

850nm, Fiber Optic LED Transmitter



OPF693-1 OPF693-2

Technical Data

Features

- Low Cost 850 nm LED technology
- High thermal stability
- Up to 155 Mbaud
- Recommended for multimode fiber applications
- High optical coupling to multimode fiber
- Low profile metal ST* style receptacle
- Industrial temperature range



Description

The OPF693 series fiber optic transmitters are high performance 850nm LED packaged for data communication links. Two power ranges are offered which allows the designer to select a device best suited for the application.

This product's combination of features including high speed and efficient coupled power makes it an ideal transmitter for integration into all types of data communications equipment.

Applications include:

- ◆ Industrial Ethernet
- ◆ Copper-to-fiber media conversion
- ◆ Intra-system links

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| | |
|---|-----------------------|
| Storage Temperature | -55° C to +100° C |
| Operating Temperature | -40° C to +85° C |
| Soldering Lead Temperature ⁽¹⁾ | 260° C for 10 Seconds |
| Continuous Forward Current ⁽²⁾ | 100 mA |
| Maximum Reverse Voltage | 1.0 V |

| Typical Coupled Power $I_F = 100\text{mA}, 25^\circ\text{C}$ | | | | |
|---|--------------|------|----------|----------|
| Fiber Size | Type | N.A. | OPF693-1 | OPF693-2 |
| 50/125 μm | Graded Index | 0.20 | -19dBm | -16dBm |
| 62.5/125 μm | Graded Index | 0.28 | -15dBm | -12dBm |
| 100/140 μm | Graded Index | 0.29 | -11dBm | -8dBm |
| 200/300 μm | Step Index | 0.41 | -5dBm | -2dBm |

* - ST is a registered trademark of Fitel USA Corp.

OPF693 Series Technical Data



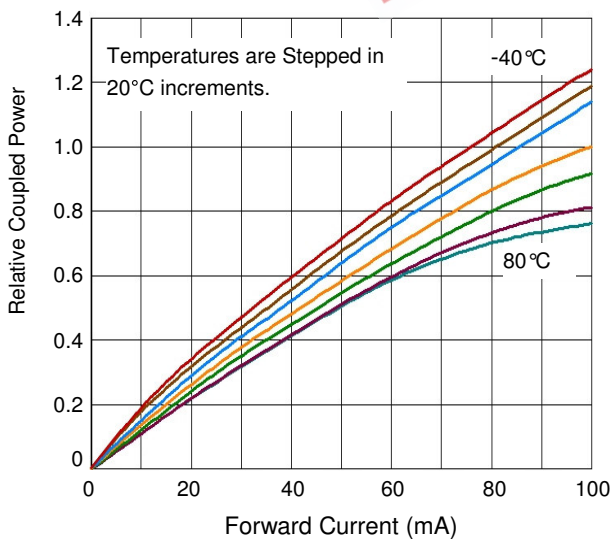
Electrical/Optical Characteristics (at 25 °C unless otherwise specified)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITION |
|---------------------------------|---------------------|-----|-----|-----|-------|--|
| P _{T50} | Total Coupled Power | -19 | | -14 | dBm | I _F = 100 mA |
| | 50/125 μm Fiber | -16 | | -11 | dBm | I _F = 100 mA |
| V _F | Forward Voltage | 1.5 | | 2.1 | V | I _F = 100 mA |
| V _R | Reverse Voltage | 1.8 | | | V | I _R = 100 μA |
| λ | Wavelength | 830 | 850 | 870 | nm | I _F = 50 mA |
| Δλ | Optical Bandwidth | | 35 | | nm | I _F = 50 mA |
| t _r , t _f | Rise and Fall Time | | 4.5 | 6.5 | ns | I _F = 100 mA; 10% to 90% ⁽³⁾ |

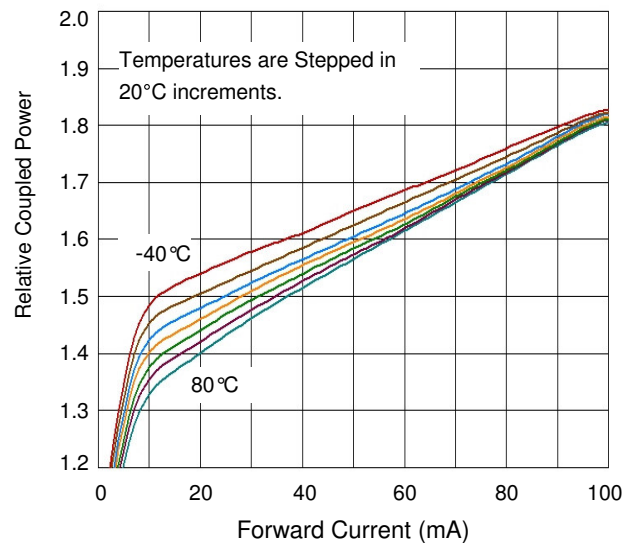
NOTES:

1. RMA flux is recommended. Duration can be extended to 10 seconds when flow soldering.
2. De-rate linearly at 1.0mA /°C above 25°C .
3. No Pre-bias.
4. All Optek fiber optic LED products are subjected to 100% burn-in as part of its quality control process. The burn-in conditions are 96 hours at 100mA drive current and 25°C ambient temperature.

