

**JBL: 品牌缩写**

The diagram illustrates the decoding process for the capacitor code **E2R47M0046R3C080R**. The code is broken down into its constituent parts, each linked to a specific attribute table:

- E 2**: Series (E1, E2, E4, E5, H2, H4, H5, M1, M2, M4, M5, H6, H7)
- 4 7 1**: Nominal Capacitance (R47, 1R0, 4R7, 470, 471, 472, 0.47μF, 1μF, 4.7μF, 47μF, 470μF, 4700μF)
- M**: Tolerance (J, K, V, M, Q, T, Z, A, ±5%, ±10%, -10~+20%, ±20%, -10~+30%, -10~+50%, -20~+80%, Special)
- 6 R 3**: Voltage (2R5, 004, 6R3, 6R8, 7R5, 010, 012, 016, 020, 025, 035, 050, 063, 080, 100, 160, 2.5V, 4V, 6.3V, 6.8V, 7.5V, 10V, 12V, 16V, 20V, 25V, 35V, 50V, 63V, 80V, 100V, 160V)
- C**: Diameter (A, B, C, D, E, F, G, 5, 5.5, 6.3, 8, 10, 12.5, 13)
- 0 8 0**: Length (050, 058, 070, 077, 080, 090, 098, 120, 126, 5, 5.8, 7, 7.7, 8, 9, 9.8, 12, 12.6)
- R**: Color (B, R, G, Blue, Red, Gray)
- L**: Lead Forming Type (L, T, C, P, Bagged, SMD, Lead cut, Taping)
- M**: Analysis (M, Solid capacitor)

Detailed table for the **M** tolerance code:

| 代码 Code | 误差 Tolerance |
|---------|--------------|
| J       | ±5%          |
| K       | ±10%         |
| V       | -10~+20%     |
| M       | ±20%         |
| Q       | -10~+30%     |
| T       | -10~+50%     |
| Z       | -20~+80%     |
| A       | 特殊 Special   |

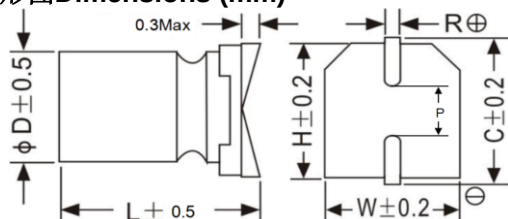
## M2

- Low ESR, High ripple, miniaturized
- SMD type: lead free reflow soldering condition at 260°C peak correspondence
- RoHS Compliant

