

Data Sheet

Cri/oFlex[®] CF1

Combine RF and vibration isolation in one solution!

Cri/oFlex[®] (CF) i/o channels enable high frequency microwave transmission on a flexible substrate. Our CF1 product line subsequently brings vibration isolation to the next level. Driven by a strong focus on extreme flexibility, our CF1 products are the most flexible high frequency transmission lines on the market. Additionally it is UHV compatible, has low-thermal load, whilst maintaining a small form-factor, making the CF1 the perfect match for any vibration sensitive cryogenic setup. Similar to our other CF products, we offer a selection of conventional connector types, as well as customizations to suit your specific setup upon request.

Features

- Exceptional vibration isolation
- High frequency bandwidth
- UHV compatibility
- Low thermal load
- Customizable connectors
- Small form-factor
- Excellent phase stability

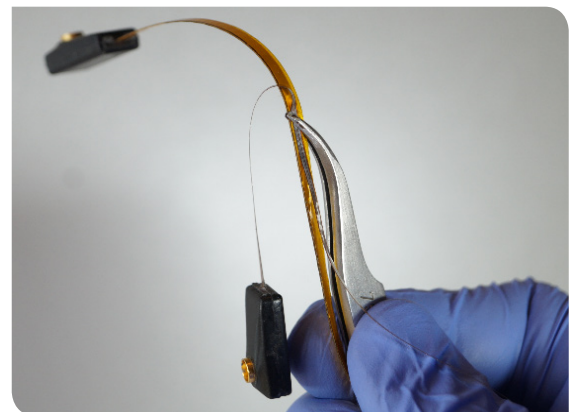
General Properties	
Connector	
Connector Type	SMA-male, SMP-male (customizable)
Connector Material	Goldplated Brass, PEEK
Housing	Stycast 1090, Stycast 2850
Flex	
Transmission Line Type	Stripline
Length	100 to 1000 mm
Width	1 mm
Thickness	0.3 mm
Materials	Polyimide & Silver (Ag)

Thermal Properties	
Operating Temperature	10 ⁻³ K → 400 K
Heat Load @ 4k (ΔT: 4 - 40 K), L = 0.4m	< 6 μW
Expected Heat Load @ 10 mK (ΔT: 10 - 350 mK), L = 0.2m	~ 2 nW
Thermal Cycles from 300 K to 77 K (LN ₂)	> 50

Electrical Properties	
Impedance	50 Ω (Customizable)
Operating Frequency	0 to 26 GHz
Signal Isolation (Crosstalk)	-60 dB, line to line



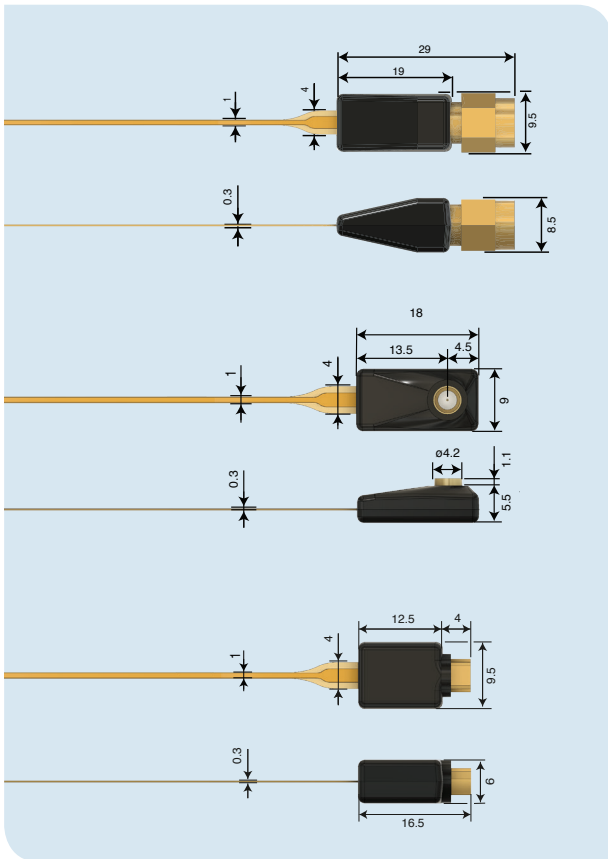
CF1 cable next to a pencil.



CF1 superflex cable (grey) and CF2 cable (orange).

Specifications

Cri/oFlex[®] CF1

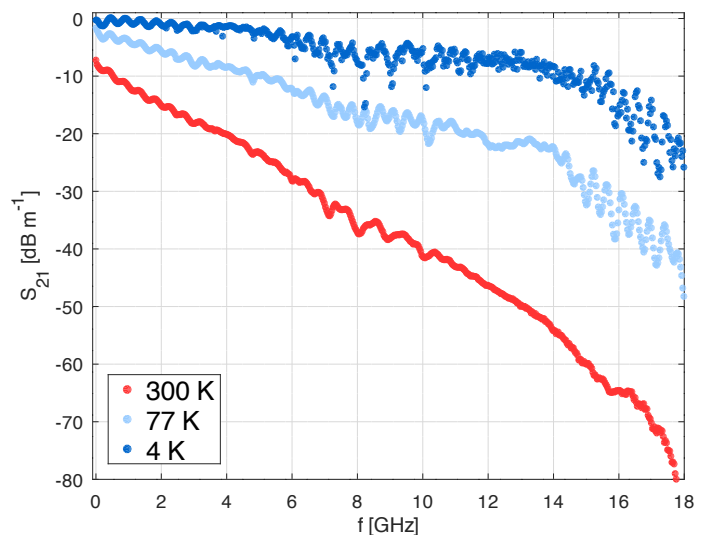


On the right the roll-off (S_{21}) of a typical DC-18 GHz bandwidth flex cable is shown. The return loss ($-S_{11}$) depends on the connector type and frequency but typically varies between 18 and 22 dB.

Connector Type	0-6 GHz	0-12 GHz	0-18 GHz	0-26 GHz
SMP right-angle	✓	✓	✓	✗
SMA straight	✓	✓	✓	✗
SMP straight	✓	✓	✓	✓

In the table above the readily available connector options and their respective frequency bandwidth options are shown, the icons indicate their current availability; ✓ readily available ✗ under development.

The flex cables can be configured with different connector types at each end, for example an SMA-SMP hybrid. Other connector types or even custom PCB landing designs can be developed in-house to fit your setup. Bandwidth ranges may vary depending on the design constraints.



Superflex

Cri/oFlex[®] CF1

Pushing the boundaries!

Our latest development efforts aim to reduce mechanical coupling even further. By pushing our microwave designs to extremely small geometries, we are looking to increase flexibility even more, whilst maintaining high frequency bandwidths. As an added benefit, this will in turn decrease thermal load. On the right, you can see a short summary table of the specifications of CF1 Superflex. We estimate that our first samples will be ready for shipment in Q2 2020.

Cri/oFlex Hyperflex Comparison		
Product	CF1 Superflex	CF1 (Standard)
Width	0.8 mm	1mm
Thickness	0.15 mm	0.30 mm
Heat Load @ 4k (ΔT : 4 - 40 K), $L = 0.4m$	< 5 μW	< 6 μW
Frequency Bandwidth	Up to 12 GHz	Up to 26 GHz

For more information please consult our website: www.delft-circuits.com