High Power RF
Cables, Connectors & Assemblies

- Semi-Conductor Manufacturing Equipment
- Flat Panel Manufacturing Equipment
- Solar Panel Manufacturing Equipment
- High Power Lasers
- High Power Radars
- TV/FM Broadcast
- Magnetic Resonance Imaging
- Other High Power RF Applications

TIMES
MICROWAVE SYSTEMS
An Amphenol Company

High Power Coaxial Cable, Connectors & Assemblies

Times offers a broad range of cables, connectors and assemblies for high power RF transmission. Applications such as magnetic resonance imaging (MRI), semi-conductor manufacturing equipment, flat panel manufacturing equipment, broadcast and high power lasers and radar each have their own electrical and mechanical requirements. With our broad range of solutions and capability of producing custom cables and connectors, Times is uniquely positioned to help with all of your high power RF transmission applications.

Although Times Microwave Systems is known for providing precision cable assemblies for microwave applications up to 40 GHz, we are also the leading provider of cables and assemblies for high power, low frequency applications. Our broad range of manufacturing capabilities enables us to offer rugged, flexible cables and cable assemblies, that can operate in high ambient temperatures and provide environmental resistance, while handling both high average and peak powers. Constructions are available to meet requirements for low loss, high RF shielding, and low VSWR.

Since each application requires a different set of performance characteristics, having a wide range of cables to choose from allows the trade-offs to be considered and the best cable for the application to be chosen. We produce cables with dielectrics of solid PE and PTFE, foam PE and expanded PTFE; outer conductors of round wire, flat wire and composite construtions; and jackets of PE, FEP, PVC, Urethane, Nomex, Kapton and other materials.

Connector Selection

At the relatively low frequencies and high powers typically encountered in these applications, considerations for the best interface selection are very different than in microwave applications. Impedance uniformity through the interface is not as critical, but high contact forces, low contact resistance and a large interface diameter are very important. From a performance point of view, EIA flange connectors are the ideal choice with their bolt-together outer contacts and inside spring finger center-contacts. Their disadvantages include large size, high cost and time-consuming installation. Other good choices include LC's and 7/16 DIN's. Frequently, the equipment being connected to dictates the interface. Some interfaces that Times Microwave Systems provide include:

- C
- N
- HN
- 7-16 DIN
- 1-5/8" EIA
- SC
- QDS
- LC
- 7/8" EIA
- 3-1/8"EIA
- Proprietary LC quick disconnect interface

Cable Assemblies

Our capability to manufacture cables and connectors and our expertise in assembling and testing them enable us to design custom cable assemblies for your application. Built to exacting standards, we design our cable assemblies for reliability in the most extreme operating conditons. Assemblies can be matched in phase length or supplied in specific electrical lengths with customer required markings added. Complete test data on VSWR, insertion loss, corona and other parameters can be provided as required.

HP Cables

Cable Feature:

Flexibility	Very Good
Cost	High
Attenuation	Medium
Power Handling	Very High
Temperature	High
Connector Availability	Good

	HP-393	HP-226	HP-600	HP-218	HP-900	HP-1200
AA Drawing Number	AA-9963	AA-9021	AA-9083	AA-9290	AA-11229	AA-11167
Part Number	510-0019	51848	51874	51928	54262	54246
Physical Specifications						
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	SC	SC	SC	SC	BC Tube	BC Tube
	0.094 (2.39)	0.126 (3.20)	0.130 (3.28)	0.230 (5.84)	0.227 (5.77)	0.310 (7.87)
Dielectric	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
	0.285 (7.24)	0.370 (9.40)	0.460 (11.56)	0.680 (17.27)	0.680 (17.27)	0.920 (23.37)
Inner Shield	TC	TC	TC	TC	MT	MT
	0.295 (7.49)	0.400 (10.13)	0.490 (12.40)	0.710 (18.11)	0.686 (17.42)	0.926 (23.52)
Outer Shield	TC	TC	TC	TC	TC	TC
	0.330 (8.38)	0.430 (10.87)	0.520 (13.23)	0.740 (18.95)	0.732 (18.59)	0.972 (24.69)
Jacket	FEP	FEP	FEP	Nomex/PTFE	Nomex	Nomex
	0.390 (9.91)	0.490 (12.32)	0.590 (14.99)	0.790 (19.94)	0.775 (19.69)	1.020 (25.91)
Mechanical Specifications						
Bend Radius	2.0 (50.8)	5.0 (127)	6.0 (152)	8.0 (203)	4.0 (101.6)	6.0 (152)
Weight	0.175 lb/ft	0.240 lb/ft	0.330 lb/ft	0.375 lb/ft	0.475 lb/ft	0.70 lb/ft
Operating Temperature Range	-55/+200°C	-55/+200°C	-55/+200°C	-55/+200°C	-55/+200°C	-55/+200°C
Electrical Specifications						
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Shielding Effectiveness	60 dB	60 dB	60 dB	60 dB	60 dB	60 dB
Dielectric Constant	1.98	1.98	1.98	1.73	1.73	1.73
Velocity of Propagation	71.0%	71.0%	71.0%	76.0%	76.0%	76.0%
Capacitance	28.6pF/ft	28.6pF/ft	28.6pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft
Attenuation: dB/100ft (100m)	(+25°C Ambient)					
13.56 MHz	0.72 (2.36)	0.56 (1.83)	0.37 (1.22)	0.26 (0.86)	0.21 (0.69)	0.16 (0.52)
50 MHz	1.41 (4.63)	1.10 (3.60)	0.74 (2.44)	0.51 (1.67)	0.41 (1.35)	0.30 (0.98)
100 MHz	2.03 (6.66)	1.58 (5.20)	1.09 (3.60)	0.73 (2.38)	0.59 (1.94)	0.44 (1.44)
1000 MHz	7.2 (23.75)	5.81 (19.1)	4.24 (13.9)	2.42 (7.94)	1.99 (6.53)	1.50 (4.92)
1500 MHz	9.20 (30.18)	7.44 (24.4)	5.51 (18.1)	3.02 (9.89)	2.49 (8.17)	1.89 (6.20)
K1	0.19200	0.14676	0.09693	0.07077	0.05722	0.04172
K2	0.00117	0.00117	0.00117	0.00018	0.00018	0.00018
Power (kW)	(+25°C Ambient; Sea Level)					
13.56 MHz	12.60	18.00	30.00	44.22	54.00	83.00
50 MHz	6.44	9.30	14.80	22.82	28.00	42.00
100 MHz	4.47	6.40	10.10	16.01	20.00	29.00
1000 MHz	1.20	1.70	2.60	4.79	5.80	8.60
1500 MHz	0.97	1.30	2.00	3.84	4.60	6.80

