

# DFA Series (DFA-XXXX<sup>1</sup>)

## Features

- Built-in Low Noise Amplifier
- Large Active Area
- Groundable Case
- Built-in Interference Filter
- Shielded Amplifier
- Wide Spectral Range

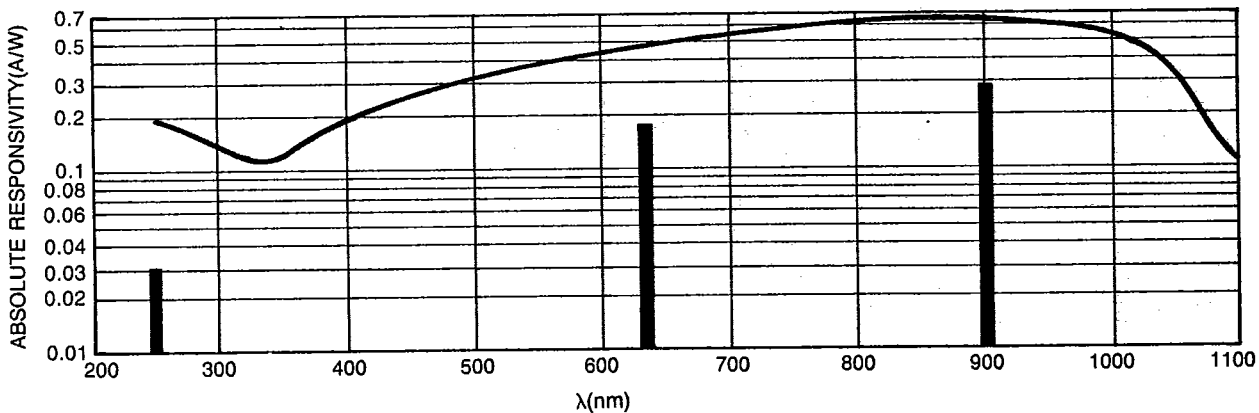
## Operating Data and Specifications at 23°C Performance at 0 V Bias (Photodiode) and ±15 V (Amplifier)

Characteristic	Minimum	Typical	Maximum	Units
Active Area	—	9.9	—	Sq. mm
Spectral Range <sup>2</sup>	250	—	1100	nm
Responsivity <sup>3</sup> at 900 nm	—	54	—	10 <sup>6</sup> V/W; R <sub>f</sub> = 200 Megohms
Responsivity <sup>3</sup> at 633 nm	—	36	—	10 <sup>6</sup> V/W; R <sub>f</sub> = 200 Megohms
Responsivity <sup>3</sup> at 250 nm	—	6	—	10 <sup>6</sup> V/W; R <sub>f</sub> = 200 Megohms
Frequency Range <sup>4</sup>	DC	—	5	MHz
Noise Voltage at 20 Hz	—	4	—	10 <sup>-6</sup> V/Hz <sup>1/2</sup> ; R <sub>f</sub> = 200 Megohms
NEP (900,20,1)	—	0.07	—	10 <sup>-12</sup> W/Hz <sup>1/2</sup>
NEP (633,20,1)	—	0.11	—	10 <sup>-12</sup> W/Hz <sup>1/2</sup>
NEP (250,20,1)	—	0.67	—	10 <sup>-12</sup> W/Hz <sup>1/2</sup>
Open Loop Gain	—	2	—	10 <sup>5</sup>
Bias Current <sup>5</sup>	—	30	—	pA
Offset Current	—	3	—	pA
Offset Voltage <sup>5</sup>	—	3	—	mV
Offset Voltage Drift	—	5	—	10 <sup>-6</sup> V/°C
Output Resistance	—	250	—	Ohms
Slew Rate	—	12	—	V/10 <sup>-6</sup> S
Supply Voltage	±5	±15	±18	V
Supply Current	—	5	—	mA at ±15 V
Power Consumption	—	150	—	mW at ±15 V
Operating Temperature	0	—	60	°C

