

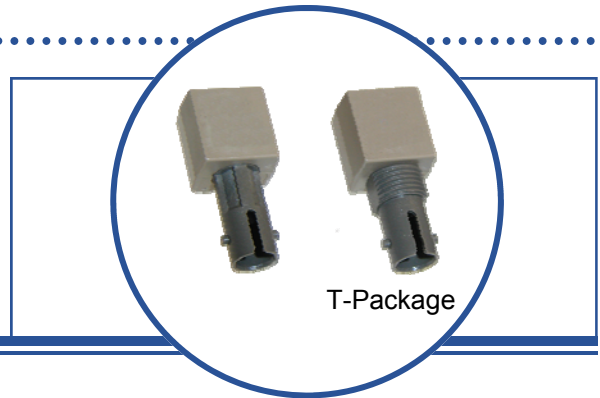
High Speed Fiber Optic Transmitter

OPF1412, OPF1412T, OPF1414, OPF1414T



Features:

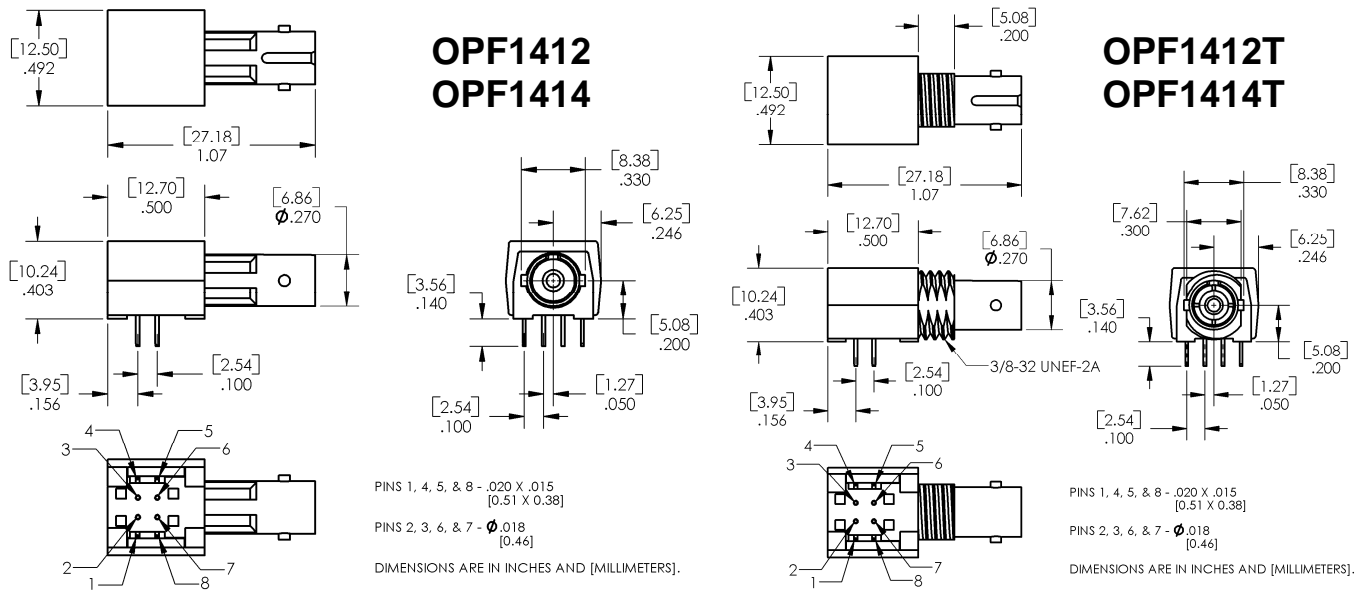
- Low cost
- High speed
- No mounting hardware required
- Wide temperature range
- 100% LED burn-in (96 hours)
- SMA or ST style ports
- Wave solderable



Description:

The OPF1412 and OPF1414 series fiber optic transmitters contain a high speed 840 nm GaAlAs LED. This LED in conjunction with the package lensing is designed to efficiently couple light into multimode optical fibers ranging in size from 50/125 μm up to 200/230 μm . The high coupling efficiency of the LED and lensing allows the devices to be used at low current drive levels thus decreasing the power consumption and increasing system reliability. The consistency of coupling varies by less than 5 dB from part to part which reduces the dynamic range requirements of the receiver. The high power (-16.0 dBm into 50/125 μm) OPF1414 was designed for small fiber applications or where there are large fixed losses such as in systems that contain star couplers or in line connectors. The OPF1412 (-12.0 dBm optical power) is ideal for 100/140 μm fiber applications.