* SC = Silver Plated Copper
* BC = Bare Copper
* TC = Tinned Copper
* MT = Metallized Composite Tapes

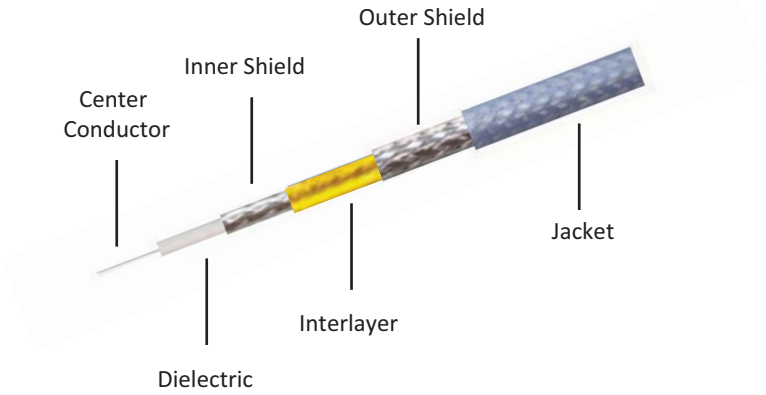
* FEP = Fluorinated Ethylene Propylene
* PTFE = Solid Polytetrafluroethylene

Note: HP-393 is marked RG-393-NPP-SN

SFT Cables

Cable Feature:

Flexibility	Good/Very Good
Cost	Very High
Attenuation	Low
Power Handling	Very High
Temperature	High
Connector Availability	Good



Cable Structure:

Center Conductor: Silver Plated Copper
Dielectric: Taped PTFE
Inner Shield: Silver Plated Copper Flat Braid
Interlayer: Metalized Composite Tapes
Outer Shield: 36 Ga SIlver Plated Copper
Jacket: Blue FEP

