PROVISIONAL

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

L3Vision

The next **revolution** in imaging is here

Marconi™

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

Typical Performance

In Normal Mode		
O/P Amp Responsivity	(µV/e⁻)	1.3
Peak Signal	(e⁻/pixel)	200,000
Peak Output Voltage	(V)	0.84
Readout Noise at 50Hz	(e⁻ rms)	<100
In High Gain Mode		
O/P Amp Responsivity	(µV/e⁻) Note 1	Up to 500
Peak Output Voltage	(V)	1.0
Readout Noise at 50Hz	(e⁻ rms)	<1

Note 1
The gain may be adjusted by changing the relevant drive voltage

Dark Signal (at 293K)	(e⁻/pixel/s)	200
Charge Transfer Efficiency	(%)	
	Parallel	99.9999
	Serial	99.9993
Dark Sig Non-Uniformity (at 293K, e⁻/pixel/s)		80
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

Ref.	Description	
V_{SS}	Substrate	5V
IΦ1	Image Clocks (high level)	11V
IΦ2	(low level)	-5V
SΦ1	Store Clocks (high level)	11V
SΦ2	(low level)	-5V
RΦ1		
RΦ2	Register Clocks (high level)	12V
RΦ3	(low level)	0V
ΦR	Reset Pulse (high level)	12V
V_{OG}	Output Gate	3V
V_{RD}	Reset Drain	18V
V_{OD}	Output Drain	28V
V_{OS}	Output Source	See Note 2
V_{DOD}	Dummy Output Drain	28V
V_{DOS}	Dummy Output Source	See Note 2
V_{ABD}	Antiblooming Drain	15V
V_{ABG}	Antiblooming Gate	0V
V_{DC}	Phase	5V
V_{HG}	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 3.3kΩ 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	0	1	6
-white	0	0	0
Black Spots	10	15	30
Traps > 200e⁻	1	2	6
White Spots	10	15	50

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