

4.7x4.1mm CERAMIC RESONATOR

AWSCR-MTD

Request Samples



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4.7 x 4.1 x 2.0 mm

RoHS/RoHS II Compliant

MSL Level = 1



Features

- Low resonant impedance
- Built-in load capacitors
- IR reflow capable

Applications

- Remote controls
- Microprocessor clocks
- Mobile phones
- Electric appliances
- Industrial controllers
- Consumer electronics

Key Electrical Specifications

| Parameters | Minimum | Typical | Maximum | Unite | Notes |
|---------------------------------------|------------------|---------|----------|-------|-----------------------|
| Frequency Range | 6.00 | | 60.00 | MHz | |
| Resonant Impedance (Ro) | | | 30 | Ω | 6.00 MHz – 13.00 MHz |
| | | | 40 | | 13.01 MHz – 16.00 MHz |
| | | | 40 | | 16.01 MHz – 25.99 MHz |
| | | | 40 | | 26.00 MHz – 60.00 MHz |
| Standard Built-in Capacitance (C1=C2) | 22 – 20% | 22 | 22 + 20% | pF | 6.00 MHz – 13.00 MHz |
| | 22 – 20% | 22 | 22 + 20% | | 13.01 MHz – 16.00 MHz |
| | 10 – 20% | 10 | 10 + 20% | | 16.01 MHz – 25.99 MHz |
| | 5 – 20% | 5 | 5 + 20% | | 26.00 MHz – 60.00 MHz |
| Frequency Tolerance @25 °C | -0.5 | | 0.5 | % | |
| Frequency Stability @ -25°C to +85°C | -0.4 | | 0.4 | % | 6.00 MHz – 13.00 MHz |
| | -0.3 | | 0.3 | | 13.01 MHz – 60.00 MHz |
| Withstanding Voltage | | 50 | | V | DC , 1 min |
| Rating Voltage | (1) D.C. Voltage | | 6 | V | |
| | (2) A.C. Voltage | | 15 | Vp-p. | |
| Insulation Resistance | 100 | | | MΩ | 10V, 1min |
| Operation Temperature | -25 | | 85 | °C | |
| Storage Temperature | -55 | | 85 | °C | |
| Aging Rate (Fosc) (10 years) | -0.3 | | 0.3 | % | |

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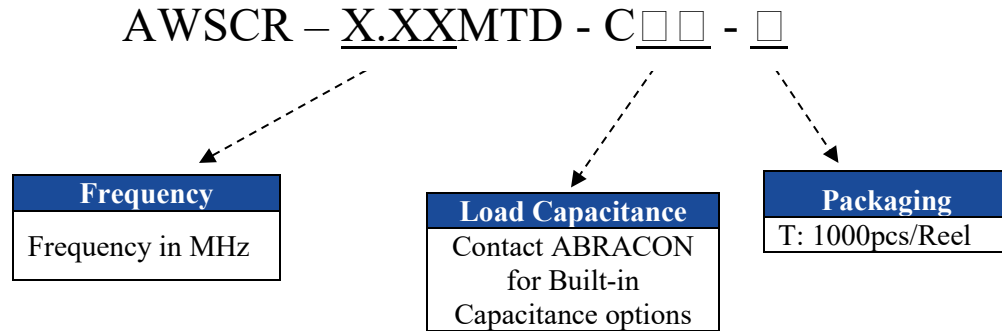
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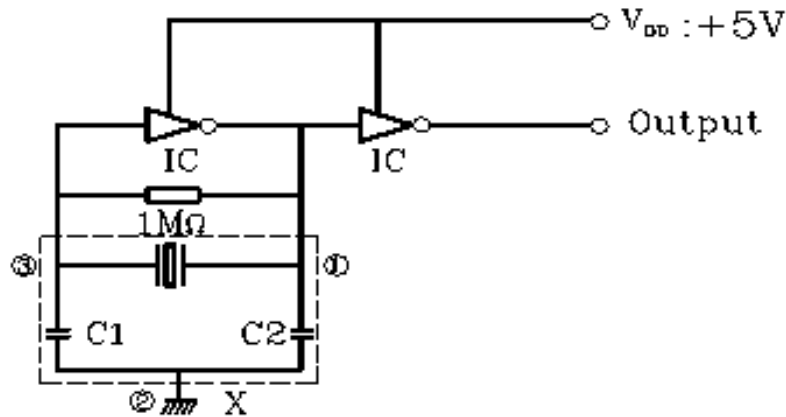


