial adapter, WR42 to 3.5 mm(f) 2
32101	WG mechanical calibration kit	26.5~40	Fixed load: SWR < 1.032 sliding load: SWR < 1.032	short 2 offset, 1/4 λ g 2 straight waveguide 2 fixed load 1 sliding load 1
32157	WG mechanical calibration kit	33~50	Fixed load: SWR < 1.06 sliding load: SWR < 1.06	short 2 offset, 1/4 λ g 2 straight waveguide 2 fixed load 1 sliding load 1
32121K	WG mechanical calibration kit	40~60	Fixed load: SWR < 1.05 sliding load: SWR < 1.05	short 1 offset, 1/4 λ g 1 straight waveguide 2 fixed load 1 sliding load 1
32156	WG mechanical calibration kit	50~75	Fixed load: SWR < 1.06 sliding load: SWR < 1.06	short 2 offset, 1/4 λ g 2 straight waveguide 2 fixed load 1 sliding load 1
32141	WG mechanical calibration kit	75~110	Fixed load: SWR < 1.065 sliding load: SWR < 1.065	Fixed load: SWR < 1.065 Sliding load: SWR < 1.065 short 2 offset, 1/4 λ g 2 straight waveguide 2 fixed load 1 sliding load 1

Model	Description	Frequency Range (GHz)	Specifications	Configuration List
32155	WG mechanical calibration kit	110~170	Fixed load: SWR < 1.06 sliding load: SWR < 1.06	short 2 offset, 1/4 λ g 2 straight waveguide 2 fixed load 1 sliding load 1
20301	WG mechanical calibration kit	170~220	Fixed load: SWR < 1.085	short 2 offset 2 fixed load 2 straight waveguide 2
20302	WG mechanical calibration kit	220~325	Fixed load: SWR < 1.10	short 2 offset 2 fixed load 2 straight waveguide 2
20301T	WG mechanical calibration kit	325~500	Fixed load: SWR < 1.12	short 2 offset 2 fixed load 2 straight waveguide 2

Coaxial Attenuators



● Coaxial Fixed Attenuators Specifications

Model	Description	Attenuation (dB)	Attenuation Accuracy (dB)	Frequency Range (GHz)	SWR(Max.)	Input Power (W)(Max.)	Connector Type
81550A	fixed attenuator	6	±2.0	DC~67	2.0	1	1.85 mm
81550B	fixed attenuator	10					
81503HA	fixed attenuator	1	±1	DC~50	1.4	1	2.4 mm
81503HB	fixed attenuator	2					
81503HC	fixed attenuator	3	±1.4	DC~40	1.35	1	2.92 mm
81503	fixed attenuator	3					
71515	fixed attenuator	6	±1.5	DC~40	1.4	1	2.4 mm
71515A	fixed attenuator	10					
71515B	fixed attenuator	20					
71515C	fixed attenuator	30					
81503FA	fixed attenuator	1	±1	DC~40	1.35	1	2.92 mm
81503FB	fixed attenuator	2					
81503FC	fixed attenuator	3	±1.2	DC~26.5	1.25	2	3.5 mm
81503FD	fixed attenuator	6	±1.5				
81503EA	fixed attenuator	1	±0.5	DC~26.5	1.25	2	3.5 mm
81503EB	fixed attenuator	2					
71514	fixed attenuator	3	±1.4	DC~26.5	1.25	2	3.5 mm
81503EE	fixed attenuator	5					
71514A	fixed attenuator	6					
71514B	fixed attenuator	10					
71514C	fixed attenuator	20					
71514D	fixed attenuator	30					
71514E	fixed attenuator	40	±1.6				

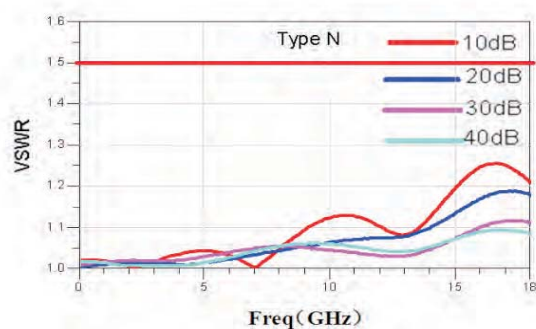
Model	Description	Attenuation (dB)	Attenuation Accuracy (dB)	Frequency Range (GHz)	SWR(Max.)	Input Power (W)(Max.)	Connector Type
81503DE	fixed attenuator	5	± 1	DC~18	1.5	2	Type-N
71513	fixed attenuator	10	± 0.8				
71513A	fixed attenuator	20	± 1.0				
71513B	fixed attenuator	30	± 1.0				
71513C	fixed attenuator	40	± 1.5				
71512	fixed attenuator	10	± 0.6	DC~12.4	1.3	2	Type-N
71512A	fixed attenuator	20	± 0.6				
71512B	fixed attenuator	30	± 0.8				
71512C	fixed attenuator	40	± 1.2				
71522B	fixed attenuator	20	± 1.5	DC~18	1.3	25	Type-N
71522C	fixed attenuator	30	± 1.6				
71522D	fixed attenuator	40	± 1.7				
71523A	fixed attenuator	20	± 1.6	DC~18	1.35	50	Type-N
71523B	fixed attenuator	30	± 1.7				
71523C	fixed attenuator	40	± 1.8				

● Programmable Step Attenuators Specifications

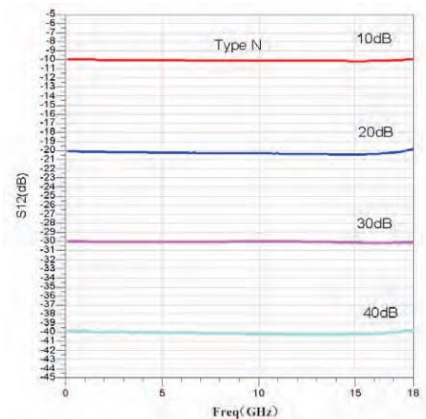
Model	Description	Frequency Range (GHz)	Attenuation Range (dB)	Step Size (dB)	Insertion Loss at 0 dB (dB)(Max.)	SWR (Max.)	RF Power (W) (Max.)	Repeatability (dB) (Max.)	Connector Type
81504	programmable step attenuator	DC~40	0~115	5	5.0	2.0	1	0.05	2.4 mm
81505	programmable step attenuator	DC~50	0~10	2	3.5	2.0	1	0.05	2.4 mm
81506	programmable step attenuator	DC~40	0~90	10	4.1	2.0	1	0.05	2.4 mm
81507	programmable step attenuator	DC~40	0~60	10	3.5	1.8	1	0.05	2.4 mm
81508	programmable step attenuator	DC~50	0~60	10	3.5	1.9	1	0.05	2.4 mm
81510	programmable step attenuator	DC~26.5	0~11	1	2.5	2.0	1	0.05	3.5 mm
81510F	programmable step attenuator	DC~40	0~11	1	4.1	2.0	1	0.05	2.4 mm
81511	programmable step attenuator	DC~40	0~70	10	3.5	1.8	1	0.05	2.4 mm
81512	programmable step attenuator	DC~40	0~35	5	3.5	1.8	1	0.05	2.4 mm

Model	Description	Frequency Range (GHz)	Attenuation Range (dB)	Step Size (dB)	Insertion Loss at 0 dB (dB)(Max.)	SWR (Max.)	RF Power (W) (Max.)	Repeatability (dB) (Max.)	Connector Type
81512A	programmable step attenuator	DC~50	0~35	5	3.5	1.9	1	0.05	2.4 mm
81514	programmable step attenuator	DC~40	0~75	5	4.1	2.0	1	0.05	2.4 mm
81515	programmable step attenuator	DC~40	0~110	10	4.1	2.0	1	0.05	2.4 mm
81516	programmable step attenuator	DC~26.5	0~70	10	3.5	1.8	1	0.05	3.5 mm
81517	programmable step attenuator	DC~26.5	0~75	5	3.5	2.0	1	0.05	3.5 mm
81518	programmable step attenuator	DC~26.5	0~110	10	3.5	2.0	1	0.05	3.5 mm
81519	programmable step attenuator	DC~26.5	0~35	5	3.5	1.8	1	0.05	3.5 mm

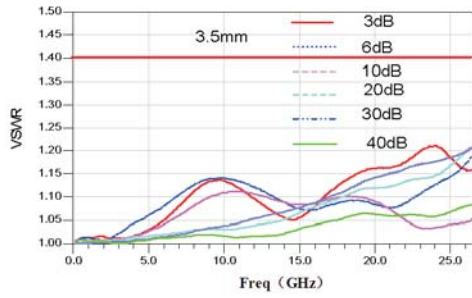
● Fixed Attenuator Typical Testing Curve



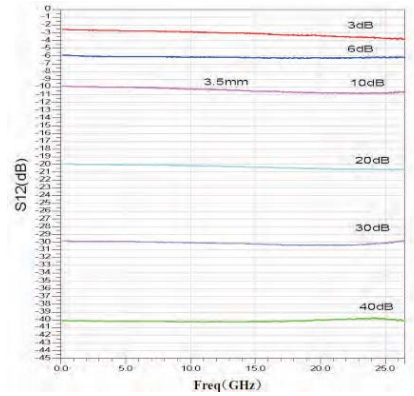
Type-N series fixed attenuators port SWR (typical)



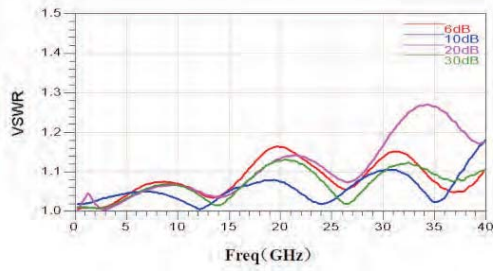
Type-N series fixed attenuators attenuation accuracy (typical)



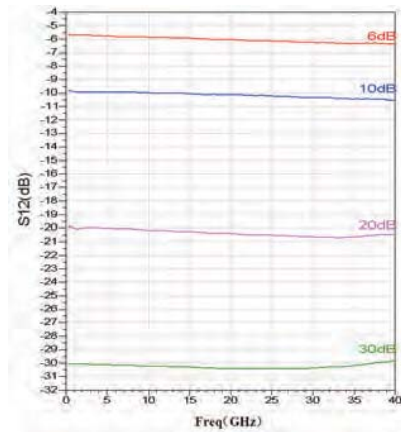
3.5 mm series fixed attenuators port SWR (typical)



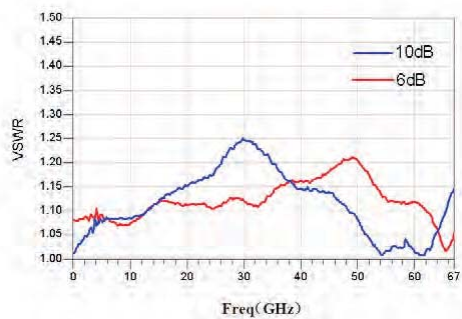
3.5 mm series fixed attenuators attenuation frequency response (typical)



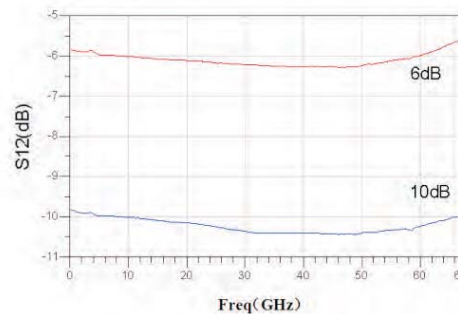
2.4 mm series fixed attenuators port SWR (typical)



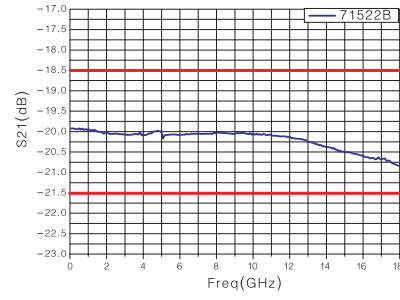
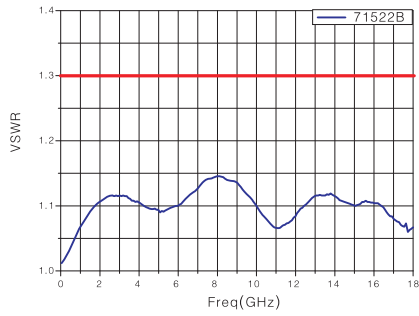
2.4 mm series fixed attenuators attenuation accuracy (typical)



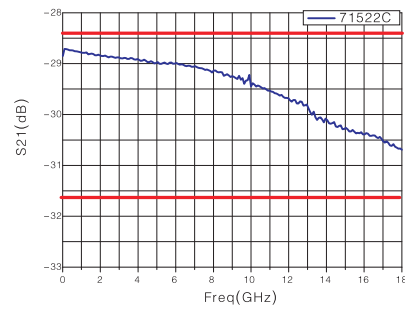
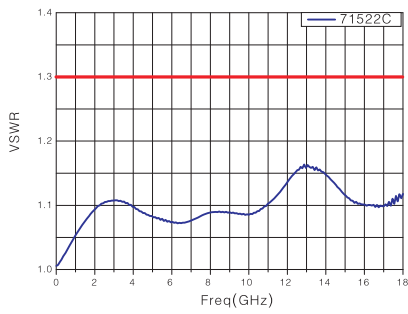
1.85 mm series fixed attenuators port SWR (typical)



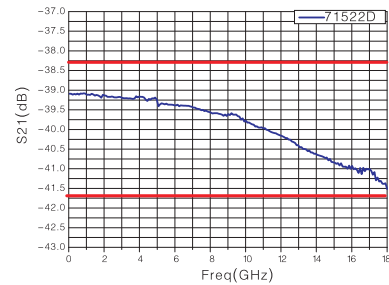
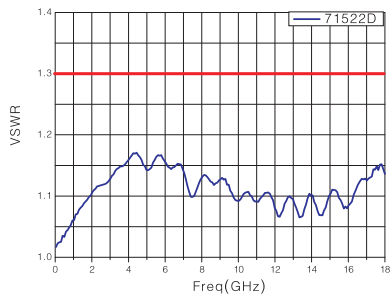
1.85 mm series fixed attenuators attenuation accuracy (typical)



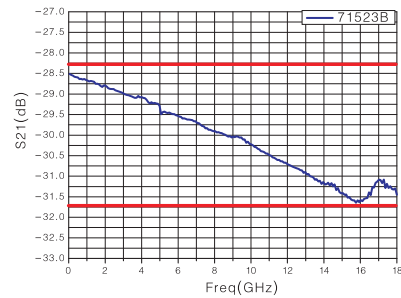
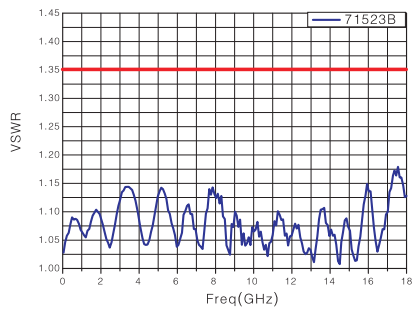
25 W 20 dB attenuator testing curve (71522B)



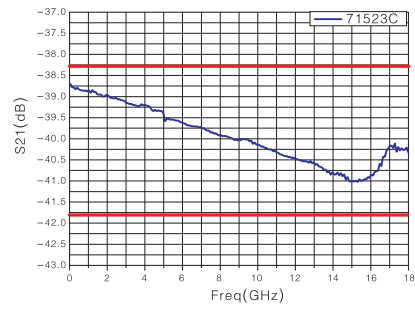
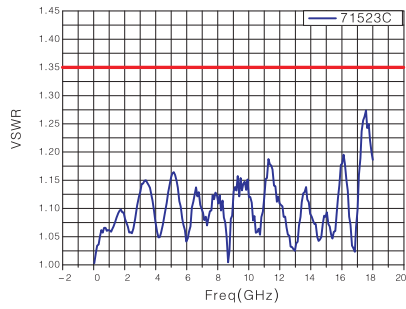
25 W 30 dB attenuator testing curve (71522C)



25 W 40 dB attenuator testing curve (71522D)

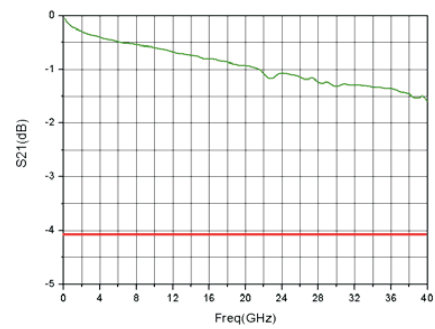
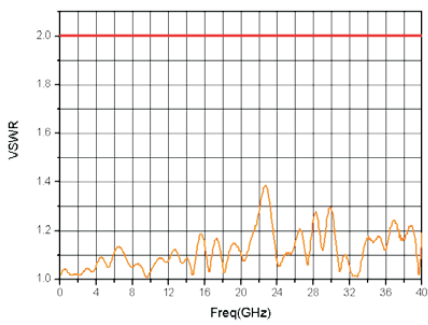


50 W 30 dB attenuator testing curve (71523B)

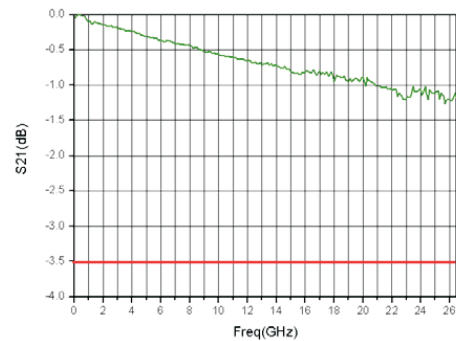
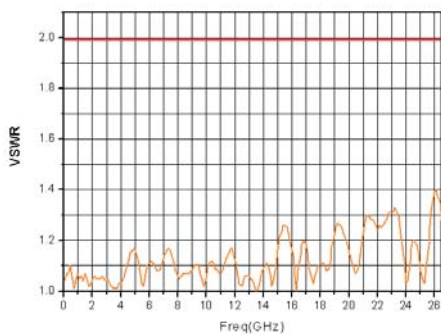