## ◆ 规格表 Specifications

| 项 目Items                                                           | 特性参数Characteristics                                                                                                                                                                                                                                                                                                                                   |                              |                               |                               |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|-------------------------------|
| 使用温度范围<br>Category<br>Temperture Range                             | -55 ~ +105℃                                                                                                                                                                                                                                                                                                                                           |                              |                               |                               |
| 额定工作电压范围<br>Rated Voltage Range                                    | 2.5 ~ 100V                                                                                                                                                                                                                                                                                                                                            |                              |                               |                               |
| 静电容量允许偏差<br>Capacitance tolerance                                  | ±20%(M) (at 20℃,120Hz)                                                                                                                                                                                                                                                                                                                                |                              |                               |                               |
| 漏电流<br>Leakage Current                                             | 施加额定工作电压2分钟后读数, 小于或等于规格值 (at 20℃)<br>Less than or equal to the specified value. After 2 minutes<br>application of rated Voltage at 20℃                                                                                                                                                                                                                |                              | 2.5~25V<br>≤0.2CV 或500μA(取大值) | 35~100V<br>≤0.1CV 或299μA(取大值) |
| 损耗角正切值tanδ<br>Dissipation Factor                                   | Rated voltage (V)                                                                                                                                                                                                                                                                                                                                     | 2.5~6.3                      | 10~100                        | (at 20℃,120Hz)                |
|                                                                    | tanδ (Max.)                                                                                                                                                                                                                                                                                                                                           | 0.08                         | 0.12                          |                               |
| 温度特性<br>Low Temperture<br>Characteristics<br>(Max.Impedance Ratio) | Z(-25℃)/Z(+20℃)                                                                                                                                                                                                                                                                                                                                       | ≤1.25                        | (100KHz)                      |                               |
|                                                                    | Z(-55℃)/Z(+20℃)                                                                                                                                                                                                                                                                                                                                       | ≤1.25                        |                               |                               |
| 耐久性<br>Endurance                                                   | 105℃施加额定工作电压2000小时, 恢复到20℃后, 产品性能应满足以下要求<br>The specifications listed below shall be satisfied when the capacitors are restored to 20℃ after application of rated voltage for 2000 hours at 105℃.                                                                                                                                                     |                              |                               |                               |
|                                                                    | Appearance                                                                                                                                                                                                                                                                                                                                            | No significant damage        |                               |                               |
|                                                                    | Capacitance change                                                                                                                                                                                                                                                                                                                                    | ≤±20% of the initial value   |                               |                               |
|                                                                    | D.F.(tanδ)                                                                                                                                                                                                                                                                                                                                            | ≤150% of the specified value |                               |                               |
|                                                                    | ESR                                                                                                                                                                                                                                                                                                                                                   | ≤150% of the specified value |                               |                               |
|                                                                    | Leakage current                                                                                                                                                                                                                                                                                                                                       | ≤The specified value         |                               |                               |
| 耐湿负荷特性<br>Damp Heat<br>(Steady State)                              | 在60℃ 温度, 湿度90%~95%RH的环境中, 施加额定电压1000小时后, 恢复到20℃后, 产品性能应满足以下要求<br>The specifications listed below shall be satisfied when the capacitors are restored to 20℃after application of rated voltage for 1000 hours at 60℃,90%~ 95% RH.                                                                                                                      |                              |                               |                               |
|                                                                    | Appearance                                                                                                                                                                                                                                                                                                                                            | No significant damage        |                               |                               |
|                                                                    | Capacitance change                                                                                                                                                                                                                                                                                                                                    | ≤±20% of the initial value   |                               |                               |
|                                                                    | D.F.(tanδ)                                                                                                                                                                                                                                                                                                                                            | ≤150% of the specified value |                               |                               |
|                                                                    | ESR                                                                                                                                                                                                                                                                                                                                                   | ≤150% of the specified value |                               |                               |
|                                                                    | Leakage current                                                                                                                                                                                                                                                                                                                                       | ≤The specified value         |                               |                               |
| 浪涌电压特性<br>(Surge Voltage)                                          | 浪涌电压=额定电压× 1.15(V)<br>Surge Voltage=Rated voltage × 1.15(V)<br>在105℃环境中, 按充电30秒; 放电5分30秒, 连续施加浪涌电压1000次(Rc=1kΩ), 待恢复测试, 应满足以下要求<br>The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages specified at 105℃ for 30 seconds through a protective resistor (Rc=1kΩ) and discharge for 5 minutes 30 seconds. |                              |                               |                               |
|                                                                    | Appearance                                                                                                                                                                                                                                                                                                                                            | No significant damage        |                               |                               |
|                                                                    | Capacitance change                                                                                                                                                                                                                                                                                                                                    | ≤±20% of the initial value   |                               |                               |
|                                                                    | D.F.(tanδ)                                                                                                                                                                                                                                                                                                                                            | ≤150% of the specified value |                               |                               |
|                                                                    | ESR                                                                                                                                                                                                                                                                                                                                                   | ≤150% of the specified value |                               |                               |
|                                                                    | Leakage current                                                                                                                                                                                                                                                                                                                                       | ≤The specified value         |                               |                               |
| 焊接耐热性<br>Resistance to<br>soldering heat                           | 按回流焊试验后, 应满足于以下要求<br>Measurement for solder temperature profile shall be made at the capacitor top and the terminal.                                                                                                                                                                                                                                  |                              |                               |                               |
|                                                                    | Capacitance change                                                                                                                                                                                                                                                                                                                                    | ≤±10% of the initial value   |                               |                               |
|                                                                    | D.F.(tanδ)                                                                                                                                                                                                                                                                                                                                            | ≤130% of the specified value |                               |                               |
|                                                                    | ESR                                                                                                                                                                                                                                                                                                                                                   | ≤130% of the specified value |                               |                               |
|                                                                    | Leakage current                                                                                                                                                                                                                                                                                                                                       | ≤The specified value         |                               |                               |