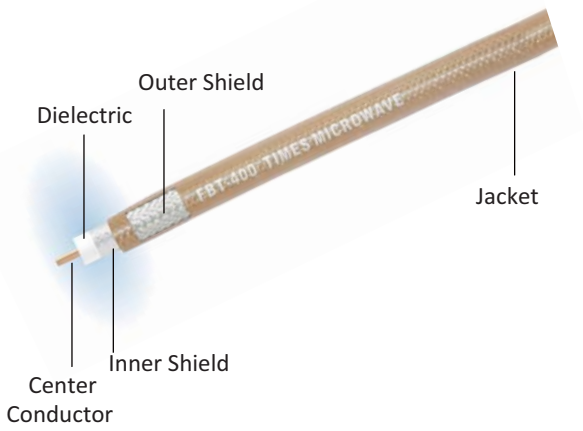
	SFT-318	SFT-320	SFT-393	SFT-500	SFT-600
AA Drawing Number	AA-9702	AA-9788	AA-8653	AA-11168	AA-9649
Part Number	51972	51980	51800	510-0037	51963
Physical Specifications					
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	Solid Silver Plated Copper			Stranded Silver Plated Copper	
	0.074 (1.88)	0.089 (2.26)	0.096 (2.44)	0.145 (3.68)	0.160 (4.06)
Dielectric	0.221 (5.61)	0.250 (6.35)	0.285 (7.24)	0.408 (10.36)	0.455 (11.56)
Inner Shield	0.231 (5.87)	0.260 (6.60)	0.295 (7.49)	0.420 (10.67)	0.465 (11.81)
Interlayer	0.240 (6.09)	NA	0.301 (7.65)	NA	0.471 (11.96)
Outer Shield	0.263 (6.68)	0.290 (7.37)	0.330 (8.38)	0.448 (11.38)	0.500 (12.70)
Jacket	0.291 (7.39)	0.322 (8.18)	0.390 (9.91)	0.490 (12.45)	0.555 (14.10)
Mechanical Specifications					
Bend Radius	1.5 (38.1)	1.75 (44.5)	2.0 (50.8)	2.5 (63.5)	2.75 (69.9)
Weight	0.095 lb/ft	0.090 lb/ft	0.126 lb/ft	0.230 lb/ft	0.240 lb/ft
Operating Temperature Range	-55/+200 ℃	-55/+200 ℃	-55/+200 ℃	-55/+200 ℃	-55/+200 ℃
Electrical Specifications					
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Shielding Effectiveness	100 dB	80 dB	100 dB	80 dB	100 dB
Dielectric Constant	1.73	1.73	1.73	1.73	1.73
Velocity of Propagation	76.0%	76.0%	76.0%	76.0%	76.0%
Capacitance	26.7pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft
Attenuation: dB/100ft (100m) (+25 ℃ Ambient)					
13.56 MHz	0.71 (2.33)	0.57 (1.87)	0.50 (1.65)	0.40 (1.31)	0.39 (18.16)
50 MHz	1.37 (4.49)	1.09 (3.60)	0.97 (3.18)	0.77 (2.53)	0.76 (2.48)
100 MHz	1.90 (6.23)	1.56 (5.11)	1.38 (4.52)	1.09 (3.58)	1.07 (3.52)
1000 MHz	6.20 (20.34)	5.05 (16.59)	4.48 (14.69)	3.58 (11.75)	3.52 (11.54)
1500 MHz	7.70 (25.26)	6.24 (20.48)	5.53 (18.16)	4.44 (14.57)	4.36 (14.30)
K1	0.19236	0.15407	0.13593	0.10749	0.10137
K2	0.00018	0.00018	0.00018	0.00018	0.00018
Power (kW) (+25 ℃ Ambient; Sea Level)					
13.56 MHz	10.80	13.69	15.92	25.00	25.50
50 MHz	5.60	7.10	8.25	12.90	13.00
100 MHz	3.90	5.00	5.80	9.10	9.15
1000 MHz	1.21	1.53	1.78	2.76	2.82
1500 MHz	0.98	1.24	1.43	2.23	2.27

* PTFE = Solid Polytetrafluroethylene
* FEP = Fluorinated Ethylene Propylene

FBT Cables

Cable Feature:

Flexibility	Fair
Cost	Medium/High
Attenuation	Low
Power Handling	High
Temperature	High
Connector Availability	Very Good



Cable Structure:

Center Conductor: Solid BCCAl
Dielectric: Taped PTFE
Inner Shield: Aluminum Tape
Outer Shield: Tinned Copper
Jacket: Brown FEP

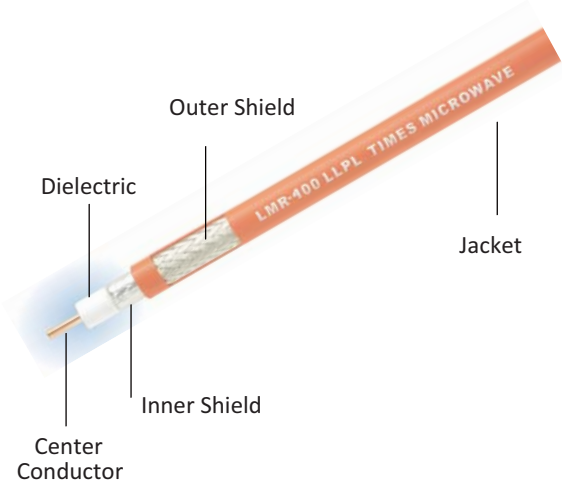
	FBT-400		FBT-500		FBT-600	
AA Drawing Number	AA-8957		AA-8958		AA-8959	
Part Number	54171		54172		54173	
Physical Specifications						
Description	in	(mm)	in	(mm)	in	(mm)
Center Conductor	0.095	(2.413)	0.123	(3.124)	0.150	(3.810)
Dielectric	0.285	(7.239)	0.370	(9.398)	0.455	(11.557)
Inner Shield	0.291	(7.391)	0.376	(9.550)	0.461	(11.709)
Outer Shield	0.320	(8.128)	0.405	(10.287)	0.490	(12.446)
Jacket	0.370	(9.398)	0.465	(11.811)	0.565	(14.351)
Mechanical Specifications						
Bend Radius	4.00	(101.6)	5.00	(127.0)	6.00	(152.4)
Weight	0.104 lb/ft		0.168 lb/ft		0.210 lb/ft	
Operating Temperature Range	-55/+150 ℃		-55/+150 ℃		-55/+150 ℃	
Electrical Specifications						
Impedance	50 ohms		50 ohms		50 ohms	
Shielding Effectiveness	90 dB		90 dB		90 dB	
Dielectric Constant	1.73		1.73		1.73	
Velocity of Propagation	76.0%		76.0%		76.0%	
Capacitance	26.7pF/ft		26.7pF/ft		26.7pF/ft	
Attenuation: dB/100ft (100m) (+25 ℃ Ambient)						
13.56 MHz	0.48	(1.57)	0.37	(1.22)	0.30	(0.99)
50 MHz	0.92	(3.02)	0.72	(2.35)	0.58	(1.91)
100 MHz	1.31	(4.30)	1.02	(3.30)	0.83	(2.70)
1000 MHz	4.23	(13.9)	3.32	(10.9)	2.72	(8.90)
1500 MHz	5.23	(17.1)	4.11	(13.5)	3.38	(11.1)
K1	0.12914		0.10026		0.08139	
K2	0.00015		0.00015		0.00015	
Power (kW) (+25 ℃ Ambient; Sea Level)						
13.56 MHz	9.00		13.0		17.0	
50 MHz	4.50		6.50		8.80	
100 MHz	3.20		4.60		6.20	
1000 MHz	1.00		1.40		1.90	
1500 MHz	0.80		1.10		1.50	

