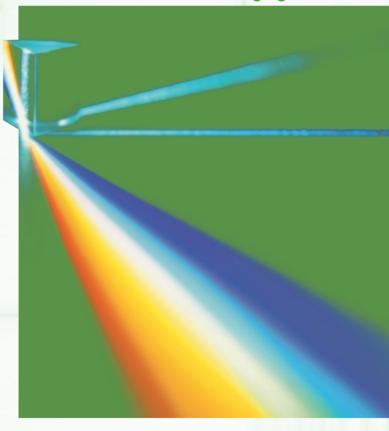
# CCD65

- > 576(H) X 288(V) PIXEL IMAGE AREA
- > 525 or 625 LINE FORMAT (INTERLACED)
- > INVERTED MODE OPERATION (MPP)
- > 20 X 30 µm PIXELS
- > NOVEL PREAMPLIFIER FOR EXTREMELY
  LOW NOISE AT HIGH PIXEL RATES
- > 100% ACTIVE AREA



The next **revolution** in imaging is here





The CCD65 uses a completely novel output amplifier circuit that is capable of operating at an equivalent output noise of less than one electron at pixel rates of over 10MHz (corresponding to a field rate of 50Hz). This makes the sensor well suited for scientific imaging

where the illumination is limited or for video applications at very low light levels.

The sensor operates in the inverted mode to suppress dark current as this is now the dominant noise source (even at 50Hz field rate). Antiblooming

is optional.

The output amplifier may be switched from the very high gain mode to normal operation by control of one of the operating voltages (details should be discussed with Marconi Applied Technologies).

#### **Format**

Image Area	(mm)	11.52 x 8.64
Active Pixels	(H)	576
	(V)	288
Pixel Size	(µm)	20 x 30

Additional pixels are provided for overscanning purposes.

Number of Output Amplifiers 1

The device has a 100% fill factor for maximum sensitivity.

## Package

Ceramic Package non peltier pack 36-pin PGA

(μV/e <sup>-</sup> )	1.3
(e <sup>-</sup> /pixel)	200,000
(V)	0.84
(e <sup>-</sup> rms)	<100
(μV/e <sup>-</sup> ) Note 1	Up to 500
(V)	1.0
(e- rms)	<1
	(e <sup>-</sup> /pixel) (V) (e <sup>-</sup> rms) (µV/e <sup>-</sup> ) Note 1 (V)

#### Note 1

Dark Signal (at 293K)

The gain may be adjusted by changing the relevant drive voltage

Charge Transfer Efficiency	(%)	
	Parallel	99.9999
	Serial	99.9993
Dark Sig Non-Uniformity (at	293K. e <sup>-</sup> /pixel/s)	80

(e<sup>-</sup>/pixel/s)

Minimum Spectral Range (nm) 400 - 1060

Note: All values quoted using typical operating conditions at a frame rate of 50Hz and at a temperature of 293K (approx).

# **Typical Operating Conditions**

nei.	Description	
Vss	Substrate	5V
ІФ1	Image Clocks (high level)	11V
<b>І</b> Ф2	(low level)	-5V
SØ1	Store Clocks (high level)	11V
SΦ2	(low level)	-5V
R <b>Ф</b> 1		
R <b>Ф</b> 2	Register Clocks (high level)	12V
<b>РФ3</b>	(low level)	OV
ΦR	Reset Pulse (high level)	12V
Vog	Output Gate	3V
VRD	Reset Drain	18V
Vod	Output Drain	28V
Vos	Output Source	See Note 2
VDOD	Dummy Output Drain	28V

Ref.	Description	
VDOS	Dummy Output Source	See Note 2
VABD	Antiblooming Drain	15V
VABG	Antiblooming Gate	OV
VDC	Phase	5V
VHG	High Gain Adjustment	See Note 3

#### Note 2

An external load is required which may either be a constant current source of approximately 7.5mA or a  $3.3k\Omega$  resistor

### Note 3

Contact Marconi Applied Technologies for details of the operation of the increased gain feature

Blemish Specification			
Grade	0	1	2
Column Defects-black or slipped -white	0	1	6
Black Spots	10	15	30
Traps > 200e <sup>-</sup>	1	2	6
White Spots	10	15	50

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