

PATCH CORDS - TECHNICAL SPECS.

1. Overview

This specification applies to 3.0mm Single Mode simplex & duplex patch cords. SC, LC and FC connectors are optional upon customer request.



SC/APC



SC/UPC



LC/APC



LC/UPC



FC/APC



FC/UPC

2. Fiber Optic Patch Cord

a. Connector Types

LC, SC, FC, ST, MU, E2000, DIN

b. Ferrule Polishing Types

UPC, APC

c. Cable Length Tolerance

| Cable Length | Tolerance |
|----------------------------------|----------------|
| $L \leq 0.5\text{m}$ | +100mm/-0 |
| $0.5\text{m} < L \leq 5\text{m}$ | +150mm/-0 |
| $5\text{m} < L \leq 20\text{m}$ | +200mm/-0 |
| $L \geq 20\text{m}$ | +/- 1% of L mm |

d. Optical Cable Specifications

3.0mm optical cable structure and specification are shown in Figure 1 and Table 2.

Figure 1. 3.0mm cable with PVC jacket

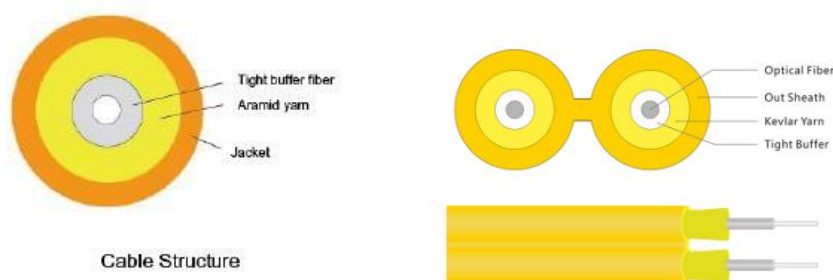


Table 2. Cable Specification

| Item | Parameter | Description |
|----------|-------------------|------------------------------------|
| Surface | Outer Diameter | 3 +/- 0.1mm |
| | Cable Color | Yellow |
| Material | Fibers | 0.9mm tight buffered fiber, PVC |
| | Strengthen Member | Kevlar |
| | Outer Jacket | PVC flame retardant and low smoke. |
| Fibers | Type | G657A1 |
| | Cores Count | 1 |
| | Color | Complied with TIA/EIA-598-B |

| | | |
|------------------------|---------------------|----------------------|
| Optical Character | Attenuation | ≤0.35 dB/km(1310nm) |
| | | ≤0.22 dB/km(1550nm) |
| Mechanical Character | Tensile Resistance | Long Term 60N |
| | | Short Term 100N |
| | Pressure Resistance | Long Term 100N/10cm |
| | | Short Term 500N/10cm |
| | Mini-bending Radius | Dynamic≥50mm |
| | | Static≥30mm |
| Operating Temperature | — | -20°C~+60°C |
| Weight | N.W. | 4.5kg/km |
| Complied with Standard | | IEC 60811, IEC 60794 |

e. Optical Specifications

Optical specifications are shown in Table 3.

Table 3. Optical Specifications

| Item | Unit | Specifications | Remarks |
|----------------|------|----------------|---------|
| Insertion Loss | dB | ≤ 0.3 | |
| Return Loss | dB | UPC | ≥ 50 |
| | | APC | ≥ 60 |

f. Ferrule End Face Geometry Parameters

Ferrule end face geometry parameters are shown in Figure 2 and Table 4.

Figure 2. Ferrule End Face Geometry

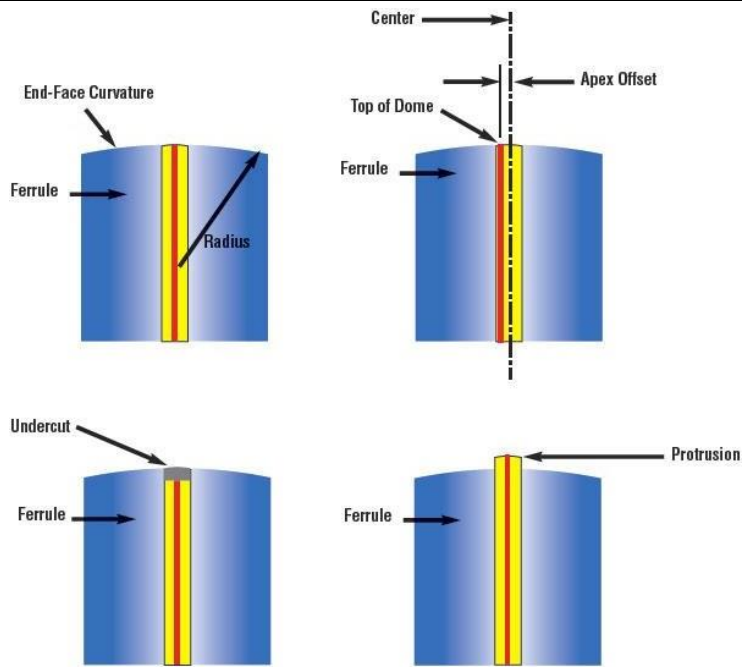
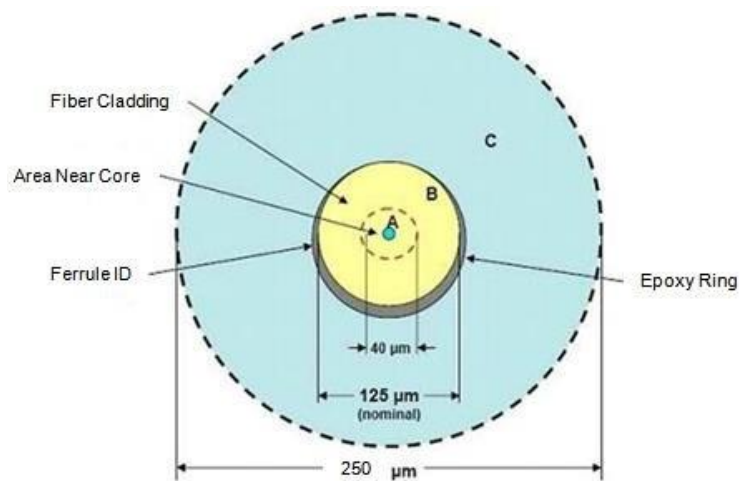


