

# APPROVAL SHEET

## WQPM444220\*LC Series SMD Molded Power Inductors AEC-Q200 Compliant



\*Contents in this sheet are subject to change without prior notice.

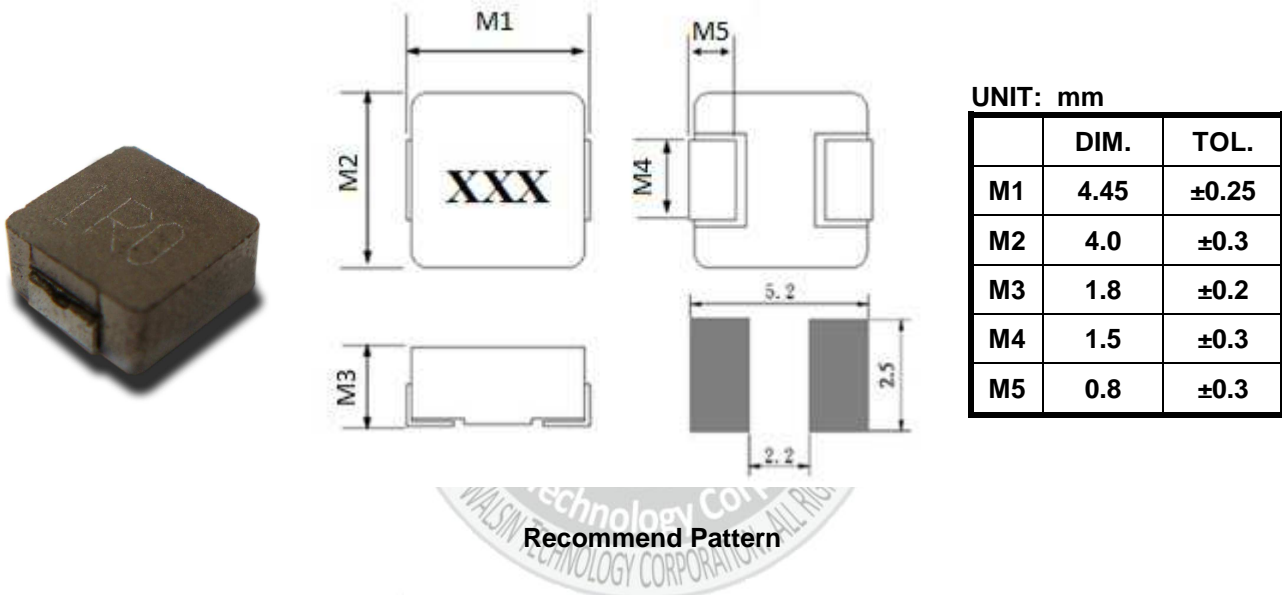
## Features

1. Shielded construction.
2. Ultra low buzz noise.
3. Low DCR/ $\mu$ H.
4. Handles high transient current spikes without saturation.
5. Encapsulated body offers improved environmental protection and moisture resistance.
6. Higher dielectric withstanding voltage.
7. Corrosion resistant package.
8. RoHS Compliance.

## Applications

1. PDA/Notebook/Desktop/Server applications high current and low profile power supplier
2. High current POL converters.
3. Battery powered devices.

## SHAPE and DIMENSION



## MARKING AND DATE CODE

Marking ex:1.0uH  $\rightarrow$  1R0



### Ordering Information

| WQ                                  | PM                                  | 4442              | 20               | M                | R10                                   | L                               | C  |
|-------------------------------------|-------------------------------------|-------------------|------------------|------------------|---------------------------------------|---------------------------------|----|
| <b>Product Code</b>                 | <b>Series</b>                       | <b>Dimensions</b> | <b>Thickness</b> | <b>Tolerance</b> | <b>Value</b>                          | <b>Packing Code</b>             |    |
| WQ:<br>Inductor<br><br>AEC-<br>Q200 | SMD<br>molded<br>power<br>inductor. | 4.4 * 4.0mm       | 1.8mm            | M: ± 20%         | R10=0.10uH<br>1R0=1.0uH<br>100=10.0uH | L=13" Reeled<br>(Embossed tape) | C: |