## ◆ 外形图 Dimensions (mm)



| ΦD  | W    | H    | C    | R       | P   |
|-----|------|------|------|---------|-----|
| 5   | 5.3  | 5.3  | 5.9  | 0.5~0.8 | 1.4 |
| 6.3 | 6.5  | 6.5  | 7.2  | 0.5~0.8 | 2.2 |
| 8   | 8.3  | 8.3  | 9.0  | 0.7~1.1 | 3.1 |
| 10  | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |

## M2

## ◆ 纹波电流修正系数 Rated Ripple Current Coefficient

| 频率Frequency(Hz) | $120\text{Hz} \leq f < 1\text{kHz}$ | $1\text{kHz} \leq f < 10\text{kHz}$ | $10\text{kHz} \leq f < 100\text{kHz}$ | $100\text{kHz} \leq f < 500\text{kHz}$ |
|-----------------|-------------------------------------|-------------------------------------|---------------------------------------|----------------------------------------|
| 系数 Coefficient  | 0.05                                | 0.30                                | 0.70                                  | 1.00                                   |

## ◆ 尺寸与个技术参数一览表Standard Ratings

| Rated voltage (V) | Rated capacitance (uF) | Case size $\Phi D \times L(\text{mm})$ | ESR(m $\Omega$ )<br>at 20°C,100 KHz | Leakage Current ( $\mu\text{A}$ ) | Rated ripple current (mA <sub>rms</sub> /105°C/100kHz) |
|-------------------|------------------------|----------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------------------|
| 2.5               | 470                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 470                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 560                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 560                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 680                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 820                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
| 4                 | 560                    | 6.3*9                                  | 30                                  | 500                               | 4100                                                   |
|                   | 680                    | 6.3*9                                  | 30                                  | 544                               | 4100                                                   |
|                   | 820                    | 6.3*9                                  | 30                                  | 656                               | 4100                                                   |
|                   | 1000                   | 6.3*9                                  | 30                                  | 800                               | 4100                                                   |
|                   | 1200                   | 6.3*9                                  | 30                                  | 960                               | 4100                                                   |
| 6.3               | 220                    | 5*7.5                                  | 45                                  | 500                               | 2500                                                   |
|                   | 220                    | 6.3*5.8                                | 35                                  | 500                               | 3200                                                   |
|                   | 220                    | 6.3*7                                  | 35                                  | 500                               | 3500                                                   |
|                   | 330                    | 6.3*5.8                                | 35                                  | 500                               | 3200                                                   |
|                   | 330                    | 6.3*7                                  | 35                                  | 500                               | 3500                                                   |
|                   | 330                    | 6.3*7.7                                | 35                                  | 500                               | 3500                                                   |
|                   | 470                    | 6.3*7.7                                | 35                                  | 592                               | 3500                                                   |
|                   | 560                    | 6.3*7.7                                | 35                                  | 706                               | 3500                                                   |
|                   | 680                    | 6.3*9                                  | 30                                  | 857                               | 3800                                                   |
|                   | 820                    | 6.3*9                                  | 30                                  | 1033                              | 3800                                                   |
|                   | 1000                   | 8*9.8                                  | 25                                  | 1260                              | 4100                                                   |
|                   | 1500                   | 10*12.6                                | 20                                  | 1890                              | 4800                                                   |
| 10                | 220                    | 6.3*7                                  | 35                                  | 500                               | 2650                                                   |
|                   | 330                    | 6.3*7                                  | 35                                  | 660                               | 2650                                                   |
|                   | 470                    | 6.3*7.7                                | 35                                  | 940                               | 2700                                                   |
|                   | 560                    | 6.3*9                                  | 35                                  | 1120                              | 2900                                                   |
|                   | 680                    | 8*9.8                                  | 25                                  | 1360                              | 3500                                                   |
|                   | 820                    | 10*10.2                                | 25                                  | 1640                              | 4100                                                   |
|                   | 820                    | 8*12.6                                 | 25                                  | 1640                              | 4100                                                   |
|                   | 1000                   | 8*12.6                                 | 25                                  | 2000                              | 4100                                                   |
|                   | 1500                   | 10*12.6                                | 25                                  | 2000                              | 4500                                                   |
| 16                | 47                     | 6.3*7                                  | 50                                  | 500                               | 2100                                                   |
|                   | 68                     | 6.3*7                                  | 40                                  | 500                               | 2100                                                   |
|                   | 100                    | 6.3*5.8                                | 40                                  | 500                               | 1900                                                   |

