



Delft Circuits

Hardware for quantum engineers



Data sheet

Cri/oFlex[®] 3

Tackle your cryogenic cabling challenge!

Cri/oFlex[®] 3 (CF3) is our multi-channel solution specifically designed to be end to end i/o from room temperature down to millikelvin. We utilize a single flexible substrate that can be installed through the vacuum barrier, reaching down to your sample stage while still properly thermalizing and filtering your microwave signals. CF3 is specifically engineered for cryogenic environments where small form factor, low thermal load and microwave signal performance are critical. Cri/oFlex[®] 3 comes as a multi-channel RF cable that is customized to have multiple SMA or SMP connectors on each end. By combining i/o channels in a single flex, it allows for easier and robust high density wiring schemes. Cri/oFlex[®] 3 solves your cryogenic cabling scaling needs!

Features

- High-density microwave channels
- Monolithic design from RT to milliKelvin
- Resilient against thermal cycling
- Optional filtering & signal conditioning
- Integrated vacuum feedthrough
- Low thermal load

General Properties	
Connector	
Connector Type	Right-angle SMA (f) & SMP(m)
Connector Material	Goldplated Brass, PEEK
Housing	Stycast 2850
Flex	
Length	200 to 1000 mm
Channel-to-channel pitch	2 mm
Thickness	0.3 mm
Materials	Polyimide & Silver (Ag)
Transmission-line type	Stripline
Vacuum Feedthrough	
Leak-rate	<10 ⁻⁹ mbar L s ⁻¹
Compatible Vacuum Connections	KF-40, Entropy System plates

Thermal Properties	
Operating Temperature	10 ⁻³ K → 400 K
Heat Load / channel @ΔT: 4 - 40 K, L = 0.4 m	< 125* μW
Expected Heat Load / channel @ ΔT: 10 - 350 mK, L = 0.2 m	~ 20* nW

*under further investigation

Mechanical Properties	
Min. Bending Radius	5 mm
Required Length for Longitudinal Rotation	2.5 cm / rotation
Max. Tensile Force	50 N

Electrical Properties	
Impedance	50 Ω (Customizable on Request)
Operating Frequency	DC to 10 GHz
Crosstalk (channel-to-channel), L = 200 mm	-40 dB
Phase matching (channel-to-channel)	< 15 ps

	Frequency	300 K	77K	4 K
Attenuation [dB/m]	2 GHz	12	5	2
	6 GHz	22	11	5
	12 GHz	39	16	9
	18 GHz	55	24	16

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