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.

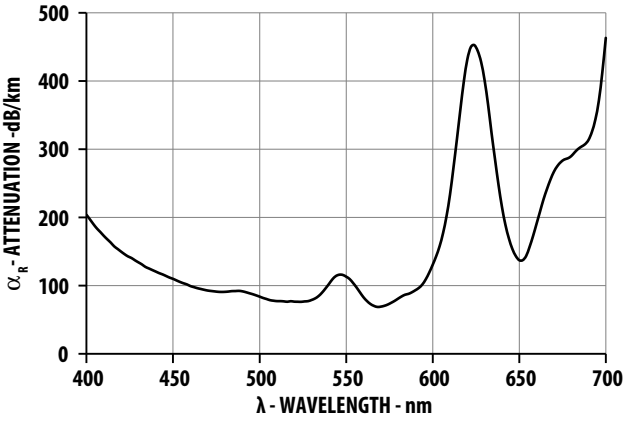

Figure 1. Typical POF attenuation vs. wavelength

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

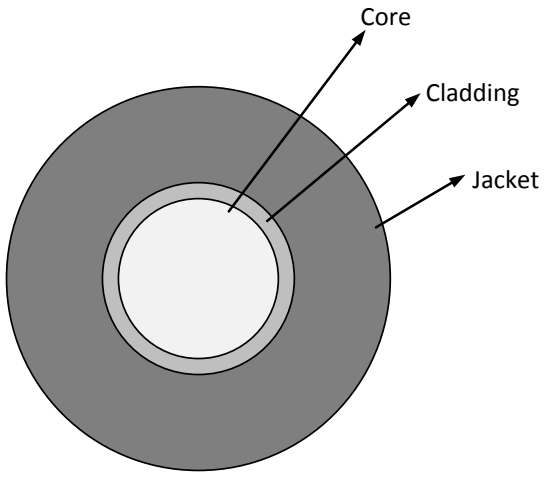

Figure 2. AFBR-TUS500Z structure

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 Core Cladding	n		1.492 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:

1. 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.
2. Fail criteria for tensile force test: elongation higher than 5% of original length.
3. Short term: 30mins.
4. Long term: 24hours
5. Bend angle is 90°. Bend radius is the radius of the mandrel around which the cable is bent.
6. Fail criteria for bend radius test: increase in attenuation higher than 0.5dB.
7. Test duration: 24hours.
8. Fiber length longer than 2 meters
9. Without connectors
10. 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/m^2], 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.
11. 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 ($3x10^8$ m/s) and n is the effective core index of refraction.

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