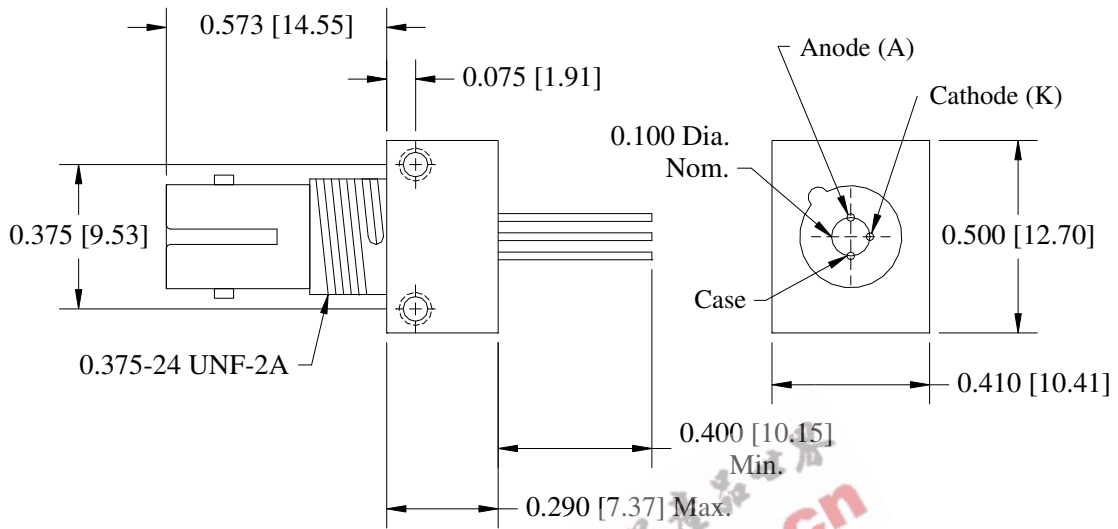
Relative Coupled Power vs. Forward Current



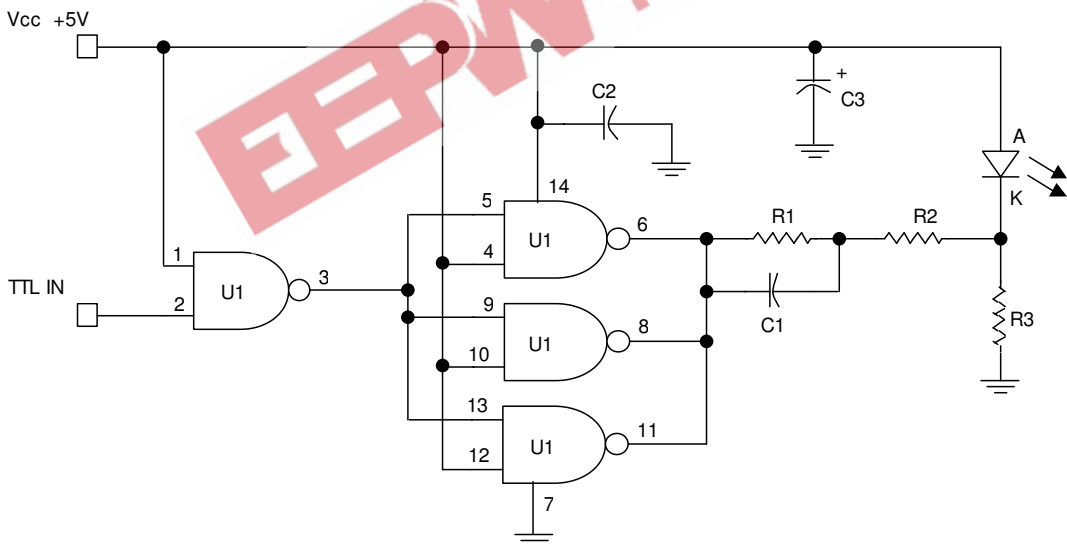
Typical Forward Voltage vs. Forward Current



OPF693 Series Technical Data



Application Circuit: 155Mbps TTL Drive Circuit



| Part | Description | Value/ Type | Symbol | Tol. |
|------|---------------|-------------|--------|------|
| C1 | Capacitor | 75 | pF | 20% |
| C2 | Capacitor | 100 | pF | 20% |
| C3 | Capacitor | 10 | μF | 20% |
| R1 | Resistor | 33 | Ω | 5% |
| R2 | Resistor | 33 | Ω | 5% |
| R3 | Resistor | 270 | Ω | 5% |
| U1 | IC, Quad NAND | 74ACTQ00 | - | - |

Refer to Application Bulletin 220 for complete details.