



**HAND FLEX™**

# Coaxial Cable

**086-10SM+**

Mini-Circuits

50Ω 10 inch DC to 18 GHz SMA Male

## THE BIG DEAL

- Wideband frequency coverage, DC to 18 GHz
- Low Insertion Loss, 0.55 dB Typ. to 18 GHz
- Excellent Return Loss, 35 dB Typ. to 18 GHz
- Hand formable to almost any custom shape without special bending tools
- 6 mm bend radius for tight installations
- Anti-torque nut prevents cable stress during installation
- Insulated outer jacket standard
- Connector interface, meets MIL-STD-348
- Ideal for interconnect of assembled systems



Generic photo used for illustration purposes only

<b>Model No.</b>	086-10SM+
<b>Case Style</b>	KP1505-10
<b>Connectors</b>	SMA Male

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our website for methodologies and qualifications

## APPLICATIONS

- Replacement for custom bent 0.086" semi-rigid cables
- Communication Receivers and Transmitters
- Military and Aerospace Systems
- Environmental Test Chambers

## PRODUCT OVERVIEW

The 086 Series Hand-Flex™ Coaxial Cables are ideal for interconnection of coaxial components or sub-systems. The construction includes a silver-plated copper steel center conductor which maintains its shape after bending. The outer shield is copper braid, tin soaked, which minimizes signal leakage while remaining flexible for easy bending. Dielectric is low loss PTFE. Connectors have passivated stainless-steel coupling nut over a gold plated connector body and gold plated, brass center conductor.

## KEY FEATURES

Feature	Advantages
Hand-Formable RF Cables	The 086 Series Hand-Flex™ cables are hand formable making them ideal for use integrating coaxial components and sub-assemblies without the need for special cable-bending tools and alleviating the risk of damage during the bending process typical of semi-rigid coaxial cable assemblies.
Tight Bend Radius	Capable of 6 mm bend radius, the 086 Series Hand-Flex™ series is able to make connections in tight spaces making these cables ideal for dense system integration
Excellent Return Loss	Supporting excellent return loss to 18 GHz, the 086 Series Hand-Flex™ Cables are ideally suited for interconnecting a wide variety of RF components while minimizing VSWR ripple contribution due to mating cables & connectors.
Good Power Handling Capability: <ul style="list-style-type: none"> <li>• 211 W at 0.5 GHz</li> <li>• 35 W at 18 GHz</li> </ul>	Mini-Circuits 086 Cable series can support medium to high RF power levels enabling these cables to be used in the transmit path. NOTE: power rating is at sea-level altitudes.
Built-In Anti-Torque Nut	Mini-Circuits 086 Series Hand-Flex™ cables include an anti-torque feature to support the connector body during installation alleviating risk of stress to the connector/cable interface.
Jacketed and Unjacketed Options	Standard 086 Series Hand-Flex™ include a blue FEP insulator jacket reducing the risk of accidental shorting of DC power lines or active pins during installation and operation. Unjacketed versions are available upon request.

REV. C  
ECO-017029  
086-10SM+  
MCL NY  
260520





## ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		18	GHz
Length <sup>1</sup>		10			inches
Insertion Loss	DC-2	—	0.12	0.41	dB
	2-6	—	0.38	0.73	
	6-10	—	0.58	0.98	
	10-18	—	0.85	1.35	
Return Loss	DC-2	23	45	—	dB
	2-6	23	40	—	
	6-10	17	35	—	
	10-18	16	27	—	

1. Custom sizes available, consult factory.

ABSOLUTE MAXIMUM RATINGS<sup>2</sup>

Parameter	Ratings
Operating Temperature	-55 °C to +105 °C
Storage Temperature	-55 °C to +105 °C
Power Handling at +25 °C, Sea Level	211 W at 0.5 GHz 150 W at 1 GHz 104 W at 2 GHz 59 W at 6 GHz 45 W at 10 GHz 35 W at 18 GHz