50 W 40 dB attenuator testing curve (71523C)

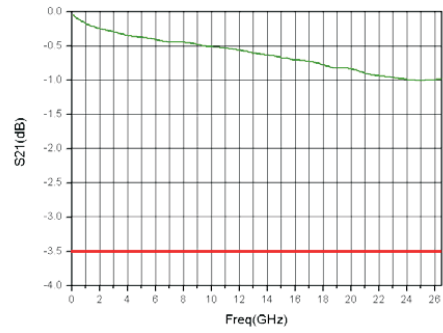
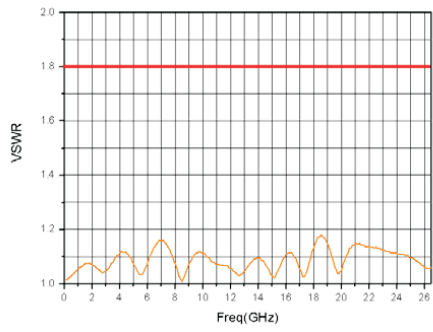
○ Programmable Step Attenuators Typical Testing Curve



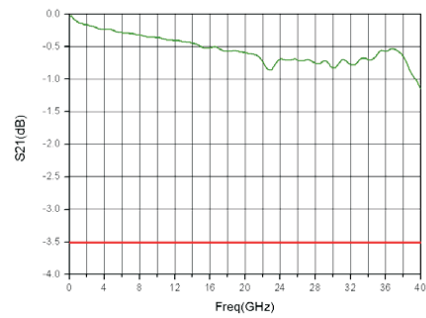
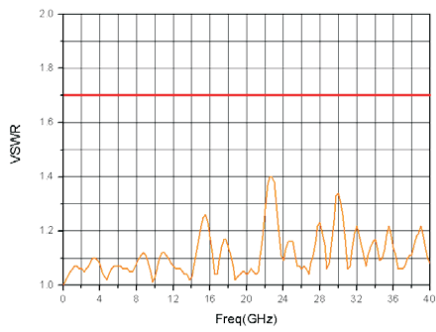
81506/81510F/81514/81515 SWR & insertion loss vs. frequency @0dB



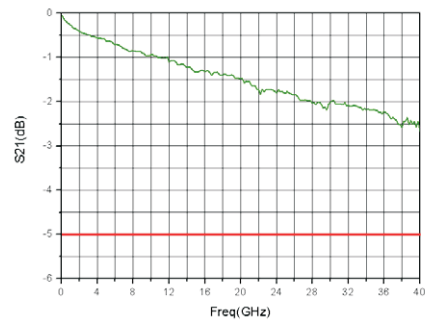
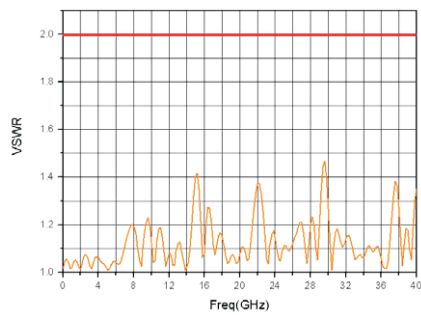
81510/81517/81518 SWR & insertion loss vs. frequency @0dB



81516/81519 SWR & insertion loss vs. frequency @0dB



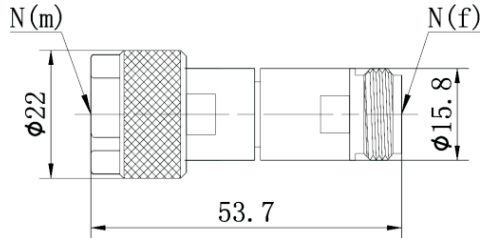
81507/81511/81512 SWR & insertion loss vs. frequency @0dB



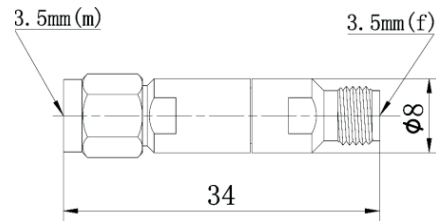
81504 SWR & insertion loss vs. frequency @0dB

• Dimensions

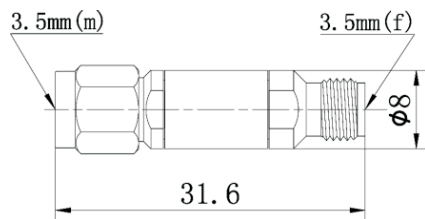
71512/71512A/71512B/71512C/
71513/71513A/71513B/71513C



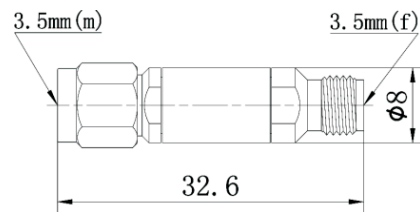
71514/71514A/71514B



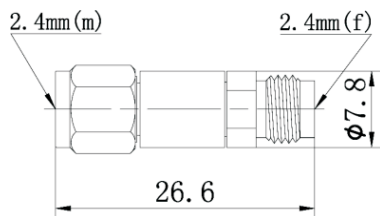
71514C/71514D



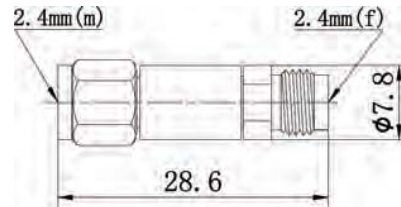
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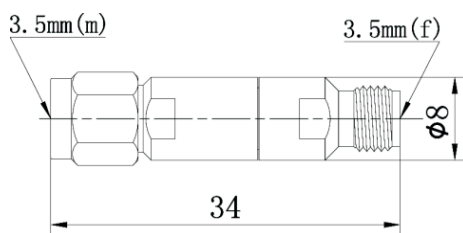
71515/71515A/71515B



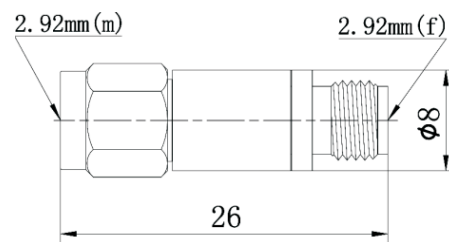
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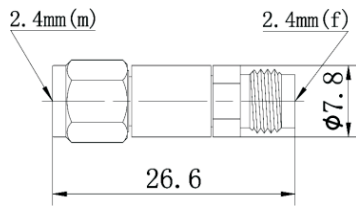
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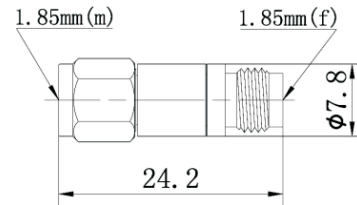
81503FA/81503FB/81503FC



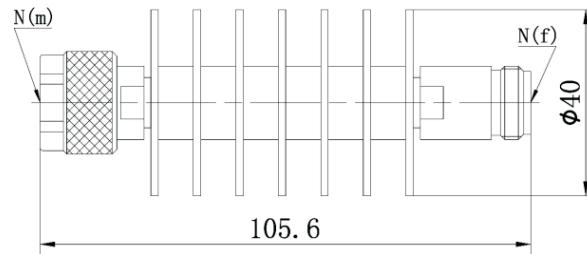
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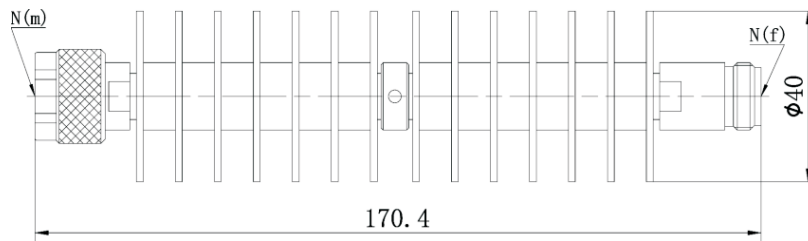
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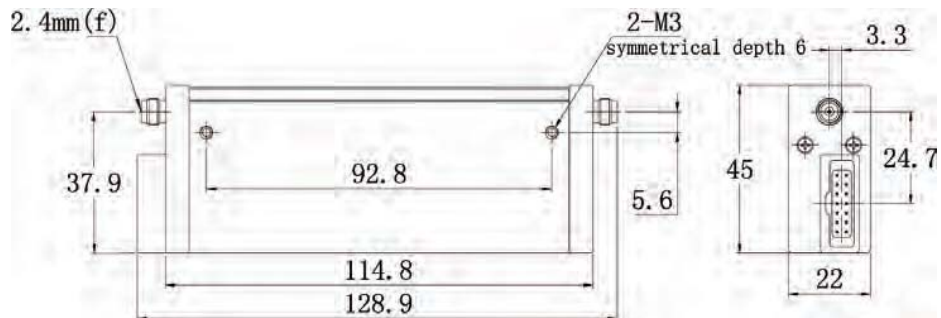
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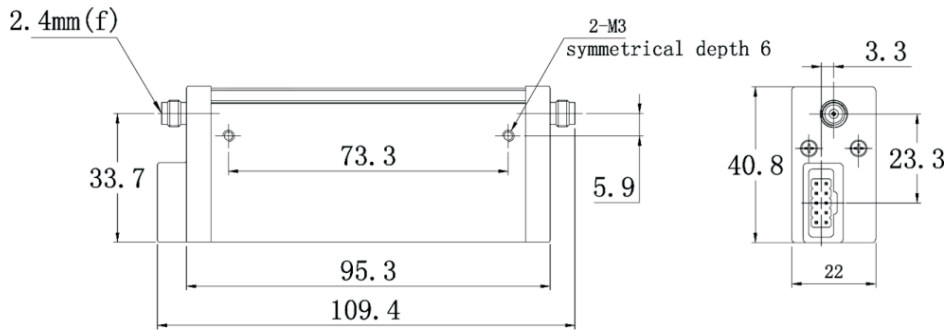
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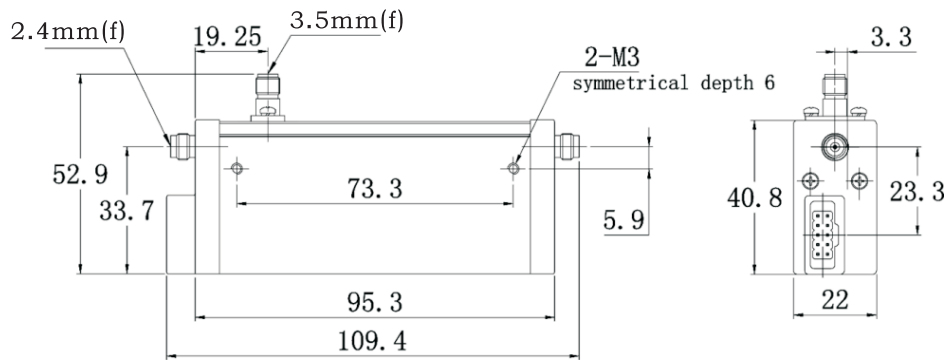
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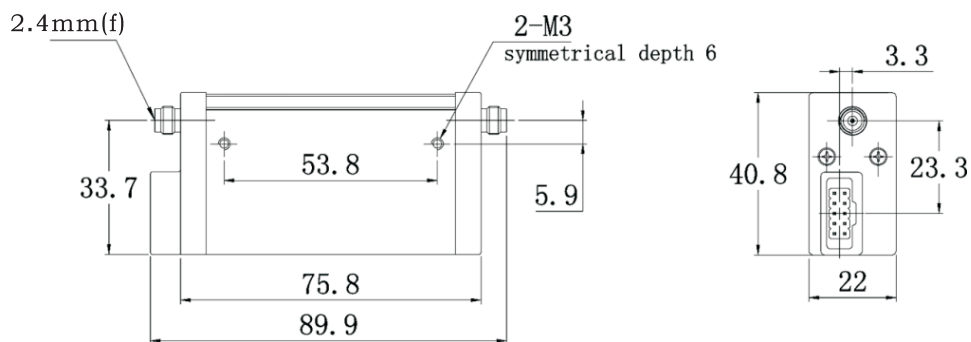
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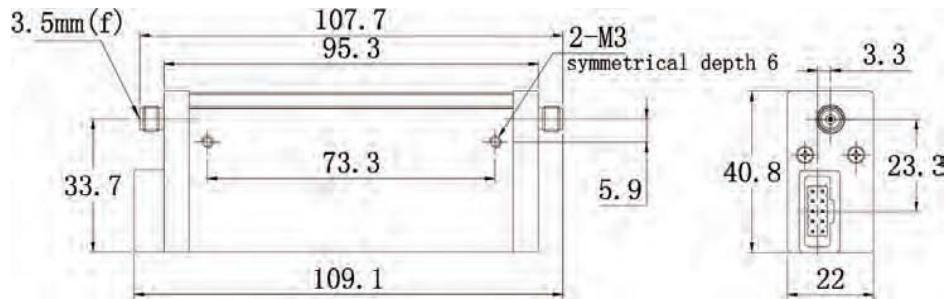
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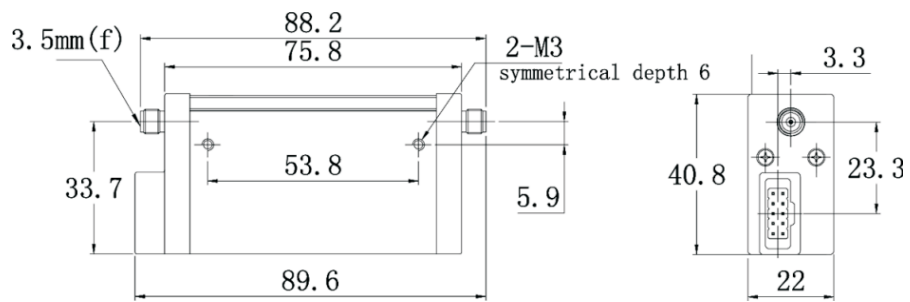
81507/81508/81511/81512/81512A



81510/81517/81518



81516/81519



Electromechanical Switches



● Specifications

○ SPDT&DPDT Switches

Model	80102A	80102	80104E	80104
Description	coaxial switch	coaxial switch	coaxial switch	coaxial switch
Type	SPDT	SPDT	DPDT	DPDT
Frequency Range (GHz)	DC~26.5	DC~40	DC~26.5	DC~50
SWR (Max.)	1.2(DC~12.4GHz) 1.5(12.4~26.5GHz)	1.8(DC~26.5GHz) 2.0(26.5~40GHz)	1.2(DC~3GHz) 1.3(3~6GHz) 1.4(6~12.4GHz) 1.5(12.4~26.5GHz)	1.2(DC~4GHz) 1.5(4~20GHz) 1.8(20~50GHz)
Insertion Loss (dB)(Max.)	0.5(DC~12.4GHz) 0.8(12.4~26.5GHz)	1.5(DC~26.5GHz) 2.0(26.5~40GHz)	0.25(DC~3GHz) 0.4(3~6GHz) 0.5(6~12.4GHz) 0.7(12.4~26.5GHz)	0.3(DC~4GHz) 1.0(4~20GHz) 1.2(20~40GHz) 1.5(40~50GHz)
Isolation (dB)(Min.)	60(DC~26.5GHz)	50(DC~26.5GHz) 35(26.5~40GHz)	80(DC~3GHz) 70(3~6GHz) 60(6~12.4GHz) 55(12.4~26.5GHz)	50(DC~50GHz)
Input Power (W)(Max.)	1 (CW)	1 (CW)	1 (CW)	1 (CW)
Switching Time (ms)(Max.)	20	20	20	20
Repeatability (dB)(Max.)	0.05	0.05	0.05	0.05
Operating Life (million cycles) (Min.)	2	2	2	2
Connector Type	3.5mm(f)	2.4mm(f)	SMA(f)	2.4mm(f)
DC Drive Voltage(V)	+12~+18 (Nominal +15V)		+20~+28 (Nominal +24V)	
DC Drive Current(mA)	200 (at +15V)		200 (at +24V)	
Relay Structure	magnetic latching		magnetic latching	

Compact SPDT Switches (Unterminated)

Model	80117D Series	80117E Series	80117F Series	80117H Series	80117L Series
Description	coaxial switch	coaxial switch	coaxial switch	coaxial switch	coaxial switch
Type	SPDT	SPDT	SPDT	SPDT	SPDT
Frequency Range (GHz)	DC~18	DC~26.5	DC~40	DC~50	DC~67
SWR (Max.)	1.3(DC~12.4 GHz) 1.5(12.4~18GHz)	1.3(DC~12.4 GHz) 1.5(12.4~26.5GHz)	1.3(DC~10 GHz) 1.5(10~20GHz) 1.8 (20~40GHz)	1.25(DC~10 GHz) 1.5(10~20GHz) 1.8 (20~50GHz)	1.25(DC~10GHz) 1.5 (10~20GHz) 1.9(20~67GHz)
Insertion Loss (dB)(Max.)	0.3(DC~12.4 GHz) 0.6(12.4~18GHz)	0.3(DC~12.4 GHz) 0.6(12.4~26.5GHz)	0.4(DC~10GHz) 0.8 (10~20GHz) 1.0(20~40GHz)	0.4(DC~10GHz) 0.8 (10~20GHz) 1.2(20~50GHz)	0.6(DC~10GHz) 0.8 (10~20GHz) 1.5(20~67GHz)
Isolation (dB)(Min.)	60(DC~18GHz)	60(DC~26.5GHz)	80(DC~10GHz) 70(10~20GHz) 60(20~40GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~50GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~67GHz)
Input Power (W)(Max.)	1 (CW)	1 (CW)	1 (CW)	1 (CW)	1 (CW)
Switching Time (ms)(Max.)	20	20	20	20	20
Repeatability (dB)(Max.)	0.05	0.05	0.05	0.05	0.1
Operating Life (million cycles)(Min.)	2	2	2	2	2
Connector Type	SMA (f)	3.5mm (f)	2.92mm (f)	2.4mm (f)	1.85mm (f)
DC Drive Voltage(V)	Options: +22~+28 (Nominal +24V) / +10V~15V (Nominal 12V) / +4.8~+6 (Nominal +5V)				
DC Drive Current(mA)	120 (at +24V) / 400 (at +12V) / 700 (at +5V)				
Drive	TTL/standard				
Relay Structure	magnetic latching				

Notes: Specific models refer to table 1.