* BCCAl = Bare Copper Clad Aluminum
* PTFE = Solid Polytetrafluroethylene
* FEP = Fluorinated Ethylene Propylene

LMR-LLPL Cables

Cable Feature:

Flexibility	Fair/Good
Cost	Medium
Attenuation	Low
Power Handling	Medium/High
Temperature	Low
Connector Availability	Very Good



Cable Structure:

Center Conductor: Solid BCCAl / BC Tube
Dielectric: Taped PTFE
Inner Shield: Aluminum Tape
Outer Shield: Tinned Copper
Jacket: Orange FRPVC

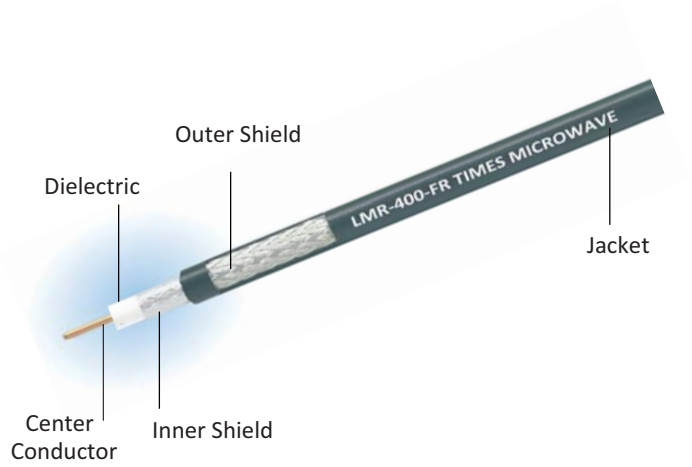
	LMR-400-LLPL	LMR-500-LLPL	LMR-600-LLPL	LMR-900-LLPL	LMR-1200-LLPL
AA Drawing Number	AA-8317	AA-8278	AA-8279	AA-8280	AA-8281
Part Number	54070	54060	54061	54062	54063
Physical Specifications					
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	Solid BCCAl			BC Tube	
	0.095 (2.41)	0.123 (3.12)	0.150 (3.81)	0.227 (5.77)	0.310 (7.87)
Dielectric	0.285 (7.24)	0.370 (9.40)	0.455 (11.56)	0.680 (17.27)	0.920 (23.37)
Inner Shield	0.291 (7.39)	0.376 (9.55)	0.461 (11.71)	0.686 (17.42)	0.926 (23.52)
Outer Shield	0.320 (8.13)	0.405 (10.29)	0.490 (12.45)	0.732 (18.59)	0.972 (24.69)
Jacket	0.405 (10.29)	0.500 (12.70)	0.590 (14.99)	0.870 (22.10)	1.200 (30.48)
Mechanical Specifications					
Bend Radius	4.0 (101.6)	5.0 (127.0)	6.0 (152.4)	9.0 (228.6)	12.0 (304.8)
Weight	0.114 lb/ft	0.194 lb/ft	0.240 lb/ft	0.542 lb/ft	0.700 lb/ft
Operating Temperature Range	-5/+75°C	-5/+75°C	-5/+75°C	-5/+75°C	-5/+75°C
Electrical Specifications					
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Shielding Effectiveness	90 dB	90 dB	90 dB	90 dB	90 dB
Dielectric Constant	1.73	1.73	1.73	1.73	1.73
Velocity of Propagation	76.0%	76.0%	76.0%	76.0%	76.0%
Capacitance	26.7pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft
Attenuation: dB/100ft (100m) (+25°C Ambient)					
13.56 MHz	0.48 (1.57)	0.37 (1.22)	0.30 (0.99)	0.21 (0.69)	0.16 (0.512)
50 MHz	0.92 (3.02)	0.72 (2.35)	0.58 (1.91)	0.41 (1.36)	0.30 (1.00)
100 MHz	1.31 (4.30)	1.02 (3.30)	0.83 (2.70)	0.59 (1.90)	0.44 (1.40)
1000 MHz	4.23 (13.9)	3.32 (10.9)	2.72 (8.90)	1.99 (6.50)	1.50 (4.90)
1500 MHz	5.23 (17.1)	4.11 (13.5)	3.38 (11.1)	2.49 (8.20)	1.89 (6.20)
K1	0.12914	0.10026	0.08139	0.05722	0.04172
K2	0.00015	0.00015	0.00015	0.00018	0.00018
Power (kW) (+25°C Ambient; Sea Level)					
13.56 MHz	5.00	7.00	10.00	20.00	35.00
50 MHz	2.60	3.90	5.40	10.20	18.00
100 MHz	1.80	2.70	3.80	7.10	12.60
1000 MHz	0.60	0.80	1.10	2.10	3.60
1500 MHz	0.50	0.70	0.90	1.70	2.90