2. Permanent damage may occur if any of these limits are exceeded.



**HAND FLEX™**

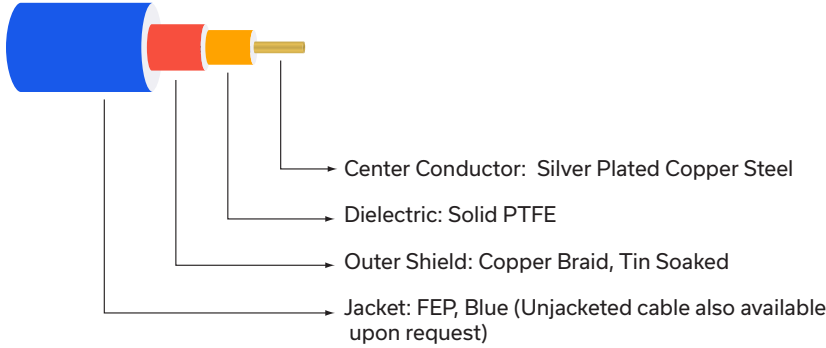
# Coaxial Cable

**086-10SM+**

Mini-Circuits

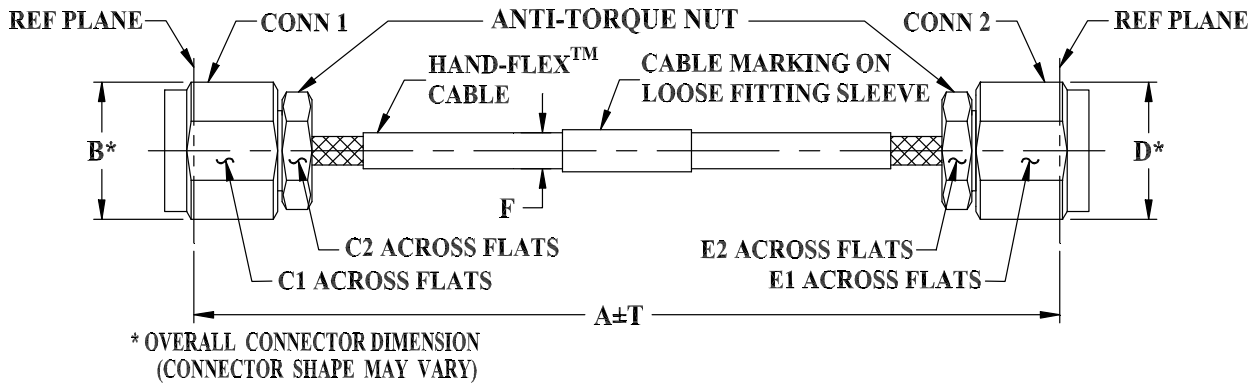
50Ω 10 inch DC to 18 GHz SMA Male

## CABLE CONSTRUCTION



Connectors: Coupling Nut: Stainless Steel Passivated  
 Body: Stainless Steel Gold Plated  
 Center Pin: Brass, Gold Plated

## OUTLINE DRAWING



## OUTLINE DIMENSIONS (Inch/mm)

A	B	C1	C2	D	E1	E2	F	T	wt
10.0	.36	.315	.250	.36	.315	.250	.123 Max	.10	grams
254.00	9.14	8.00	6.35	9.14	8.00	6.35	3.12 Max	2.54	9.77