SPDT Switches (Terminated)

Model	80113D Series	80113E Series	80113F Series	80113H Series	80113L Series
Description	coaxial switch	coaxial switch	coaxial switch	coaxial switch	coaxial switch
Type	SPDT	SPDT	SPDT	SPDT	SPDT
Frequency Range (GHz)	DC~18	DC~26.5	DC~40	DC~50	DC~67
SWR (Max.)	1.3(DC~12.4 GHz) 1.5(12.4~18GHz)	1.3(DC~12.4 GHz) 1.5(12.4~26.5GHz)	1.3(DC~10 GHz) 1.5(10~20GHz) 1.8 (20~40GHz)	1.25(DC~10GHz) 1.5 (10~20GHz) 1.8(20~50GHz)	1.25(DC~10GHz) 1.5 (10~20GHz) 1.9(20~67GHz)
Insertion Loss (dB)(Max.)	0.3(DC~12.4 GHz) 0.6(12.4~18GHz)	0.3(DC~12.4 GHz) 0.6(12.4~26.5GHz)	0.4(DC~10GHz) 0.8 (10~20GHz) 1.0(20~40GHz)	0.4(DC~10GHz) 0.8 (10~20GHz) 1.2(20~50GHz)	0.6(DC~10GHz) 0.8 (10~20GHz) 1.5(20~67GHz)

Model	80113D Series	80113E Series	80113F Series	80113H Series	80113L Series
Isolation (dB)(Min.)	60(DC~18GHz)	60(DC~26.5GHz)	80(DC~10GHz) 70(10~20GHz) 60(20~40GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~50GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~67GHz)
Input Power (W)(Max.)	1 (CW)	1 (CW)	1 (CW)	1 (CW)	1 (CW)
Switching Time (ms)(Max.)	20	20	20	20	20
Repeatability (dB)(Max.)	0.05	0.05	0.05	0.05	0.05
Operating Life (million cycles) (Min.)	2	2	2	2	2
Connector Type	SMA (f)	3.5mm (f)	2.92mm (f)	2.4mm (f)	1.85mm (f)
DC Drive Voltage(V)	Options: +22~+28 (Nominal +24V) / +10V~15V (Nominal 12V) / +4.8~+6 (Nominal +5V)				
DC Drive Current(mA)	240 (at +24V) / 800 (at +12V) / 1400 (at +5V)				
Drive	TTL/standard				
Relay Structure	magnetic latching				

Notes: Specific models refer to table 1.

Bypass Switches & 2P3T Switches

Model	80110A	80110DA	80110E
Description	coaxial switch	coaxial switch	coaxial switch
Type	bypass switch	bypass switch	2P3T
Frequency Range (GHz)	DC~26.5	DC~50	DC~67
SWR (Max.)	1.3(DC~12.4 GHz) 1.5(12.4~26.5GHz)	1.25(DC~10GHz) 1.5 (10~20GHz) 1.8(20~50GHz)	1.25(DC~10GHz) 1.5 (10~20GHz) 1.9 (20~67GHz)
Insertion Loss (dB)(Max.)	0.3(DC~12.4 GHz) 0.6(12.4~26.5GHz)	0.4(DC~10GHz) 0.8 (10~20GHz) 1.2(20~50GHz)	0.6 (DC~10GHz) 0.8 (10~20GHz) 1.5(20~67GHz)
Isolation (dB)(Min.)	60(DC~26.5GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~50GHz)	85(DC~10GHz) 77(10~20GHz) 70(20~67GHz)
Input Power (W)(Max.)	1 (CW)	1 (CW)	1 (CW)
Switching Time (ms)(Max.)	20	20	20
Repeatability (dB)(Max.)	0.05	0.05	0.1
Operating Life (million cycles) (Min.)	2	2	2
Connector Type	SMA (f)	2.4mm(f)	1.85mm(f)

Model	80110A	80110DA	80110E
DC Drive Voltage(V)	+4.8~+6 (Nominal +5V)		
DC Drive Current(mA)	1400 (at +5V)		
Relay Structure	magnetic latching		
Drive	standard		

SP4T Switches (Terminated)

Model	80119D	80119E	80119F	80119H
Description	coaxial switch	coaxial switch	coaxial switch	coaxial switch
Type	SP4T	SP4T	SP4T	SP4T
Frequency Range (GHz)	DC~18	DC~26.5	DC~40	DC~50
SWR (Max.)	1.1(DC~4GHz) 1.2(4~12.4GHz) 1.5(12.4~18GHz)	1.2(DC~4GHz) 1.35(4~12.4GHz) 1.7(12.4~26.5GHz)	1.2(DC~4GHz) 1.7(4~26.5GHz) 1.9(26.5~40GHz)	1.2(DC~4GHz) 1.7(4~26.5GHz) 1.9(26.5~50GHz)
Insertion Loss (dB)(Max.)	0.2(DC~4GHz) 0.4(4~12.4GHz) 0.5(12.4~18GHz)	0.2(DC~4GHz) 0.5(4~12.4GHz) 0.7(12.4~26.5GHz)	0.2(DC~4GHz) 0.8(4~26.5GHz) 1.2(26.5~40GHz)	0.2(DC~4GHz) 0.8(4~26.5GHz) 1.2(26.5~50GHz)
Isolation (dB)(Min.)	80(DC~4GHz) 70(4~12.4GHz) 60(12.4~18GHz)	80(DC~4GHz) 70(4~12.4GHz) 60(12.4~26.5GHz)	80(DC~4GHz) 70(4~26.5GHz) 60(26.5~40GHz)	80(DC~4GHz) 70(4~26.5GHz) 60(26.5~50GHz)
Input Power (W)(Max.)	1 (CW)	1 (CW)	1 (CW)	1 (CW)
Switching Time (ms)(Max.)	20	20	20	20
Repeatability (dB)(Max.)	0.05	0.05	0.05	0.05
Operating Life (million cycles) (Min.)	2	2	2	2
Connector Type	SMA(f)	3.5mm(f)	2.92mm(f)	2.4mm(f)
DC Drive Voltage(V)	+20~+28 (Nominal+24V)			
DC Drive Current(mA)	200 (at +24V)			
Relay Structure	magnetic latching			

SP6T Switches (Terminated)

Model	80103	80103B	80103C	80103D
Description	coaxial switch			
Type	SP6T			
Frequency Range (GHz)	DC~18	DC~26.5	DC~40	DC~50
SWR (Max.)	1.1(DC~4GHz) 1.2(4~12.4GHz) 1.5(12.4~18GHz)	1.2(DC~4GHz) 1.35(4~12.4GHz) 1.7(12.4~26.5GHz)	1.2 (DC~4GHz) 1.7(4~26.5GHz) 1.9(26.5~40GHz)	1.2(DC~4GHz) 1.7(4~26.5GHz) 1.9(26.5~50GHz)
Insertion Loss (dB)(Max.)	0.2(DC~4GHz) 0.4(4~12.4GHz) 0.5(12.4~18GHz)	0.2(DC~4GHz) 0.5(4~12.4GHz) 0.7(12.4~26.5GHz)	0.2(DC~4GHz) 0.8(4~26.5GHz) 1.2(26.5~40GHz)	0.2(DC~4GHz) 0.8(4~26.5GHz) 1.2(26.5~50GHz)
Isolation (dB)(Min.)	80(DC~4GHz) 70(4~12.4GHz) 60 (12.4~18GHz)	80(DC~4GHz) 70(4~12.4GHz) 60 (12.4~26.5GHz)	80(DC~4GHz) 70(4~26.5GHz) 60 (26.5~40GHz)	80(DC~4GHz) 70(4~26.5GHz) 60 (26.5~50GHz)
Input Power (W)(Max.)	1 (CW)			
Switching Time (ms)(Max.)	20			
Repeatability (dB)(Max.)	0.05			
Operating Life (million cycles) (Min.)	2			
Connector Type	SMA (f)	3.5mm (f)	2.92mm (f)	2.4mm (f)
DC Drive Voltage(V)	+20~+28 (Nominal +24V)			
DC Drive Current(mA)	200 (at +24V)			
Relay Structure	magnetic latching			

Notes: The polarity of the switch drive power cannot be wrong, otherwise the internal device will be destroyed.

Table 1: Selection Guide of 80113 & 80117 Series Switches

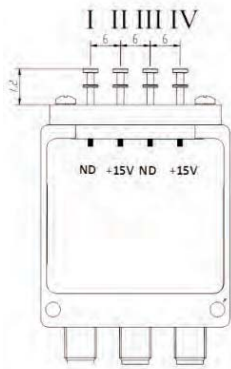
Type	Model	Frequency Range	Connector Type	Driving Voltage	Drive	Relay Structure
SPDT	80117D	DC~18 GHz	SMA	24 V	TTL	latching
	80117DA				standard	
	80117DC			5 V	standard	
	80117DD			12 V	TTL	
	80117DE				standard	
	80117E	DC~26.5 GHz	3.5 mm	24 V	TTL	
	80117EA				standard	
	80117EC			5 V	standard	
	80117ED			12 V	TTL	
	80117EE				standard	
80117EG	24 V	TTL				



Type		Model	Frequency Range	Connector Type	Driving Voltage	Drive	Relay Structure	
		80117F	DC~40 GHz	2.92 mm	24 V	TTL	latching	
		80117FA				standard		
		80117FC			12 V	standard		
		80117FD				TTL		
		80117FE				standard drive		
			80117H	DC~50 GHz	2.4 mm	24 V	TTL	latching
			80117HA				standard	
			80117HC			12 V	standard	
			80117HD				TTL	
			80117HE				standard	
			80117L	DC~67 GHz	1.85 mm	24 V	TTL	latching
			80117LA				standard	
			80117LC			12 V	standard	
			80117LD				TTL	
80117LE			standard					
SPDT (terminated)		80113D	DC~18 GHz	SMA	24 V	TTL	latching	
		80113DA				standard		
		80113DC			12 V	standard		
		80113DD				TTL		
		80113DE				standard		
			80113E	DC~26.5 GHz	3.5 mm	24 V	TTL	latching
			80113EA				standard	
			80113EC			12 V	standard	
			80113ED				TTL	
			80113EE				standard	
			80113F	DC~40 GHz	2.92 mm	24 V	TTL	latching
			80113FA				standard	
			80113FC			12 V	standard	
			80113FD				TTL	
			80113FE				standard	
			80113H	DC~50 GHz	2.4 mm	24 V	TTL	latching
			80113HA				standard	
			80110D			12 V	standard	
			80113HC				TTL	
			80113HD				standard	
			80113L	DC~67 GHz	1.85 mm	24 V	TTL	latching
			80113LA				standard	
			80113LC			12 V	standard	
			80113LD				TTL	
80113LE			standard					

● Operating State and Driving

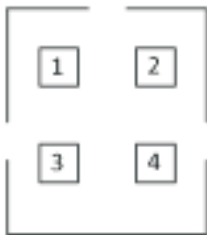
○ 80102 Series



Pin	I	II	III	IV
State				
RF 1	GND	+15 V	Open	Open
RF 2	Open	Open	GND	+15 V

Notes: The polarity of the switch drive power can not be wrong, otherwise the internal device will be destroyed.

○ 80110/80113/80117 Series

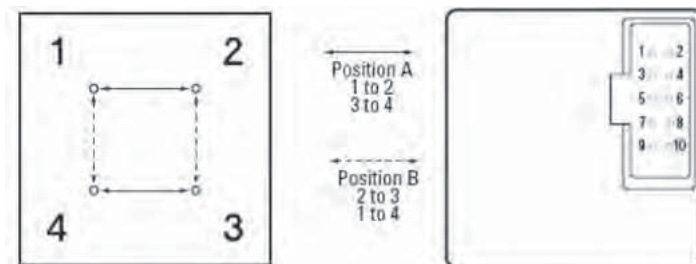


State	TTL				Standard			
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 1	Pin 2	Pin 3	Pin 4
RF to1	GND	+24 V/+12 V/+5 V	High	Low	GND	+24 V/+12 V/+5 V	GND	Open
RF to2	GND	+24 V/+12 V/+5 V	Low	High	GND	+24 V/+12 V/+5 V	Open	GND

Notes: High: 3.3 V (3 V~7 V);
Low: 0 V (0~0.8 V).

○ 80104

Pin1 +24 V Pin 9 GND



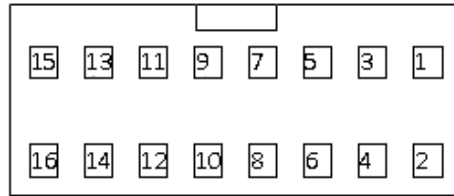
Drive	Standard		TTL	
	Pin 3	Pin 5	Pin 7	Pin 8
Switch state				
Position A (1 to 2;3 to 4)	GND	Open	High	Low
Position B (1 to 4;2 to 3)	Open	GND	Low	High

Notes:

High: 3 V (2.5 V~5 V);
Low: 0 V (0~0.8 V). The same below.

TTL Drive and Standard Drive are two different Drive methods, please do not power up at the same time.

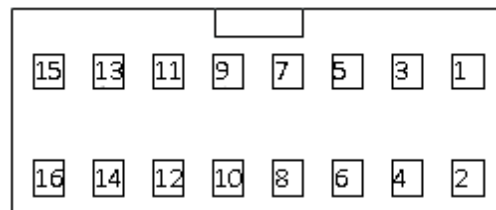
○ **80119 Series**



State	Standard (Connect Pin 1 to supply voltage 24V DC (+22V DC ~ +28V DC) and pin 15 to ground)					TTL (Connect Pin 1 to supply voltage 24V DC (+22V DC ~ +28V DC), and pin 15 to ground)				
	Pin 5	Pin 7	Pin 11	Pin 13	Pin 16	Pin 5	Pin 7	Pin 11	Pin 13	Pin 16
RF to 1	GND	Open	Open	Open	Open	High	Low	Low	Low	Low
RF to 2	Open	GND	Open	Open	Open	Low	High	Low	Low	Low
RF to 3	Open	Open	GND	Open	Open	Low	Low	High	Low	Low
RF to 4	Open	Open	Open	GND	Open	Low	Low	Low	High	Low
Reset	Open	Open	Open	Open	GND	Low	Low	Low	Low	High

Notes: TTL is the default driving type of this series, please specify in case you need standard.

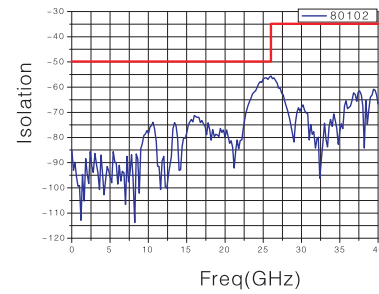
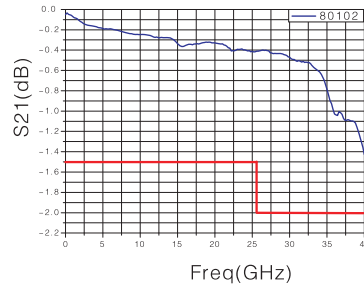
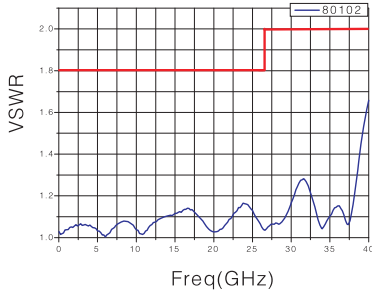
○ **80103 Series**



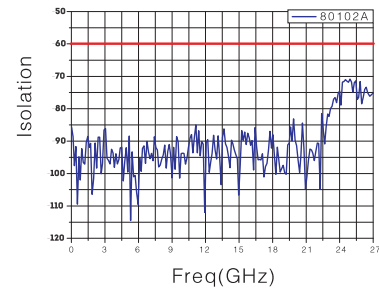
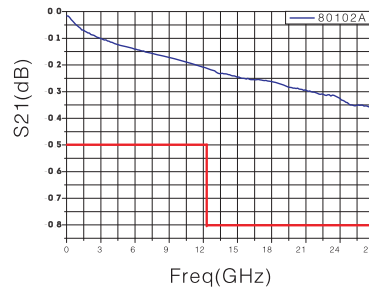
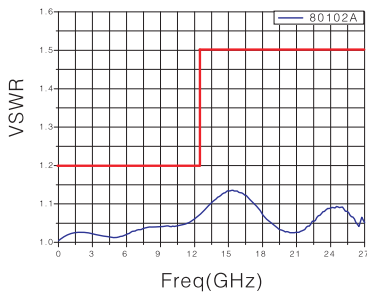
State	standard (Connect Pin 1 to supply voltage 24 V DC (+22 V DC ~ +28 V DC) , and pin 15 to ground)							TTL (Connect Pin 1 to supply voltage 24 V DC (+22 V DC ~ +28 V DC) , and pin 15 to ground)						
	Pin 3	Pin 5	Pin 7	Pin 9	Pin 11	Pin 13	Pin 16	Pin 3	Pin 5	Pin 7	Pin 9	Pin 11	Pin 13	Pin 16
RF to 1	GND	Open	Open	Open	Open	Open	Open	High	Low	Low	Low	Low	Low	Low
RF to 2	Open	GND	Open	Open	Open	Open	Open	Low	High	Low	Low	Low	Low	Low
RF to 3	Open	Open	GND	Open	Open	Open	Open	Low	Low	High	Low	Low	Low	Low
RF to 4	Open	Open	Open	GND	Open	Open	Open	Low	Low	Low	High	Low	Low	Low
RF to 5	Open	Open	Open	Open	GND	Open	Open	Low	Low	Low	Low	High	Low	Low
RF to 6	Open	Open	Open	Open	Open	GND	Open	Low	Low	Low	Low	Low	High	Low
Reset	Open	Open	Open	Open	Open	Open	GND	Low	Low	Low	Low	Low	Low	High

Notes: TTL is the default driving type of this series, please specify in case you need standard.

