BG51

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

Absolute Maximum Ratings

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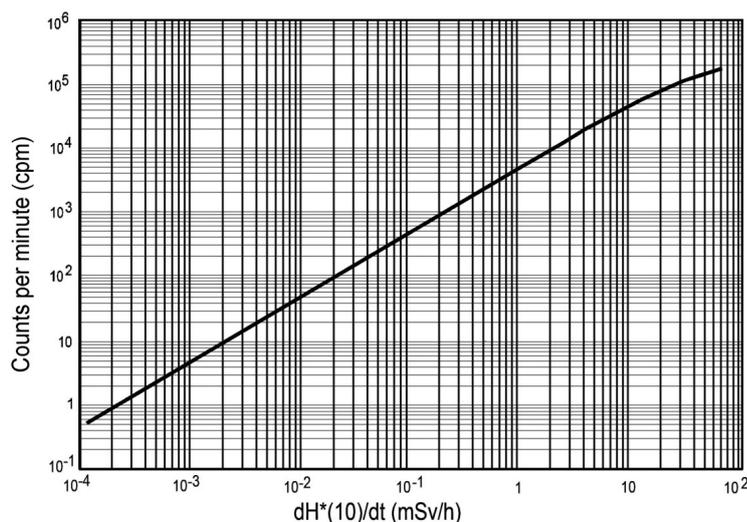Storage temperature range   -65°C to 100°C

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

Pulse count rate   5 cpm ± 15% for 1 µSv/h radiation dose rate

Energy response   50 KeV to above 2 MeV

Output pulse level   Equal to supply voltage (positive going)
Output pulse width   50 µs to 200 µs (LOW→HIGH→LOW)

Supply voltage range, V_{CC} 2.5V to 12.0V
Supply current, I_S 25µA TYP

Operating temperature range   -30°C to 60°C

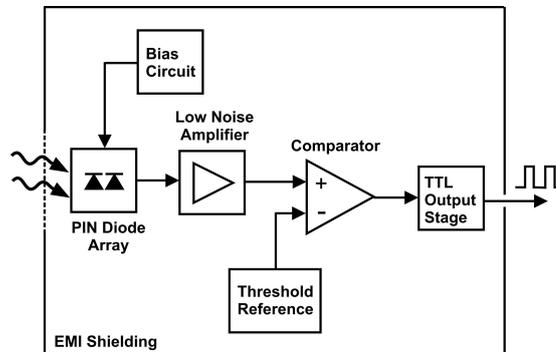## BG51 Sensor Linearity

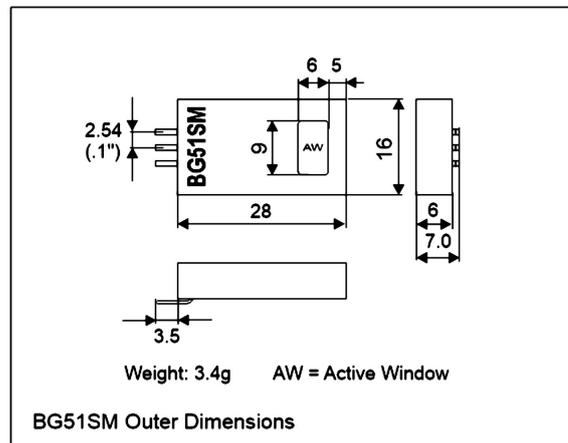dH*(10) / dt = Radiation dose equivalent rate for Cs-137 and Co-60 (mSv/h)

iSweek   www.isweek.com
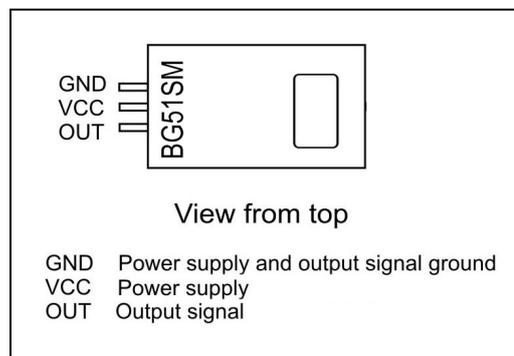Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
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BG51 Functional Block Diagram

BG51-SM Outline Dimensions (in millimeters)

BG51SM Outer Dimensions

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

View from top

GND   Power supply and output signal ground
VCC   Power supply
OUT   Output signal

Soldering Recommendations

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

Application Information

Susceptibility to Strong Microwave Signals

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

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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