* BCCAl = Bare Copper Clad Aluminum
* PTFE = Solid Polytetrafluroethylene
* FRPVC = Fire Retardent PVC

LMR-FR Cables

Cable Feature:

Flexibility	Fair
Cost	Low
Attenuation	Low
Power Handling	Medium
Temperature	Low
Connector Availability	Very Good



Cable Structure:

Center Conductor: Solid BCCAl / BC Tube
Dielectric: Foam PE
Inner Shield: Aluminum Tape
Outer Shield: Tinned Copper
Jacket: Black FRPE

	LMR-400-FR	LMR-500-FR	LMR-600-FR	LMR-900-FR	LMR-1200-FR
AA Drawing Number	AA-8120	AA-8121	AA-8122	AA-8123	AA-8124
Part Number	54030	54031	54032	54033	54034
Physical Specifications					
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	Solid BCCAl			BC Tube	
	0.108 (2.74)	0.142 (3.61)	0.176 (4.47)	0.262 (6.65)	0.349 (8.86)
Dielectric	0.285 (7.24)	0.370 (9.40)	0.455 (11.56)	0.680 (17.27)	0.920 (23.37)
Inner Shield	0.291 (7.39)	0.376 (9.55)	0.461 (11.71)	0.686 (17.42)	0.926 (23.52)
Outer Shield	0.320 (8.13)	0.405 (10.29)	0.490 (12.45)	0.732 (18.59)	0.972 (24.69)
Jacket	0.405 (10.29)	0.500 (12.70)	0.590 (14.99)	0.870 (22.10)	1.200 (30.48)
Mechanical Specifications					
Bend Radius	1.0 (25.4)	1.3 (31.8)	1.5 (38.1)	3.0 (76.2)	6.5 (165.1)
Weight	0.068 lb/ft	0.097 lb/ft	0.131 lb/ft	0.266 lb/ft	0.448 lb/ft
Operating Temperature Range	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C
Electrical Specifications					
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Shielding Effectiveness	90 dB	90 dB	90 dB	90 dB	90 dB
Dielectric Constant	1.38	1.35	1.32	1.32	1.29
Velocity of Propagation	85.0%	86.0%	87.0%	87.0%	88.0%
Capacitance	23.9pF/ft	23.6pF/ft	23.4pF/ft	23.4pF/ft	23.1pF/ft
Attenuation: dB/100ft (100m) (+25°C Ambient)					
13.56 MHz	0.45 (1.49)	0.36 (1.18)	0.28 (0.92)	0.19 (0.63)	0.14 (0.46)
50 MHz	0.88 (2.88)	0.70 (2.28)	0.55 (1.80)	0.37 (1.23)	0.27 (0.89)
100 MHz	1.25 (4.10)	0.99 (3.25)	0.78 (2.56)	0.53 (1.75)	0.39 (1.28)
1000 MHz	4.13 (13.54)	3.31 (10.87)	2.65 (8.69)	1.80 (5.89)	1.34 (4.40)
1500 MHz	5.13 (16.82)	4.13 (13.55)	3.32 (10.88)	2.25 (7.37)	1.69 (5.54)
K1	0.12229	0.09659	0.07555	0.05177	0.03737
K2	0.00026	0.00026	0.00026	0.00016	0.00016
Power (kW) (+25°C Ambient; Sea Level)					
13.56 MHz	4.97	6.60	8.24	13.30	18.93
50 MHz	2.57	3.40	4.24	6.85	9.72
100 MHz	1.81	2.39	2.97	4.80	6.79
1000 MHz	0.54	0.71	0.87	1.42	1.97
1500 MHz	0.44	0.57	0.70	1.14	1.56

* BCCAl = Bare Copper Clad Aluminum
* PE = Polyethylene
* FRPE = Fire Retardent Polyethylene

RG Cables

Cable Feature:

Flexibility	Good/Very Good
Cost	Medium/Low
Attenuation	Medium
Power Handling	Medium/High
Temperature	Low
Connector Availability	Medium