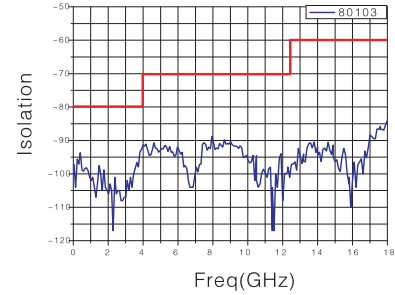
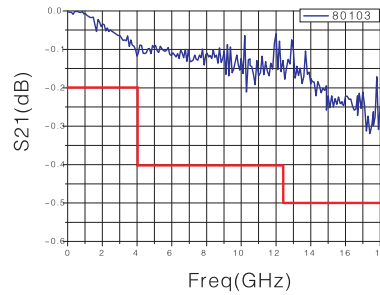
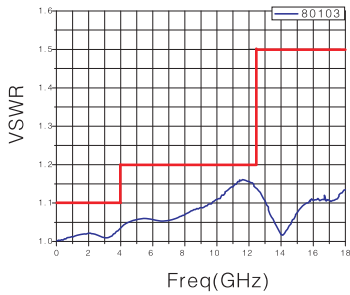
● Typical Testing Curve



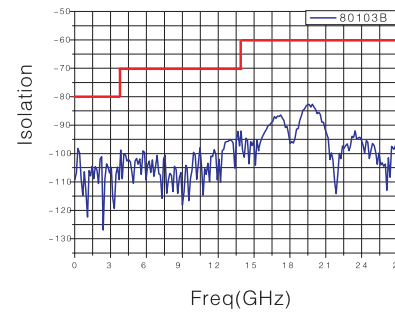
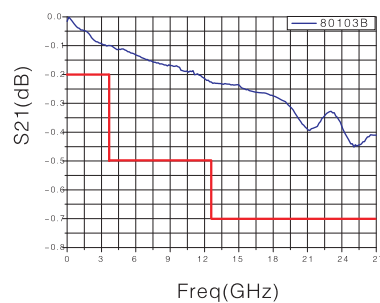
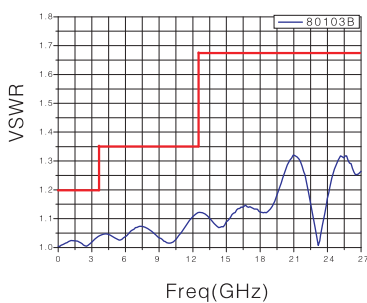
80102 switch VSWR & insertion loss & isolation vs. frequency



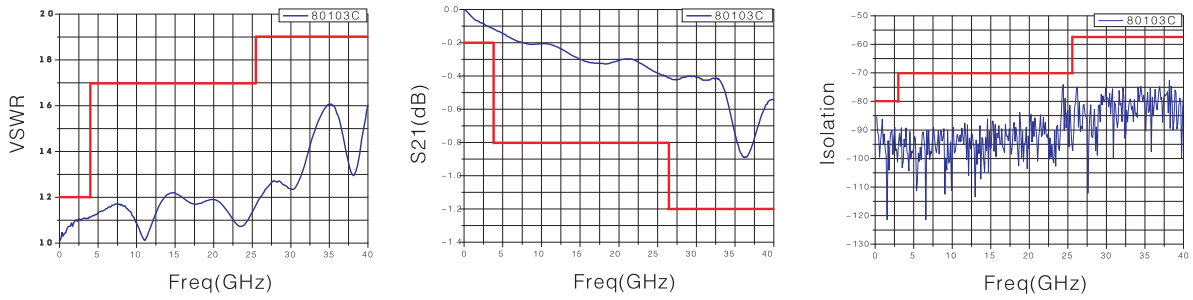
80102A switch VSWR & insertion loss & isolation vs. frequency



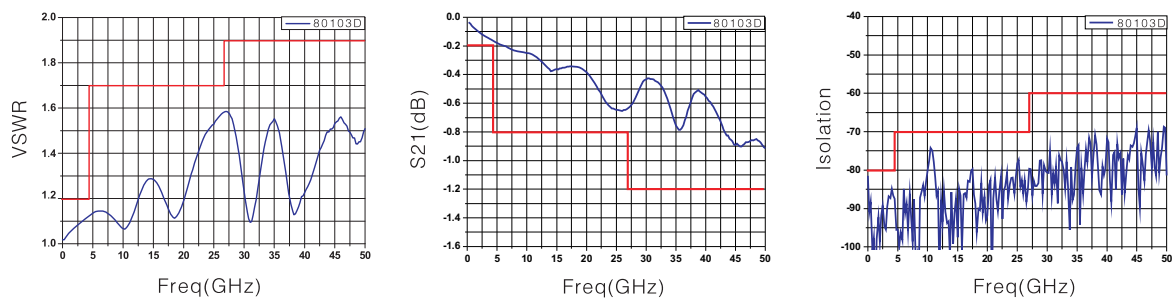
80103 switch VSWR & insertion loss & isolation vs. frequency



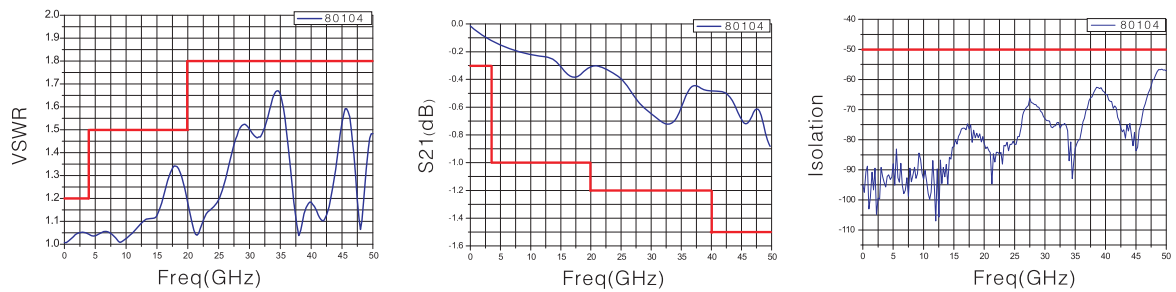
80103B switch VSWR & insertion loss & isolation vs. frequency



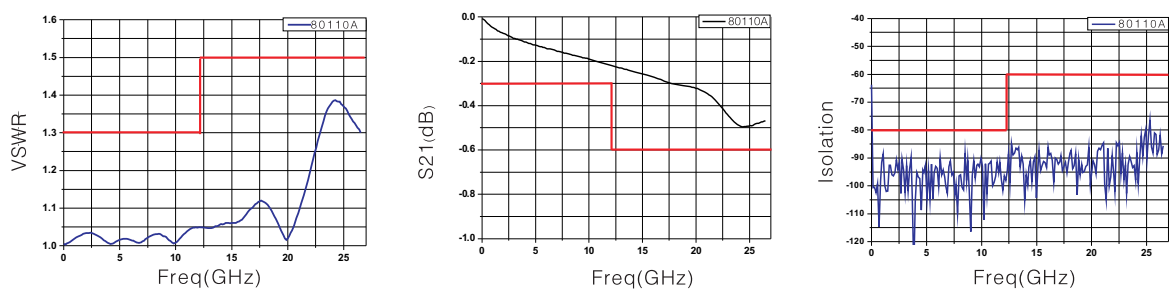
80103C switch VSWR & insertion loss & isolation vs. frequency



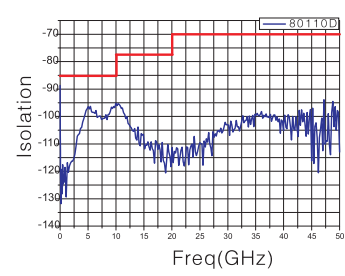
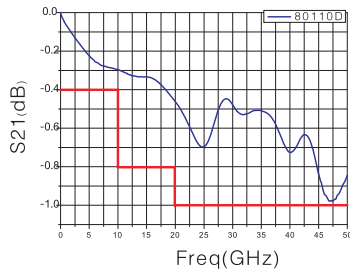
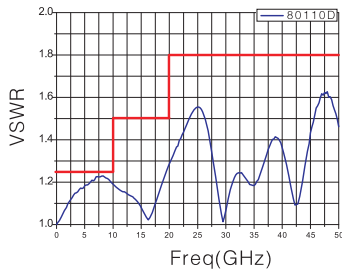
80103D switch VSWR & insertion loss & isolation vs. frequency



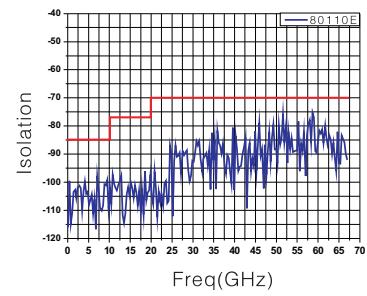
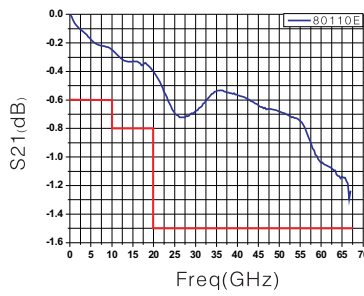
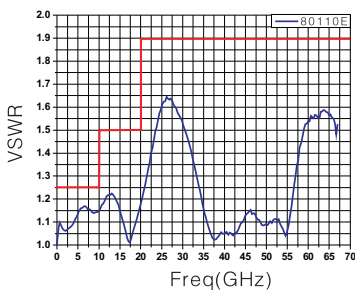
80104 switch VSWR & insertion loss & isolation vs. frequency



80110A/80117E switch VSWR & insertion loss & isolation vs. frequency



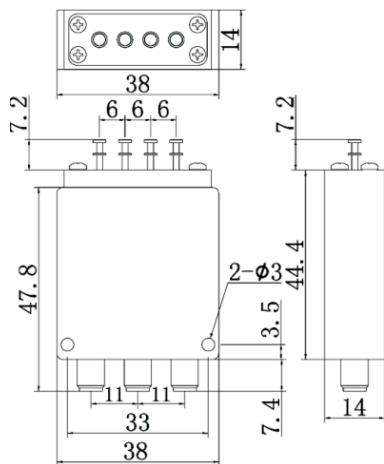
80110D/80117H switch VSWR & insertion loss & isolation vs. frequency



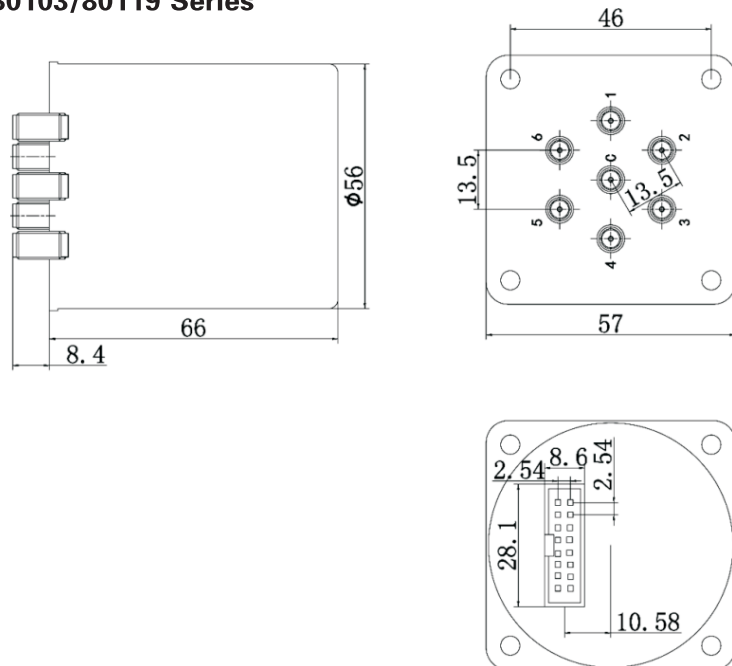
80110E/80117L switch VSWR & insertion loss & isolation vs. frequency

• Dimensions

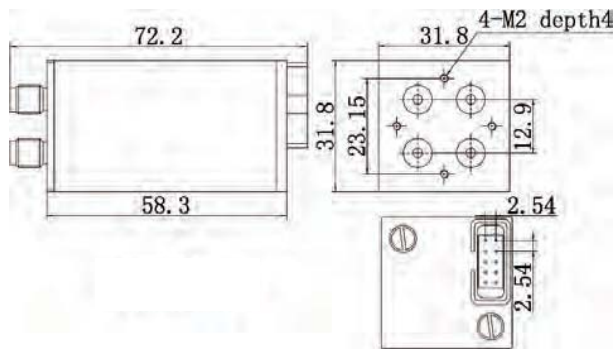
80102 Series



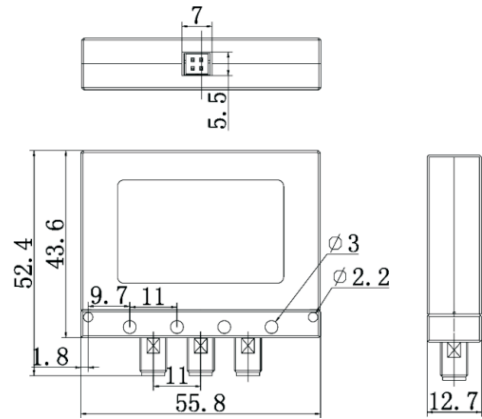
80103/80119 Series



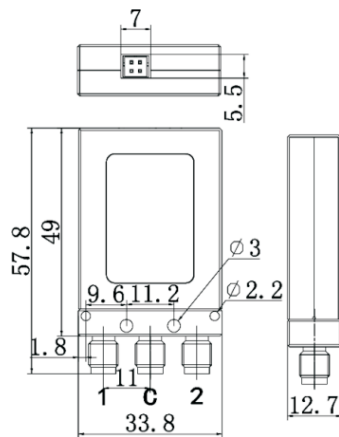
80104 Series



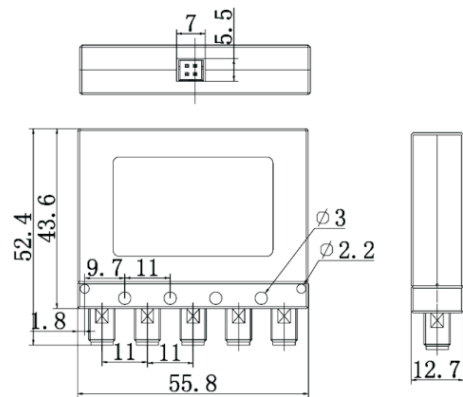
80113 Series



80117 Series



80110 Series



Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

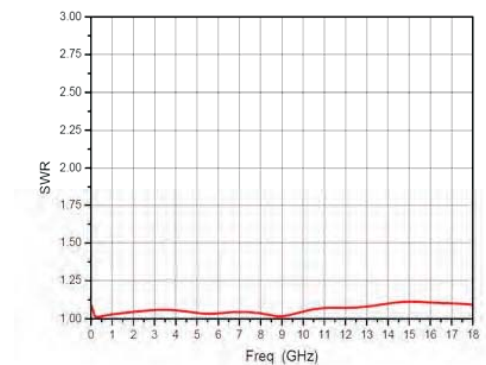
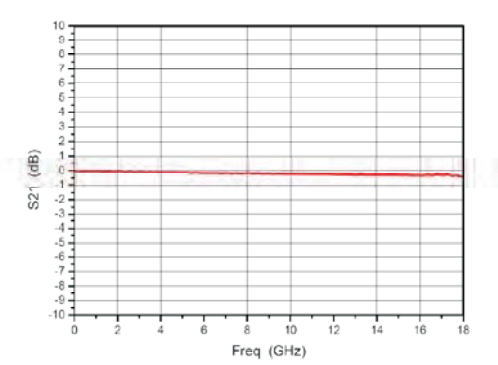
DC Blocks



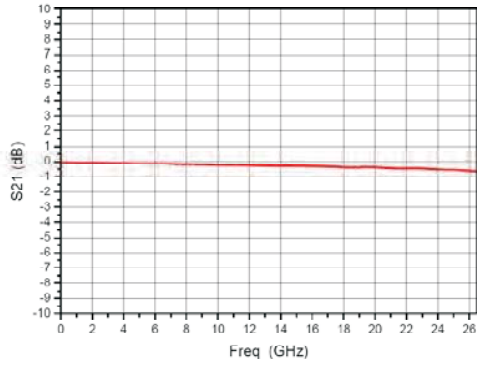
● Specifications

Model	Description	Frequency Range (GHz)	Insertion Loss (dB)(Max.)	SWR (Max.)	Connector Type	Input Voltage (V)(Max.)
71802	DC block	0.045~26.5	1	1.3	3.5 mm(m-f)	50
71802A	DC block	0.01~18	1	1.2	Type-N(m-f)	50
71802C	DC block	0.01~40	1	1.43	2.4 mm(m-f)	50
71802D	DC block	0.01~67	1	1.45	1.85 mm(m-f)	16
71802E	DC block	0.01~40	1	1.4	2.92 mm(m-f)	50