HAND FLEX™

# Coaxial Cable

086-10SM+

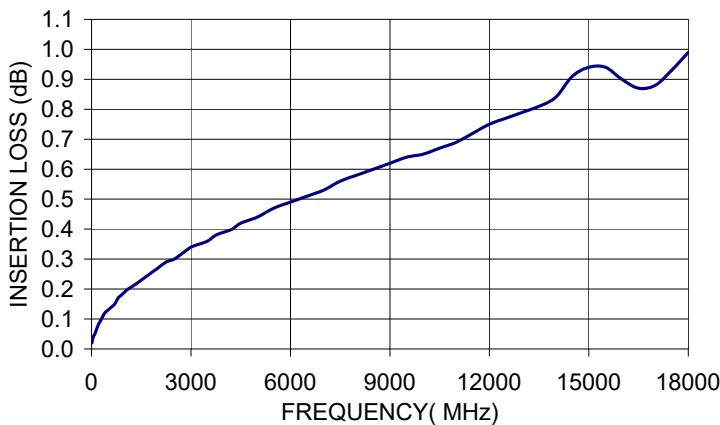
Mini-Circuits

50Ω 10 inch DC to 18 GHz SMA Male

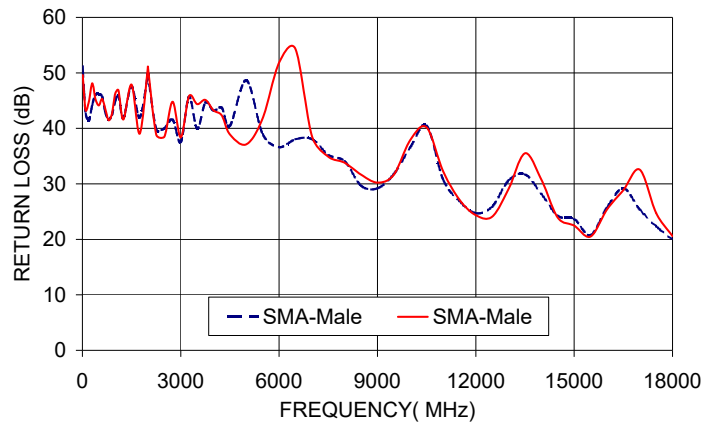
## TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	
		SMA Male	SMA Male
10.0	0.02	51.16	49.61
1000.0	0.19	44.88	46.22
2000.0	0.27	49.74	51.11
2500.0	0.30	39.98	38.51
4000.0	0.39	43.16	43.24
5000.0	0.44	48.65	37.13
6000.0	0.49	36.61	51.84
7000.0	0.53	38.07	38.60
8000.0	0.58	34.05	33.81
9000.0	0.62	29.19	30.23
10000.0	0.65	36.55	37.88
12000.0	0.75	24.71	24.35
13000.0	0.79	30.60	29.09
15000.0	0.94	23.65	22.49
18000.0	0.99	19.99	20.57

086-10SM+ INSERTION LOSS



086-10SM+ RETURN LOSS





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# Coaxial Cable

086-10SM+

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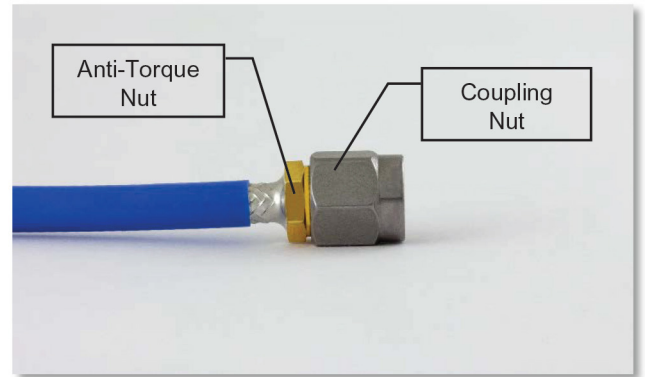
50Ω 10 inch DC to 18 GHz SMA Male

## PROPER CABLE CONNECTION USING ANTI-TORQUE NUT

Mini-Circuits 086-series HandFlex™ interconnect cables are constructed with an anti-torque nut adjacent to the connector coupling nut. When used properly, this feature prevents possible damage to the cable due to torquing and twisting when tightening the cable connector.

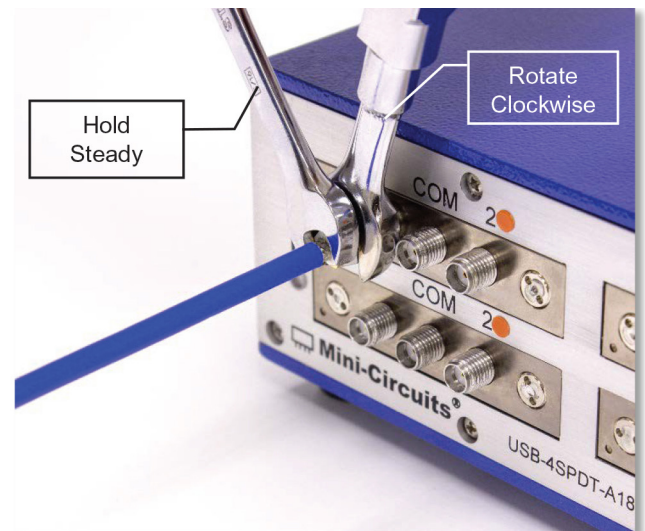
### TO PROPERLY TIGHTEN THE CABLE CONNECTOR:

1) The cable connector includes a coupling nut which rotates to fasten the connector, and an anti-torque nut, which is fixed to prevent the cable from twisting during connection.



