



e2v technologies

**VQ48Z**  
**Pellistor**

**INTRODUCTION**

The VQ48Z is a catalytic flammable gas sensor (pellistor) that consists of two matched elements. It may be used for the detection of a wide variety of combustible gases in air, at concentrations between 0% and 100% of the lower explosive limit (LEL) of a given flammable gas. The VQ48Z is a low power sensor, especially suitable for use in battery powered, portable gas detectors, where small size, poison resistance and tolerance to mechanical shocks are the primary requirements.

The principles of operation of pellistor type gas sensors are described in 'e2v Gas Sensors - Pellistors and Thermal Conductivity Cells'.

**GENERAL DATA**

The information given below relates to the VQ48Z operating in the recommended circuit shown in Fig. 1. The instrument designer should always be aware that the mounting arrangement and circuitry employed within an instrument design will often profoundly modify the performance of any gas sensor.

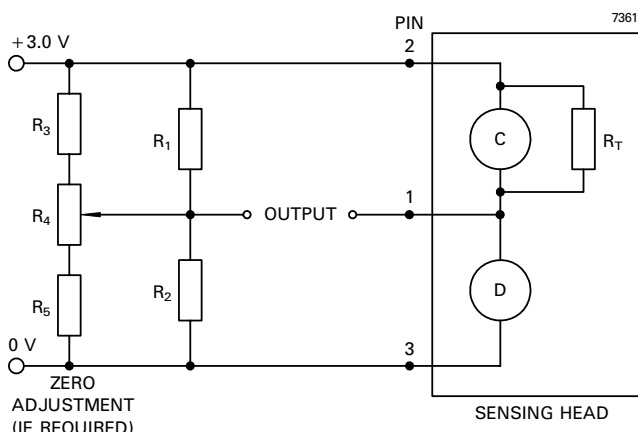
Operation	suitable for continuous or intermittent operation
Bridge supply (see note 1)	2.9 to 3.3 V
Sensor current (at 3.0 V)	80 mA max
Minimum sensitivity	25 mV/% methane
Linearity (see note 2)	linear up to 60% LEL (methane)
Repeatability	±2% LEL (methane)
Response time	
(T <sub>50</sub> , measured at 50% LEL methane)	10 s max
Maximum methane concentration (see note 3)	100% LEL
Typical long term drift (see note 4):	
zero	0.5 mV/month
span	2% signal/month

**MARKING**

The detector has a red number written on the can; the compensator has a black number.

**NOTES**

1. The polarity of the supply voltage in the bridge circuit (Fig. 1) may be reversed without harm. The only effect is to reverse the polarity of the output signal.
2. For further details of the linearity of pellistor based gas sensors, refer to Pellistor Application Note 4, 'Linearity Corrections to Pellistor Responses at High Gas Levels'.
3. If the VQ48Z is exposed to greater than 100% LEL concentration of a flammable gas, the calibration of the instrument should be checked.
4. Some flammable gases and vapours, in particular, silicones, some fuel additives and some sulphur bearing compounds, can damage or 'poison' pellistors. The long term drift data expressed above assumes that the sensor is not exposed to chemicals known to poison them. For more details, refer to Pellistor Application Note 1, 'How to Get the Best from your e2v technologies Pellistors'.
5. The elements are supplied as a matched pair, complete with a trimming resistor of the correct value which is between 200 and 8200 Ω. The trimming resistor should be connected across the **compensator** element as shown in the circuit Fig. 1.
6. Resistor supplied in 1206 chip resistor outline.