For custom electrical and optical requirements contact your local representative or OPTEK for more information.



| Pin # | Description | Pin # | Description |
|-------|---------------|-------|---------------|
| 1 | No Connection | 8 | No Connection |
| 2 | Anode | 7 | Anode |
| 3 | Cathode | 6 | Anode |
| 4 | No Connection | 5 | No Connection |

| Part Number | Typ. dBm into 50/125 μm @ 60mA | Typ. dBm into 100/140 μm @ 60mA |
|-------------|---|--|
| OPF1412 | -16.0 | -12.0 |
| OPF1412T | -16.0 | -12.0 |
| OPF1414 | -12.0 | -6.5 |
| OPF1414T | -12.0 | -6.5 |



RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

High Speed Fiber Optic Transmitter

OPF1412, OPF1412T, OPF1414, OPF1414T



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

| | |
|--|--------------------------|
| Storage Temperature Range | -55°C to +85°C |
| Operating Temperature Range | -40°C to +85°C |
| Forward Input Current | Peak 200 mA DC 100 mA |
| Reverse Input Voltage | 1.8 V |
| Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) ⁽¹⁾ | 260° C |

Notes:

(1) All parameters tested using pulse technique.

Electrical Characteristics ($T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ unless otherwise noted) Typ. values are at 25°C .

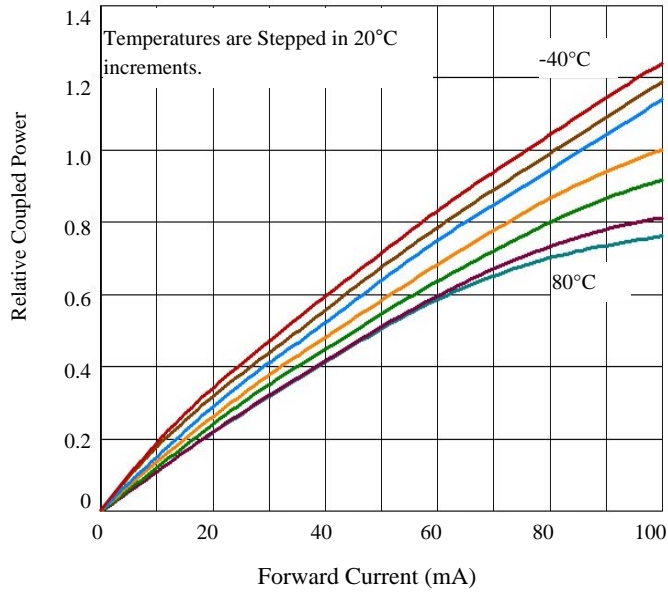
| Symbol | Parameter | Min | Typ | Max | Units | Test Conditions |
|-------------|---|------|------------------|------|-------|---|
| V_F | Forward Voltage | 1.48 | 1.70 1.84 | 2.09 | V | $I_F = 60\text{ mA}$ $I_F = 100\text{ mA}$ |
| V_F/T | Forward Voltage Temperature Coefficient | | -0.20 | | mV/°C | $I_F = 60\text{ mA}$ |
| V_{BR} | Reverse Input Voltage | 1.8 | 3.8 | | V | $I_R = 100\ \mu\text{A}$ |
| λ_p | Peak Emission Wavelength | 820 | 840 | 865 | nm | $I_F = 60\text{ mA}$ |
| C_T | Diode Capacitance | | 55 | | pF | $V = 0, f = 1\text{ MHz}$ |
| P_T/T | Optical Power Temperature Coefficient | | -0.008 -0.020 | | dB/°C | $I_F = 60\text{ mA}$ $I_F = 100\text{ mA}$ |
| t_r, t_f | Rise Time, Fall Time (10% to 90%) | | 4.0 | 6.5 | ns | $I_F = 60\text{ mA}$, no pre-bias |