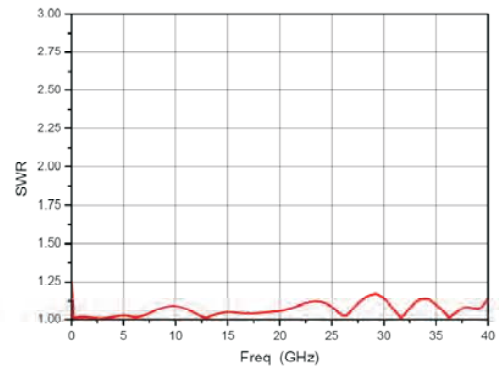
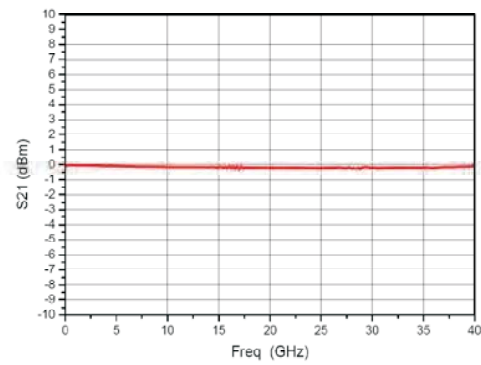
● Typical Testing Curve



71802A DC block insertion loss & SWR vs. frequency



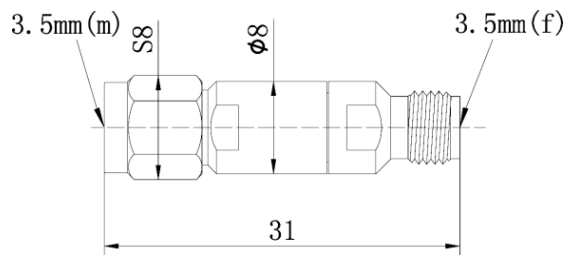
71802 DC block insertion loss & SWR vs. frequency



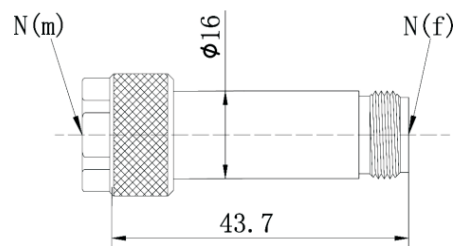
71802C DC block insertion loss & SWR vs. frequency

● Dimensions

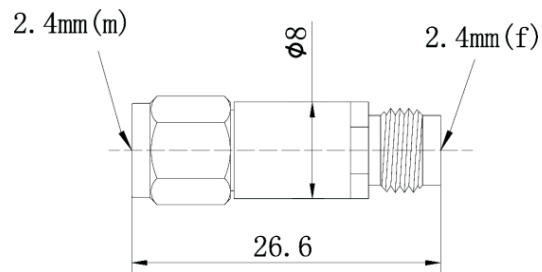
71802



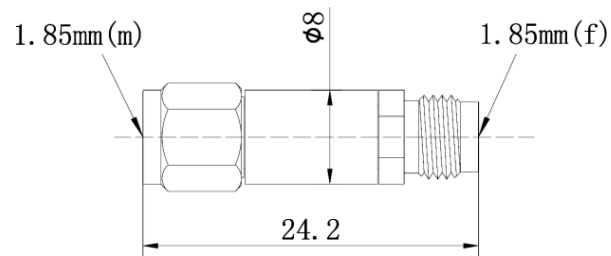
71802A



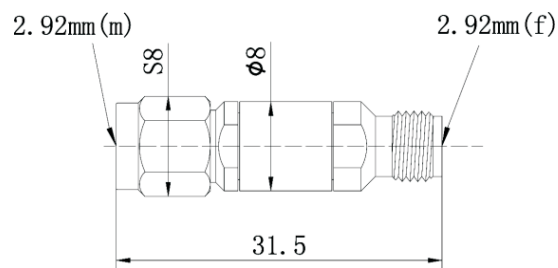
71802C



71802D



71802E



Notes: All dimensions are in millimeter.
Product specifications and descriptions in this document are subject to change without notice.

Power Dividers

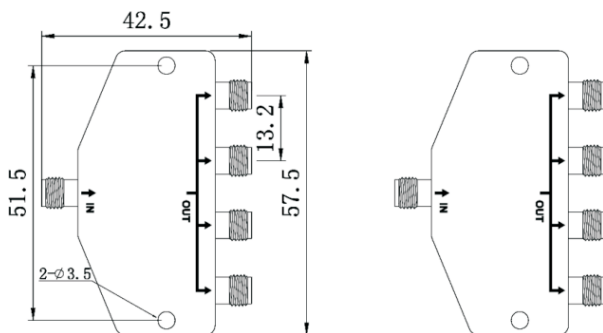


● Specifications

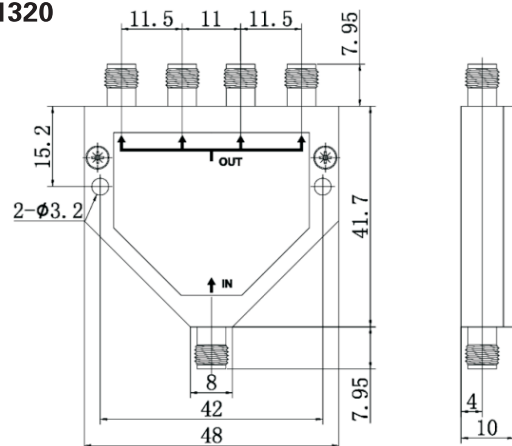
Model	Frequency Range (GHz)	Isolation (dB Min)	Return loss (dB Min)	Insertion loss (dB Max)	Amplitude balance (dB)	Phase balance (Deg)	Path	Input power (W Max)	Connector
81310	DC~24	10	15	8	±0.5	±3	2	0.5	3.5mm (f)
81320	DC~40	10	9.5	16	±2.0	±7	4	0.5	2.4mm (f)
71301	0.5~2.5	20	15.5	3.8	±0.2	±4	2	2.5	SMA (f)
81311	DC~26.5	10	17	7.5	±0.25	±3	2	1	3.5mm (f)
81312	DC~40	9	15	7.5	±0.4	±4	2	1	2.92mm (f)
81313	DC~50	9	10	7.7	±0.5	±5	2	0.5	2.4mm (f)
81314	DC~67	7.8	10	7.8	±0.8	±7	2	0.5	1.85mm (f)
81315	0.5~3	8	9.5(in) 14(out)	7.2	±0.7	±3	4	50	SMA (f)
81320B	0.3~2	9	14	8.3	±0.15	±2	4	1	3.5mm (f)

● Dimensions

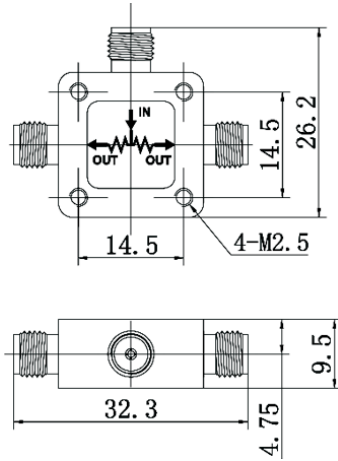
81320B



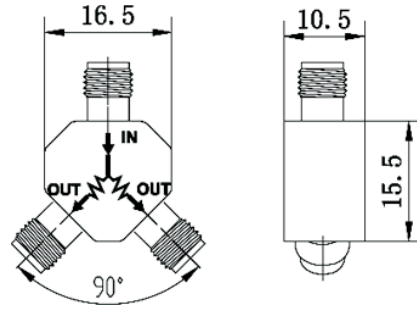
81320



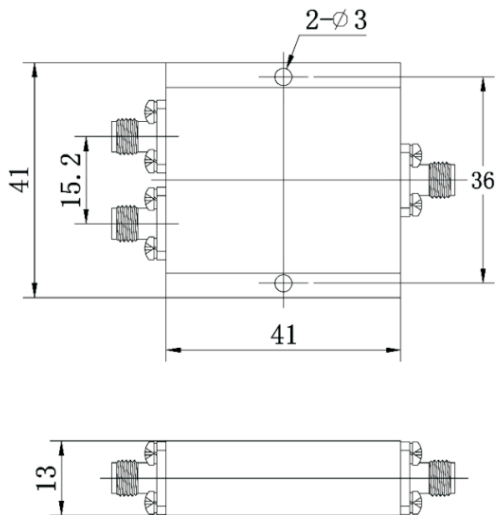
81310



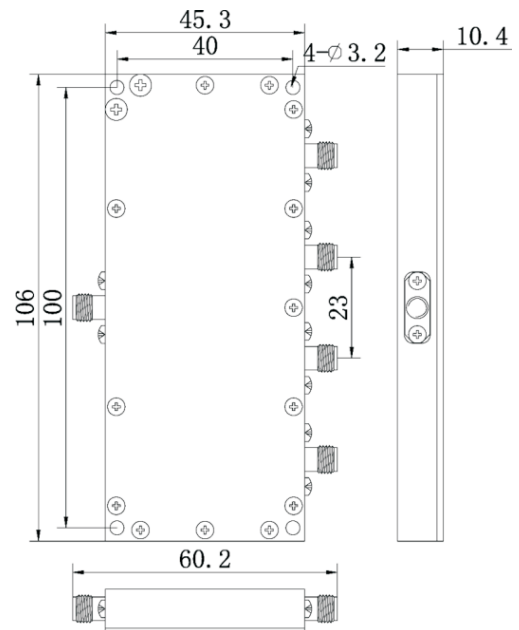
81311/81312/81313/81314



71301



81315



Note: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

Test Cables



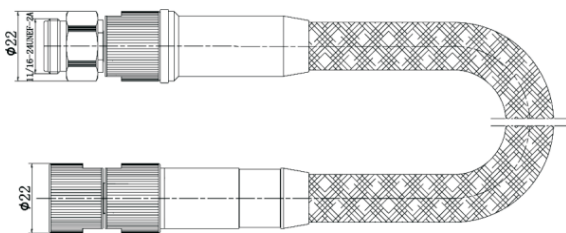
● Specifications

Model	Description	Frequency Range (GHz)	Connector Type	Impedance (Ω)	SWR	Insertion Loss (dB)	Phase (Max.)	Amplitude(Max.)	lifetime
87308	test cable	DC~26.5	3.5 NMD/ 3.5 mm-KJ	50	≤ 1.35	≤ 2.5	$\pm 6^\circ$ (DC~18 GHz)	± 0.15 dB (DC~18 GHz)	50000
87308A	test cable	DC~26.5	3.5 NMD/ 3.5 mm-KK				$\pm 8^\circ$ (DC~26.5 GHz)	± 0.20 dB (DC~26.5 GHz)	
87309	test cable	DC~40	2.4 NMD/ 2.4 mm-KJ	50	≤ 1.40	≤ 5.0	$\pm 10^\circ$	± 0.20 dB	50000
87309A	test cable	DC~40	2.4 NMD/ 2.4 mm-KK						

● Dimensions

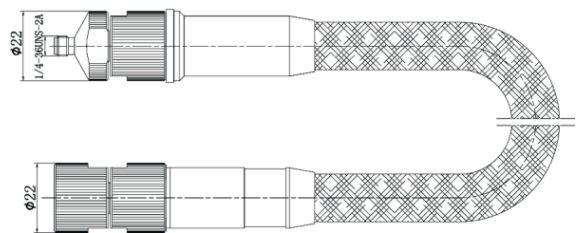
87308/87309

length: 628.5 ± 2.5 mm



87308A/87309A

length: 628.5 ± 2.5 mm



Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

Microwave Test Accessories



87601 microwave assistant (Type-N)



87601A microwave assistant (3.5 mm)



87601B microwave assistant (2.92 mm)



87601C microwave assistant (2.4 mm)

- **Torque Wrench**



Description	Nominal Torque	Opening Demension	Remarks
torque wrench, 3.5 mm	8 inch.lbs	5/16–inch.hex	Used for torque connection of 1.85 mm, 2.4 mm, 2.92 mm, 3.5 mm series adapters.
torque wrench, Type–N	12 inch.lbs	3/4–inch.hex	Used for torque connection of Type–N series adapters.
open–end wrench	–	7.2 mm	Used for the female end fixing of 3.5 mm, 2.4 mm, 2.92 mm, 1.85 mm series adapters.

87601 Microwave Assistant (Type–N) List

No.	Type	Description	Qty. (pc.)
1	2.4 mm (f) to Type–N (f)	coaxial adapter	1
2	2.4 mm (f) to Type–N (m)	coaxial adapter	1
3	2.4 mm (m) to Type–N (f)	coaxial adapter	1
4	2.4 mm (m) to Type–N (m)	coaxial adapter	1
5	2.92 mm (f) to Type–N (f)	coaxial adapter	1
6	2.92 mm (f) to Type–N (m)	coaxial adapter	1
7	2.92 mm (m) to Type–N (f)	coaxial adapter	1
8	2.92 mm (m) to Type–N (m)	coaxial adapter	1
9	Type–N (f) to 3.5 mm (m)	coaxial adapter	1
10	Type–N (m) to 3.5 mm (m)	coaxial adapter	1
11	Type–N (m) to 3.5 mm (f)	coaxial adapter	1
12	Type–N (f) to 3.5 mm (f)	coaxial adapter	1
13	Type–N (m) to SMA (m)	coaxial adapter	1
14	Type–N (f) to SMA (f)	coaxial adapter	1
15	Type–N (m) to SMA (f)	coaxial adapter	1
16	Type–N (f) to SMA (m)	coaxial adapter	1
17	Type–N (f) to Type–N (f)	coaxial adapter	1
18	Type–N (m) to Type–N (m)	coaxial adapter	1
19	–	torque wrench, 3.5 mm	1
20	–	torque wrench, Type–N	1
21	–	open–end wrench	1

87601A Microwave Assistant (3.5 mm) List

No.	Type	Description	Qty. (pc.)
1	Type-N (f) to 3.5 mm(m)	coaxial adapter	1
2	Type-N (m) to 3.5 mm (m)	coaxial adapter	1
3	Type-N (m) to 3.5 mm (f)	coaxial adapter	1
4	Type-N (f) to 3.5 mm (f)	coaxial adapter	1
5	3.5 mm (f) to 3.5 mm (f)	coaxial adapter	1
6	3.5 mm (m) to 3.5 mm (m)	coaxial adapter	1
7	2.4 mm (m) to 3.5 mm (m)	coaxial adapter	1
8	2.4 mm (m) to 3.5 mm (f)	coaxial adapter	1
9	2.4 mm (f) to 3.5 mm (m)	coaxial adapter	1
10	2.4 mm (f) to 3.5 mm (f)	coaxial adapter	1
11	-	torque wrench, 3.5 mm	1
12	-	torque wrench, Type-N	1
13	-	open-end wrench	1

87601B Microwave Assistant (2.92 mm) List

No.	Type	Description	Qty. (pc.)
1	2.92 (m) to 2.92 mm (m)	coaxial adapter	1
2	2.92 (f) to 2.92 mm (f)	coaxial adapter	1
3	2.4 mm (m) to 2.92 mm (m)	coaxial adapter	1
4	2.4 mm (f) to 2.92 mm (f)	coaxial adapter	1
5	2.4 mm (m) to 2.92 mm (f)	coaxial adapter	1
6	2.4 mm (f) to 2.92 mm (m)	coaxial adapter	1
7	2.92 mm (f) to Type-N (f)	coaxial adapter	1
8	2.92 mm (f) to Type-N (m)	coaxial adapter	1
9	2.92 mm (m) to Type-N (f)	coaxial adapter	1
10	2.92 mm (m) to Type-N (m)	coaxial adapter	1
11	-	torque wrench, 3.5 mm	1
12	-	torque wrench, Type-N	1
13	-	open-end wrench	1

87601C Microwave Assistant (2.4 mm) List

No.	Type	Description	Qty. (pc.)
1	2.4 mm (m) to 2.92 mm (m)	coaxial adapter	1
2	2.4 mm (f) to 2.92 mm (f)	coaxial adapter	1
3	2.4 mm (m) to 2.92 mm (f)	coaxial adapter	1
4	2.4 mm (f) to 2.92 mm (m)	coaxial adapter	1
5	2.4 mm (m) to 2.4 mm (m)	coaxial adapter	1
6	2.4 mm (f) to 2.4 mm (f)	coaxial adapter	1
7	2.4 mm (f) to Type-N (f)	coaxial adapter	1
8	2.4 mm (f) to Type-N (m)	coaxial adapter	1
9	2.4 mm (m) to Type-N (f)	coaxial adapter	1
10	2.4 mm (m) to Type-N (m)	coaxial adapter	1
11	2.4 mm (f) to 1.85 mm (f)	coaxial adapter	1
12	2.4 mm (f) to 1.85 mm (m)	coaxial adapter	1
13	2.4 mm (m) to 1.85 mm (f)	coaxial adapter	1
14	2.4 mm (m) to 1.85 mm (m)	coaxial adapter	1
15	2.4 mm (m) to 3.5 mm (m)	coaxial adapter	1
16	2.4 mm (m) to 3.5 mm (f)	coaxial adapter	1
17	2.4 mm (f) to 3.5 mm (m)	coaxial adapter	1
18	2.4 mm (f) to 3.5 mm (f)	coaxial adapter	1
19	-	torque wrench, 3.5 mm	1
20	-	torque wrench, Type-N	1
21	-	open-end wrench	1

Notes: (f) means female connectors, m means male connectors.