**Fig. 1** Recommended circuit diagram

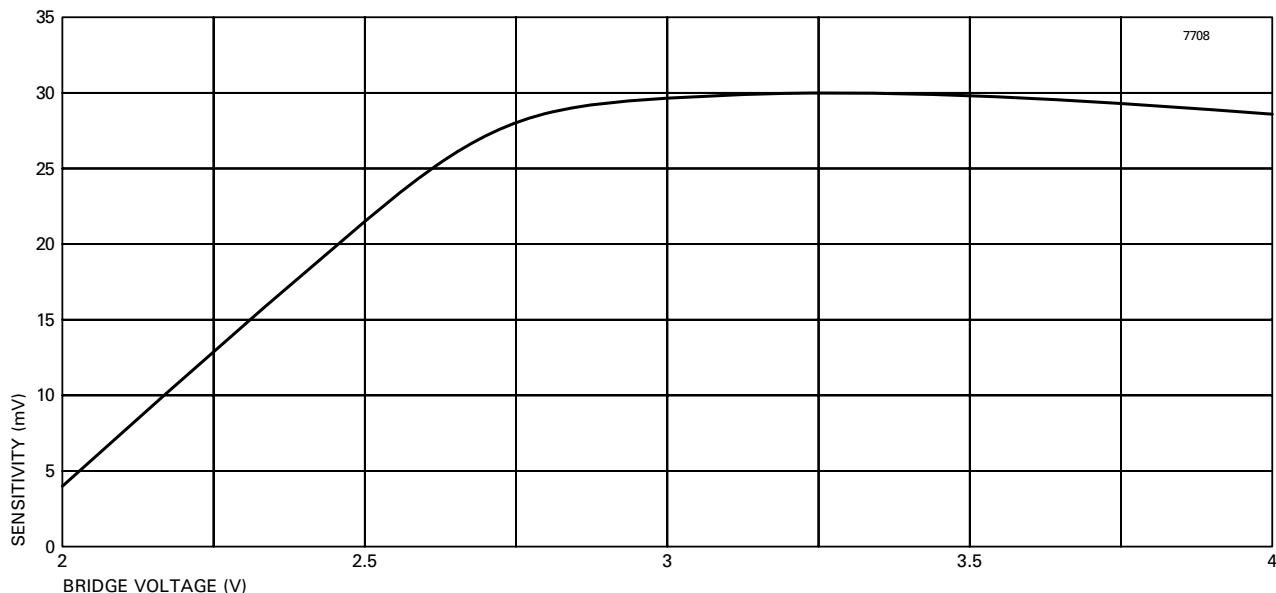
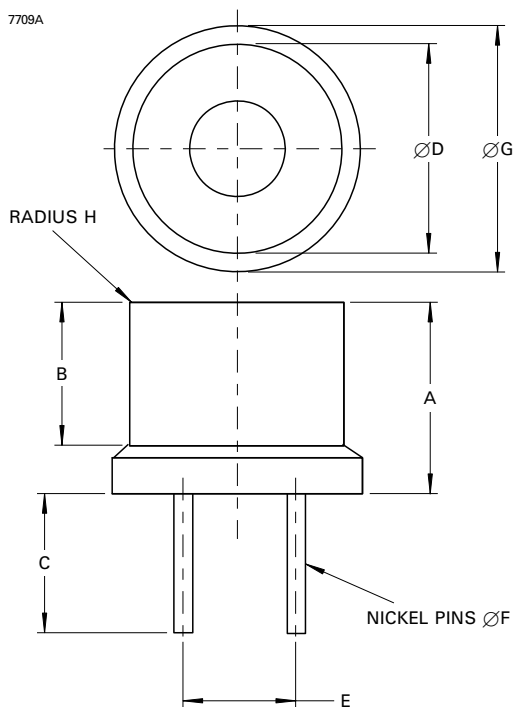


Fig. 2 Peaking curve

## OUTLINE



Ref	Millimetres	Inches
A	5.50 ± 0.20	0.216 ± 0.008
B	4.40 ± 0.20	0.173 ± 0.008
C	9.00 ± 0.20	0.354 ± 0.008
D	6.30 ± 0.20	0.248 ± 0.008
E	3.60 ± 0.20	0.142 ± 0.008
F	1.00 ± 0.20	0.040 ± 0.008
G	7.20 ± 0.20	0.283 ± 0.008
H	0.20 ± 0.10	0.008 ± 0.004

Inch dimensions have been derived from millimetres.

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