Table 4. Ferrule End Face Geometry Parameters

| Parameters | UPC | APC |
|------------------------------|----------|------------------|
| Radius of Curvature | 10~25mm | 5~12mm |
| Fiber Undercut or Protrusion | ≤ 100 nm | ≤ 100 nm |
| Apex Offset | ≤ 50 μm | ≤ 50 μm |
| Polishing Angle | | 8 +/- 0.3 degree |

g. Ferrule End Face Inspection Criteria

Figure 3. Ferrule End Face Inspection Criteria



| Defects | Zone A (Area Near Core) ($\leq 40\mu\text{m}$) | Zone B (Cladding) ($40 \sim 125\mu\text{m}$) | Zone C (Contact) ($125 \sim 250\mu\text{m}$) |
|---|--|---|---|
| Scratch(width) | None | light scratch (white): None | >3 μm : None |
| | | dark scratch (black): None | |
| Pits & Irremovable Material (Diameter) | None | $\geq 2\mu\text{m}$: None <2 μm : 2pcs allowed | $\geq 10\mu\text{m}$: None <10 μm : total<20 μm |
| Chipping(Diameter) | None | None | None |
| Crack/Dust/Contamination | None | None | None |
| Epoxy Ring | Width<2 μm , total length $\leq 1/2$ fiber diameter | | |



3. Requirements

a. Operating & Storage Temperature

-40°C ~ 85°C

b. Optical Performance Measurement

Insertion loss and return loss listed in Table 3 are measured at 1310/1550nm.

c. Connector Reliability Test (GR326)

The environmental and mechanical test conditions are given in Table 5.

Table 5. Environmental and mechanical test conditions, Unit: dB

| Environmental and Mechanical Tests | Test Conditions | Test Interval | IL Change (dB) | RL Change (dB) |
|--|--|-------------------|----------------|----------------|
| Thermal Aging | 85°C, Duration: 168 hrs | Before, After | ≤0.20 | ≤5 |
| Thermal Cycling | -40°C to 85°C, 68Cycles, Duration: 168 hrs | Before, After | ≤0.20 | ≤5 |
| Humidity Aging | 85°C, 85%RH, Duration: 168 hrs | Before, After | ≤0.20 | ≤5 |
| Humidity/Condensation Cycling | -40°C~+85°C, 90~100%RH, Duration: 68cycles 168hrs | Before, After | ≤0.20 | ≤5 |
| Dry-out Step | 75°C; 1day(24hr) | Before, After | ≤0.20 | ≤5 |
| Post-Condensation Thermal Cycling | -40°C + 85°C, 7 days(168hr) | Before, After | ≤0.20 | ≤5 |
| Vibration Test | Frequency: 10~55Hz, Amplitude: 1.5mm (peak to peak), Duration 2hrs | Before, After | ≤0.20 | ≤5 |
| Flex Test | Load: 0.9kgf, Flex Angles: 0~90°, 0~-90°, 0°, Number of Flex: 100 times | Before, After | ≤0.20 | ≤5 |
| Twist Test | Loading 1.35kg (φ3mm cable), Distance between loading and plug: 22 ~28cm, Twist angle: ±90°, Times of Twist: 9 times | Before, After | ≤0.20 | ≤5 |
| Proof Test | Reference GR-326-Core 4.4.3.4 | Before, After | ≤0.20 | ≤5 |
| Transmission with Applied Tensile Load | Reference GR-326-Core 4.4.3.5 | During Test, Load | ≤0.20 | ≤5 |
| Impact Test | Length from clamp to plug 1.5meter, Number of impact: 8 times | Before, After | ≤0.20 | ≤5 |

4. Packing and Labeling

a. Packing

One patch cord should be packed in one clear plastic bag. Test data should be attached with each bag. Appropriate cushions should be used in the cardboard box after multiple plastic bags are packed in the cardboard box. The patch cords should be protected well by the package during transportation.



b. Labeling

The content below shall be included in the label attached on the shipping carton. Other shipping mark is also available if requested by customer.

- (1) Product Name
- (2) Order No.
- (3) Quantity
- (4) Gross Weight
- (5) Lot No.
- (6) Country of Origin