

AFBR-TUS500Z

Transparent Jacket Plastic Optical Fiber



Data Sheet



Cable description

The AFBR-TUS500Z plastic fiber optic cable is constructed of a single step-index fiber sheathed in a transparent polyethylene jacket. The cable is supplied in spools of 500m.

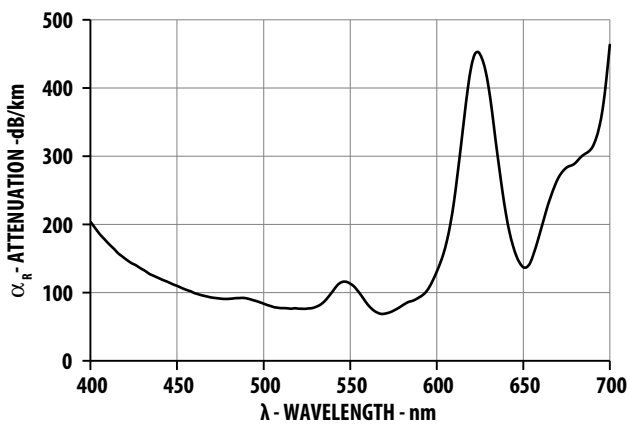


Figure 1. Typical POF attenuation vs. wavelength

Features

- Compatible with Avago Versatile Link Family of connectors and fiber optic components
- 1.0/2.2 mm diameter Plastic Optical Fiber (POF) with 0.21dB/m typical attenuation (-40°C to 85°C)
- PMMA core
- Fluorinated polymer cladding
- Transparent polyethylene jacket
- Halogen free

Applications

- Arc flash event detection
- Light detection

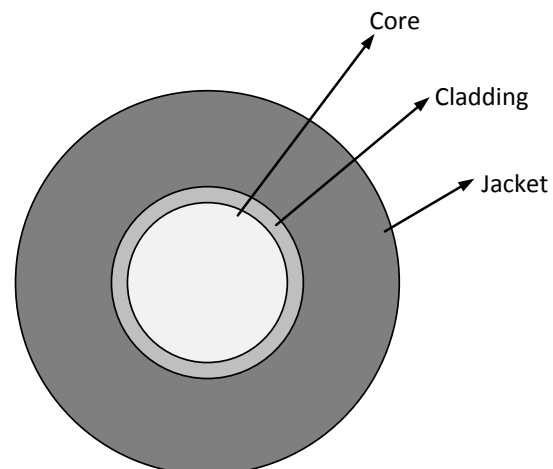


Figure 2. AFBR-TUS500Z structure

Plastic Optical Fiber Specifications: AFBR-TUS500Z

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Recommended storage Temperature	T _S	-55	+85	°C	
Recommended Operating Temperature	T _O	-40	+85	°C	
Recommended Installation Temperature	T _i	0	+70	°C	1
Short Term Tensile Force	F _T		50	N	2, 3
Long Term Tensile Load	F _T		1	N	2, 4
Bend Radius	r	30		mm	5, 6, 7
Humidity range	H		85	%	

Mechanical Characteristics, T_A = -40°C to +85°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Numerical Aperture	NA		0.48			8
Diameter Core and Cladding	DC	0.94	1.00	1.06	mm	
Diameter Jacket	DJ	2.13	2.20	2.27	mm	
Refractive Index	n		1.492			
Core Cladding			1.412			
Mass per Unit Length			3.7		g/m	9

Optical Characteristics, T_A = -40°C to +85°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Cable Attenuation Source: 650nm, LED, NA=0.5 (Source: AFBR-1529Z)	α ₀	0.16	0.21	0.26	dB/m	
Capturing constant	C		3E-9		m	10
Propagation delay constant	l/v		5		ns/m	11

Notes:

- Installation temperature is the range over which the cable can be bent and pulled without damage. Below 0°C the cable becomes brittle and should not be subjected to mechanical stress.
- Fail criteria for tensile force test: elongation higher than 5% of original length.
- Short term: 30mins.
- Long term: 24hours
- Bend angle is 90°. Bend radius is the radius of the mandrel around which the cable is bent.
- Fail criteria for bend radius test: increase in attenuation higher than 0.5dB.
- Test duration: 24hours.
- Fiber length longer than 2 meters
- Without connectors
- The optical power P at the photo detector can be calculated as $P = C * L * E / K$ with;
 - P: Optical power on detector [W]
 - C: Capturing constant [m]
 - L: Illuminated length of fiber [m]
 - E: Optical power density in illuminated area [W/m²], halogen lamp used as light source
 - K: Correction factor for transmission losses [1], calculated as: $K=10^{(A*L2/10)}$
 - A: Transmission loss [dB/m]
 - L2: Length of fiber between illuminated area and photo detector [m], i.e. wiring length.
 - * Capturing constant determined with a fiber length of 12m.
- Propagation delay constant is the reciprocal of the group velocity for propagation delay of optical power. Group velocity is $v=c/n$, where c is the velocity of light in free space (3x10⁸ m/s) and n is the effective core index of refraction.

For product information and a complete list of distributors, please go to our web site: www.avagotech.com

Avago, Avago Technologies, and the A logo are trademarks of Avago Technologies in the United States and other countries.
Data subject to change. Copyright © 2005-2015 Avago Technologies. All rights reserved.
AV02-4965EN - July 6, 2015