### Electrical Characteristics

| Part number      | Inductance<br>(uH)<br>±20% | DC Resistance<br>(mΩ) |     | Rated Current<br>(A)<br>Typical | I sat<br>(A)<br>Typical |
|------------------|----------------------------|-----------------------|-----|---------------------------------|-------------------------|
|                  |                            | Typical               | Max |                                 |                         |
| WQPM444220MR10LC | 0.10                       | 3.5                   | 4.0 | 12.0                            | 22.0                    |
| WQPM444220MR22LC | 0.22                       | 6.0                   | 6.6 | 9.0                             | 12.5                    |
| WQPM444220MR33LC | 0.33                       | 9.6                   | 13  | 8.0                             | 12.0                    |
| WQPM444220MR47LC | 0.47                       | 12.5                  | 14  | 7.0                             | 9.5                     |
| WQPM444220MR56LC | 0.56                       | 14.0                  | 16  | 6.5                             | 10.0                    |
| WQPM444220MR68LC | 0.68                       | 16.0                  | 18  | 6.0                             | 9.0                     |
| WQPM444220M1R0LC | 1.0                        | 24.0                  | 27  | 4.5                             | 7.0                     |
| WQPM444220M1R2LC | 1.2                        | 24.0                  | 27  | 4.5                             | 7.0                     |
| WQPM444220M1R5LC | 1.5                        | 38.0                  | 46  | 4.0                             | 6.0                     |
| WQPM444220M2R2LC | 2.2                        | 52.0                  | 58  | 3.0                             | 5.0                     |
| WQPM444220M3R3LC | 3.3                        | 74.0                  | 87  | 2.5                             | 4.0                     |
| WQPM444220M4R7LC | 4.7                        | 98.0                  | 110 | 2.2                             | 3.5                     |
| WQPM444220M5R6LC | 5.6                        | 105                   | 115 | 1.8                             | 3.5                     |
| WQPM444220M6R8LC | 6.8                        | 160                   | 175 | 1.5                             | 2.5                     |
| WQPM444220M100LC | 10                         | 256                   | 282 | 1.2                             | 2.2                     |

#### NOTE

1. TOLERANCE: M ±20%
2. INDUCTANCE · I RMS · I SAT MEASURED AN HP4284A, CH11025, CH3302, CH1320, CH1320S LCR METER.
3. DCR MESASURED USING A CH16502.
4. CURRENT THAT CAUSES A 15°C TEMPERATURE RISE FROM 25°C AMBIENT.
5. ELECTRICAL SPECIFICATIONS AT 25°C.
6. OPERATING TEMPERATURE: -40°C ~ +125°C.
7. STORAGE TEMPERATURE COMPONENT: -40°C to +100°C.  
TAPE AND REEL PACKING : -40°C to +80°C.
8. MOISTURE SENSIVITY LEVEL (MSL) 1 (UNLIMITED FLOOR LIFE AT < 30°C / 85% RELATIVE HUMIDITY)
9. GRAPHIC IS ONLY FOR DIMENSIONALLY APPLICATION.

