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Teviso Sensor Technologies





Radiation Sensor BG51

- Nuclear Beta and Gamma Radiation Sensor - Ultra Low Power Requirement

Description

The function of the BG51 radiation sensor is based on an array of customized PIN diodes. The integrated pulse discriminator with a temperature compensated threshold level provides true TTL signal output. The BG51 is capable of detecting beta radiation (electrons), gamma radiation (photons) and X-rays.

The performance of the BG51 solid state sensor, in combination with high immunity to electrostatic fields make it a good choice for new state-of-the-art designs as well as for upgrading existing designs.

Features and Benefits

- Detects beta and gamma radiation and X-rays
- New: Ultra low power requirement (25µA)
- Detector sensitivity: 5 cpm/µSv/h
- High immunity to RF and electrostatic fields
- Linear response over wide temperature range (-30°C to 60°C)
- Swiss made

Application Areas

- Equipment for detecting radioactivity in medical environment
- Radiation monitors for nuclear safeguards and security
- Gamma detector to detect illicit nuclear material
- Natural sciences courses and practical lab experiments

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BG51



Absolute Maximum Ratings

Supply voltage, V _{CC} to GND	18.0V
Output short-circuit current	continuous
Storage temperature range	-65°C to 100°C

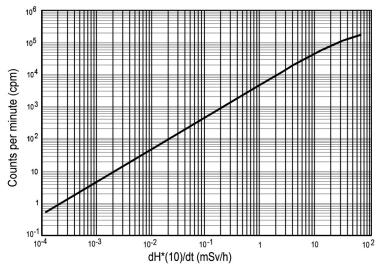
Electrical characteristics

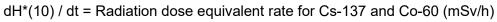
Unless otherwise indicated specified at: V_{CC} = 4.0V, T_A = 25°C

Measurement range of dose rate	0.1 µSv/h to 100 mSv/h
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Pulse count rate	5 cpm \pm 15% for 1 μ Sv/h radiation dose rate
Energy response	50 KeV to above 2 MeV
Output pulse level Output pulse width	Equal to supply voltage (positive going) 50 μ s to 200 μ s (LOW \rightarrow HIGH \rightarrow LOW)
Supply voltage range, V_{CC} Supply current, I_S	2.5V to 12.0V 25µA TYP
Operating temperature range	-30°C to 60°C

BG51 Sensor Linearity





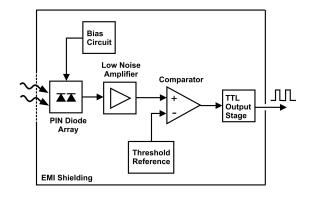
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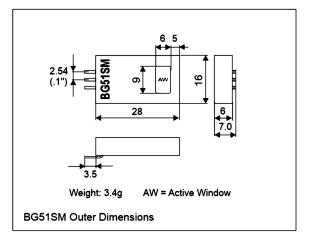
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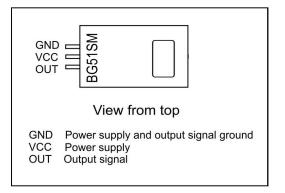
BG51 Functional Block Diagram



BG51-SM Outline Dimensions (in millimeters)



BG51-SM Connection Descriptions (View from the top side)



Soldering Recommendations

Hand soldering is recommended. 360°C max., 5 seconds max.

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Application Information

Susceptibility to Strong Microwave Signals

Please refer to our Application Note published on <u>https://www.teviso.com/file/pdf/bg51-preventing-undesired-pulses.pdf</u>

Susceptibility to Noise on Power Source

Please refer to our Application Note published on https://www.teviso.com/file/pdf/bg51-preventing-undesired-pulses.pdf

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