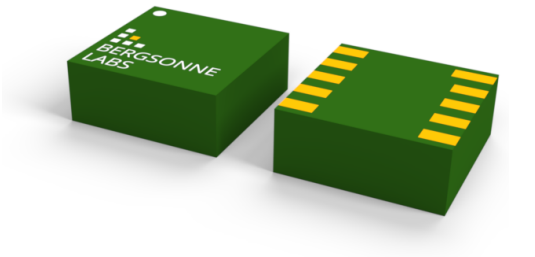




Sense.CAM.P

monochrome QVGA camera

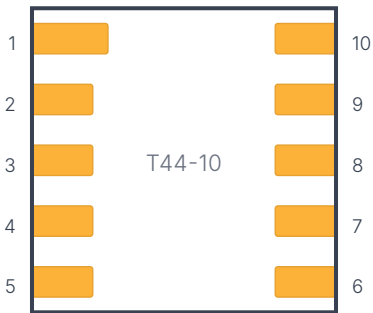
An ultra-low-power machine-vision tile built around the PixArt PAG7920J3, a 320 × 240 monochrome global-shutter camera module with an integrated lens. It captures 8-bit RAW frames over SPI (30 fps as configured; the chip's 180 fps is a parallel-bus figure), with 3.0 μm pixels, a 71.3° × 53.7° field of view, and 64 dB of dynamic range. Configuration is over I2C. A proprietary on-chip motion-detection mode draws under 100 μW (compared to 760 μW for QVGA output at 15 fps) making the tile practical to leave always-on in a battery-powered system, with auto exposure and gain control, auto black cancellation, mirror/flip, windowing, LED strobe, and multi-sensor frame sync built in.



Overview

Revision	a
Package	T44-10
Packaging	12 mm tape and reel, 500 per 7 in reel
Power	1.8–3.3V (V+ feeds the camera I/O (VDDIO) directly, and its 3.3 V analog supply through a TPS610995 boost (3.6 V) and TPS7A2033 LDO. About 0.7 mA while streaming at 30 fps from 3.3 V, about 1 mA from 1.8 V.)
Component	PAG7920J3
Component	TPS610995YFFT
Component	TPS7A2033PYCJR
Interfaces	I2C, SPI

Pad Assignments



(top view)

PAD	TYPE	FUNCTION	NOTE
1	power	GND	
2	digital	GPIO1	LED strobe, frame interrupt, frame sync or external clock (one at a time); unused by the driver
3	digital	GPIO2	I2C address strap, latched 30 ms after power-up: floating 0x35 (default), to VDDIO 0x25, to GND 0x40. The broadcast address 0x60 always answers too.
4	digital	I2C.CLK	
5	digital	I2C.DAT	
6	digital	SPI.MISO	



7	digital	SPI.CLK	
8	digital	SPI.CS	
9	digital	SPI.MOSI	
10	power	V+	1.8-3.3V; also the I/O supply (VDDIO)

Interfaces

I2C

Mode

Max Clock

Addresses

Format

slave

1MHz

0x35 (default), 0x25, 0x40

7-bit addr

FUNCTION	REQ	PAD(S)
I2C.CLK	Yes	4
I2C.DAT	Yes	5
GPIO2	No	3

SPI

Mode

Max Clock

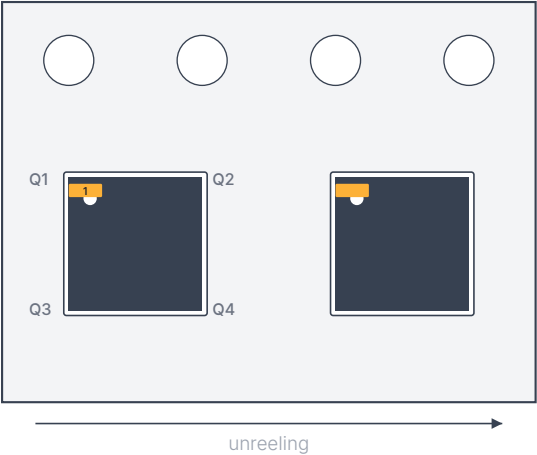
slave

25MHz

FUNCTION	REQ	PAD(S)
SPI.MISO	Yes	6
SPI.CLK	Yes	7
SPI.CS	Yes	8
SPI.MOSI	Yes	9

Packaging

Method	Tape and reel, EIA-481
Carrier tape	12 mm embossed, cold seal cover tape
Pocket	4.3 × 4.3 × 1.8 mm (A0 × B0 × K0)
Pocket pitch	8 mm (P1)
Reel	7 in (178 mm)
Quantity	500 per reel
Pin 1	Quadrant 1 per EIA-481: keyed land toward the sprocket holes, tile face up
	Tape and reel drawing (PDF)



Application Notes

I2C address
when GPIO2 (pad 3) is left floating, the I2C address will default to 0x35. Pulling GPIO2 (pad 3) high will change the address to 0x25, while grounding pad 3 will set it to 0x40. The camera will also respond to general broadcasts on 0x60.