## RELIABILITY PERFORMANCE

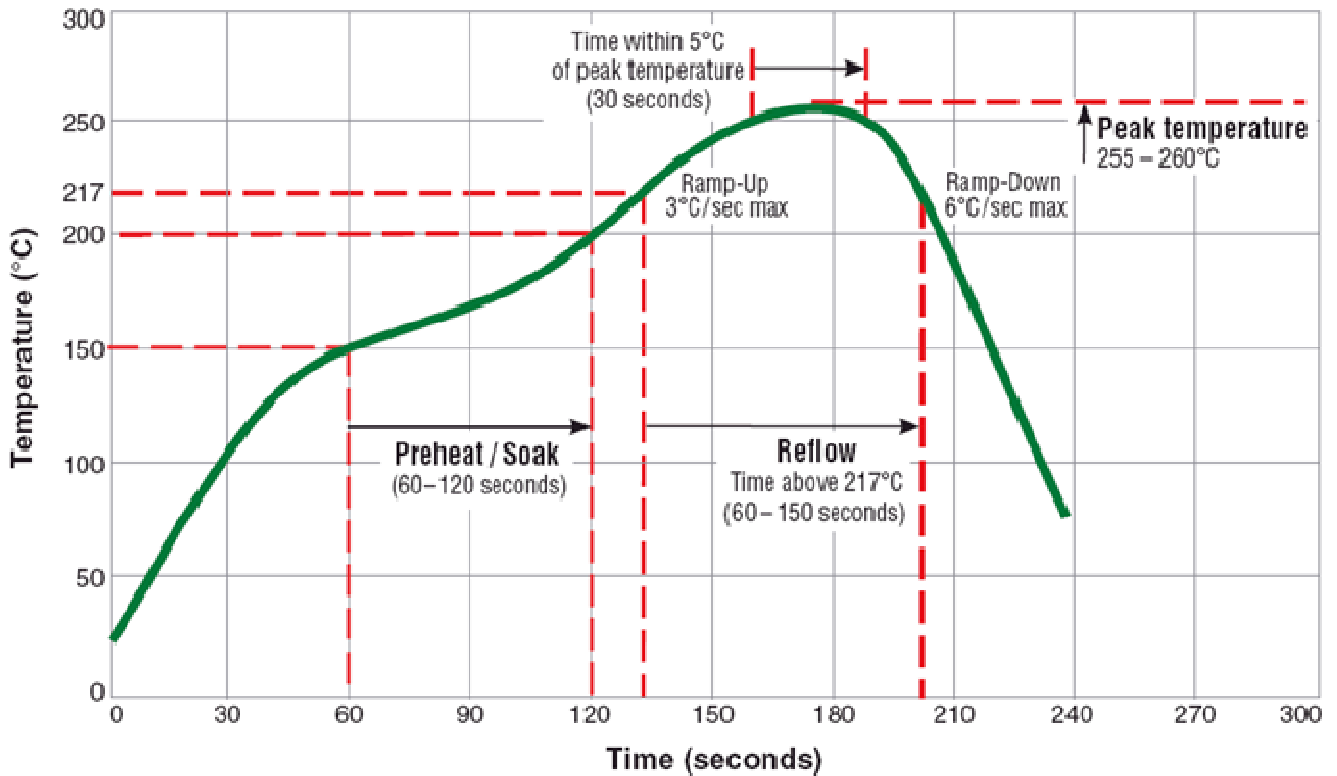
| Test Item                           | Accept criteria   | Test Condition   | Standard Source              |
|-------------------------------------|---|--|------------------------------|
| High Temperature Exposure (Storage) | 1.Change from an initial value L:within±20%<br>2.no visible damage. | 1000 hrs. at rated operating temperature (e.g. 125°C part can be stored for 1000 hrs. @ 125°C. Same applies for 105°C and 85°C. Unpowered.<br>Measurement at 24±4 hours after test conclusion.   | MIL-STD-202 Method 108       |
| Temperature Cycling                 | 1.Change from an initial value L:within±20%<br>2.no visible damage. | 1000 cycles (-40°C to +125°C). Note: If 85°C part or 105°C part the 1000 cycles will be at that temperature.<br>Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time. | JESD22 Method JA-104         |
| Biased Humidity                     | 1.Change from an initial value L:within±20%<br>2.no visible damage. | 1000 hours 85°C/85%RH. Unpowered.<br>Measurement at 24±4 hours after test conclusion.  | MIL-STD-202 Method 103       |
| Operational Life                    | 1.Change from an initial value L:within±20%<br>2.no visible damage. | 1000 hrs. @ 105°C. If 85°C or 125°C part will be tested at that temperature.<br>Measurement at 24±4 hours after test conclusion.   | MIL-PRF-27                   |
| Mechanical Shock                    | 1.Within product specification tolerance<br>2.no visible damage.    | Method 213. Condition C, Peak Value: 100g's, Duration: 6ms, Waveform: Half-sine Velocity Change: 12.3ft/sec  | MIL-STD-202 Method 213       |
| Vibration                           | 1.Change from an initial value L:within±20%<br>2.no visible damage. | 5g's for 20 minutes, 12 cycles each of 3 orientations. Note: Use 8"X5" PCB, .031" thick, 7 secure points on one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.       | MIL-STD-202 Method 204       |
| Resistance to Soldering Heat        | 1.No visible damage.  | Condition B No pre-heat of samples. Note: Single Wave Solder - Procedure 2 for SMD and Procedure 1 for Leaded with solder within 1.5mm of device body.   | MIL-STD-202 Method 210       |
| ESD                                 | 1.Change from an initial value L:within±20%<br>2.no visible damage. | Passive Component Human Body Model (HBM) Electrostatic Discharge (ESD) Test. Only direct contact discharge, record the voltage value what the sample can pass.   | AEC-Q200-002 Or ISO/DIS10605 |
| Solderability                       | 1.95% coverage min. good tinning.<br>2.no visible damage.           | For both Leaded & SMD. Electrical Test not required. Magnification 50X. Conditions:<br>Leaded: Method A @ 235°C, category 3. SMD:<br>a) Method B, 4 hrs @ 155°C dry heat @ 235°C<br>b) Method B @ 215°C category 3.<br>c) Method D category 3 @ 260°C. | J-STD-002                    |

