



HIGH BANDWIDTH, BIPOLAR PHOTODETECTOR-AMPLIFIER MODULE

- LOW NOISE - DOWN TO 100fW/ $\sqrt{\text{Hz}}$
- ULTRA HIGH BANDWIDTH - 1kHz TO 200MHz
- HIGH GAIN - UP TO 1.5V/ μW
- SILICON OR InGaAs PINS, OR SILICON 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	Power	+15VDC at 100mA typical Internally regulated
Output		Temperature	-20° to +70°C
Load	50 Ω	Connections	
Swing	2V pk	Input	Photodetector inside box
Gain	20kV/A transimpedance Multiply transimpedance gain by detector responsivity at peak wavelength to get V/W in table.	Output	BNC
Polarity	Non-Inverting, positive output when flux applied	Power	Filter feed-thru pins and ground lug
		Bias	Pin decoupled with 0.01 μF , 1kV capacitor. (See figure on reverse.)
		Size	3.49" x 1.92" x 0.92"
		Weight	3.2 ounces



Specifications subject to change without notice.

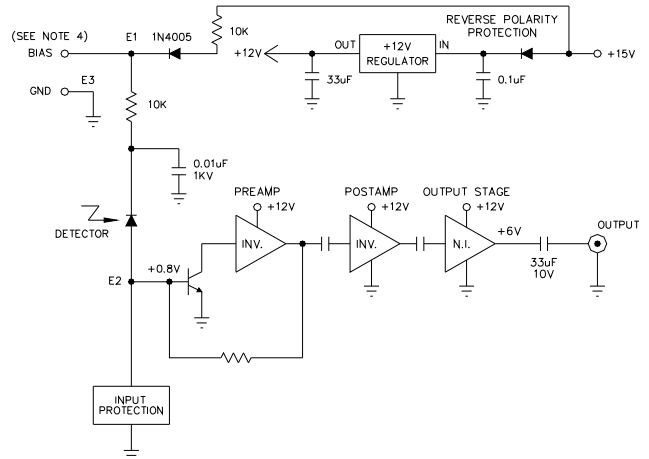
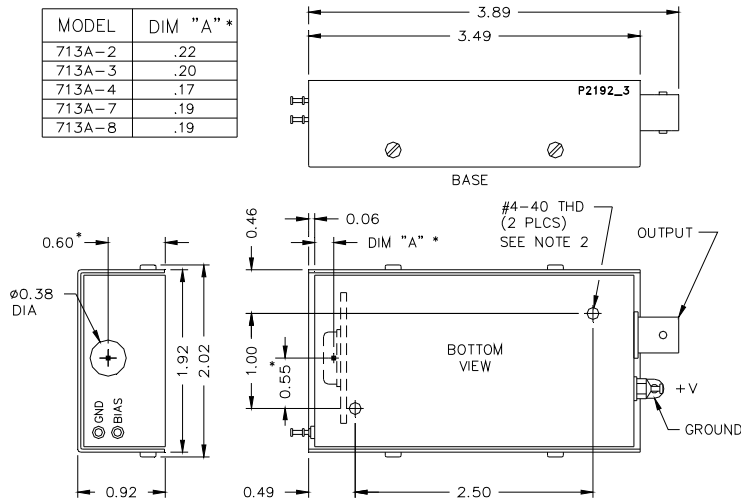
APPLICATIONS:

Ultra High Speed, Low Light Level Sensing

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

- (1) Internal bias provided at +12V. 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 $\pm 20\%$ due to detector tolerance. Noise is greater with higher capacitance detectors.
- (6) Bandwidth tolerance is $\pm 20\%$.
- Note: Equivalent detector may be used.

Typical Part Number: **713A-7** = Transimpedance Gain: 20kV/A
 Detector: GAP100
 Optimum gain: 18V/mW
 Noise: 8pW/ $\sqrt{\text{Hz}}$
 3dB frequency: 200MHz
 Cut-on frequency: $\leq 1\text{kHz}$



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