818 BB

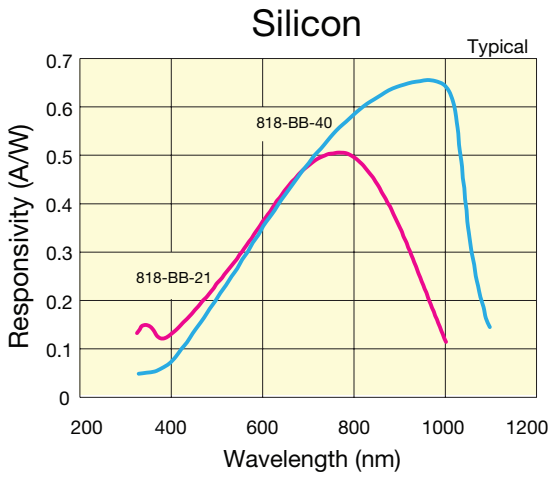
Biased Free Space Optical Detectors

mks | Newport

Our high speed free space optical detectors use biased photodetectors for a cost effective diagnostic tools suitable for a variety of high speed applications such as viewing of Q-switched, mode-locked, or rapidly modulated laser signals and picosecond laser alignment.

Silicon Free Space Optical Detectors

The 818-BB-21 and -40 consist of free-space, small and large area Silicon detectors, with rise times ranging from 300 ps to 1.5 ns. Each unit, other than the 818-BB-40, includes a built-in bias supply consisting of standard 3 V lithium cells and a 50 ohm BNC connector output. The 818-BB-40 comes with an external 24 VDC power supply.

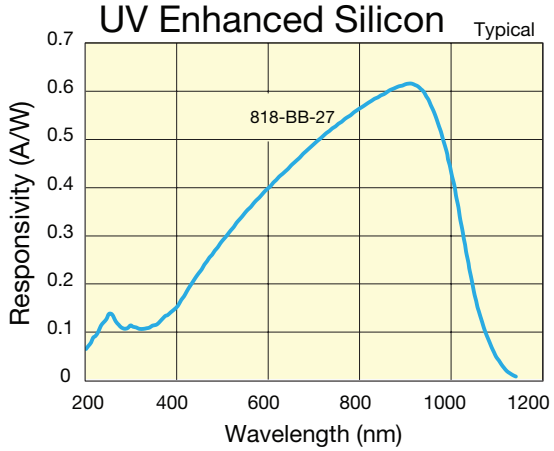


Features

- Silicon, UV-Silicon, GaAs & InGaAs versions
- Rise times as fast as 25 ps
- Biased by Internal battery or external power source

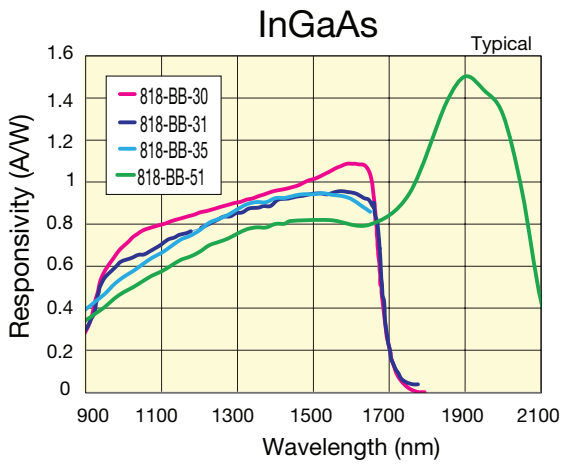
UV-Enhanced Silicon Free Space Detector

The 818-BB-27 consists of a silicon detector with an enhanced ultraviolet response, making it well suited for the fourth harmonic Nd:YAG, YLF or Glass Lasers and Excimer Lasers. Additionally, its large active area and fast response time make it an excellent general-purpose biased detector for the 200 to 1100 nm wavelength region. To attain its fast response, this detector comes with a 24 VDC external power supply.



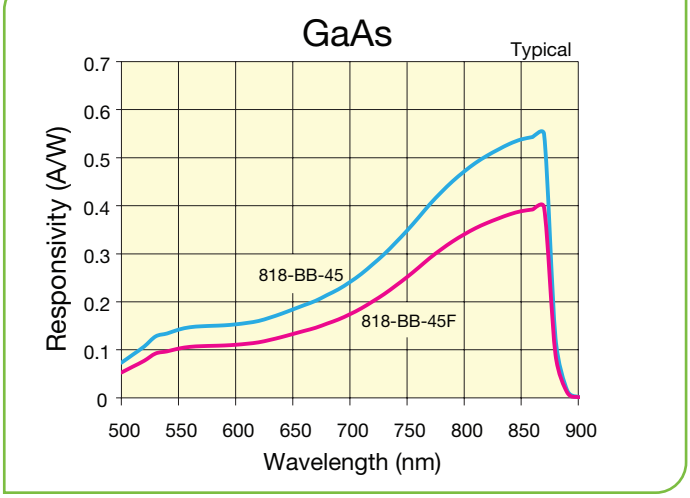
InGaAs Free Space Detectors

The 818-BB-30, -31, and -35 consist of free-space, small and large area InGaAs detectors, with rise times ranging from 300 ps to 1.5 ns for covering the 1000-1600 nm wavelength range. Each unit includes a built-in bias supply consisting of standard 3 V lithium cells and a 50 ohm BNC connector output. The 818-BB-51 features an extended InGaAs photodetector with a wavelength range of 1475–2100 nm.