● Environmental Specifications

Temperature	Min.	Max.
Operating	-20°C	+70°C
Storage	-40°C	+70°C



Active Components

Synergy Active Components include YIG Oscillators, YIG Bandpass filter, mixer, low noise amplifier, power amplifier, detector, etc. the products have the advantages of broadband, high performance and frequency reached up to 325Ghz

Mixers	82
Broadband Solid-State Amplifiers	85
Detectors	93
YIG Tuned Oscillators	96
YIG Bandpass Filters	97

1

10317	coaxial detector, 0.01~8 GHz	93
10318	coaxial detector, 0.01~18 GHz	93

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3840F	complete set of low noise amplifier, 0.5~40 GHz, 2.4 mm (f)	87
3840H	complete set of low noise amplifier, 0.5~50 GHz, 2.4 mm (f)	87
3871P	waveguide amplifier, 75~110 GHz, WR10	87
3860C	complete set of power amplifier, 0.8~20 GHz, Type-N (f)	88
3860D	complete set of power amplifier, 18~40 GHz, 2.92 mm (f)	88
3860E	complete set of power amplifier, 0.01~20 GHz, 3.5 mm (m)	88
3871AA	complete set of power amplifier, 1~2.5 GHz, Type-N (f)	89
3871AB	complete set of power amplifier, 1~6 GHz, Type-N (f)	89
3871AS	complete set of power amplifier, 0.5~6 GHz, Type-N (f)	89
3871AT	complete set of power amplifier, 0.5~6 GHz, Type-N (f)	89
3871DA	complete set of power amplifier, 6~18 GHz, Type-N (f)	89
3871DB	complete set of power amplifier, 6~18 GHz, Type-N (f)	89
3871DC	complete set of power amplifier, 6~18 GHz, Type-N (f)	89
3871EA	complete set of power amplifier, 18~26.5 GHz, 3.5 mm (m)	89
3871EB	complete set of power amplifier, 18~26.5 GHz, 3.5 mm (m)	89
3871FA	complete set of power amplifier, 26~32 GHz, 2.4 mm (m)	89
3871FC	complete set of power amplifier, 26~32 GHz, 2.4 mm (m)	89
3871FB	complete set of power amplifier, 32~40 GHz, 2.4 mm (m)	89
3871HA	complete set of power amplifier, 40~47 GHz, 2.4 mm (m)	89

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70702	broadband balance mixer, 2~20 GHz	81
70703	broadband balance mixer, 2~26.5 GHz	81
70302	coaxial detector, 0.01~26.5 GHz	93
70303	coaxial detector, 0.01~40 GHz	93
70304	waveguide detector, 26.5~40 GHz	93
70305	waveguide detector, 40~60 GHz	93
70306	waveguide detector, 75~110 GHz	93

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80713	broadband balance mixer, 3~40 GHz	81
80713GB	broadband balance mixer, 4~50 GHz	81
82706	millimeter-wave balance mixer, 40~60 GHz	81
82707	millimeter-wave balance mixer, 50~75 GHz	81

82717A	millimeter-wave harmonic mixer, 40~60 GHz	81
82717B	millimeter-wave harmonic mixer, 50~75 GHz	81
82717C	millimeter-wave harmonic mixer, 75~110 GHz	81
82717D	millimeter-wave harmonic mixer, 110~170 GHz	81
82717E	millimeter-wave harmonic mixer, 140~220 GHz	81
82717F	millimeter-wave harmonic mixer, 220~325 GHz	81
80230	low noise amplifier, 2~20 GHz, 3.5 mm (f)	85
80230F	low noise amplifier, 0.5~40 GHz, 2.4 mm (f)	85
80230H	low noise amplifier, 0.5~50 GHz, 2.4 mm (f)	85
80231	low noise amplifier, 18~26.5 GHz, 3.5 mm (f)	85
80232	low noise amplifier, 26.5~40 GHz, 2.4 mm (f)	85
80232F	low noise amplifier, 26~40 GHz, 2.92 mm (f)	85
80230P	waveguide amplifier, 75~110 GHz, WR10	87
80210	broadband driving amplifier, 1~26.5 GHz, 3.5 mm (f)	86
80211	broadband driving amplifier, 1~26.5 GHz, 3.5 mm (f)	86
80212	broadband driving amplifier, 1~26.5 GHz, 3.5 mm (f)	86
80214	broadband driving amplifier, 0.045~26.5 GHz, 3.5 mm (f)	86
80220	broadband driving amplifier, 1~40 GHz, 2.4 mm (f)	86
80221	broadband driving amplifier, 1~40 GHz, 2.4 mm (f)	86
80223	broadband driving amplifier, 0.045~40 GHz, 2.4 mm (f)	86
80240	broadband driving amplifier, 0.8~26.5 GHz, 3.5 mm (f)	86
80241	broadband driving amplifier, 0.045~26.5 GHz, 3.5 mm (f)	86
80242	broadband driving amplifier, 26.5~40 GHz, 2.4 mm (f)	86
80244	broadband power amplifier, 0.05~3 GHz, SMA (f)	86
80246	broadband power amplifier, 0.8~20 GHz, 3.5 mm (f)	86
80243	broadband power amplifier, 0.8~20 GHz, 3.5 mm (f)	86
80243B	broadband power amplifier, 2~50 GHz, 2.4 mm (f)	86
80248	broadband power amplifier, 6~18 GHz, 3.5 mm (f)	86
80249	broadband power amplifier, 6~18 GHz, 3.5 mm (f)	86
80253	broadband power amplifier, 18~26.5 GHz, 3.5 mm (f)	86
80254	broadband power amplifier, 18~26.5 GHz, 3.5 mm (f)	86
80255	broadband power amplifier, 18~40 GHz, 2.4 mm (f)	86
80255C	broadband power amplifier, 18~40 GHz, 2.92 mm (f)	86
80264	broadband power amplifier, 18~40 GHz, 2.4 mm (f)	86
80264C	broadband power amplifier, 18~40 GHz, 2.92 mm (f)	86
80256	broadband power amplifier, 20~40 GHz, 2.4 mm (f)	86
80256C	broadband power amplifier, 20~40 GHz, 2.92 mm (f)	86
80259	broadband power amplifier, 26.5~31 GHz, 2.4 mm (f)	86
80259C	broadband power amplifier, 26.5~31 GHz, 2.92 mm (f)	86
80261	broadband power amplifier, 30~40 GHz, 2.4 mm (f)	87
80261C	broadband power amplifier, 30~40 GHz, 2.92 mm (f)	87
80262L	broadband power amplifier, 40~67 GHz, 1.85 mm (f)	87
80234B	complete set of low noise amplifier, 0.5~6 GHz, Type-N (f)	87

80230A	complete set of low noise amplifier, 2~20 GHz, 3.5 mm (f)	87
80231A	complete set of low noise amplifier, 18~26.5 GHz, 3.5 mm (f)	87
80232A	complete set of low noise amplifier, 26.5~40 GHz, 2.4 mm (f)	87
80241A	complete set of power amplifier, 0.045~26.5 GHz, 3.5 mm (f)	88
80223A	complete set of power amplifier, 0.045~40 GHz, 2.4 mm (f)	88
80246A	complete set of power amplifier, 0.8~20 GHz, 3.5 mm (f)	88
80243A	complete set of power amplifier, 0.8~20 GHz, 3.5 mm (f)	88
80248A	complete set of power amplifier, 6~18 GHz, 3.5 mm (f)	88
80249A	complete set of power amplifier, 6~18 GHz, 3.5 mm (f)	88
80253A	complete set of power amplifier, 18~26.5 GHz, 3.5 mm (f)	88
80254A	complete set of power amplifier, 18~26.5 GHz, 3.5 mm (f)	88
80255A	complete set of power amplifier, 18~40 GHz, 2.4 mm (f)	88
80255B	complete set of power amplifier, 18~10 GHz, 2.92 mm (f)	88
80264A	complete set of power amplifier, 18~40 GHz, 2.4 mm (f)	88
80264B	complete set of power amplifier, 18~10 GHz, 2.92 mm (f)	88
80256A	complete set of power amplifier, 20~40 GHz, 2.4 mm (f)	88
80256B	complete set of power amplifier, 20~10 GHz, 2.92 mm (f)	88
80261A	complete set of power amplifier, 30~40 GHz, 2.4 mm (f)	88
80261B	complete set of power amplifier, 30~40 GHz, 2.92 mm (f)	88
82320	waveguide detector, 33~50 GHz	93
82322	waveguide detector, 50~75 GHz	93
86207	YIG tuned oscillator, 3~8 GHz	96
86203A	YIG tuned oscillator, 3.2~10 GHz	96
86801	YIG bandpass filter, 2.75~18 GHz	97
86802	YIG bandpass filter, 2.75~26.5 GHz	97
81617E	YIG bandpass filter, 4~26.5 GHz	97
81617F	YIG bandpass filter, 4~40 GHz	97
81617H	YIG bandpass filter, 4~50 GHz	97

Mixers



● Specifications

○ Microwave Broadband Double Balance Mixer

Model	Frequency Range (GHz)			LO Power (dBm)	Conversion Loss (dB)(Typ.)	Isolation (dB)(Typ.)		Connector Type
	RF	LO	IF			L/R	L/I	
70702	2.0~20.0	2.0~20.0	DC~0.7	15~18	7.5	25	20	SMA (f)
70703	1.6~26.5	2.0~26.5	DC~0.7	15~18	9.5	20	20	SMA (f)
80713	3~40	3~40	DC~1.5	10~14	8.5	25	25	2.4mm (f) 3.5mm (f)
80713GB	4~50	4~50	DC~2	10~14	10	25	25	2.4mm (f) SMA (f)

○ Millimeter-Wave Balance Mixer

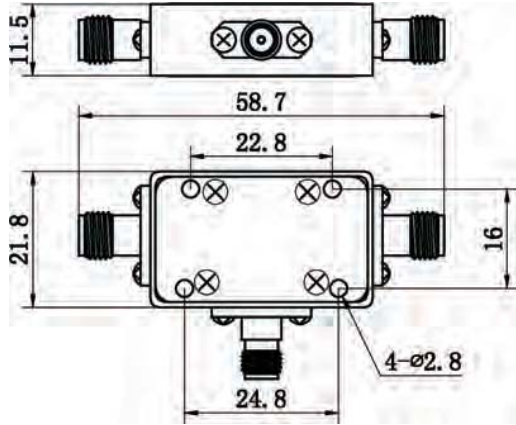
Model	Frequency Range (GHz)			LO Power (dBm)	Conversion Loss (dB)(Typ.)	Connector Type		
	RF	LO	IF			RF	LO	IF
82706	40~60	36/44	4~16	12~15	10	WR-19	WR-22	3.5mm (f)
82707	50~75	46/57	4~18	12~15	11	WR-15	WR-19	3.5mm (f)

○ Millimeter-Wave Harmonic Mixer

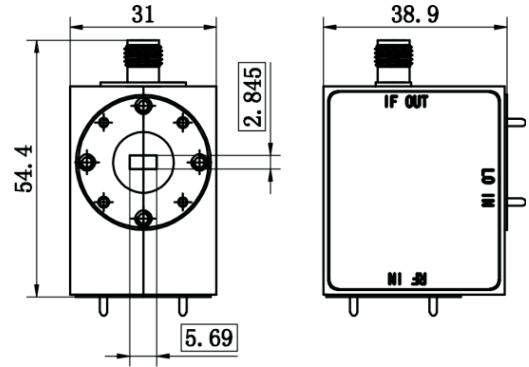
Model	Frequency Range (GHz)	Conversion Loss (dB)(Typ.)	Harmonic Number	LO Power (dBm)	Conversion Response (dB)	Bias Voltage (V)	Connector Type		
							RF	LO	IF
82717A	40~60	22	3	7~12	± 2.5	+5	WR-19	2.4mm (f)	3.5mm (f)
82717B	50~75	24	5	7~12	± 2.5	+5	WR-15	2.4mm (f)	3.5mm (f)
82717C	75~110	28	7	7~12	± 3.2	+5	WR-10	2.4mm (f)	3.5mm (f)
82717D	110~170	36	9	7~12	± 6.0	+5	WR-06	2.4mm (f)	3.5mm (f)
82717E	170~220	40	7	7~12	-	+5	WR-05	2.4mm (f)	3.5mm (f)
82717F	220~325	46	9	7~12	-	+5	WR-03	2.4mm (f)	3.5mm (f)

● Dimensions

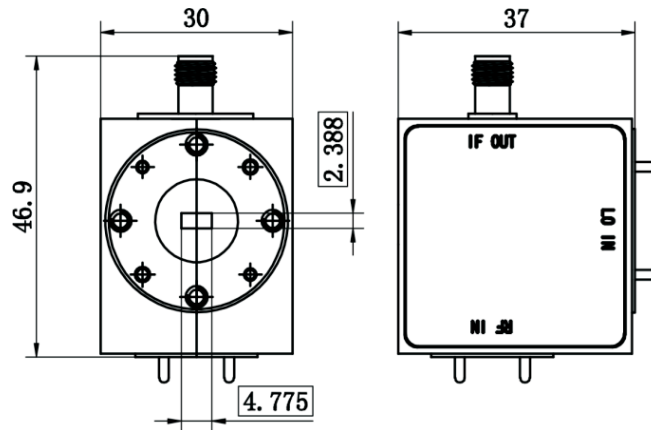
70702/70703



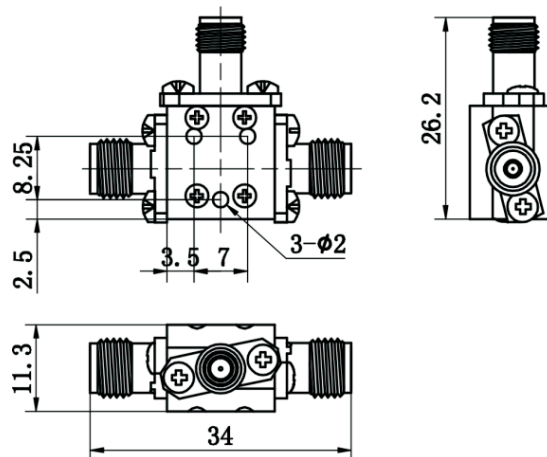
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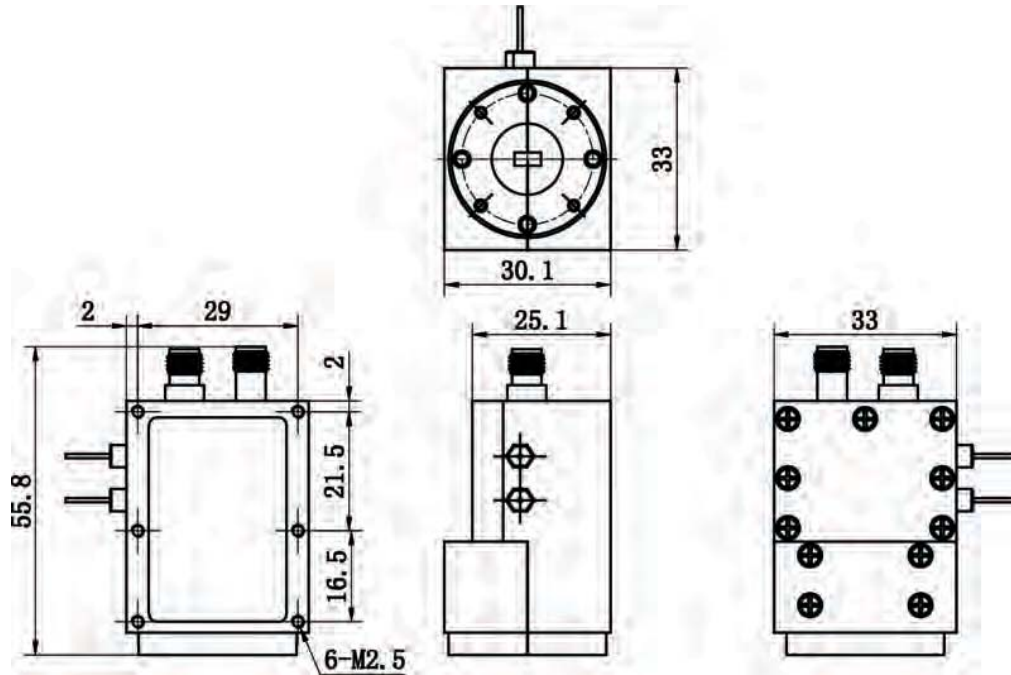
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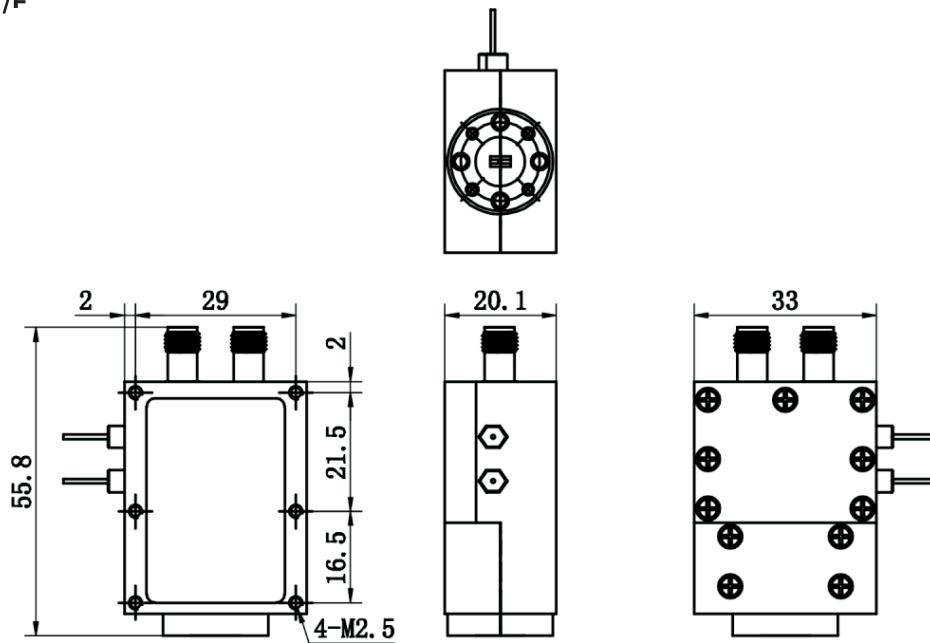
80713/80713GB



82717A



82717B/C/D/E/F



Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

Broadband Solid- state Amplifiers



● Amplifier Modules

○ Low Noise Amplifiers

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Max.)	P1dB (dBm)(Typ.)	Power Supply (Typ.)	Connector Type	Case Type
80230	2~20	25	4	12	130 mA @ + 8 V	3.5 mm (f)	AMP1
80231	18~26.5	30	4	10	160 mA @ + 5 V	3.5 mm (f)	AMP1
80232	26.5~40	30	4	10	270 mA @ + 8 V	2.4 mm (f)	AMP1
80230F	0.5~40	30	5 (0.5 GHz~25 GHz) 6 (25 GHz~40 GHz)	15	360 mA @ + 7 V	2.4 mm (f)	AMP1
80232F	26~40	22.5 (Typ. ± 1.5)	5	10	170 mA @ + 7 V	2.92 mm (f)	AMP1
80230H	0.5~50	18	5 (0.5 GHz~25 GHz) 6 (25 GHz~40 GHz) 8.5 (40 GHz~50 GHz)	10 (40 GHz) 7 (50 GHz)	200 mA @ + 7 V	2.4 mm (f)	AMP1

Notes: f means female connectors, the same below.

