

MT6412BA

640×480-12μm VGA Microbolometer ROIC



Features

- Advanced VGA Microbolometer ROIC
- 640 × 480-12 μm Array format
- 1, 2, or 4 analog outputs with optional reference
- Programmable Biasing, Timing, and Windowing
- High Speed, Low Power, and Low Noise
- Tested ROIC parts on 200mm CMOS wafers

Technical Specifications

Array Format	640 × 480		
Pixel Size	12 μm × 12 μm		
ROIC Operating Mode	Rolling Line		
Biasing and Timing	On-Chip Programmable		
Detector Resistance	$30k\Omega \leq R_{det} \leq 90k\Omega$		
Integration Time	Programmable from 1μs to 1ms in steps of 1 period of system clock		
Number of Analog Outputs	Programmable 1, 2, or 4 analog video, Programmable 1 or 2 analog reference		
Analog Outputs	Swing ≥ 2.0V	Load Capacitance ≤ 15pF	Load Resistance ≥ 10MΩ
Gain and Offset	On-Chip Programmable gain and offset		
Readout Modes	Rolling Line		
Windowing	Programmable size and location		
Frame Rate	≤ 60 fps for full window (640×480)		
Supply Voltage	Analog : 3.3V Core and I/O		Digital: 1.8V Core, 3.3V I/O
System / Pixel Clock	System: ≤ 25 MHz (Nominal 20 MHz)		Pixel: ≤ 12.5 MHz (Nominal 10 MHz)
Programming Interface	Serial Programming Interface (SPI) For ROIC Command/Control and Non-Uniformity Correction (NUC) operations		
Power Dissipation	≤ 150mW @ 60 fps with 2 outputs		
Output Noise Level	≤ 0.5mV rms at 300K		
Temperature	Operated with TEC: $25^{\circ}\text{C} \leq T_{op} \leq 30^{\circ}\text{C}$ Operated w/o TEC: $-35^{\circ}\text{C} \leq T_{op} \leq 60^{\circ}\text{C}$		Storage: $-40^{\circ}\text{C} \leq T_{st} \leq 80^{\circ}\text{C}$
Temperature Sensor	On-chip sensor with 1mV/K sensitivity		
Wafer / Die Sizes, DPW	Wafer: 200mm	Die: 11 .1mm × 13.9 mm	Total: 144 Dice 120 Functional Dice (Typical)
Pads	Dual pad structure: 1 for probing and 1 for wirebonding		
Package Pin Count	≤ 32		
Synchronization	Master Mode: self-triggered Slave Mode: Frame synchronization via frame sync input		
TEC-LESS Operation	Supported using dynamically updated NUC tables based on ROIC operation temperature		