

1/3 inch SD Single Chip
CMOS Image Sensor with NTSC/PAL Transmitter

Table 1 Key Performance Parameter

| Parameter | Typical value |
|--|--|
| Pixel size | 5.0 [um] x 7.40 [um] |
| Effective pixel array | 968 (H) x 488 (V) |
| Effective image area | 4.840 [mm] x 3.611 [mm] |
| Optical format | 1/3 [inch] |
| Input clock frequency | 27 [MHz] |
| Output interface | 10/8-bit parallel CVBS(NTSC/PAL) |
| Max. frame rate | 60fps : ITU-R. BT1302 @ 36[MHz] (for NTSC) |
| | 50fps : ITU-R. BT1302 @ 36[MHz] (for PAL) |
| | 60fields/sec : NTSC @ 36[MHz] |
| | 50fields/sec : PAL @ 36[MHz] |
| | 60fps : YCbCr422/RGB565/RGB444 @ 72[MHz] |
| | 60fps : Bayer @ 36[MHz] |
| Dark signal | 40mA ± 10 mA |
| Sensitivity | 2800MV/Lux.sec |
| Power supply | AVDD : 3.3 [V] |
| | HVDD : 3.3 [V] |
| | CVDD : 3.3 [V] |
| | DVDD : 1.5 [V] |
| Power consumption | 0.48W |
| Operating Temp. (fully functional Temp.) | -40~105 [°C] |
| Dynamic range | 85 dB |
| SNR | 39 dB |

Chip Architecture

The PC2099K has a 972 x 504 total pixel array and includes column/row driver circuits for reading out pixel data progressively. CDS circuit reduces noises generated from various sources, which mainly are resulted from process variations. The fixed error signal level caused by pixel process variation can be reduced by sampling the defference between the output and the reset level of the pixel. Each of R, G, and B pixel output can be multiplied by different gain factors to balance the color of images under various light conditions. The analog signals are converted into digital data of one line at a time and each line data is streamed out column by column. The Bayer RGB data passes through a sequence of image signal processing to produce various output datas. Image signal processing includes operations such as gamma correction, defect correction, low pass filter, color interpolation, edge enhancement, color correction, contrast stretch, color saturation, white balance, exposure control and back light compensation. The PC2099K supports various interfaces such as composite, analog, and digital output. The control of internal functions and output signal timings can be enabled by modifying registers directly through a 2-wire serial interface called I2C or by programming the internal/external ROMs which contain device settings.