2) To properly tighten the cable, use a standard 1/4-inch open end wrench to brace the anti-torque nut.

3) Using a 5/16-inch open end wrench, rotate the coupling nut clockwise to tighten the cable connector.



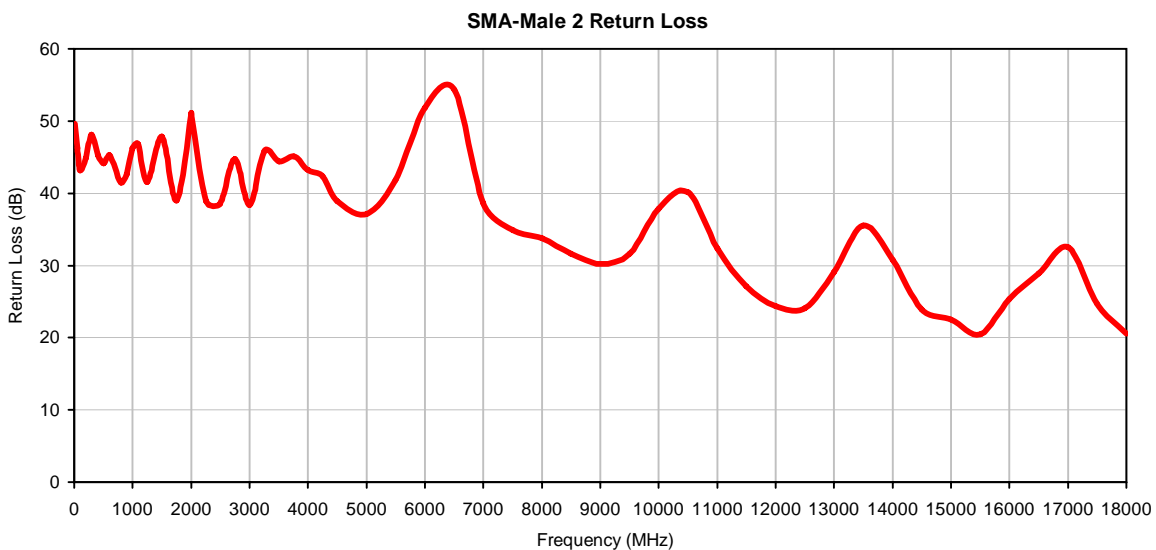
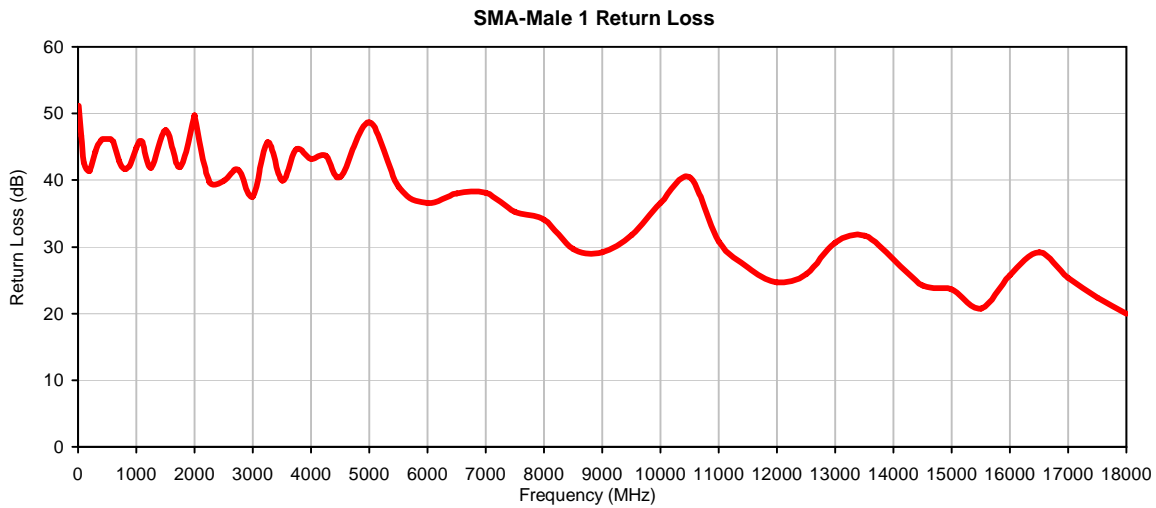
\*NOTE: Mini-Circuits recommends using a 5/16-inch open end wrench calibrated to 8 inch-pounds maximum torque to prevent damage due to over-torquing the connector.

