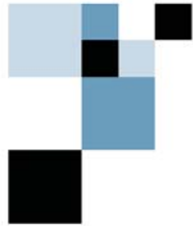
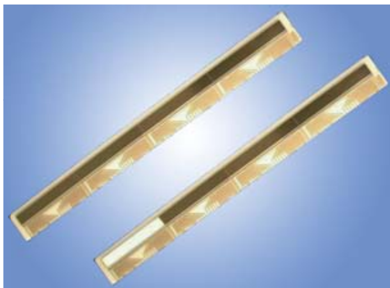


CCD 296



The CCD296 assembly is a series of sensors, consisting of three or four end-to-end butted CCD chips, ceramic substrate, fiber optic faceplate and scintillator. The CCD chip utilizes a "time delay integration" (TDI) and/or full frame imager (in the staring mode) architecture and was designed specifically for scanning x-ray imaging applications. The design of this CCD is a 1024 x 132, 45µm pixel pitch. The CCD is butted end-to-end with a 90µm gap between each die. A single fiber optic faceplate and scintillator is attached to the top of the CCD for high-resolution x-ray applications.

Features	*Benefits*
4096 x 132 pixel array, 4-chip hybrid	Large field of view
45µm x 45µm pixel size	
184.59 mm x 5.94 mm active area	
Time delay integration (TDI) full frame imager modes	Optimal design for speed and sensitivity
4 output ports (1 port per die)	Maximize readout speed
Multi-pinned phase (MPP)	Minimize dark noise
Four-phase buried channel NMOS	Maximize CCD full well capacity
Fiber optic faceplate	
Choice of scintillators	Optimize speed versus resolution

CCD 296

Specifications

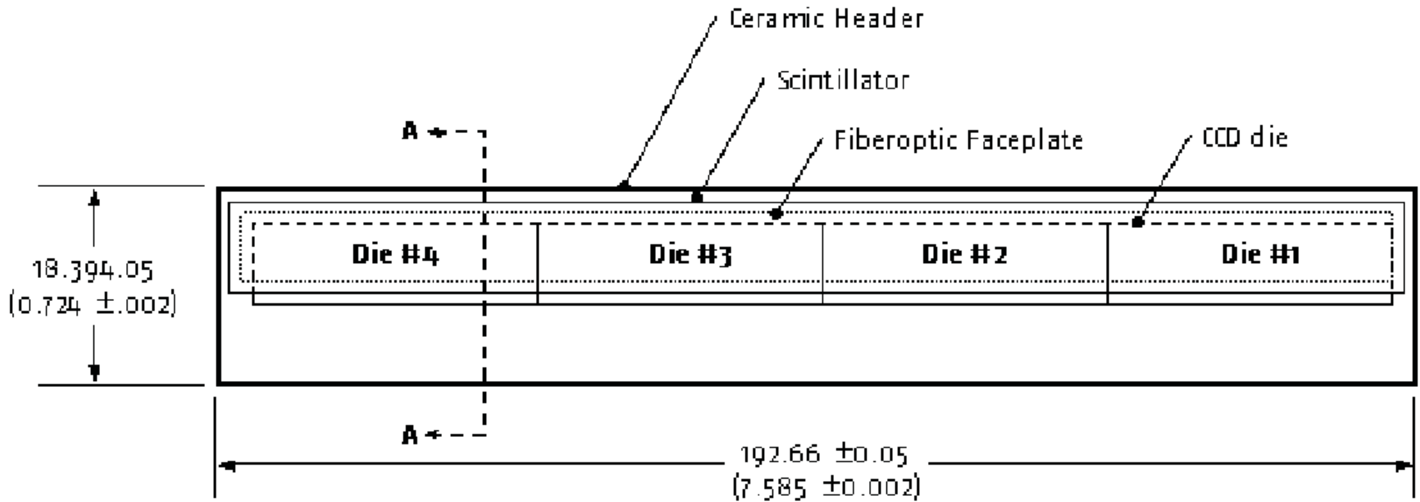
Sensor	CCD 296A	CCD 296B
Type	Front-illuminated, 3 die installed on header (#4 position empty)	Front-illuminated, 3 die installed on header
Resolution	3072 columns x 132 TDI rows	4096 columns x 132 TDI rows
Pixel Size	45 µm x 45 µm	45 µm x 45 µm
Fill Factor	94%	94%
Image Area	138.24 mm x 5.94 mm	184.32 mm x 5.94 mm

	All CCD 296
Full Well Capacity	
Full resolution	1.0 Me-
2 x 2 binning	4.0 Me-
Output Scale Factor	0.9 µV/e-
Maximum Data Rate	2 MHz per port
Non-photosensitive region ("dead space")	< 2 pixels (90 µm) at die-to-die joints
Fiberoptic Faceplate	Schott type 47A6, 2.5mm thick Others available upon request
Scintillator	Choice of: Kodak Lanex Fast Backside (Gd_2O_2S; for 90µm resolution) Kodak Lanex Regular (Gd_2O_2S; for 45µm resolution) Others available upon request (CsI, etc.)
Package Electrical I/O	Backside contacts; 0.67 mm pitch Solderless Z-axis interconnect (Shin-Etsu type GB or equivalent) 26 I/O pads per die

