INTRODUCTION
The VQ41TSB is a flammable gas sensor optimised for the detection of ammonia in air. It operates by detecting the heat produced by the catalytic oxidation of ammonia on a pair of matched elements. It may be used for the detection of ammonia in air mixtures with concentrations of 600 ppm upwards and is particularly suitable for monitoring over the range zero to 1.5% by volume (zero to 10% LEL). This makes the sensor ideal for use in ammonia refrigerant detection systems intended to comply with BS4434:1989.

Interference from water vapour or carbon dioxide is eliminated by using a matched, inert compensating element. The use of an improved poison resistant construction provides protection against the common substances that can progressively degrade the performance of a sensor and specifically provides a high degree of protection against silicone poisoning agents. In this latter case the protection is very much higher than that provided by standard poison resistant catalytic flammable gas detectors. Tests show no effect on zero or sensitivity to ammonia when exposed to 100 ppm HMDS for greater than one hour.

The VQ41TSB employs new catalyst chemistry and device structure to optimise the ammonia response. There is negligible sensitivity to xylene and very little sensitivity to methane under normal operating conditions, but the device can be used to detect hydrogen and butane.

GENERAL DATA

Electrical
This information relates to the sensor operating in the recommended bridge circuit shown below.

Operation .............. continuous
Bridge supply ........... 2.0 ± 0.1 V
Sensor power consumption ...... 250 mW max
Typical sensor current ........ 100 mA
Sensitivity in e2v technologies test block (see note 1):
  minimum ........... 15 mV/% NH₃
  typical ............ 20 mV/% NH₃
Typical sensitivity to hydrogen ....... 45 mV/% H₂

Mechanical
Outline .................. see page 2
Shock (see note 2) ........ 250 g, 5 blows in each plane
Vibration (see note 2) ....... 20 g, 24 cycles from 100 to 3200 Hz

MARKING
Each element carries a unique serial number written on the side of the can. On the detector the number is red and on the compensator it is black.

NOTES
1. The sensitivity is partially influenced by the flow of gas to the elements. Consequently, it is affected by the geometry of the mounting arrangements. The quoted figures were obtained in SGX Sensortech’s standard test block, details of which are available on request.
2. Shock and vibration measurements are strongly dependent on the mounting arrangements of the sensor.
3. The values of the resistors in the bridge circuit are suitable for circuits where negligible current is drawn from the output terminals, such as when a high input impedance output amplifier is used.
4. The elements are provided as a matched pair with a trimming resistor R, which must be connected across the compensator as shown. Occasionally a trimming resistor is not required and in such cases the slip packed with the sensor will be marked ‘N/R’ instead of quoting the value of the resistor supplied.
**Figure 1. Typical Response to 20% LEL**

![Graph showing typical response to 20% LEL](image)

**OUTLINE OF DETECTOR ELEMENT**

```
<table>
<thead>
<tr>
<th>Ref</th>
<th>Millimetres</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11.3 max</td>
<td>0.445 max</td>
</tr>
<tr>
<td></td>
<td>10.8 min</td>
<td>0.425 min</td>
</tr>
<tr>
<td>B</td>
<td>6.36 max</td>
<td>0.250 max</td>
</tr>
<tr>
<td></td>
<td>5.86 min</td>
<td>0.230 min</td>
</tr>
<tr>
<td>C</td>
<td>3.69 max</td>
<td>0.145 max</td>
</tr>
<tr>
<td></td>
<td>3.43 min</td>
<td>0.135 min</td>
</tr>
<tr>
<td>D</td>
<td>40.0 min</td>
<td>1.575 min</td>
</tr>
<tr>
<td>E</td>
<td>1.0 nom</td>
<td>0.039 nom</td>
</tr>
<tr>
<td>F*</td>
<td>6.36 max</td>
<td>0.250 max</td>
</tr>
<tr>
<td></td>
<td>5.33 min</td>
<td>0.210 min</td>
</tr>
<tr>
<td>G</td>
<td>8.2 max</td>
<td>0.323 max</td>
</tr>
<tr>
<td>H</td>
<td>1.5 nom</td>
<td>0.059 nom</td>
</tr>
</tbody>
</table>
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* For the compensator element, dimension F is 7.88 mm (0.310 inches) max, 6.86 mm (0.270 inches) min.

**WARNING**

To satisfy the requirements of the recognised approval authorities, SGX Sensortech recommends that a suitable sintered metal flame arrestor be used with the device to ensure safe operation.