

FEATURES

- 80 by 80 1:1 Image Format
- Image Area 1.92 x 1.92 mm
- Split-frame Transfer Operation
- 24 μm Square Pixels
- Symmetrical Anti-static Gate Protection
- Four High Performance Very Low Noise Output Amplifiers
- High Frame Rate Operation (up to 1000 fps)
- High Spectral Response
- 100% Active Area

APPLICATIONS

- Astronomy
- Scientific Imaging

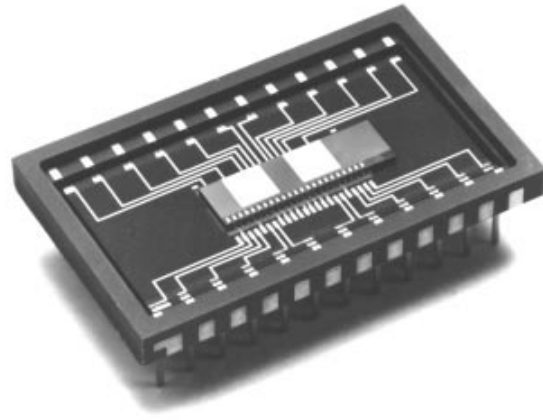
INTRODUCTION

The CCD39-01 is a small split-frame transfer device optimised for use at high frame rates which makes it particularly suited to the tracking of point source objects. To optimise the dynamic range, the sensitivity is maximised by combining back illumination technology with large pixels and non-antibloomed architecture. The noise floor of the chip is kept low by an advanced amplifier which permits operation at 1 MHz with noise levels typical of slow-scan operation. Dark signal noise is limited by cryogenic cooling or by an optional Peltier package which is sufficient for most applications when charge dithering effects are considered.

The device has split-frame transfer architecture with four amplifiers, each reading a block of 40 x 40 pixels.

The output circuit has a very small first-stage transistor to maximise the responsivity and minimise the noise, with only minimal loading from the much larger second-stage transistor, which provides a high level of drive capability. The connections to the circuit are identical to those of a single-stage type, the only difference being a standing current (1 mA) flowing in the substrate connection. There is no light emission to cause the generation of spurious charge.

Designers are advised to consult Marconi Applied Technologies should they be considering using CCD sensors in abnormal environments or if they require customised packaging.



TYPICAL PERFORMANCE

Maximum readout frequency	>3	MHz
Output responsivity	4.5	$\mu\text{V}/\text{e}^-$
Peak signal	300	ke^-/pixel
Spectral range	200 - 1100	nm
Readout noise (at 20 kHz)	3	$\text{e}^- \text{ rms}$
QE at 500 nm	90	%

GENERAL DATA

Format

Image area	1.92 x 1.92	mm
Active pixels (H)	80	
(V)	80 ± 4	
Pixel size	24 x 24	μm
Storage areas (x 2)	1.92 x 0.96 mm each	
Pixels (H)	80	
(V)	40	
Number of output amplifiers	4	

Package

Package size	32.89 x 20.07 mm
Number of pins	24
Inter-pin spacing	2.54 mm
Window material	quartz or removable glass
Type	ceramic DIL array