## M2

## ◆ 尺寸与个技术参数一览表Standard Ratings

| Rated voltage<br>(V) | Rated capacitance<br>(uF) | Case size<br>ΦD×L(mm) | ESR(mΩ)<br>at 20℃,100 KHz | Leakage Current<br>(μA) | Rated ripple current<br>(mArms/105℃/100kHz) |
|----------------------|---------------------------|-----------------------|---------------------------|-------------------------|---------------------------------------------|
| 16                   | 100                       | 6.3*7                 | 40                        | 500                     | 2100                                        |
|                      | 220                       | 6.3*7                 | 40                        | 704                     | 2100                                        |
|                      | 220                       | 6.3*7.7               | 40                        | 704                     | 2260                                        |
|                      | 220                       | 8*9.8                 | 35                        | 704                     | 2690                                        |
|                      | 330                       | 6.3*7.7               | 40                        | 1056                    | 2260                                        |
|                      | 330                       | 8*9.8                 | 40                        | 1056                    | 2900                                        |
|                      | 330                       | 8*12.6                | 30                        | 1056                    | 3500                                        |
|                      | 470                       | 8*9.8                 | 40                        | 1504                    | 2900                                        |
|                      | 470                       | 8*12.6                | 30                        | 1504                    | 3500                                        |
|                      | 680                       | 8*12.6                | 30                        | 2176                    | 3500                                        |
|                      | 820                       | 8*12.6                | 30                        | 2624                    | 3500                                        |
|                      | 1000                      | 8*12.6                | 30                        | 3200                    | 3500                                        |
|                      | 1500                      | 10*12.6               | 30                        | 4800                    | 4100                                        |
| 25                   | 47                        | 6.3*5.8               | 60                        | 500                     | 1870                                        |
|                      | 47                        | 6.3*7                 | 60                        | 500                     | 1950                                        |
|                      | 100                       | 5*7.5                 | 70                        | 500                     | 1650                                        |
|                      | 100                       | 6.3*5.8               | 50                        | 500                     | 1870                                        |
|                      | 100                       | 6.3*7                 | 50                        | 500                     | 1950                                        |
|                      | 100                       | 6.3*9                 | 50                        | 500                     | 2100                                        |
|                      | 220                       | 6.3*9                 | 50                        | 1100                    | 2100                                        |
|                      | 220                       | 8*9.8                 | 50                        | 1100                    | 2690                                        |
|                      | 270                       | 6.3*10                | 50                        | 1350                    | 2400                                        |
|                      | 330                       | 8*9.8                 | 50                        | 1650                    | 2690                                        |
|                      | 470                       | 8*12.6                | 45                        | 2350                    | 3100                                        |
|                      | 470                       | 10*10.2               | 45                        | 2350                    | 3100                                        |
|                      | 680                       | 8*12.6                | 40                        | 3400                    | 3100                                        |
|                      | 680                       | 10*12.6               | 35                        | 3400                    | 3800                                        |
|                      | 820                       | 10*12.6               | 35                        | 4100                    | 3800                                        |
|                      | 1000                      | 10*12.6               | 35                        | 5000                    | 3800                                        |
| 35                   | 47                        | 6.3*7                 | 80                        | 299                     | 1410                                        |
|                      | 100                       | 6.3*7                 | 80                        | 350                     | 1516                                        |
|                      | 100                       | 6.3*7.7               | 80                        | 350                     | 1870                                        |
|                      | 100                       | 6.3*9                 | 80                        | 350                     | 1950                                        |
|                      | 100                       | 8*9.8                 | 50                        | 350                     | 2450                                        |
|                      | 150                       | 6.3*10                | 70                        | 525                     | 2100                                        |
|                      | 220                       | 8*9.8                 | 50                        | 770                     | 2450                                        |
|                      | 220                       | 8*12.6                | 50                        | 770                     | 2910                                        |
|                      | 330                       | 8*12.6                | 50                        | 1155                    | 2910                                        |
|                      | 330                       | 10*12.6               | 40                        | 1155                    | 3640                                        |
|                      | 470                       | 10*12.6               | 40                        | 1155                    | 3640                                        |

