ANALOG MODULES, INC.
a HEICO company

MODEL 713A
BIPOLAR LOW NOISE
PHOTODETECTOR-AMPLIFIER MODULES

HIGH BANDWIDTH, BIPOLAR PHOTODETECTOR-AMPLIFIER MODULE

- **Low Noise – down to 100 fW/√Hz**
- **Ultra High Bandwidth – 1 kHz to 200 MHz**
- **High Gain – up to 1.5 V/μW**
- **Silicon or InGaAs PIN's, or Avalanche Photodiodes**

DESCRIPTION:

The ***713A Series*** Ultra High Bandwidth Low Noise Photodetector-Amplifier Modules offer a high gain amplifier with the flexibility of incorporating various silicon and InGaAs photodetectors. The design is optimized for high-speed response and has a lower input impedance than the 712A Series, permitting high speed operation from larger capacitance detectors. The *713A Series* is based on the *313A Series* transimpedance amplifier. Consult factory for different detectors.

SPECIFICATIONS:

Input	Silicon or InGaAs photodetector (See table for characteristics.) Other detectors available upon request. Maximum DC light-induced current: 0.5mA
Output	
Load	50 Ω
Swing	2 V pk
Gain	20 kV/A transimpedance Multiply transimpedance gain by detector responsivity at peak wavelength to get V/W in table.
Polarity	Non-Inverting, positive output when flux applied

Power	+15 VDC at 100 mA typical Internally regulated
Temperature	-20° to +70°C
Connections	
Input	Photodetector inside box
Output	BNC
Power	Filter feed-thru pins and ground lug
Bias	Pin decoupled with 0.01 μF, 1 kV capacitor. (See figure on reverse.)
Size	3.49" x 1.92" x 0.92"
Weight	3.2 ounces

Specifications subject to change without notice.

APPLICATIONS:

Ultra High Speed, Low Light Level Sensing

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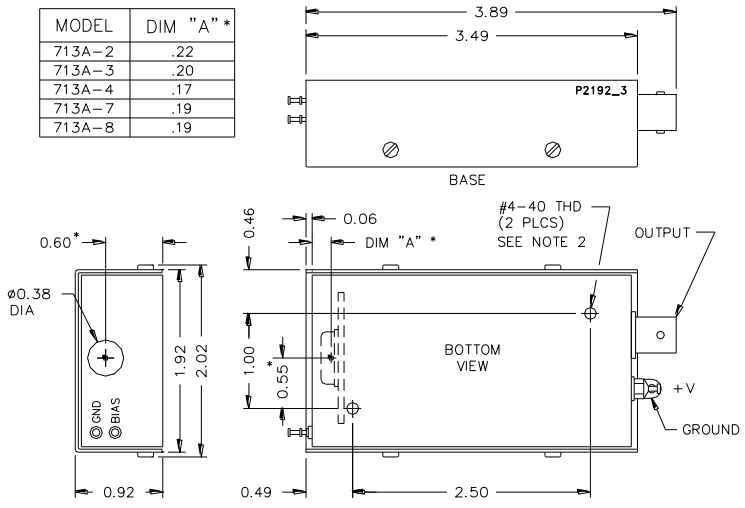
MODEL NO.	PHOTODIODE	DETECTOR PART NO.	ACTIVE AREA DIAMETER	PEAK	OPTIMUM REVERSE BIAS	BANDWIDTH ≤1 kHz TO:	NOMINAL GAIN	TYPICAL NOISE (5)
713A-2	Si PIN	C30807E	1.0 mm	900 nm	+45 V (1)	125 MHz	12 V/mW	16 pW/√ Hz
713A-3	Si PIN	FND 100Q	2.5 mm	900 nm	+90 V (1)	100 MHz	12 V/mW	12 pW/√ Hz
713A-4	Si APD	C30902E (3)	0.5 mm (4)	830 nm	180-250 V (2)	200 MHz	1.5 V/μW	100 fW/√ Hz
713A-7	InGaAs PIN	GAP100 (3)	100 μm (4)	1.55 μm	+5 V internal	200 MHz	18 V/mW	8 pW/√ Hz
713A-8	InGaAs PIN	GAP300 (3)	300 μm (4)	1.55 μm	+12 V Internal	180 MHz	18 V/mW	9 pW/√ Hz

(1) Internal bias provided at +12 V. For best bandwidth, use *Model 521* high voltage bias power supply to apply optimum reverse bias. Internal bias is protected by diode when external supply is used.
(2) Adjustable HV supply required. Optional *Model 521* or *522* available(consult factory).
(3) Available in ST or FC receptacle (consult factory).
(4) Available with optical fiber (consult factory).
(5) Actual noise may vary by ±20% due to detector tolerance. Noise is greater with higher capacitance detectors.
(6) Bandwidth tolerance is ±20%.
Note: Equivalent detector may be used.

Typical Part Number: ***713A-7 =***

Transimpedance Gain:	20 kV/A
Detector:	GAP100
Optimum gain:	18 V/mW
Noise:	8 pW/√Hz
3dB frequency:	200 MHz
Cut-on frequency:	≤1 kHz

MODEL	DIM "A"*
713A-2	.22
713A-3	.20
713A-4	.17
713A-7	.19
713A-8	.19



NOTES:
1. DIMENSIONS ARE IN INCHES.
2. MAXIMUM THREAD ENTRY 0.18.
3. TOLERANCE: +/- 0.01.
4. MODEL 713A -7 AND -8 HAVE NO EXTERNAL BIAS.
* DETECTOR POSITION MAY VARY BY +/- 0.12"