Options and Part Identification



Test Conditions and Test Circuit

Parts shall be measured under a condition (Temp.: 20±15°C, Humidity: 65±20% R.H.) unless the standard condition (Temp: 25±3°C, Humidity: 65±10% R.H.) is regulated to measure



- X: Ceramic Resonator
1. Input
 2. Ground
 3. Output

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Reflow Profile [JEDEC J-STD-020]

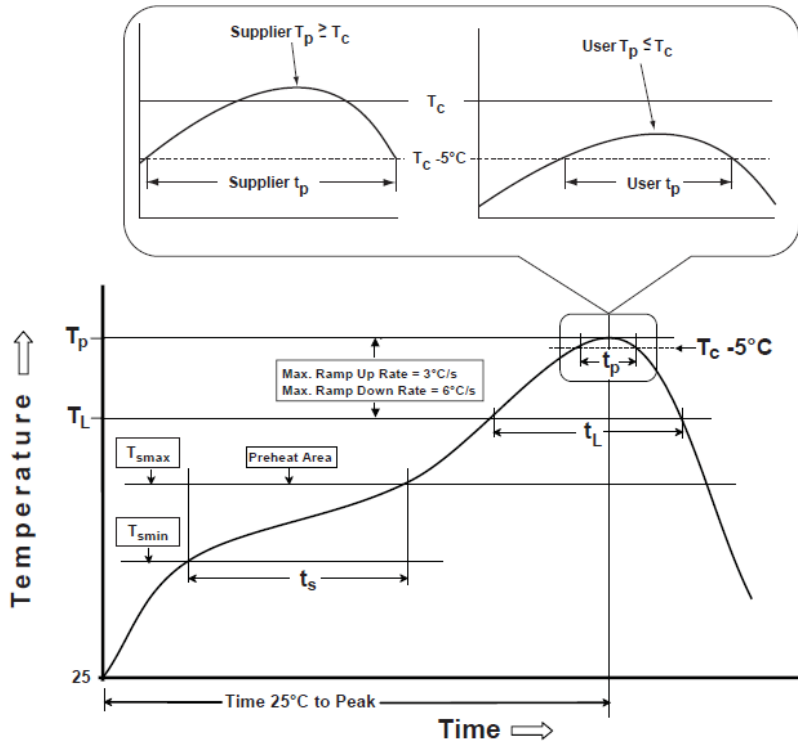


Table 1

| SnPb Eutectic Process Classification Temperatures (T_c) | | |
|-------------------------------------------------------------|---------------------------|---------------------------------|
| Package Thickness | Volume mm^3 <350 | Volume mm^3 ≥ 350 |
| <2.5 mm | 235 °C | 220 °C |
| ≥ 2.5 mm | 220 °C | 220 °C |

Table 2

| Pb-Free Process Classification Temperatures (T_c) | | | |
|-------------------------------------------------------|---------------------------|-------------------------------|----------------------------|
| Package Thickness | Volume mm^3 <350 | Volume mm^3 350-2000 | Volume mm^3 >2000 |
| <1.6 mm | 260 °C | 260 °C | 260 °C |
| 1.6 mm - 2.5 mm | 260 °C | 250 °C | 245 °C |
| >2.5 mm | 250 °C | 245 °C | 245 °C |

| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|-------------------------------------------------------------------------------------------------|----------------------------|----------------------------|
| Preheat / soak | | |
| Temperature minimum (T_{smin}) | 100°C | 150°C |
| Temperature maximum (T_{smax}) | 150°C | 200°C |
| Time (T_{smin} to T_{smax}) (t_s) | 60 - 120 sec. | 60 - 120 sec. |
| Average ramp-up rate (T_{smax} to T_p) | 3°C/sec. max | 3°C/sec. max |
| Liquidous temperature (T_L) | 183°C | 217°C |
| Time at liquidous (t_l) | 60 - 150 sec. | 60 - 150 sec. |
| Peak package body temperature (T_p)* | see Table 1 | see Table 2 |
| Time (t_p)** within 5°C of the specified classification temperature (T_c) | 20 sec. | 30 sec. |
| Ramp-down rate (T_p to T_{smax}) | 6°C/sec. max | 6°C/sec. max |
| Time 25°C to peak temperature | 6 min. max | 8 min. max |
| Reflow cycles | 2 max | 2 max |

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.