GaAs Free Space Detector

The 818-BB-45 high speed optical detector consists of free-space 40 µm diameter GaAs photodetector, with a 30 ps rise time and 12.5 GHz bandwidth. It includes a built-in bias supply consisting of single 3 V lithium cell and a 50 ohm BNC connector output. The batteries are easily replaceable and by disconnecting the detector from the oscilloscope input, when not in use, you can extend the lifetime of the batteries.



Optical Post Mounting

An 8-32 threaded hole at the bottom of 818-BB biased photoreceivers allows for optical post mounting.

Handle With ESD Care

These detectors are very susceptible to damage by electrostatic discharge (ESD). Please use ESD protective measures, like the FK-STRAP , when unpacking and handling these devices.

Specifications Table

Silicon and GaAs Photodetectors

Models	818-BB-21	818-BB-27	818-BB-40	818-BB-45
Detector Material	Silicon	UV Enhanced Silicon	Silicon	GaAs
Wavelength Range	320-1000 nm	200-1100 nm	320-1100 nm	500-890 nm
Bias Voltage	9 V	24V	24V	3V
Detector Type	PIN	PIN	PIN	PIN
Detector Diameter	0.4 mm	2.55 mm	4.57 mm	0.06 mm
Acceptance Angle	10°	50°	60°	15°
3 dB Bandwidth	DC to 1.2 GHz	DC to 118 MHz	DC to 25 MHz	DC to 12.5 GHz
Rise Time	300 ps	3 ns	30 ns	30 ps
Responsivity	0.47 A/W @ 830 nm	0.56 A/W @ 830 nm	0.6 A/W @ 830 nm	0.53 A/W @ 830 nm
Output Connector	BNC	BNC	BNC	BNC
NEP	<0.01 pW/√Hz	<0.1 pW/√Hz	<0.09 pW/√Hz	<35 pW/√Hz @ 830 nm
Saturation Current	3 mA	2.5 mA	2 mA	10 mA
Junction Capacitance	<1.5 pF	<25 pF	<45 pF	<0.3 pF
Reverse Breakdown	20 V	150 V	50 V	30 V
Thread Type	8-32 and M4	8-32 and M4	8-32 and M4	8-32 and M4

InGaAs Photodetectors

Models	818-BB-30	818-BB-31	818-BB-35	818-BB-51
Detector Material	InGaAs	InGaAs	InGaAs	InGaAs
Wavelength Range	800-1750 nm	1000-1600 nm	830-1650 nm	830-2150 nm
Bias Voltage	6 V	6 V	6 V	3V
Detector Type	PIN	PIN	PIN	PIN
Detector Diameter	0.1 mm	0.1 mm	0.032 mm	0.040 mm
Acceptance Angle	20°	20°	15°	20°
3 dB Bandwidth	DC to 2 GHz	DC to 2 GHz	DC to 15 GHz	DC to 10 GHz
Rise Time	175 ps	175 ps	25 ps	28 ps
Responsivity	0.9 A/W @ 1300 nm	0.9 A/W @ 1300 nm	0.90 A/W @ 1300 nm	1.3 A/W @ 2.0 µm
Output Connector	BNC	BNC	SMA	SMA
NEP	<0.03 pW/√Hz	0.03 pW/√Hz	20 pW/√Hz @ 1300 nm	<15 pW/√Hz @ 2000 nm
Saturation Current	5 mA	10 mA	10 mA	3 mA
Junction Capacitance	<0.75 pF	<1.25 pF	<0.13 pF	
Reverse Breakdown	25 V	25 V	25 V	25 V
Thread Type	8-32 and M4	8-32 and M4	8-32 and M4	8-32 and M4

Order Information

Product	Model	Description
	818-BB-21	High Speed Photodetector, 320-1000 nm Battery Biased Silicon Detector, 1.2 GHz
	818-BB-27	High Speed Photodetector, 200-1100 nm UV-Silicon Detector, 118 MHz
	818-BB-30	High Speed Photodetector, 800-1750 nm Battery Biased InGaAs Detector, 2 GHz
	818-BB-31	FC Bulkhead High Speed Photodetector, 1000-1600 nm Battery Biased InGaAs Detector, 2 GHz
	818-BB-35	High Speed Photodetector, 1000-1650 nm Battery Biased InGaAs Detector, 15 GHz
	818-BB-40	High Speed Photodetector, 320-1100 nm Biased Silicon Detector, 25 MHz
	818-BB-45	High Speed Photodetector, 500-890 nm Battery Biased GaAs Detector, 12.5 GHz
	818-BB-51	High Speed Photodetector, 830-2150 nm Battery Biased Extended InGaAs Detector, 10 GHz

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