

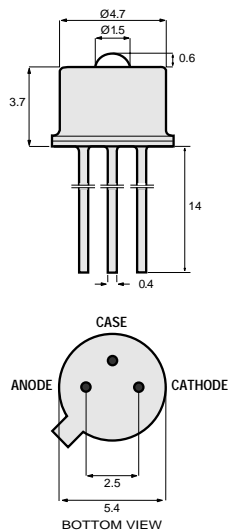
PRODUCT INFORMATION

1320nm

1A353
High-Performance Duplex

Half-Duplex Communication

This single-chip device operates as both an Emitter and Detector, and transmits data over a single fiber in half-duplex mode — thus reducing both fiber and component costs when compared with traditional approaches.



All dimensions in mm

The diode chip is isolated from the case.

TO-46 Package With Lens

Optical and Electrical Characteristics (25° C Case Temperature)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION | | |
|----------------|--|--------------------|------|------|------|--|---|-------------------------------------|
| EMITTING MODE | Fiber-Coupled Power (Fig. 1, 2, & 3) (Table 1) | P_{fiber} | 50 | 55 | | $I_F=80 \text{ mA}$ (Note 1) | Fiber: 62.5/125 μm Graded Index NA=0.275 | |
| | Rise and Fall Time (10-90%) | t_r, t_f | | 4 | | $I_F=80 \text{ mA}$ (no bias) | | |
| | Bandwidth (3 dB $_{el}$) | f_c | | 50 | | $I_F=80 \text{ mA}$ | | |
| | Peak Wavelength | λ_p | 1280 | 1320 | 1350 | nm | | $I_F=80 \text{ mA}$ |
| | Spectral Width (FWHM) | $\Delta\lambda$ | | 140 | | nm | | $I_F=80 \text{ mA}$ |
| | Forward Voltage (Fig. 5) | V_F | | 1.7 | 1.9 | V | | $I_F=80 \text{ mA}$ |
| RECEIVING MODE | Responsivity (Fig. 1, 2) (Table 2) | R | 0.25 | 0.3 | | $V_R=1 \text{ V}$ $\lambda=1320 \text{ nm}$ | Fiber: 62.5/125 μm Graded Index NA=0.275 | |
| | Rise and Fall Time (10-90%) | t_r, t_f | | 4 | | $V_R=1 \text{ V}$ $R_L=50\Omega$ (no bias) | | |
| | Bandwidth | f_c | | 50 | | MHz | | $V_R=1 \text{ V}$ $R_L=50\Omega$ |
| | Capacitance | C | | 300 | | pF | | $V_R=1 \text{ V}, f=1 \text{ MHz}$ |
| | Dark Current | I_d | | 20 | 100 | nA | | $V_R=1 \text{ V}$ |

Note 1: Measured at the exit of 100 meters of fiber.

Absolute Maximum Ratings

| PARAMETER | SYMBOL | LIMIT |
|---|------------------|---------------|
| Storage Temperature | T_{stg} | -55 to +125°C |
| Operating Temperature (derating: Fig. 4) | T_{op} | -55 to +125°C |
| Electrical Power Dissipation (derating: Fig. 4) | P_{tot} | 160 mW |
| Continuous Forward Current ($f \leq 10 \text{ kHz}$) | I_F | 110 mA |
| Peak Forward Current (duty cycle $\leq 50\%$, $f \geq 1 \text{ MHz}$) | I_{FRM} | 150 mA |
| Reverse Voltage | V_R | 2.0 V |
| Soldering Temperature (2mm from the case for 10 sec) | T_{sld} | 260°C |

Thermal Characteristics

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|-------------------|------|------|------|-------|
| Thermal Resistance - Infinite Heat Sink | R_{thjc} | | | 200 | °C/W |
| Thermal Resistance - No Heat Sink | R_{thja} | | | 500 | °C/W |
| Temperature Coefficient - Optical Power | dP/dT_j | | -0.8 | | %/°C |
| Temperature Coefficient - Wavelength | $d\lambda/dT_j$ | | 0.55 | | nm/°C |
| Temperature Coefficient - Responsivity | dR/dT_j | | 0.2 | | %/°C |
| Temperature Coefficient - Dark Current | dI_d/dT_j | | 5 | | %/°C |

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Typical Fiber-Coupled Power

| Core Diameter/Cladding Diameter Numerical Aperture | |
|---|---------------------------------|
| 50/125 μm 0.20 | 62.5/125 μm 0.275 |
| 15 μW | 55 μW |

Table 1

Typical Responsivity

| Core Diameter/Cladding Diameter Numerical Aperture | |
|---|---------------------------------|
| 50/125 μm 0.20 | 62.5/125 μm 0.275 |
| 0.3 A/W | 0.3 A/W |

Table 2