	RG-393	RG-217	RG-177	RG-218	RG-220
AA Drawing Number	AA-3420	AA-3410	AA-3404	AA-3411	AA-6002
Part Number	51509	41511	41506	41512	41579
Physical Specifications					
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	SC	BC	BC	BC	BC
	0.094 (2.39)	0.106 (2.69)	0.195 (4.95)	0.195 (4.95)	0.260 (6.60)
Dielectric	PTFE	PE	PE	PE	PE
	0.285 (7.24)	0.370 (9.40)	0.680 (17.27)	0.680 (17.27)	0.910 (23.11)
Inner Shield	SC	BC	SC	BC	BC
	0.295 (7.49)	0.403 (10.24)	0.709 (18.01)	0.726 (18.44)	0.956 (24.28)
Outer Shield	SC	BC	SC	/	/
	0.330 (8.38)	0.436 (11.07)	0.738 (18.75)		
Jacket	FEP	PVC	PVC	PVC	PVC
	0.390 (9.91)	0.545 (13.84)	0.895 (22.73)	0.870 (22.10)	1.120 (28.45)
Mechanical Specifications					
Bend Radius	2.0 (50.8)	5.5 (139.7)	9.0 (228.6)	9.0 (228.6)	12.0 (304.8)
Weight	0.175 lb/ft	0.230 lb/ft	0.470 lb/ft	0.460 lb/ft	0.820 lb/ft
Operating Temperature Range	-55/+200°C	-40/+80°C	-40/+80°C	-40/+80°C	-40/+80°C
Electrical Specifications					
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Dielectric Constant	1.98	2.30	2.30	2.30	2.30
Velocity of Propagation	71.0%	65.9%	65.9%	65.9%	65.9%
Capacitance	28.6pF/ft	30.8pF/ft	30.8pF/ft	30.8pF/ft	30.8pF/ft
Attenuation: dB/100ft (100m) (+25°C Ambient)					
13.56 MHz	0.72 (2.36)	0.48 (1.59)	0.29 (0.95)	0.27 (0.89)	0.20 (0.66)
50 MHz	1.41 (4.63)	0.96 (3.15)	0.59 (1.92)	0.55 (1.81)	0.42 (1.37)
100 MHz	2.03 (6.66)	1.40 (4.60)	0.87 (2.80)	0.82 (2.70)	0.63 (2.10)
1000 MHz	7.20 (23.75)	5.28 (17.3)	3.60 (11.8)	3.44 (11.3)	2.84 (9.30)
1500 MHz	9.20 (30.18)	6.81 (22.3)	4.76 (15.6)	4.56 (15.0)	3.83 (12.6)
K1	0.19200	0.12700	0.07400	0.06900	0.05000
K2	0.00117	0.00126	0.00126	0.00126	0.00126
Power (kW) (+25°C Ambient; Sea Level)					
13.56 MHz	12.60	5.00	10.00	11.00	16.00
50 MHz	6.44	2.30	4.90	5.30	7.80
100 MHz	4.47	1.60	3.30	3.60	5.20
1000 MHz	1.20	0.40	0.80	0.80	1.10
1500 MHz	0.97	0.30	0.60	0.60	0.80

* SC = Silver Plated Copper
* BC = Bare Copper
* PE = Polyethylene
* PVC = Polyvinyl Chloride
* PTFE = Solid Polytetrafluroethylene
* FEP = Fluorinated Ethylene Propylene