Mini-Circuits

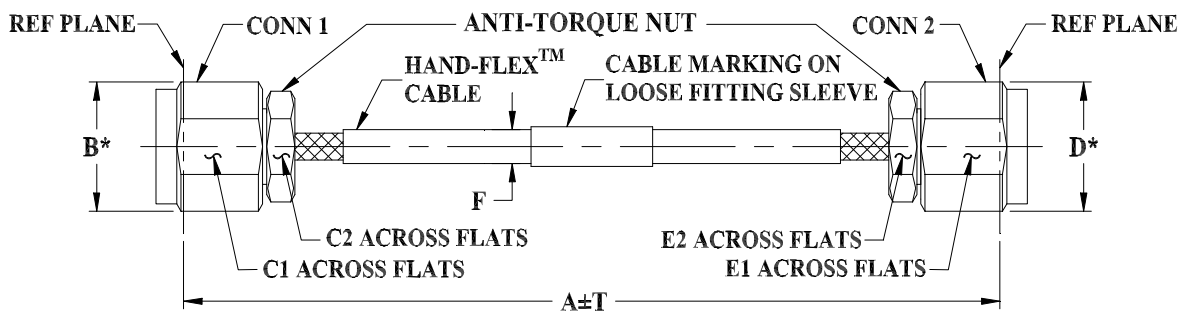
## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	SMA-MALE 1 RETURN LOSS (dB)	SMA-MALE 2 RETURN LOSS (dB)
10.0	0.02	51.16	49.61
50.0	0.04	46.70	46.23
100.0	0.05	42.58	43.20
200.0	0.08	41.42	44.88
300.0	0.10	44.22	48.12
400.0	0.12	46.00	45.29
500.0	0.13	46.19	44.14
600.0	0.14	45.76	45.30
700.0	0.15	42.89	43.48
800.0	0.17	41.63	41.46
900.0	0.18	42.44	42.61
1000.0	0.19	44.88	46.22
1100.0	0.20	45.84	46.83
1250.0	0.21	41.87	41.59
1500.0	0.23	47.56	47.90
1750.0	0.25	41.96	39.03
2000.0	0.27	49.74	51.11
2001.0	0.27	49.63	50.85
2250.0	0.29	39.77	38.87
2500.0	0.30	39.98	38.51
2750.0	0.32	41.55	44.80
3000.0	0.34	37.52	38.36
3250.0	0.35	45.65	45.80
3500.0	0.36	39.95	44.36
3750.0	0.38	44.62	45.12
4000.0	0.39	43.16	43.24
4250.0	0.40	43.70	42.34
4500.0	0.42	40.48	38.90
5000.0	0.44	48.65	37.13
5500.0	0.47	38.95	41.84
6000.0	0.49	36.61	51.84
6500.0	0.51	38.02	54.30
7000.0	0.53	38.07	38.60
7500.0	0.56	35.20	34.89
8000.0	0.58	34.05	33.81
8500.0	0.60	29.67	31.67
9000.0	0.62	29.19	30.23
9500.0	0.64	31.75	31.66
10000.0	0.65	36.55	37.88
10500.0	0.67	40.46	40.18
11000.0	0.69	30.83	32.34
11500.0	0.72	26.89	27.14
12000.0	0.75	24.71	24.35
12500.0	0.77	25.93	24.10
13000.0	0.79	30.60	29.09
13500.0	0.81	31.71	35.50
14000.0	0.84	28.17	30.77
14500.0	0.91	24.24	23.91
15000.0	0.94	23.65	22.49
15500.0	0.94	20.76	20.50
16000.0	0.90	25.75	25.38
16500.0	0.87	29.18	28.88
17000.0	0.88	25.34	32.55
17500.0	0.93	22.36	24.74
18000.0	0.99	19.99	20.57