## M2

## ◆ 尺寸与个技术参数一览表Standard Ratings

| Rated voltage<br>(V) | Rated capacitance<br>( $\mu$ F) | Case size<br>$\Phi$ D×L(mm) | ESR( $m\Omega$ )<br>at 20°C,100 KHz | Leakage Current<br>( $\mu$ A) | Rated ripple current<br>(mA <sub>rms</sub> /105°C/100kHz) |
|----------------------|---------------------------------|-----------------------------|-------------------------------------|-------------------------------|-----------------------------------------------------------|
| 50                   | 10                              | 5*9                         | 100                                 | 299                           | 550                                                       |
|                      | 22                              | 6.3*9                       | 100                                 | 299                           | 850                                                       |
|                      | 33                              | 6.3*9                       | 100                                 | 299                           | 850                                                       |
|                      | 47                              | 6.3*9                       | 80                                  | 299                           | 920                                                       |
|                      | 47                              | 8*9.8                       | 60                                  | 299                           | 1200                                                      |
|                      | 47                              | 8*12.6                      | 60                                  | 299                           | 1500                                                      |
|                      | 100                             | 8*9.8                       | 60                                  | 500                           | 1320                                                      |
|                      | 100                             | 8*12.6                      | 60                                  | 500                           | 1550                                                      |
|                      | 100                             | 10*12.6                     | 55                                  | 500                           | 2100                                                      |
|                      | 150                             | 8*12.6                      | 60                                  | 750                           | 1550                                                      |
|                      | 220                             | 10*12.6                     | 55                                  | 1100                          | 2100                                                      |
| 63                   | 10                              | 6.3*9                       | 110                                 | 299                           | 750                                                       |
|                      | 22                              | 6.3*9                       | 110                                 | 299                           | 750                                                       |
|                      | 33                              | 6.3*9                       | 100                                 | 299                           | 820                                                       |
|                      | 33                              | 8*9.8                       | 60                                  | 299                           | 1100                                                      |
|                      | 47                              | 8*9.8                       | 60                                  | 299                           | 1100                                                      |
|                      | 47                              | 8*12.6                      | 60                                  | 299                           | 1300                                                      |
|                      | 82                              | 8*12.6                      | 60                                  | 517                           | 1550                                                      |
|                      | 100                             | 8*12.6                      | 60                                  | 630                           | 1550                                                      |
|                      | 100                             | 10*12.6                     | 55                                  | 630                           | 1800                                                      |
|                      | 150                             | 10*12.6                     | 55                                  | 945                           | 1800                                                      |
| 80                   | 10                              | 6.3*9                       | 120                                 | 299                           | 550                                                       |
|                      | 22                              | 6.3*9                       | 120                                 | 299                           | 600                                                       |
|                      | 22                              | 8*9.8                       | 70                                  | 299                           | 950                                                       |
|                      | 33                              | 8*9.8                       | 70                                  | 299                           | 950                                                       |
|                      | 33                              | 8*12.6                      | 70                                  | 299                           | 1300                                                      |
|                      | 47                              | 8*12.6                      | 70                                  | 376                           | 1300                                                      |
|                      | 56                              | 8*12.6                      | 70                                  | 448                           | 1400                                                      |
|                      | 68                              | 10*12.6                     | 50                                  | 544                           | 1750                                                      |
|                      | 100                             | 10*12.6                     | 50                                  | 800                           | 1750                                                      |
| 100                  | 10                              | 6.3*9                       | 120                                 | 299                           | 550                                                       |
|                      | 22                              | 8*9.8                       | 80                                  | 299                           | 950                                                       |
|                      | 22                              | 8*12.6                      | 70                                  | 299                           | 1300                                                      |
|                      | 33                              | 8*12.6                      | 70                                  | 330                           | 1300                                                      |
|                      | 47                              | 10*12.6                     | 50                                  | 470                           | 1700                                                      |
|                      | 68                              | 10*12.6                     | 50                                  | 680                           | 1750                                                      |