Other High Power Cables

	HFlex-142	AA-9593	AA-11222	AA-11223	AA-9193	QEAM-810
AA Drawing Number	AA-9406	AA-9593	AA-11222	AA-11223	AA-9193	AA-8848
Physical Specifications						
Description	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
Center Conductor	SC	BCCAl	RSC	RSC	RSC	SC
	0.038 (0.01)	0.150 (3.81)	0.160 (4.064)	0.160 (4.064)	0.160 (4.064)	0.228 (5.791)
Dielectric	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
	0.105 (2.67)	0.455 (11.45)	0.455 (11.56)	0.455 (11.56)	0.455 (11.56)	0.620 (15.75)
Inner Shield	SC	FSC	FSC	SC	SC	FSC
	0.123 (3.12)	0.465 (11.81)	0.465 (11.81)	0.478 (12.14)	0.478 (12.14)	0.630 (16.00)
Interlayer	/	APT	APT	/	/	APA
		0.469 (11.91)	0.469 (11.91)			0.636 (16.15)
Outer Shield	SC	TC	TC	SC	SC	TC
	0.141 (3.58)	0.508 (12.90)	0.508 (12.90)	0.501 (12.73)	0.501 (12.73)	0.665 (16.89)
Jacket	FEP	FR Polyurethane	FR Polyurethane	FR Polyurethane	FEP	FR Polyurethane
	0.170 (4.32)	0.560 (14.22)	0.560 (14.22)	0.560 (14.22)	0.555 (14.10)	0.810 (20.57)
Mechanical Specifications						
Bend Radius	1.5 (38.1)	2.5 (63.5)	2.5 (63.5)	2.5 (63.5)	2.5 (63.5)	8.0 (203.2)
Weight	0.030 lb/ft	0.220 lb/ft	0.300 lb/ft	0.285 lb/ft	0.260 lb/ft	0.400 lb/ft
Operating Temperature Range	-55/+200℃	-55/+90℃	-55/+105℃	-55/+105℃	-55/+200℃	-55/+80℃
Electrical Specifications						
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Shielding Effectiveness	60 dB	100 dB	100 dB	60 dB	60 dB	100 dB
Dielectric Constant	1.73	1.73	1.73	1.73	1.73	1.56
Velocity of Propagation	76.0%	76.0%	76.0%	76.0%	76.0%	80.0%
Capacitance	26.8pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft	26.7pF/ft	25.4pF/ft
Attenuation: dB/100ft (100m) (+25℃ Ambient)						
13.56 MHz	1.62 (5.31)	0.32 (1.05)	0.38 (1.25)	0.46 (1.51)	0.46 (1.51)	0.27 (0.89)
50 MHz	3.11 (10.20)	0.62 (2.03)	0.89 (2.92)	0.89 (2.92)	0.89 (2.92)	0.53 (1.73)
100 MHz	4.40 (14.43)	0.89 (2.92)	1.05 (3.44)	1.26 (4.13)	1.26 (4.13)	0.75 (2.46)
1000 MHz	14.10 (46.25)	2.90 (9.51)	3.40 (11.15)	4.11 (13.48)	4.11 (13.48)	2.50 (8.20)
1500 MHz	17.20 (56.42)	3.60 (11.81)	4.20 (13.78)	5.10 (16.73)	5.10 (16.73)	3.05 (10.0)
k1	0.438078	0.086948	0.101875	0.124310	0.124310	0.073435
k2	0.000183	0.000183	0.000183	0.000183	0.000183	0.000136
Power (kW) (+25℃ Ambient; Sea Level)						
13.56 MHz	3.65	17.53	19.20	15.60	23.00	34.30
50 MHz	1.89	9.06	9.70	8.10	12.00	17.72
100 MHz	1.33	6.37	7.00	5.70	8.10	12.50
1000 MHz	0.41	1.92	2.12	1.70	2.50	3.78
1500 MHz	0.33	1.55	1.70	1.40	2.00	3.05

* SC = Silver Plated Copper
* BCCAl = Bare Copper Clad Aluminum
* RSC = Rope Stranded Silver Plated Copper
* FSC = Silver Plated Copper Flat Strip Braid
* TC = Tinned Copper
* PTFE = Solid Polytetrafluroethylene
* APA = Alumnim-Polyester-Aluminum
* APT = Aluminum-Polyimide Tape Wrap
* FEP = Fluorinated ethylene propylene

Connectors

We offer a broad range of high power connectors. Below are some of them for reference.
Please consult our factory for more details.

Cable Category	Series	Stock Code	Part Number	Outer Conductor Attach
HP-218	158EIA	3190-2473	EZ-218-158EIA-CL	C-S-C
	716M	3190-2000	TC-218-716MC	Clamp
	78EIA	3190-2005	TC-218-78EIA	Clamp
	LCM	3190-1447	TC-218-LCM	Clamp
	LCMRA	3190-2587	TC-218-LCM-RA-CL	C-S-C
	NM	3190-2001	TC-218-NMC	Clamp
	SCM	3190-2003	TC-218-SCMC	Clamp
	CM	3190-2002	TC-218-CMC	Clamp
	1330M	3190-2004	TC-218-1330MC	Clamp
HP-226	716M	3190-2624	TC-226-716M-CL	C-S-C
	716MRA	3190-2625	TC-226-716M-RA-CL	C-S-C
	LCM	3190-2665	TC-226-LCM-CL	C-S-C
	LCMRA	3190-2666	TC-226-LCM-RA-CL	C-S-C
	NM	3190-2514	TC-500-NMH-X	Crimp
	NMRA	3190-2513	TC-500-NMH-RA-X	Crimp
RG-393	716M	3190-2692	TC-393-716M-CL	C-S-C
	716MRA	3190-2693	TC-393-716M-RA-CL	C-S-C
	HNM	3190-2663	TC-393-HNM-CL	C-S-C
	HNMRA	3190-2559	TC-393-HNM-RA-CL	C-S-C
	LCM	3190-2565	TC-393-LCM-CL	C-S-C
	LCMRA	3190-2561	TC-393-LCM-RA-CL	C-S-C
	NFBH	3190-1094	TC-393-NF-BH	Crimp
		3190-1401	TC-393T-NF-BH	Crimp
	NFPM	3190-1398	TC-393T-NF-PM	Crimp
	NM	3190-542	TC-393T-NMH	Crimp
		3190-2626	TC-400-NMH-X	Crimp
		3190-1091	TC-393-NM	Crimp
	NMRA	3190-920	TC-393T-NMH-RA	Crimp
		3190-2293	TC-400-NMH-RA-D	Crimp
	SCM	3190-2569	TC-393-SCM-CL	C-S-C
	SCMRA	3190-2570	TC-393-SCM-RA-CL	C-S-C
	CM	3190-922	TC-393T-CM	Crimp
SFT-320	HNM	3190-2563	TC-320T-HNM-CL	C-S-C
	LCM	3190-2664	TC-320T-LCM-CL	C-S-C
SFT-600	158EIA	3190-2485	EZ-600T-158EIA-CL	C-S-C
	716M	3190-2636	TC-600T-716MC	Clamp
		3190-2595	TC-600T-716M-CL	C-S-C
	716MRA	3190-2637	TC-600T-716MC-RA	Clamp
		3190-2594	TC-600T-716M-RA-CL	C-S-C
	78EIA	3190-2212	EZ-600-78EIA (2-piece pin)	Clamp
	HNM	3190-2564	TC-600T-HNM-CL	C-S-C
	HNMRA	3190-2560	TC-600T-HNM-RA-CL	C-S-C
	LCM	3190-2566	TC-600T-LCM-CL	C-S-C
	LCMRA	3190-2562	TC-600T-LCM-RA-CL	C-S-C
	NM	3190-2628	TC-600-NMH-X	Crimp
		3190-2583	TC-600T-NM-CL	C-S-C
	NMRA	3190-2427	TC-600-NMH-RA-D	Crimp
	NF	3190-965	TC-600-NF-PL	Crimp
	QDLCM	3190-2383	TC-600T-QDLCM-CL	C-S-C