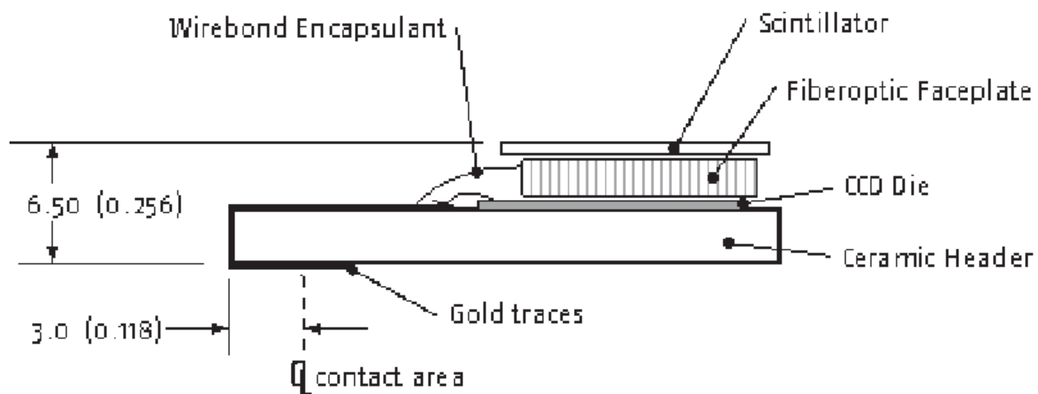
*Note: Specifications subject to change without notice

Package Dimensions

Top View:

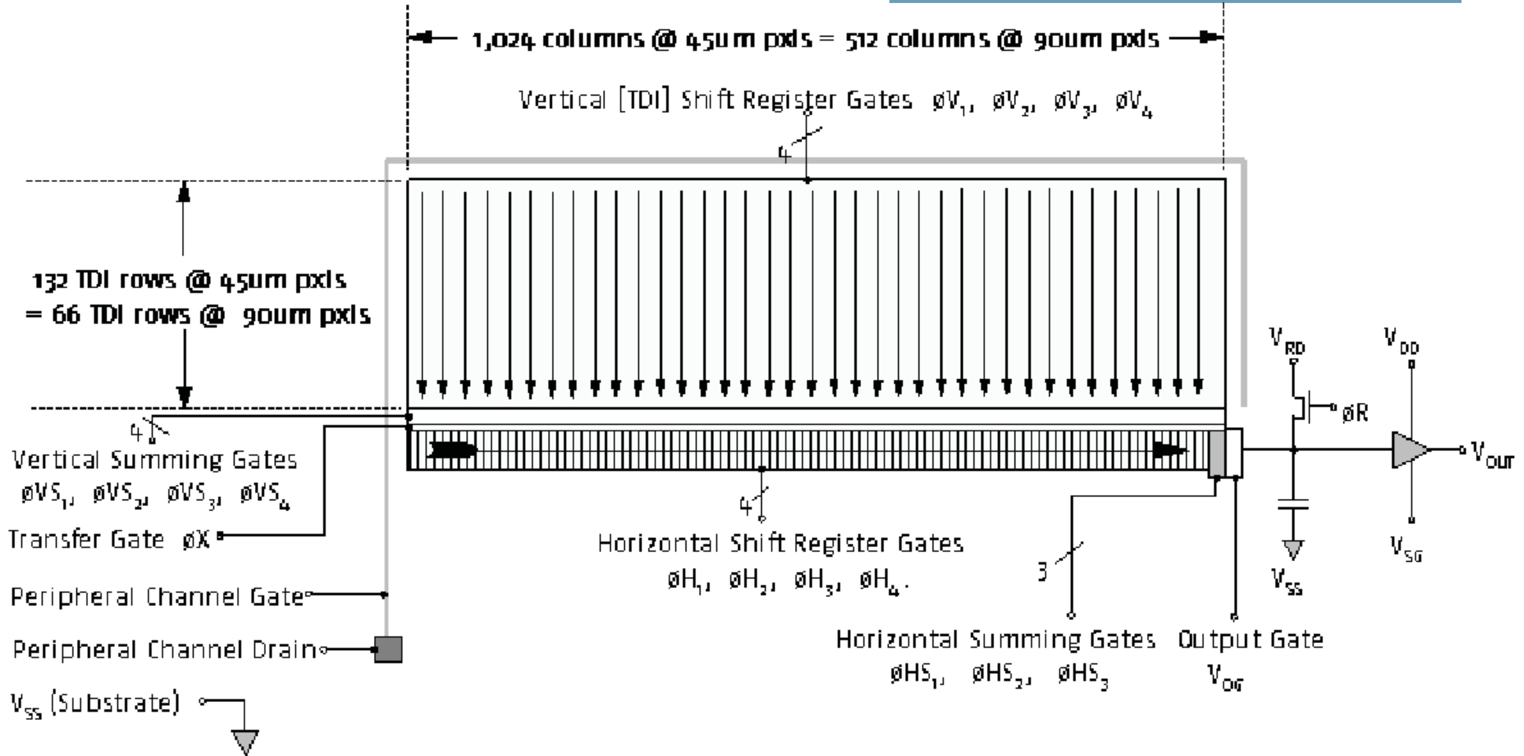


Cross Section A-A:



Note: All dimensions are in mm (inches)

Block Diagram (single die)



Photosite Array Dimensions