○ Broadband Driving Amplifiers

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm)(Typ.)	Psat (dBm)(Min.)	Power Supply (Typ.)	Connector Type	Case Type
80210	1~26.5	10	8	19	20	200 mA @ + 7 V	3.5 mm (f)	AMP1
80211	1~26.5	20	7	19	20	350 mA @ + 7 V	3.5 mm (f)	AMP1
80212	1~26.5	25	7	19	20	400 mA @ + 7 V	3.5 mm (f)	AMP1
80214	0.045~26.5	25	12	19	20	400 mA @ + 7 V	3.5 mm (f)	AMP1
80220	1~40	10	11	14	16	200 mA @ + 7 V	2.4 mm (f)	AMP1
80221	1~40	25	10	14	16	400 mA @ + 7 V	2.4 mm (f)	AMP1
80223	0.045~40	25	12	14	16	400 mA @ + 7 V	2.4 mm (f)	AMP1
80240	0.8~20	23	8	25	27	600 mA @ + 9 V	3.5 mm (f)	AMP1
	20~26.5	20	10	21	23			
80241	0.045~20	21	8	24	25	600 mA @ + 9 V	3.5 mm (f)	AMP1
	20~26.5	20	10	19	20.5			
80242	26.5~40	33	7	19	21	600 mA @ + 7 V	2.4 mm (f)	AMP1

○ Broadband Power Amplifiers

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm)(Typ.)	Psat (dBm)(Min.)	Psat (dBm)(Typ.)	IP3 (dBm)(Typ.)	Power Supply (Typ.)	Connector Type	Case Type
80244	0.05~3	30	6	31	33	35	41	0.8 A @ + 26 V	SMA (f)	AMP4
80246	0.8~20	32	5	29	30	31	37	1.3 A @ + 10 V	3.5 mm (f)	AMP3
80243	0.8~20	28	7	30	31	32	40	2.6 A @ + 10 V	3.5 mm (f)	AMP5
80243B	2.0~50	12	-	16	18	20	-	0.4 A @ + 9 V	2.4 mm (f)	AMP3
80248	6~18	32	4	32.5	33.5	34.5	37	1.4 A @ + 9 V	3.5 mm (f)	AMP3
80249	6~18	32	5	34	35	36	39	2.6 A @ + 9 V	3.5 mm (f)	AMP3
80253	18~26.5	29	7	28	29	30	38	1.5 A @ + 9 V	3.5 mm (f)	AMP3
80254	18~26.5	30	7	30	31	32	40	4 A @ + 9 V	3.5 mm (f)	AMP3
80255	18~40	23	10	22	23	24	34	0.8 A @ + 9 V	2.4 mm (f)	AMP3
80255C									2.92 mm (f)	
80264	18~40	22	10	24	25	26	36	1.5 A @ + 9 V	2.4 mm (f)	AMP3
80264C									2.92 mm (f)	
80256	20~40	25	10	24	25	26	35	1.2 A @ + 9 V	2.4 mm (f)	AMP3
80256C									2.92 mm (f)	
80259	26.5~31	31	8.5	30	31	32	37.5	2 A @ + 7.5 V	2.4 mm (f)	AMP3
80259C									2.92 mm (f)	

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm)(Typ.)	Psat (dBm)(Min.)	Psat (dBm)(Typ.)	IP3 (dBm)(Typ.)	Power Supply (Typ.)	Connector Type	Case Type
80261	30~40	30	10	28	29	30	-	2 A @ + 7.5 V	2.4 mm (f)	AMP3
80261C									2.92 mm (f)	
80262L	40~67	14	-	-	16	17	-	0.4 A @ + 7 V	1.85 mm (f)	AMP3

○ Waveguide Amplifiers

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm)(Typ.)	Psat (dBm)(Min.)	Psat (dBm)(Typ.)	Power Supply (Typ.)	Connector Type	Case Type
3871P	75~110	10	12	12	16	19	620 mA @ + 5 V	WR10	AMP7
80230P	75~110	17	6	-	-	-	80 mA @ + 5 V	WR10	AMP8

Complete Sets of Power Amplifiers

○ Compact Low-Noise Amplifier Instruments

(With power adapter)

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Noise Figure (dB)(Max.)	P1dB (dBm)(Typ.)	Power Supply (Typ.)	Connector Type	Case Type
80234B	0.5~6	40	3.5 (Typ:3)	14	220 V/ 50 Hz (connect to power adapter)	Type-N	AMP13
80230A	2~20	24	4.0	12		3.5 mm (f)	
80231A	18~26.5	29	4.0	10		3.5 mm (f)	
80232A	26.5~40	29	4.0	10		2.4 mm (f)	
3840F	0.5~40	30	5 (0.5 GHz~25 GHz) 6 (25 GHz~40 GHz)	15	12 V DC (ϕ 2.5 mm DC wiring terminal)	2.4 mm (f)	
3840H	0.5~50	18	5 (0.5 GHz~25 GHz) 6 (25 GHz~40 GHz) 8.5 (40 GHz~50 GHz)	10 (40 GHz) 7 (50 GHz)		2.4 mm (f)	

○ Compact Power Amplifier Instruments

(With power adapter)

Model	Frequency Range (GHz)	Gain (dB) (Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm) (Typ.)	Psat (dBm) (Min.)	Psat (dBm) (Typ.)	Ip3 (dBm) (Typ.)	Power Supply (Typ.)	Connector Type	Case Type
80241A	0.045~20	20	8	24	25	-	-	220 V/ 50 Hz (connect to power adapter) 12 V DC (ϕ 2.5 mm DC wiring terminal)	3.5 mm (f)	AMP13
	20~26.5	19	10	19	20.5	-	-		2.4 mm (f)	
80223A	0.045~40	24	12	14	16	-	-		3.5 mm (f)	
80246A	0.8~20	31	5	29	30	31	37		3.5 mm (f)	
80243A	0.8~20	27	7	30	31	32	40		3.5 mm (f)	
80248A	6~18	31	4	32.5	33.5	34.5	37		3.5 mm (f)	
80249A	6~18	31	5	34	35	36	39		3.5 mm (f)	
80253A	18~26.5	28	7	28	29	30	38		3.5 mm (f)	
80254A	18~26.5	29	7	30	31	32	40		3.5 mm (f)	
80255A	18~40	22	10	22	23	24	34		2.4 mm (f)	
80255B									2.92 mm (f)	
80264A	18~40	21	10	24	25	26	36		2.4 mm (f)	
80264B									2.92 mm (f)	
80256A	20~40	24	10	24	25	26	35		2.4 mm (f)	
80256B									2.92 mm (f)	
80261A	30~40	29	10	28	29	30	-		2.4 mm (f)	
80261B								2.92 mm (f)		

○ Portable Power Amplifier Instruments

(Display output power, output power external stability)

Model	Frequency Range (GHz)	Gain (dB) (Min.)	Noise Figure (dB)(Typ.)	P1dB (dBm) (Typ.)	Psat (dBm) (Min.)	Psat (dBm) (Typ.)	Ip3 (dBm) (Typ.)	Connector Type	Power Supply Case Type
3860C	0.8~20	23	8	-	29	30	-	Type-N (f)	Power Supply: 220 V/ 50 Hz Case Type:AMP11
3860D	18~40	22	12	-	20	21	-	2.92 mm (f)	
3860E	0.01~20	18	8	-	24	25	-	3.5 mm (m)	

○ 4U High-Power Amplifier Instruments

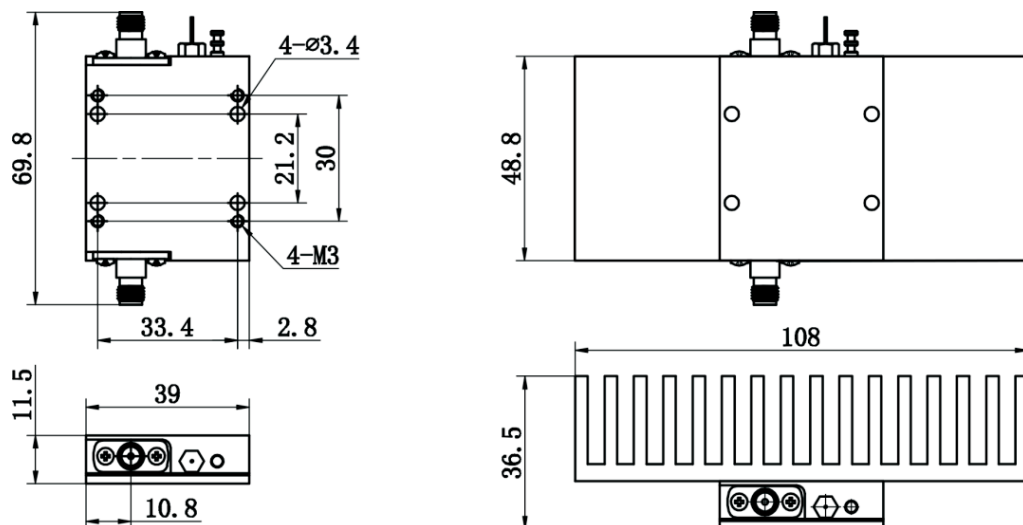
(Display accurate output power, open loop/stable amplitude function is optional, manual adjustment of gain/output power is available)

Model	Frequency Range (GHz)	Gain (dB)(Min.)	Power Flatness (dB)(Max.)	P1dB (dBm) (Typ.)	Psat (dBm) (Typ.)	Harmonic Suppression @P1dB (dBc)(Typ.)	Connector Type	Power Supply Case Type
3871AA	1~2.5	50	±3	47	50	10	Type-N (f)	Power Supply: 220 V/ 50 Hz Case Type: AMP14
3871AB	1~6	50	±3	38	45	10	Type-N (f)	
3871AS	0.5~6	50	±3	40	47	10	Type-N (f)	
3871AT	0.5~6	50	±3	43	50	10	Type-N (f)	
3871DA	6~18	44	±3	41	43	10	Type-N (f)	
3871DB	6~18	50	±3	42	47	10	Type-N (f)	
3871DC	6~18	53	±3	43	50	10	Type-N (f)	
3871EA	18~26.5	40	±3	38	40	10	3.5 mm (m)	
3871EB	18~26.5	43	±3	42	43	10	3.5 mm (m)	Power Supply: 220 V/ 50 Hz Case Type: AMP15
3871FA	26~32	38	±3	36	38	-	2.4 mm (m)	
3871FC	26~32	40	±3	37	42	-	2.4 mm (m)	
3871FB	32~40	38	±3	36	38	-	2.4 mm (m)	
3871HA	40~47	40	±3	35	37	-	2.4 mm (m)	

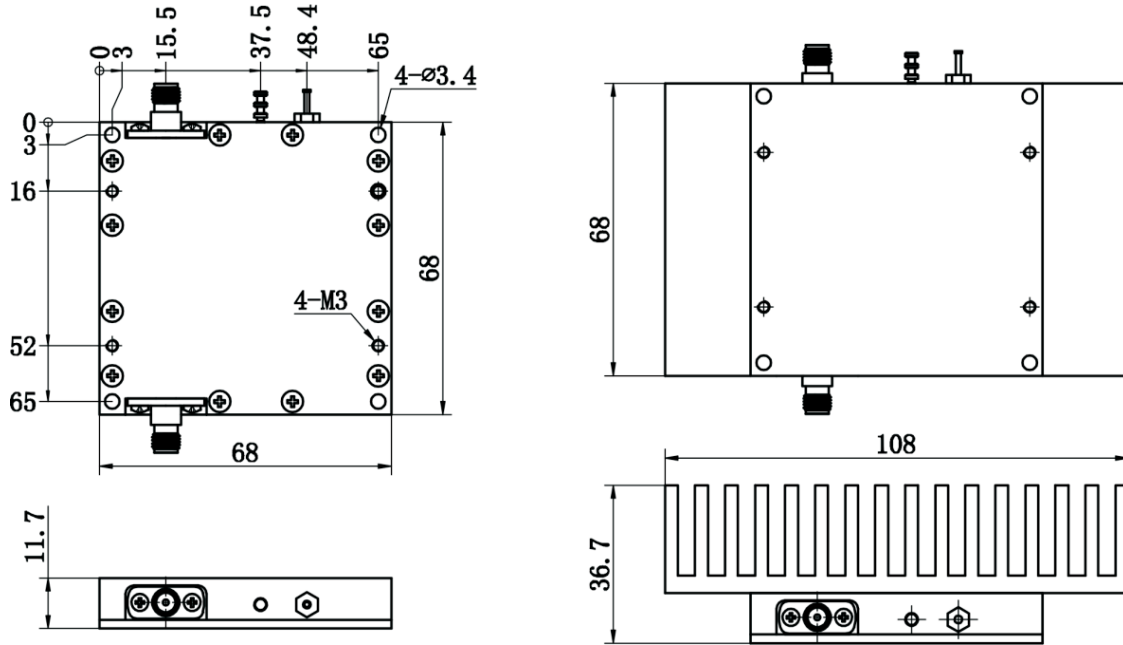
Notes: (m) means male connectors, the same below.

● Dimensions

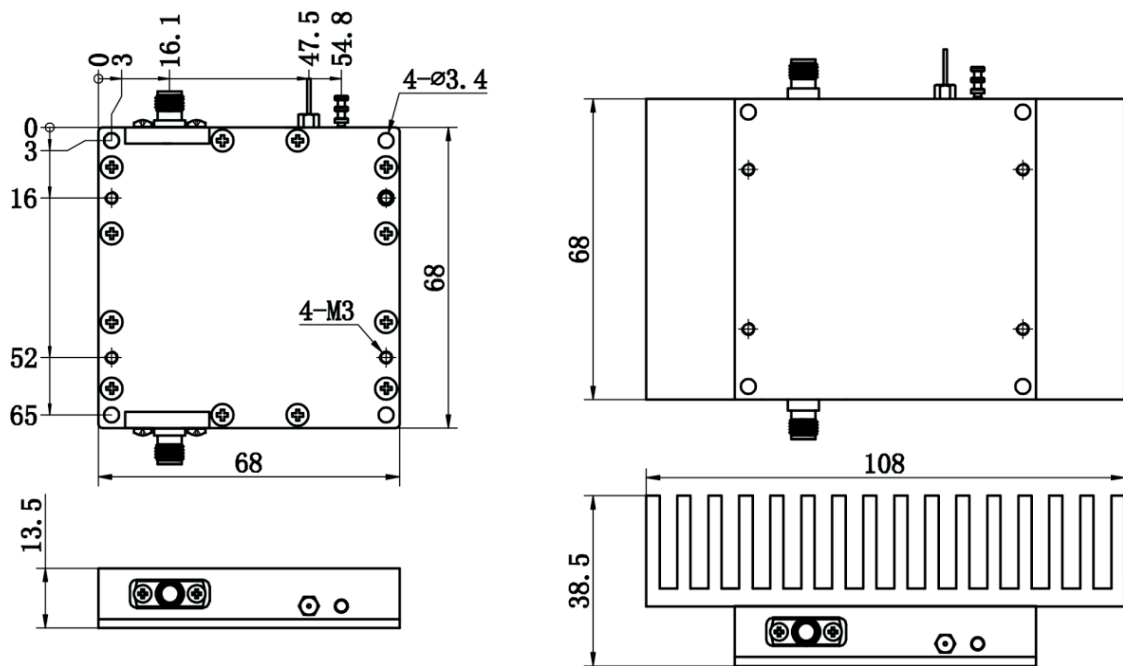
AMP1 Amplifier (Unit: mm)



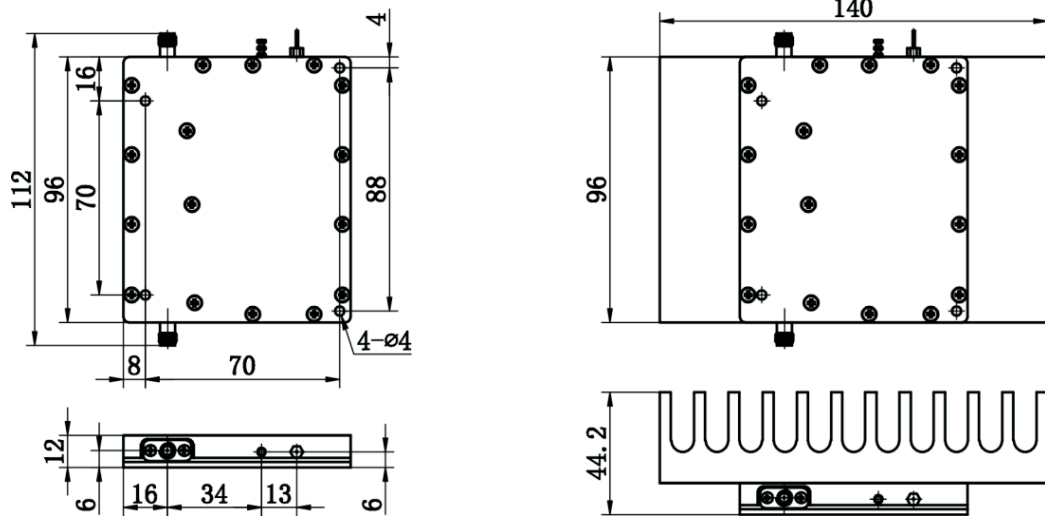
AMP3 Amplifier (Unit: mm)