## Typical Performance Curves



### Outline Dimensions



\* OVERALL CONNECTOR DIMENSION  
(CONNECTOR SHAPE MAY VARY)

KP1505 SERIES  
SMA MALE (CONN-1)  
SMA MALE (CONN-2)

CASE STYLE #	A		B	C1	C2	D	E1	E2	F		T		WEIGHT GRAMS
	INCH	MM							086U-ASM+	086-ASM+	INCH	MM	
KP1505-2	2.00	50.80	.36 (9.14)	.315 (8.00)	.250 (6.35)	.36 (9.14)	.315 (8.00)	.250 (6.35)	.091 MAX (2.31 MAX)	.123 MAX (3.12 MAX)	.05	1.27	6.11
KP1505-3	3.00	76.20									.05	1.27	6.57
KP1505-4	4.00	101.60									.05	1.27	7.03
KP1505-5	5.00	127.00									.05	1.27	7.49
KP1505-6	6.00	152.40									.05	1.27	7.94
KP1505-7	7.00	177.80									.10	2.54	8.40
KP1505-8	8.00	203.20									.10	2.54	8.86
KP1505-9	9.00	228.60									.10	2.54	9.31
KP1505-9.5	9.50	241.30									.10	2.54	9.54
KP1505-10	10.00	254.00									.10	2.54	9.77
KP1505-11	11.00	279.40									.10	2.54	10.23
KP1505-11.5	11.50	292.10									.10	2.54	10.46
KP1505-12	12.00	304.80									.10	2.54	10.68
KP1505-12.5	12.50	317.50									.15	3.81	10.91
KP1505-13	13.00	330.20									.15	3.81	11.14
KP1505-14	14.00	355.60									.15	3.81	11.60
KP1505-15	15.00	381.00	.15	3.81	12.06								
KP1505-15.5	15.50	393.70	.15	3.81	12.28								
KP1505-16	16.00	406.40	.15	3.81	12.51								

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

Note:

1. 086 Hand-Flex™ Coaxial Cable.
2. "A" Represents Length of Cable.



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Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

CASE STYLE #	A		B	C1	C2	D	E1	E2	F		T		WEIGHT GRAMS
	INCH	MM							086U-ASM+	086-ASM+	INCH	MM	
KP1505-18	18.00	457.20	.36 (9.14)	.315 (8.00)	.250 (6.35)	.36 (9.14)	.315 (8.00)	.250 (6.35)	.091 MAX (2.31 MAX)	.123 MAX (3.12 MAX)	.15	3.81	13.43
KP1505-20	20.00	508.00									.15	3.81	14.34
KP1505-22	22.00	558.80									.15	3.81	15.24
KP1505-24	24.00	609.60									.15	3.81	16.17
KP1505-26	26.00	660.40									.20	5.08	17.08
KP1505-27	27.00	685.80									.20	5.08	17.54
KP1505-30	30.00	762.00									.20	5.08	18.91
KP1505-36	36.00	914.40									.20	5.08	21.65
KP1505-48	48.00	1219.20									.30	7.62	27.14



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 105° C or -55° to 85° C (see datasheet) Ambient Environment	Individual Model Data sheet
Storage Temperature	-55° to 105° C or -55° to 85° C (see data sheet) Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 Cycles	MIL-STD-202F; Method 107G
Multiple Bend Radius	40 mm, 5 times for 141 series cables 30 mm, 5 times for 086 series cables	
Single Bend Radius	8 mm for 141 series cables 6 mm for 086 series cables	