Peak Output Optical Power

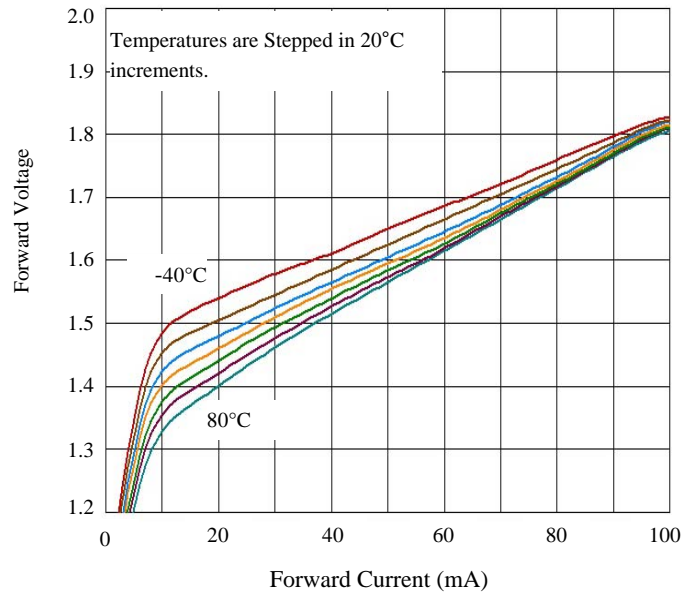
| Symbol | Parameter | 1412 | | | 1414 | | | Unit | Test Condition |
|------------|--|-------|-------|-------|-------|-------|-------|------|---|
| | | Min | Typ | Max | Min | Typ | Max | | |
| P_{T100} | 100/140 μm Fiber Cable N.A. = 0.30 | -15.0 | -12.0 | -10.0 | -9.5 | -6.5 | -4.5 | dBm | $I_F = 60\text{ mA}, T_A = 25^\circ\text{C}$ $I_F = 100\text{ mA}, T_A = 25^\circ\text{C}$ |
| | | -16.0 | | -9.0 | -10.5 | | -3.5 | | |
| | | -13.5 | -10.0 | -7.6 | -8.0 | -4.5 | -2.1 | | |
| | | -15.1 | | -7.0 | -9.6 | | -1.5 | | |
| P_{T62} | 62.5/125 μm Fiber Cable N.A. = 0.275 | -19.0 | -16.0 | -14.0 | -15.0 | -12.0 | -10.0 | dBm | $I_F = 60\text{ mA}, T_A = 25^\circ\text{C}$ $I_F = 100\text{ mA}, T_A = 25^\circ\text{C}$ |
| | | -20.0 | | -13.0 | -16.0 | | -9.0 | | |
| | | -17.5 | -14.0 | -11.6 | -13.5 | -10.0 | -7.6 | | |
| | | -19.1 | | -11.0 | -15.1 | | -7.0 | | |
| P_{T50} | 50/125 μm Fiber Cable N.A. = 0.20 | -21.8 | -18.8 | -16.8 | -18.8 | -15.8 | -13.8 | dBm | $I_F = 60\text{ mA}, T_A = 25^\circ\text{C}$ $I_F = 100\text{ mA}, T_A = 25^\circ\text{C}$ |
| | | -22.8 | | -15.8 | -19.8 | | -12.8 | | |
| | | -20.3 | -16.8 | -14.4 | -17.3 | -13.8 | -11.4 | | |
| | | -21.9 | | -13.8 | -18.9 | | -10.8 | | |

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Relative Coupled Power vs Forward Current



Typical Forward Voltage vs Forward Current



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