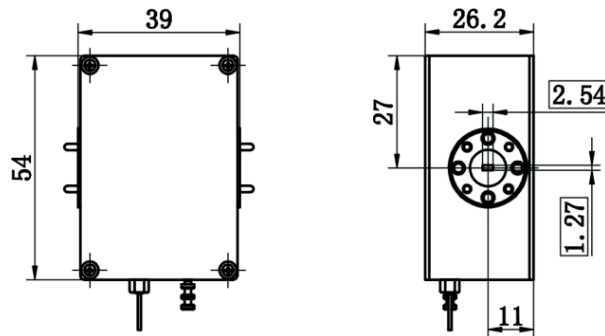
AMP4 Amplifier (Unit: mm)



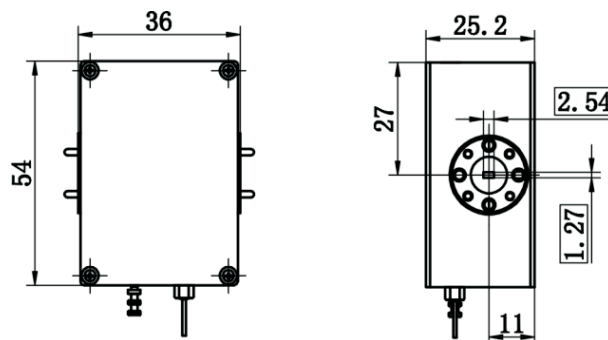
AMP5 Amplifier (Unit: mm)



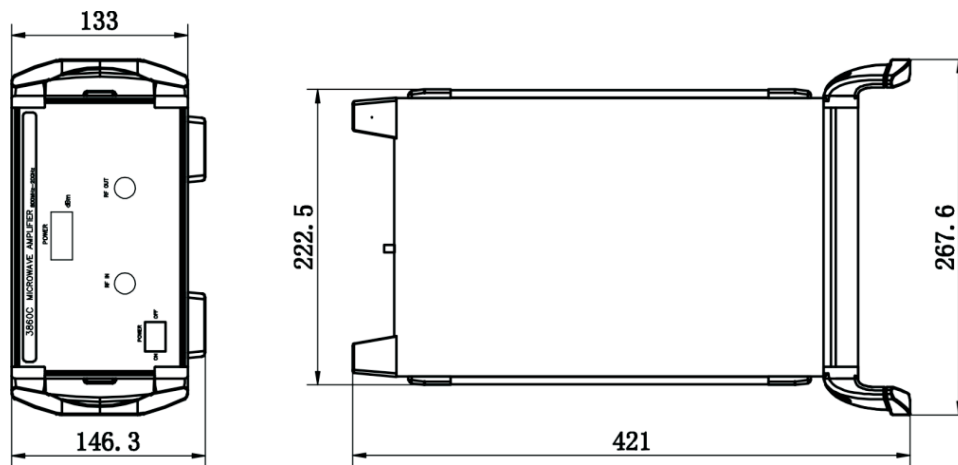
AMP7 Amplifier (Unit: mm)



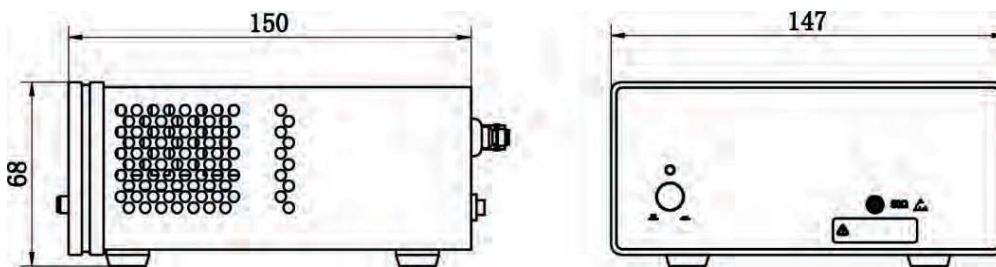
AMP8 Amplifier (Unit: mm)



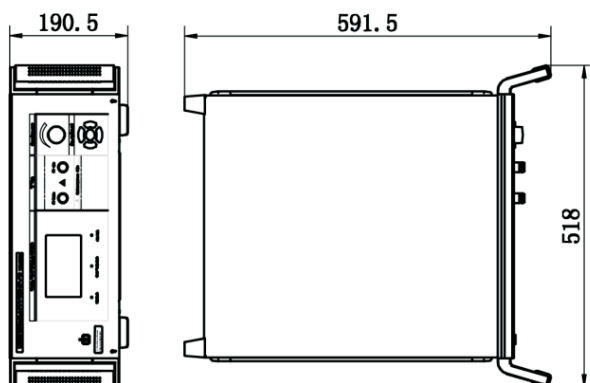
AMP11 Amplifier (Unit: mm)



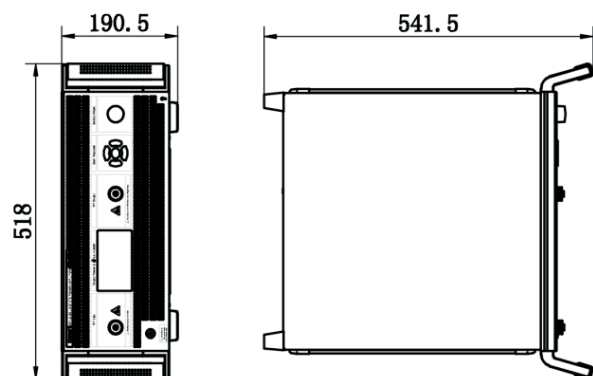
AMP13 amplifier (Unit: mm)



AMP14 Amplifier (Unit: mm)



AMP15 Amplifier (Unit: mm)



Detectors



● Specifications

○ Coaxial Detectors

Model	Frequency Range (GHz)	Frequency Response (dB)	SWR (Max.)	Sensitivity (mV/ μ W)	Max. Input Power (dBm)	Input Connector	Output Connector	RF Bypass Capacitance	Output Polarity
10317	0.01 ~ 8	± 0.8	1.5	0.4	+20	SMA(m)	SMA(f)	6.2 pf	negative
10318	0.01 ~ 18	± 1.0	2.0	0.4	+20	SMA(m)	SMA(f)	6.2 pf	negative
70302	0.01 ~ 26.5	± 1.5	2.0	0.4	+20	3.5 mm(m)	SMA(f)	6.2 pf	negative
70303	0.01 ~ 40	± 1.75	2.0	0.35	+20	2.4 mm(m)	SMA(f)	6.2 pf	negative

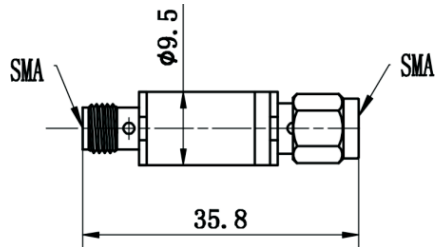
○ Waveguide Detectors

Model	Frequency Range (GHz)	Frequency Response (dB)	Sensitivity (mV/ μ W)	Max. Input Power (dBm)	Input Connector	Output Connector	Output Polarity
70304	26.5 ~ 40	± 1.8	0.3	+20	WR28	SMA(f)	negative
82320	33 ~ 50	± 2.0	0.3	+20	WR22	SMA(f)	negative
70305	40 ~ 60	± 1.8	0.3	+20	WR19	SMA(f)	negative
82322	50 ~ 75	± 2.2	0.2	+20	WR15	SMA(f)	negative
70306	75 ~ 110	± 2.2	0.1	+20	WR10	SMA(f)	negative

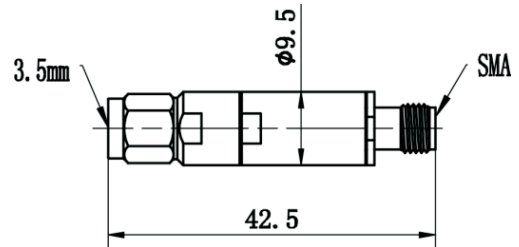
Notes: Output polarity of all products is negative. Please specify polarity when ordering.

• Dimensions

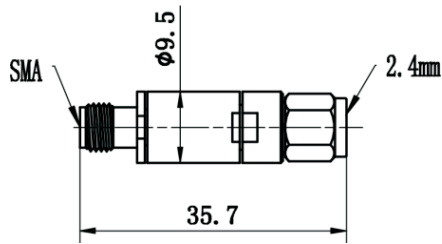
10317/10318



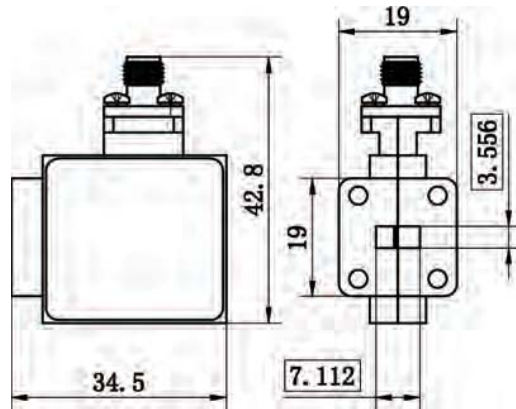
70302



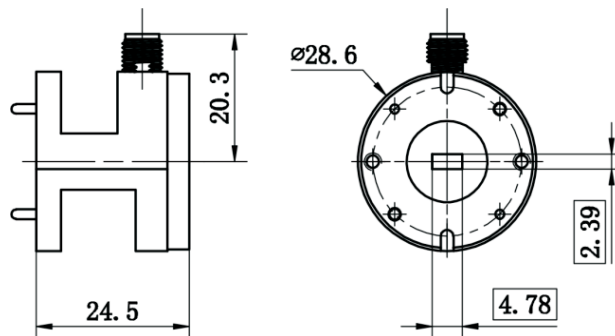
70303



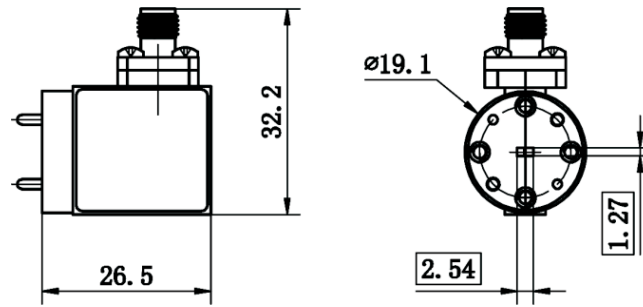
70304



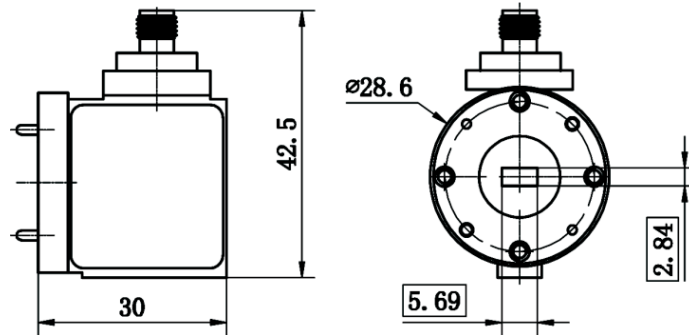
70305



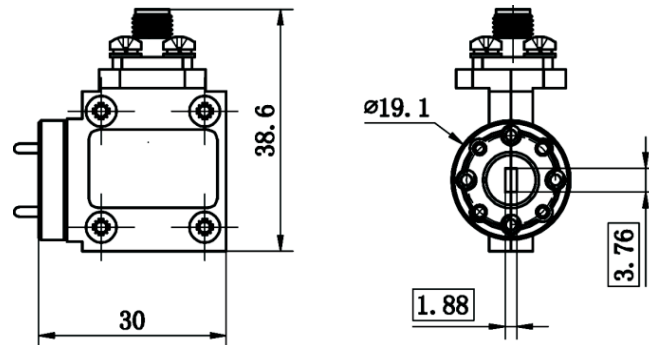
70306



82320



82322



Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

YIG Tuned Oscillators

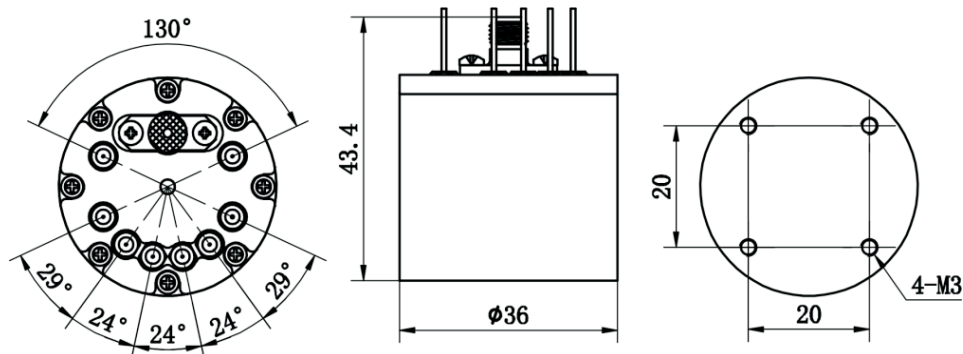


● Specifications

Model	86207	86203A
Frequency Range (GHz)	3~8	3.2~10
Output Power(dBm Min.)	12	12
Power Flatness (dB Max.)	± 3	± 3.5
Harmonic (dBc Max.)	-8	-8
Non-Harmonic Spurious (dBc Max.)	-70	-70
SSB Phase Noise (dBc/Hz@100kHz Max.)	-118	-118
Frequency Drift over Temperature (MHz Max.)	20	20
Magnetic Hysteresis (MHz Max.)	8	9
Main Coil Sensitivity (MHz/mA)	20 ± 1	20 ± 1
FM Coil Sensitivity (kHz/mA)	210	260
Linearity	± 0.1%	± 0.1%
YIG Heater Input Voltage (V)	20 ± 2	20 ± 2
Main Coil Input Impedance (Ω)	9.3	9.3
FM 3dB Bandwidth (MHz)	-	10

● Dimensions

86203A/86207



Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.

YIG Bandpass Filters

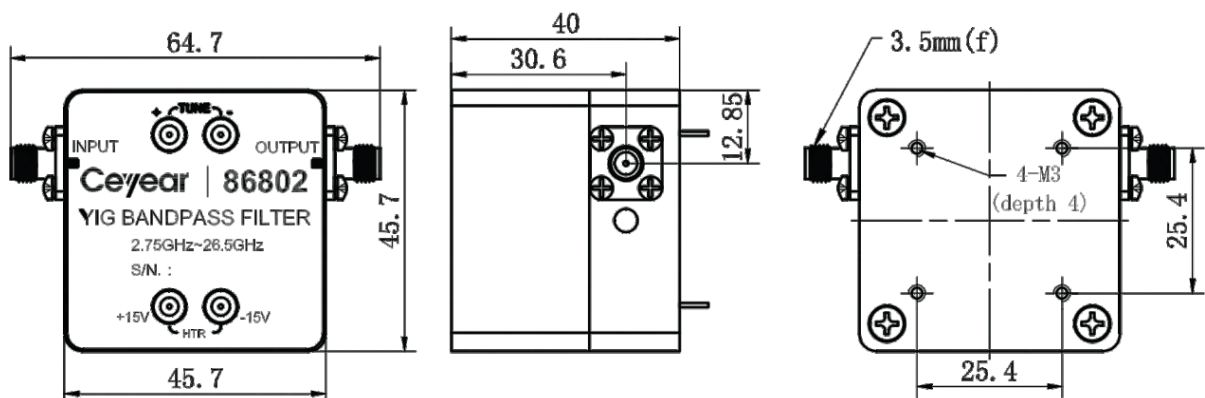


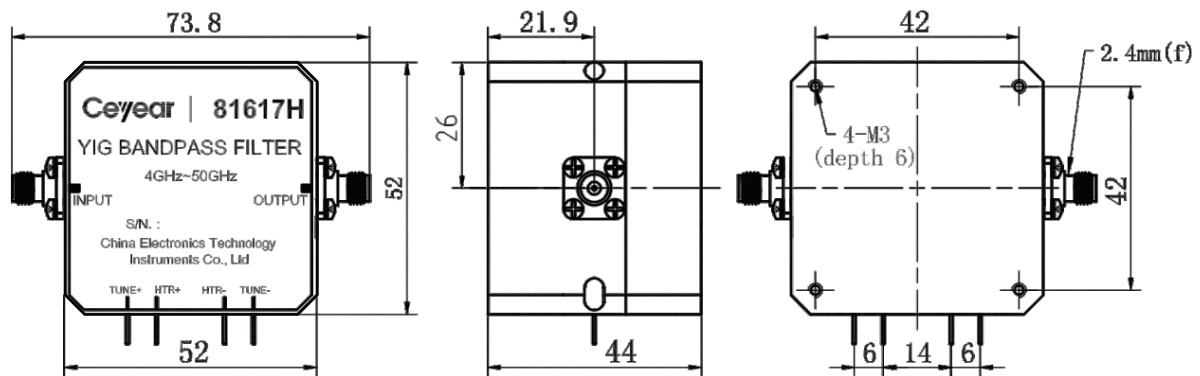
● Specifications

Model	Frequency Range (GHz)	3dB Bandwidth (MHz) (Min.)	Insertion Loss (dB) (Max.)	Off Resonance Isolation (dB)(Min.)	Off Resonance Spurious (dB)(Min.)	Hysteresis (MHz) (Max.)	Temperature Drift (MHz)(Max.) 0°C-60°C	Tuning Sensitivity (MHz/mA)
86801	2.75~18	30	6	70	20	20	30	50 ± 5
86802	2.75~26.5	30	6	65	20	25	30	50 ± 5
81617E	4~26.5	40	7.5	85	40	65	40	77 ± 5
81617F	4~40	40	7.5	80	40	70	45	77 ± 5
81617H	4~50	40	7.5	75	40	75	50	77 ± 5

● Dimensions

86801/86802



81617E/F/H


Notes: All dimensions are in millimeter.

Product specifications and descriptions in this document are subject to change without notice.