### Notes

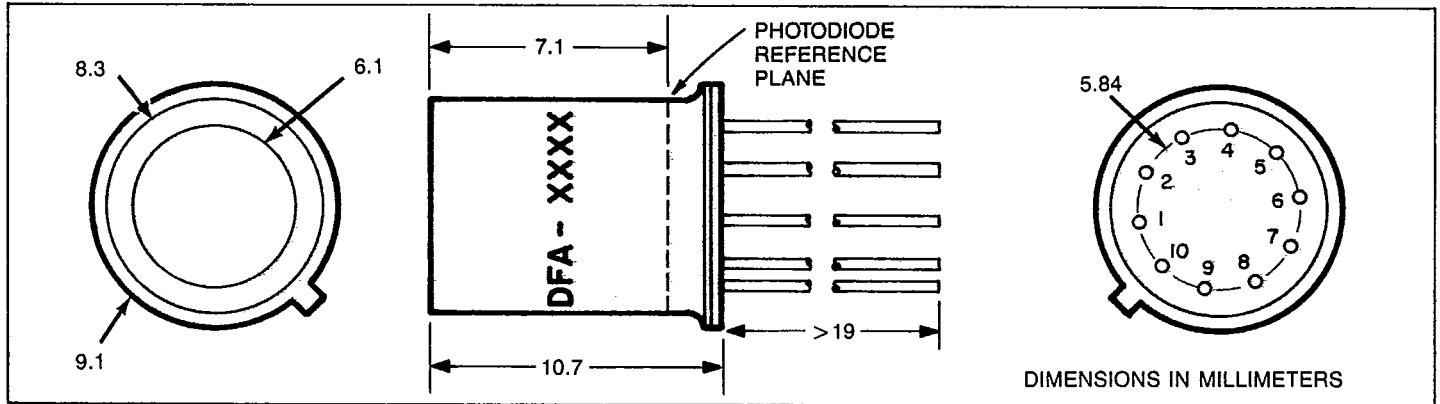
1. Numerical suffix refers to center wavelength in Angstroms.
2. Refers to the range of filter center wavelengths available.
3. Responsivity is based on typical photodiode responsivity at λ<sub>0</sub> and minimum filter transmission at λ<sub>0</sub>.
4. Gain bandwidth product
5. Doubles for every 10 °C rise in temperature.
6. Adjustable to 0 V with external trim potentiometer.

## Typical Spectral Response

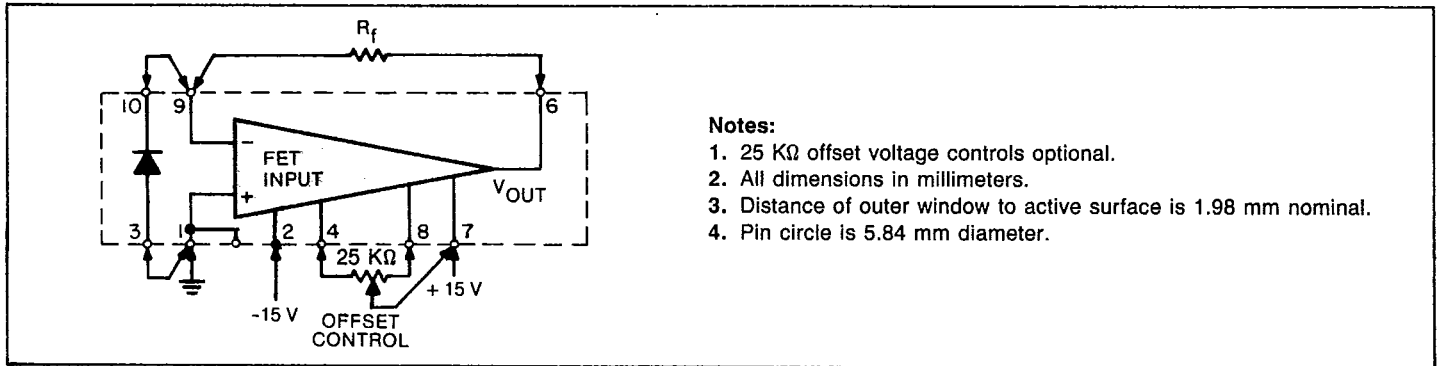


# Photodiode/OP-Amp Interference Filter

## Mechanical



## Electrical Circuit



## Filter Characteristics

### Transmission

Wavelength Range	Minimum Transmission at Center Wavelength <sup>(1)</sup>
250-300	15%
300-400	25%
400-1100	45%

(1) Center wavelength accuracy ±2 nm.

## Blocking

1. Short wavelength to 200 nm.
2. Long wavelength to 1200 nm.
3. Maximum discrete wavelength transmission outside band-pass is less than 10<sup>-6</sup> of peak value.
4. Half power point width: 10 nm ± 2 nm.
5. 10% amplitude width: 1.5 times the half power point width.
6. 1% amplitude width: 2.5 times the half power point width.
7. Integrated optical "Signal to Noise" — greater than 10<sup>4</sup>.  
Integrated optical "Signal to Noise" defined as:

$$4.0 \leq \log \frac{\int_{\lambda_0 - 40 \text{ nm}}^{\lambda_0 + 40 \text{ nm}} Ed\lambda}{\int_{200 \text{ nm}}^{\lambda_0 - 40 \text{ nm}} Ed\lambda + \int_{\lambda_0 + 40 \text{ nm}}^{1200 \text{ nm}} Ed\lambda}$$

## Options<sup>(2)</sup>

1. Narrower bandpasses
2. Wider bandpasses
3. Center wavelengths down to 200 nm
4. Cut-off/cut-on filters
5. Broadband absorption filters
6. Neutral density filters

(2) Options are available as special orders only and may differ in price from the standard DF Series.