

## CCD "LEADER-1"

CCD "Leader-1" has one section, n-type bulk channel and 512x512 pixels. The device has one output register and two-stage output unit with "floating" diffusion.

The register comprises 522 pixels. The first ten are supporting.

CCD has horizontal antiblooming that provides device operation in conditions of considerable local overillumination. Cooling is provided by built-in thermoelectric battery.

Quasi-random access to any line of section is provided by signal transfer out of foregoing lines to drain region located in parallel to the register.

The device can be applied as a detector in stellar monitoring systems.



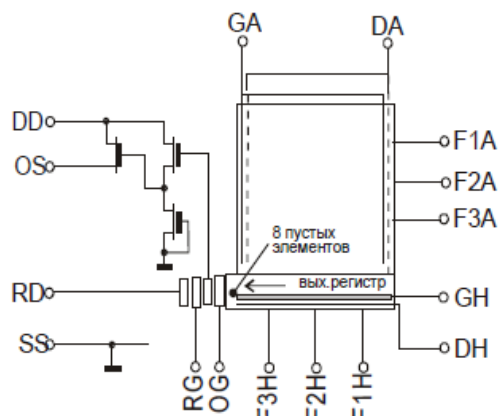
Construction design: The device is filled with gas and has vacuum tight package with optical window and unit of joint with heat sink for heat removal. The possibility of temperature measurement is provided by suitable p-n-junction designed on a CCD substrate.

### SPECIFICATIONS

Number of pixels	512x512
Pixel size, (HxV), $\mu\text{m}$	23x23
Spectral response, $\mu\text{m}$	0.4÷1.0
Device width, mm	$\leq 37.5$
Device height (with contacts), mm	$\leq 23$
Input window outside surface error in parallelism relative to photosensitive surface	$\leq 30'$
Saturation voltage, V	1.0
Responsivity, V/lx·s	$\geq 6$
Spectral sensitivity ( $\lambda=0.67\mu\text{m}$ ), $\text{V}/\text{cm}^2 \cdot \mu\text{J}$	7

Relative responsivity mean square nonuniformity across the field, %	≤5
Local relative responsivity mean square nonuniformity across (5x5) pixel area, %	3
Threshold exposure, lx·s	$2 \cdot 10^{-5}$
Dark signal voltage at $T_{\text{accumulation}}=10\text{s}$ , mV	40

### Circuit diagram



8 / 10 пустых элементов – 8 / 10 empty elements

выходной регистр – output register

### Terminal description

Terminal number	Conventional sign	Description
1	“+”	Thermobattery positive terminal
2,12,23		Empty
3	F3H	Third register phase electrode
4	F2H	Second register phase electrode
5	F1H	First register phase electrode
6	DH	Register horizontal sink
7	GH	Accelerated transfer gate
8	UT	Temperature detector
9	GA	Antiblooming gate
10	DA	Antiblooming sink
11,22	SS	Substrate
13	-	Package output
14	F1A	Section first phase
15	F2A	Section second phase
16	F3A	Section third phase
17	OS	Output transistor source
18	DD	Output unit transistor sinks
19	RD	Reset transistor sinks
20	RG	Reset transistor gate
21	OG	Output register screen
24	“-”	Thermobattery negative terminal