

Vishay MBB02070C2490FRP00

Instruction Manual: Metal Film Resistor

Brand: Vishay | Model: MBB02070C2490FRP00

1. PRODUCT OVERVIEW

The Vishay MBB02070C2490FRP00 is a high-quality metal film resistor designed for various electronic applications. It features a resistance of 249 ohms, a power rating of 600mW, and a tolerance of $\pm 1\%$. This axial-leaded component is suitable for circuits requiring precise resistance values and stable performance. It is RoHS compliant, ensuring adherence to environmental standards.



This image displays the Vishay MBB02070C2490FRP00 Metal Film Resistor, an axial-leaded component with color bands indicating its resistance and tolerance.

2. KEY FEATURES

- Resistance:** 249 Ohm
- Power Rating:** 600mW
- Resistance Tolerance:** $\pm 1\%$
- Resistor Case Style:** Axial Leaded
- Resistor Element Material:** Metal Film
- Voltage Rating:** 300V
- Temperature Coefficient:** $\pm 50\text{ppm}/^{\circ}\text{C}$
- RoHS Compliant

3. SETUP AND INSTALLATION

Proper handling and installation are crucial for the optimal performance and longevity of the resistor. Follow these guidelines:

- Inspection:** Before installation, visually inspect the resistor for any physical damage, such as bent leads or cracks in the body.
- Identification:** Verify the resistance value and tolerance using the color code bands on the resistor body or by

measuring with a multimeter.

3. **Static Electricity Precautions:** While resistors are generally robust against static discharge, it is good practice to handle them in an ESD-safe environment, especially when integrating with sensitive electronic components.
4. **Mounting:** Insert the axial leads into the designated holes on the printed circuit board (PCB) or connect them to other circuit components. Ensure the resistor body does not touch other conductive parts to prevent short circuits.
5. **Soldering:** Solder the leads securely to the PCB pads. Use appropriate soldering techniques to avoid overheating the resistor, which can affect its performance or cause damage. Ensure good solder joints for reliable electrical connection.
6. **Lead Bending:** When bending leads, do so gently and avoid sharp bends close to the resistor body to prevent stress on the internal element.

4. OPERATING PRINCIPLES

The Vishay MBB02070C2490FRP00 is a passive electronic component designed to oppose the flow of electric current. Its operation is inherent to the circuit it is integrated into. Key considerations during operation include:

- **Voltage and Current Limits:** Ensure that the voltage across the resistor and the current flowing through it do not exceed its specified voltage rating (300V) and power rating (600mW). Exceeding these limits can lead to overheating and permanent damage.
- **Heat Dissipation:** Resistors dissipate electrical energy as heat. Adequate ventilation or heat sinking may be required in applications where the resistor operates close to its maximum power rating to prevent excessive temperature rise.
- **Environmental Conditions:** Operate the resistor within its specified temperature range. Extreme temperatures can affect its resistance value and overall performance.

5. MAINTENANCE

Metal film resistors are generally maintenance-free components due to their robust construction and passive nature. However, periodic inspection can help ensure continued reliable operation:

- **Visual Inspection:** Periodically inspect the resistor for any signs of physical damage, such as discoloration (indicating overheating), cracks, or corrosion on the leads.
- **Environmental Control:** Ensure the operating environment remains within specified temperature and humidity ranges to prevent degradation over time.
- **Cleaning:** If necessary, gently clean the resistor and surrounding PCB area using appropriate electronic cleaning solutions and soft brushes to remove dust or debris that could affect performance or lead to short circuits.

6. TROUBLESHOOTING

While resistors are highly reliable, issues can arise, often due to incorrect application or external factors. Here are common troubleshooting steps:

- **Incorrect Resistance Reading:**
 - **Check Multimeter:** Ensure your multimeter is functioning correctly and calibrated.
 - **Measure In-Circuit vs. Out-of-Circuit:** Other components in the circuit can affect resistance readings. For an accurate measurement, desolder one lead of the resistor from the circuit.
 - **Tolerance:** Remember the $\pm 1\%$ tolerance. The measured value should fall within this range.

- **Open Circuit (Infinite Resistance):**
 - **Broken Lead:** Inspect leads for breaks or poor solder joints.
 - **Internal Damage:** Severe overheating or physical stress can cause the resistive element to break. Replace the resistor if this is suspected.
- **Short Circuit (Zero Resistance):**
 - **Solder Bridge:** Check for unintended solder bridges across the resistor leads or to adjacent traces on the PCB.
 - **Component Failure:** While rare, a resistor can fail short if subjected to extreme overcurrent or voltage.
- **Overheating/Discoloration:**
 - **Exceeding Power Rating:** Calculate the actual power dissipated by the resistor ($P = I^2R$ or $P = V^2/R$) and compare it to the 600mW rating. If it exceeds, a higher power rated resistor is needed.
 - **Insufficient Ventilation:** Ensure adequate airflow around the resistor, especially in enclosed spaces.

7. TECHNICAL SPECIFICATIONS

Specification	Value
Resistance	249 Ohm
Power Rating	600mW
Resistance Tolerance	±1%
Resistor Case Style	Axial Leaded
Voltage Rating	300V
Resistor Element Type	Metal Film
RoHS Compliant	Yes
Item Weight	0.01 ounces
Model Number	MBB02070C2490FRP00
Manufacturer	Vishay
Date First Available	January 6, 2014

8. WARRANTY INFORMATION

Specific warranty details for the Vishay MBB02070C2490FRP00 Metal Film Resistor are not provided within this manual. For comprehensive warranty information, please refer to the official Vishay website or contact your authorized Vishay distributor. Keep your purchase receipt as proof of purchase.

9. CUSTOMER SUPPORT

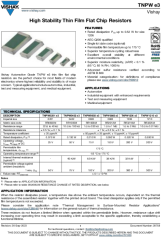
For technical assistance, product inquiries, or support regarding the Vishay MBB02070C2490FRP00 resistor, please contact Vishay customer support directly through their official channels. You can typically find contact information,

including phone numbers and email addresses, on the Vishay corporate website (www.vishay.com).



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Related Documents

	<p>Vishay TNPW e3 High Stability Thin Film Flat Chip Resistors Datasheet</p> <p>Datasheet for Vishay's TNPW e3 series of high stability thin film flat chip resistors. Features include AEC-Q200 qualification, high reliability, superior temperature cycling robustness, and advanced sulfur resistance. Applications span automotive, industrial, test and measuring, and medical equipment. Includes detailed technical specifications, performance characteristics, and test procedures.</p>
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