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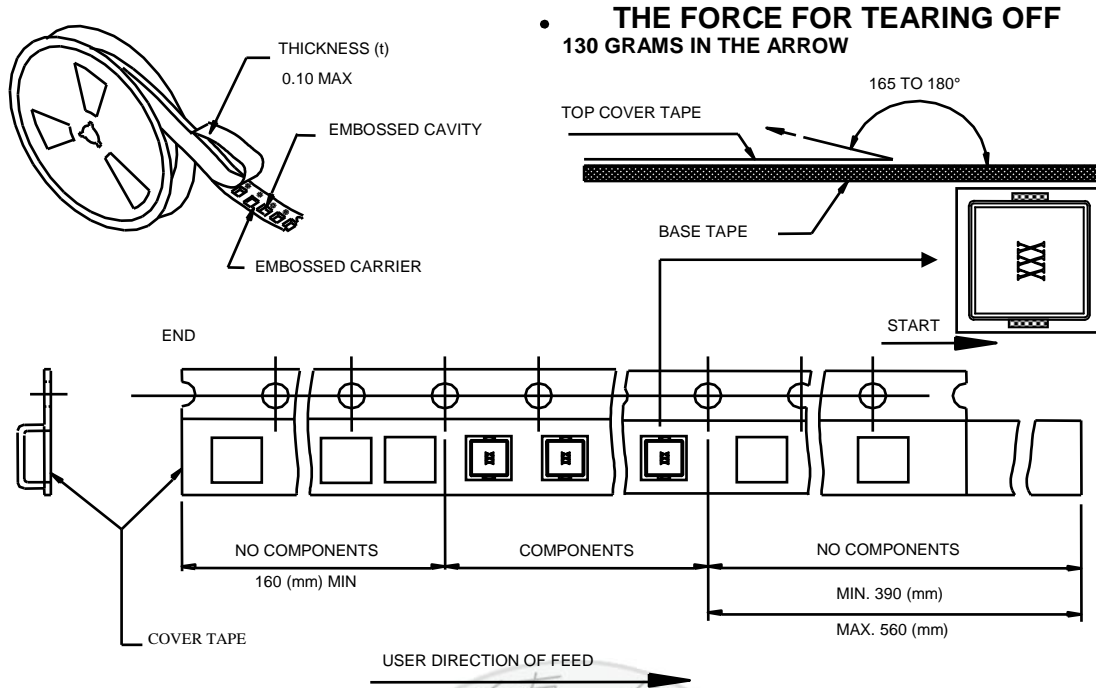
| Test Item               | Accept criteria   | Test Condition                 | Standard Source |
|-------------------------|---|--------------------------------|-----------------|
| Flammability            | 1.Meet UL94V-0 or V1.                                       | V-0 or V-1 Acceptable          | UL-94           |
| Board Flex              | 1.No drop.<br>2.no solder connect broken.                   | 60 sec minimum holding time.   | AEC-Q200-005    |
| Terminal Strength (SMD) | 1.No cracking.<br>2.no part being sheared off from its pad. | Force of 1.8kg for 60 seconds. | AEC-Q200-006    |

**TYPICAL RoHS REFLOW PROFILE**

**Typical RoHS Reflow Profile**

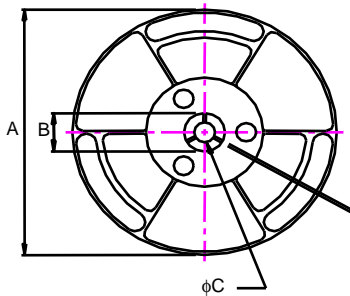


## Packaging

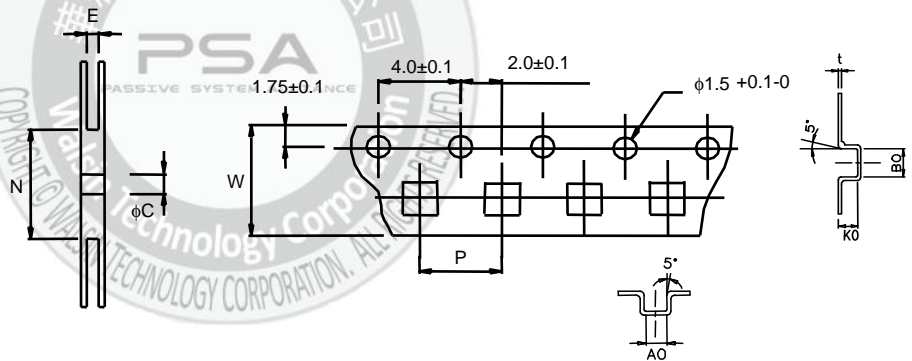


### ■ CARRIER TAPE REELS (mm)

MATERIAL: PLASTIC



### ■ DIMENSIONS OF CARRIER TAPE (mm)



※ 10 sprocket hole pitch cumulative tolerance  $\pm 0.20$

UNIT : mm

|             | A         | B         | C         | E         | N   | P         | W         | t          | A0        | B0        | K0        |
|-------------|-----------|-----------|-----------|-----------|-----|-----------|-----------|------------|-----------|-----------|-----------|
| <b>DIM.</b> | 330       | 25.0      | 13.5      | 13.0      | 100 | 8.0       | 12.0      | 0.3        | 4.7       | 4.4       | 2.5       |
| <b>TOL.</b> | $\pm 0.2$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ | MIN | $\pm 0.1$ | $\pm 0.3$ | $\pm 0.05$ | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.1$ |

Quantity per reel : 2K pcs