

## True Color ICs Allow Color Measurement To DIN 5033



### PRODUCT INFORMATION

Under the trademark of JenColour MAZeT provides a product line of color sensor ICs that combine the quality advantages of interference filters directly deposited onto Si-wafers with a PIN diode technology specifically optimized for operation in the visual wavelength region.

The interference filters represent on-chip-microstructured filter layers. These feature a high transmission in the bandpass range. They are resistant to aging and perform stably despite mechanical and thermal influences.

Interference filters which are directly deposited onto a silicon wafer have already recommended themselves in many applications where color detection is carried out with handheld devices to support automated process sequences or handle simple measurement jobs for color nonconformity's.

How good a result can be achieved by color measurement essentially depends on the type and quality of the filter function. The new generation of JenColour sensors is committed to implementing the standard distribution functions as defined under DIN 5033 Part 2 – Color Measurement; CIE 1931 Standard Colorimetric Systems. This implementation method allows colors to be determined according to the three-range procedure that is defined in part 6 of DIN 5033.

Color measurement can thus be performed to address applications with standard distribution coefficient registration for "sufficiently accurate detection" of remitting, transmitting or self-lighting samples. Such applications include, for example, LED testing and sorting, monitor calibration or simple, compact, low-cost handheld devices for measuring colors and color differences.

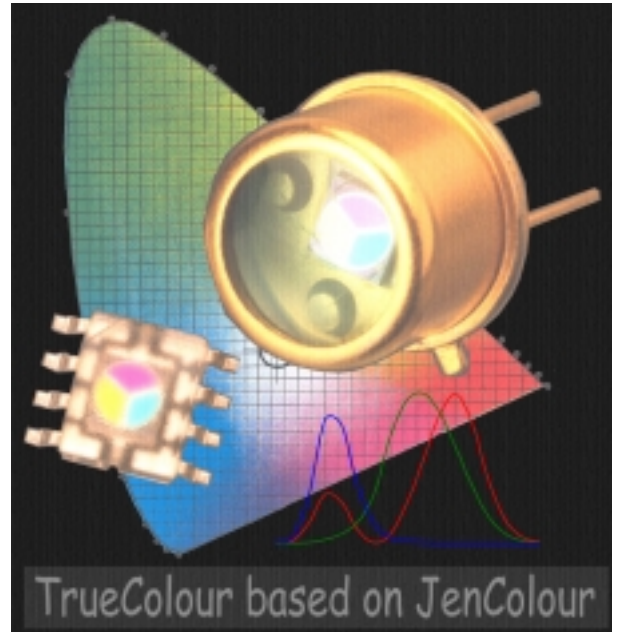


Figure 1: True color detection  
with JenColour XYZ-color sensor ICs

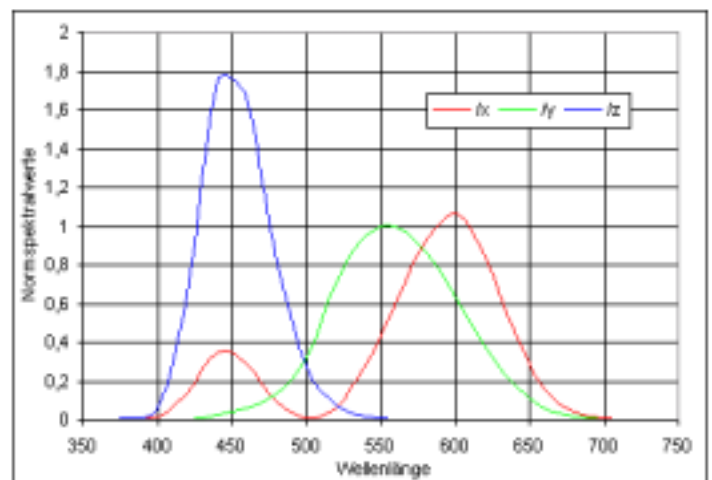


Figure: Spectrum function  
2° standard observers

Detection is accomplished with the help of PIN photodiodes that are technologically adjusted for a specific range of spectral sensitivity. Compared to conventional standard PIN technologies, which reach their maximum between 600 nm and 800 nm and an even higher sensitivity in the blue spectral range, the JenColour technology provides a maximum sensitivity at approximately 580 nm. It features a considerably higher sensitivity in the blue spectral range than other comparable technologies.

The spectral sensitivity distribution of each of the three sensor elements represents the resultant curve of the PIN diode's spectral sensitivity and the transmittance of the corresponding interference filter.

The color sensor outputs photo-currents in three channels. These are proportional to the relations of standard distribution functions. A factor which is specifically calibrated for each channel is then applied to the measured values for normalization and gain matching, in order to fulfill Luther's condition. So the resulting absolute standard spectral coefficients for XYZ will be available for further mathematical conversion into a randomly selectable color space. This allows color measurement to be performed with sufficient accuracy up to "True Color" level in accordance with particular Customer and application requirements, using standard-compliant colorimetry as a basis.

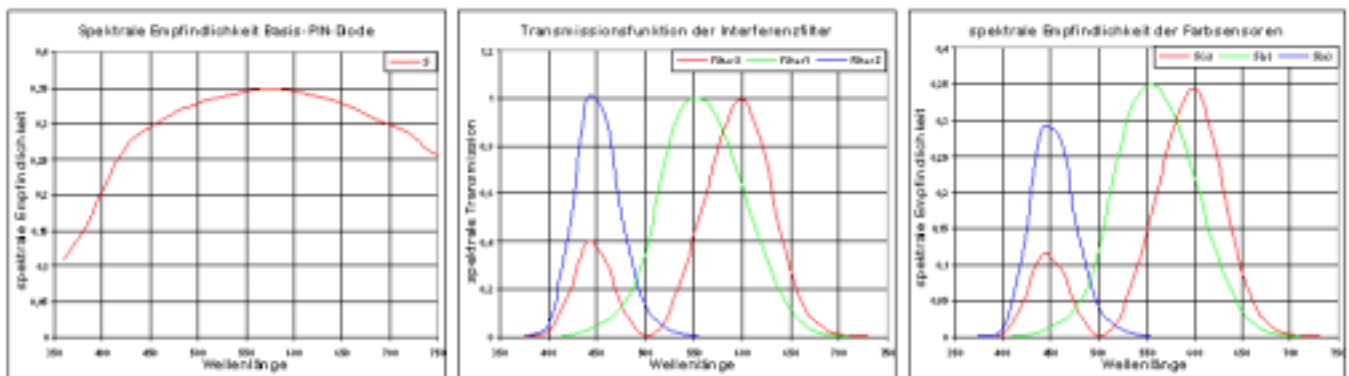


Figure: Spectral sensitivity of PIN base diodes, interference filters and resultant performance of color sensors

The new MTCS series of JenColour sensors is available in the same space-saving SO8 and TO5 package versions as the previous MCS sensor ICs.