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Outline Dimensions

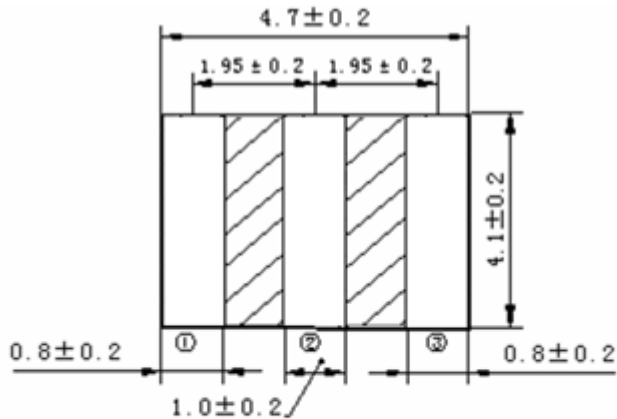
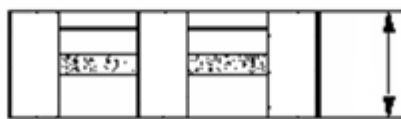


Table 1

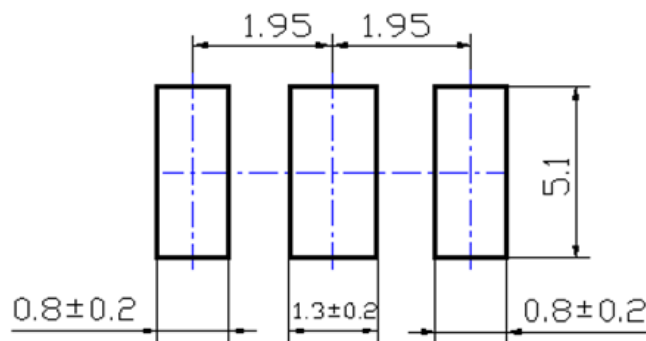
| Frequency Range | Max Height (mm) |
|-----------------------|-----------------|
| 6.00 MHz - 13.00 MHz | 1.70 |
| 13.01 MHz - 16.00 MHz | 2.00 |
| 16.01 MHz - 25.99 MHz | 1.80 |
| 26.00 MHz - 50.00 MHz | 1.70 |



See Table 1

- ① INPUT
- ② GROUND
- ③ OUTPUT
- *: EIAJ MONTHLY CODE

Recommended Land Pattern



Dimension: mm

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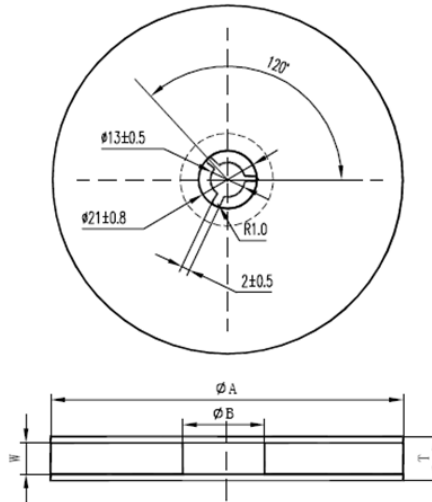


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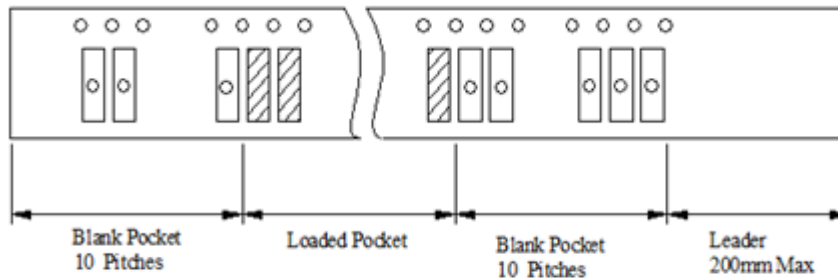


Packaging

T: 1000pcs/Reel



| ϕA | ϕB | W | T | Pieces Per Reel | Carrier Tape Size |
|----------|----------|----------|----------|-----------------|-------------------|
| 180±3 | 60min | 12.4 min | 19.4 max | 1000 typ. | 12 |



Dimensions: mm

Note: upon opening the original packaging, it is recommended that the product be used within 1 year. If the product will not be used within 1 year, it is recommended that the product be re-sealed in airtight packaging according to MSL 1 requirements to maintain solder ability.

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