B52-640S Data Sheet

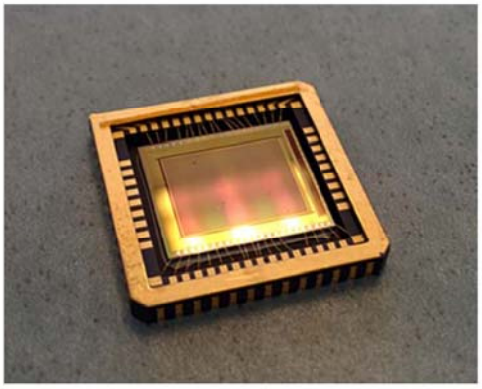
Multispectral Image Sensor

Key Features

- 640 (H) x 512 (V) Active Pixels
- 15 µm x 15 µm Square Pixels
- 1 inch Optical Format
- SWIR Spectral Coverage: 900 – 1,700 nm
- VIS-SWIR Optional: 400 – 1,700 nm
- Quantum Efficiency in visible & NIR/SWIR (>60% @ 600 – 1600 nm)
- Min. Detectable Threshold: 0.001 lux
- Variable Frame Rate: 30 – 150 fps for Active Window of 640 x 512
- High Dynamic Range: ~120 dB - Clear vision in fog, rain, shadows, excess light
- Electronic Rolling Shutter
- −40°C to +85°C Operational Temperature Range
- 52-Pin LCC Package
- Power Dissipation: < 230 mW
- These Devices are Pb−Free and are RoHS Compliant

Applications

- SWIR Imaging, Night Vision /Fog Vision
- Homeland Security – Security & Surveillance, Military
- First-responders, Law Enforcement & Public Safety
- Automotive – Autonomous & Non-Autonomous Driving Sensors – Safety, Collision, Obstacle Avoidance
- Machine Vision
- Inspection – Solar Cell & Silicon Ingot
- Agricultural QC & Food Sorting
- Process Control – Semiconductor
- Spectroscopy, Microscopy, Scientific Imaging, Raman Chemical ID - Pharma
- Space & Atmospheric Remote Sensing
- Bio - Medical Imaging



Description

The Banpil *B52-640S Multispectral* Image Sensor is a next generation high performance 2-D array image sensor designed for a wide range of image sensing applications in the 0.9 µm to 1.7 µm SWIR wavelength band. There is an option to extend the image sensor spectral range from 0.4 µm to 1.7 µm multispectral wavelength bands from visible to SWIR imaging.

The sensor is built with a truly unique technology employing a single monolithic sensor that detects Visible, Near Infrared (NIR) and Shortwave IR (SWIR) light (3 bands in 1 or 3-in-1) with high quantum efficiency.

The *B52-640S multispectral* image sensor produces more than 2x consistently clearer, sharper, enhanced images than CCD sensors in visible light and clearer, sharper NIR/SWIR images where CCD fails. With a highly sensitive minimum detectable threshold of 0.001 lux, this sensor is able to "see" in practically total darkness. No light projection is needed. It also produces higher quality images in rapidly changing bright and dark conditions giving visibility in poor lighting.

SPECIFICATIONS

GENERAL SPECIFICATIONS	
Parameters	**Specification**
Sensor Type	InGaAs
Active Pixels / Resolution	640 × 512 – Extended VGA
Pixel Size/Pitch	15 µm x 15 µm
Active Area (H x V)	12.58 mm x 11.07 mm
Pixel Type	Rolling progresive shutter pixel
Integration Time	5000 ns to 30 ms
Integration Modes	Integrate-Then-Read
Internal Master Clock	Up to 80 MHz
Output Format	Buffered Analog Differential
Power Dissipation	≤ 230 mW @ 50 Hz, 3.3 V and 1.8 V
Package Type	52 LCC; Glass Lid

ELECTRO-OPTICAL SPECIFICATIONS	
Parameters	**Typical Specifications**
Frame Rate	Variable - 30 to 150 FPS
Max Frame Rate	150 FPS at Full Resulution
Optical Format	1"
Windowing	Row Windowing
Readout	Partial row readout & subsampling possible
Fill Factor (FF)	90%
Quantum Efficiency (QE)	>60% from 0.6 to 1.6 µm
Spectral Response (Optional)	Standard 0.9 - 1.7 µm VIS/SWIR 0.4 - 1.7 µm
Photo Response Nonuniformity (PRNU)	10% of Signal
Min Detectable Range	0.001 lux
Dynamic Range	120 dB

Banpil Photonics, Inc.

Santa Clara, CA 95054

Tel: (408) 282-3628 E-mail: info@banpil.com Web: www.banpil.com