

# JENCOLOR - True Color Sensors (Color Measurement to DIN 5033)

PRODUCT INFORMATION



JENCOLOR True Color Sensor ICs are specifically designed for sensitivity to yield a significantly improved performance where color deviations have to be resolved. Each sensor IC consists of a PIN photodiode with sensitivity optimized for the visible wavelength range, and a directly mounted interference filter. Of greater blue-sensitivity, these sensors also provide a general improvement in practical operating values.

The interference filter represents on-chip-microstructured filter layers. These feature high transmission in the band-pass range and resistance to aging, mechanical impacts and thermal influences.

Interference filters which are directly deposited onto a silicon wafer have already recommended themselves in many applications.

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 JENCOLOR True Color Sensors implements the tri-stimulus value function (under DIN 5033, part 2) in a way that allows colors to be determined according to the three range procedure – measurement with spectral properties - as defined in part 6 of DIN 5033.

It facilitates applications for “sufficiently accurate detection” of emitting, remitting, or transmitting samples. Such applications include, for example, LED testing and sorting, monitor calibrating, or simple, compact and low-cost modules for color measurement.

The spectral sensitivity distribution of each interference filter cell is obtained as a functional diagram of the spectral sensitivity of the filter's base material versus its transmittance, with the standard distribution function representing the sensor's actual sensitivity.

The output currents of the color sensor ICs are a function of the spectral composition of incident light, weighted

with the function of the filter which is mounted to the photodiode.

A special factor is defined for gain matching of, and normalization of the values measured in each channel, in order to fulfill Luther's condition. The resulting absolute standard spectral coefficients for XYZ are available for further mathematical conversion into a randomly selectable color space.

## Highlights

- *Detection/ measurement of colors more accurately and much faster than human eye*
- *low dark current*
- *Signal input frequencies > 100 kHz*
- *RoHS compliant*
- *Values display as XYZ*
- *Calibration in system L\*a\*b*

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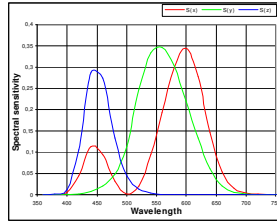
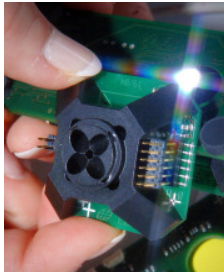
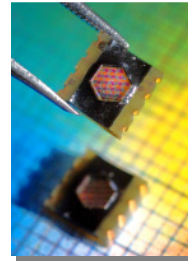


Figure: Spectral sensitivity of True Color sensors



**Product Overview of JENCOLOR® - True Color Sensors**

<b>True Color Sensor ICs</b>			
MTCSi	True Color Sensor IC		Ordering code:
MTCSiCS	with transparent glob top in LCC8 package (RoHS)		090400-193-26AEZ00
MTCSiCT	with transparent glob top in TO39 package (RoHS)		090400-201-26AEZ00
MTCS-TIAM2	One-Chip-Solution with integrated True Color MTCSiC, multi-channel amplifier MTI04C and circular hole (RoHS)		090400-321-26AEZ00
<b>Accessories</b>			
MTCS-ME1 modEVA Main	modEVA: Mainboard for TOP and DARK with $\mu$ C and USB interface (RoHS)		090003-382-25AEZ01
MTCS-ME1 modEVA Main Front	modEVA(front): Mainboard for FRONT modul with $\mu$ C and USB interface (RoHS)		090003-383-25AEZ01
MTCS-ME1/MTCS-C2 Soft	modEVA: Software USB driver (f. USB 2.0) and PC test software		090600-001-16AEZ03
MTCS-ME1/MTCS-C2 DLL	modEVA: API program interface (DLL) for all $\mu$ C based JENCOLOR boards		090600-011-16AEZ03
MTCS-ME1/MTCS-C2 USB	modEVA: Cable USB 59204-9401; 1m, Plug Type A/mini-B (RoHS)		E082P000573
MTCS-ME1 modEVA TOP	modEVA: TOP plug-module with 4xLED, Sensor-IC, circular hole and signal electronic (RoHS)		090003-392-25AEZ00
MTCS-ME1 modEVA FRONT	modEVA: FRONT plug-module with 2xLED, Sensor-IC, circular hole and signal electronic (RoHS)		090003-402-25AEZ00
MTCS-ME1 modEVA DARK CCC	modEVA: DARK CCC plug-module with Sensor-IC, circular hole and signal electronic - Current-Charge-Converter (RoHS)		090003-413-25AEZ00
MTCS-ME1 modEVA DARK TIA	modEVA: DARK TIA plug-module with Sensor-IC, circular hole and signal electronic (Transimpedance amplifier) (RoHS)		090003-414-25AEZ00
MTCS-C2 Colorimeter	modEVA Functional Board COL2 with Sensor, Amplifier, $\mu$ C, USB-Interface and Circular Hole (RoHS)		090012-162-25AEZ02
MTCS-ME1 modEVA LWL FRONT	modEVA additional circular hole for FRONT, without sensor		090003-409-51AEZ01
MTCS-ME1 modEVA LWL TOP	modEVA additional circular hole for TOP, without sensor		090003-399-51AEZ01
MTCS-ME1 modEVA Col2 Circular Hole	modEVA additional circular hole for DARK/COL2, without sensor		E082Z000847
<b>Transimpedance amplifier</b>			
MTI04xx	Multi-channel preamplifier (current to voltage amp.)		
MTI04CS	<b>NEW!</b> 8 amplifier stages adjustable, delivery form SOP16 (RoHS)		090450-041-26AEZ00
MTI04CQ	<b>NEW!</b> 8 amplifier stages adjustable, delivery form QSOP16 (RoHS)		090450-031-26AEZ00

Further information available at <http://www.JENCOLOR.de> or from our sales departments!