• ENR 12…15 dB typical
• High stability
• Good flatness

• No high voltage supply required
• Compact solid state source
• High reliability, rugged construction

Applications
• Laboratory measurement and test equipment
• Mm-wave noise source
• Calibration
• Noise figure measurement

Description

ELVA-1 solid-state noise source **ISSN-XX** series delivers a uniform level of noise power spectral density within the whole waveguide frequency range. Sources are available in eight waveguide bands covering 26.4-170 GHz. A Silicon IMPATT diode is employed as a fundamental building block of the source. High stability of the device allows it to be used for test and instrumentation applications in place of gas-tube noise sources. Low DC power requirements eliminate the need for complex high voltage supplies. There are two operation modes: CW mode and pulsed AM mode with modulation frequency up to 1 kHz. Typical value of excess noise ratio (ENR) as a function of frequency is given on the plot below.

Block Diagram:
**Inputs and Controls:**

- **Mm-power ON Indicator**
- **Power/Triggering Inversion Switch**
- **Triggering (SMA Female) TTL**
- **+18...+28VDC (BNC Female)**

**Notes:**

- Power/Triggering Inversion Switch can be used for manual ON/OFF. “INV” position is ON. Microwave power can be switched with TTL-level control voltage.
- If Triggering Inversion Switch is in OFF (Down) position active level is high, otherwise (INV position) – active level is low.

**Specifications**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>ISSN-28</th>
<th>ISSN-22</th>
<th>ISSN-19</th>
<th>ISSN-15</th>
<th>ISSN-12</th>
<th>ISSN-10</th>
<th>ISSN-08</th>
<th>ISSN-06</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Band and Range, GHz</strong></td>
<td>Ka 26.5-40</td>
<td>Q 33-50</td>
<td>U 40-60</td>
<td>V 50-75</td>
<td>E 60-90</td>
<td>W 75-110</td>
<td>F 90-140</td>
<td>D 110-170</td>
</tr>
<tr>
<td><strong>Input waveguide</strong></td>
<td>WR28</td>
<td>WR22</td>
<td>WR19</td>
<td>WR15</td>
<td>WR12</td>
<td>WR10</td>
<td>WR8</td>
<td>WR6</td>
</tr>
<tr>
<td><strong>Bandwidth, GHz (min)</strong></td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
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</tr>
<tr>
<td><strong>ENR, dB (nom)</strong></td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>12</td>
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<tr>
<td><strong>Typical Flatness, dB</strong></td>
<td>±1</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
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<tr>
<td><strong>Stability, dB/°C</strong></td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
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<td></td>
</tr>
<tr>
<td><strong>Stability/Day, dB (typ)</strong></td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
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<td>0.05</td>
<td>0.05</td>
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<tr>
<td><strong>Biasing Voltage, V</strong></td>
<td>+18...+28</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Sizes, mm</strong></td>
<td>Cylinder diameter/length (without isolator)</td>
<td>50/75</td>
<td>50/75</td>
<td>50/75</td>
<td>50/75</td>
<td>50/60</td>
<td>50/60</td>
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</tr>
</tbody>
</table>

**Notes:**

- Maximum operating temperature is +60°C
- Diode operating current is 50...100 mA.
- A limiting value of modulation frequency is 1 kHz (external triggering).
- Triggering signal amplitude is TTL level.
- Bias voltage is +18 V. It is possible to supply the noise source with +28VDC biasing for the compatibility with commonly used noise meters.
- External triggering connector is SMA female.
- ENR would be increased for narrower bandwidth. Please contact factory.
Power supply for input power 220VAC/50Hz, 110VAC/60Hz or 100VAC/50Hz are available optionally.
For the precision control and fast modulation of the output power of the source Voltage Controlled Attenuator VCVA-XX series can be supplied optionally.

### How to Order

Specify Model Number ISSN-XX/BW/V, where
- **XX** – number of waveguide standard (Ex. 10 for WR-10 and 06 for WR-06)
- **BW** – operating bandwidth in GHz (nothing if full band)
- **V** – type of power supply: **18** or **28** if external power supply +18VDC or +28 VDC of customer’s lab will be used (specify voltage), **110** or **220** if external 110VAC or 220VAC power supply is requested together with noise source

### Example

**ISSN-10/28** (W-band noise source with output waveguide WR-10, full band 75-110 GHz, external power supply +28VDC not requested  
**ISSN-06/110-140/220** (D-band noise source with output waveguide WR-06, operating frequency 110-140GHz, external 220VAC power supply requested as well)