Connectors

Cable Category	Series	Stock Code	Part Number	Outer Conductor Attach
LMR-500-LLPL	NM	3190-2578	TC-500-NM-PL-CL	C-S-C
	NMRA	3190-2579	TC-500-NM-RA-PL-CL	C-S-C
QEAM-810	LCM	3190-2631	LC Male for QEAM-810	C-S-C
Receptacle	QDSF	3191-296	QDSF PANEL RECEPTACLE to THREADED POST CONTACT	
	QDLCF	3191-274	90° LCF QUICK DISCONNECT PANEL RECEPTACLE	
		3191-293	LCF QUICK DISCONNECT PANEL RECEPTACLE	
Adapter	HNF-HNF	3191-360	HN Female to HN Female	
	716M-716F	3191-361	7-16 DIN Male to n Female	

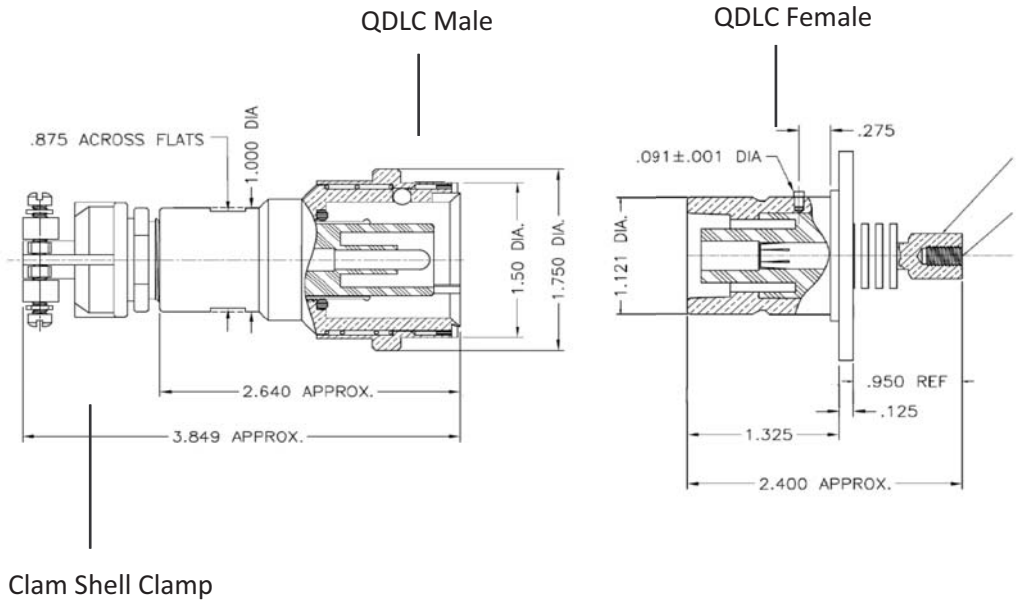
* “C-S-C” = Clam Shell Clamp

Quick Disconnect LC

The QD-LC interface is unique to Times and was developed specifically for high power applications. Based on an LC interface, it includes an overlapping dielectric and a quick disconnect mechanism to allow quick installation and removal. We also supply mating female connectors.

Clam Shell Clamp Strain Relief

Many high power applications in semi-conductor and flat panel manufacturing require periodically moving cables for maintenance and cleaning operations. This places a great deal of strain on the cable to connector interface. The use of a secondary clam-shell style clamp to secure the connector to the cable is an effective way to provide strain relief and prevent cable to connector failures. Although there may be some distortion of the cable shape, at frequencies below 100 MHz or so, this does not cause a performance issue.



MISSION

TIMES MICROWAVE SYSTEMS designs and manufactures high performance RF and microwave transmission lines. These products consist of coaxial cables, connectors, accessories and cable assemblies.
We are committed to understanding the needs and requirements of our customers and providing highly engineered, cost effective products.
TIMES MICROWAVE SYSTEMS is dedicated to total customer satisfaction and superior results for our shareholders in all we do.

TIMES
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