## •FEATURE

1. Small size High saturation current
2. Operating Temperature -40 ~ 125℃
3. Compliant with AEC-Q200

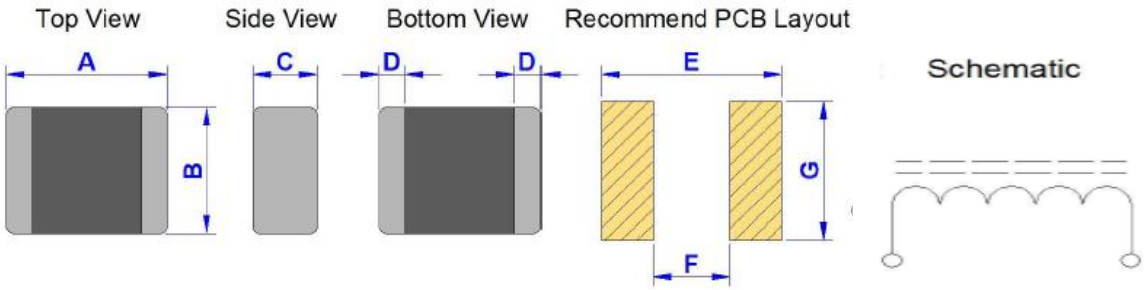
## •APPLICATION

Portable Device, Smart Phone, Tablet PC, LTE Module, Hard Disk of Ultrabook

## •ORDERING INFORMATION

| WCJ | 201608 | U | -1R0 | T | Q |
|---|---|---|---|---|---|
| Series | Dimension (L*W*H) | Material code (A, B, L) | Impedance (Ω) | Tolerance M=±20%, Y=±30 | AEC-Q |

## •SHAPE AND DIMENSION




## •SPECIFICATION

Unit: mm (inch)

| TYPE | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 201608(0806) | 2.00±0.20 | 1.60±0.20 | 0.80 | 0.50±0.30 | 0.80 ref. | 0.70 ref. | 1.80 ref. |
| 201610(0806) | 2.00±0.20 | 1.60±0.20 | 1.00 | 0.50±0.30 | 0.55 ref. | 0.90 ref. | 1.60 ref. |
| 252010(1008) | 2.50±0.20 | 2.00±0.20 | 1.00 | 0.60±0.30 | 0.80 ref. | 1.20 ref. | 2.00 ref. |
| 252012(1008) | 2.50±0.20 | 2.00±0.20 | 1.20 | 0.60±0.30 | 0.80 ref. | 1.20 ref. | 2.00 ref. |
| 322512(1210) | 3.20±0.30 | 2.50±0.30 | 1.20 | 0.50±0.30 | 0.75 ref. | 1.70 ref. | 2.50 ref. |

## •ELECTRICAL CHARACTERISTICS

| Part Number | Inductance ( uH ) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|
| WCJ201608A-1R0M | 1.00 | 76.0 | 87.0 | 2800 | 2700 |
| WCJ201608A 1R5M | 1.50 | 102 | 115 | 2300 | 2400 |

Inductance test Freq.: 2MHz / 0.2V
M=Tolerance = ±20%
Isat: For Inductance drop 30% from its value without current.
Irms: For a 40℃ temperature rise from 25℃ ambient.

| Part Number | Inductance ( uH ) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|
| WCJ201610A-R24M | 0.24 | 28.0 | 40.0 | 6000 | 4500 |
| WCJ201610A-R33M | 0.33 | 40.0 | 48.0 | 5500 | 3800 |
| WCJ201610A-R47M | 0.47 | 44.0 | 54.0 | 5000 | 3600 |
| WCJ201610A-R56M | 0.56 | 46.0 | 59.0 | 4600 | 3300 |
| WCJ201610A-R68M | 0.68 | 55.0 | 72.0 | 4200 | 3000 |
| WCJ201610A-1R0M | 1.00 | 81.0 | 96.0 | 3400 | 2300 |
| WCJ201610A-1R5M | 1.50 | 122 | 150 | 2800 | 2000 |
| WCJ201610A-2R2M | 2.20 | 170 | 204 | 2400 | 1600 |

Inductance test Freq.: 2MHz / 0.2V
M=Tolerance = ±20%
Isat: For Inductance drop 30% from its value without current.
Irms: For a 40℃ temperature rise from 25℃ ambient.

| Part Number | Inductance ( uH ) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|
| WCJ201610B-R24M | 0.24 | 23.0 | 30.0 | 6000 | 4400 |
| WCJ201610B-R47M | 0.47 | 34.0 | 41.0 | 4500 | 3300 |
| WCJ201610B-R68M | 0.68 | 44.0 | 53.0 | 3600 | 2900 |
| WCJ201610B-1R0M | 1.00 | 60.0 | 72.0 | 3200 | 2500 |
| WCJ201610B-2R2M | 2.20 | 142.0 | 170 | 2100 | 1700 |

Inductance test Freq.: 2MHz / 0.2V
M=Tolerance = ±20%
Isat: For Inductance drop 30% from its value without current.
Irms: For a 40℃ temperature rise from 25℃ ambient.

| Part Number | Inductance ( uH ) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|
| WCJ252010B-R33M | 0.33 | 25.0 | 31.0 | 6000 | 4400 |
| WCJ252010B-R47M | 0.47 | 29.0 | 35.0 | 4700 | 3900 |
| WCJ252010B-R68M | 0.68 | 40.0 | 48.0 | 4000 | 3500 |
| WCJ252010B-1R0M | 1.00 | 54.0 | 65.0 | 3600 | 3000 |
| WCJ252010B-1R5M | 1.50 | 78.0 | 94.0 | 3300 | 2400 |
| WCJ252010B-2R2M | 2.20 | 100 | 120 | 2700 | 2100 |

Inductance test Freq.: 2MHz / 0.2V
M=Tolerance = ±20%
Isat : For Inductance drop 30% from its value without current.
Irms : For a 40℃ temperature rise from 25℃ ambient.

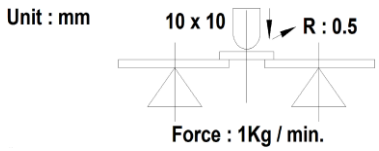
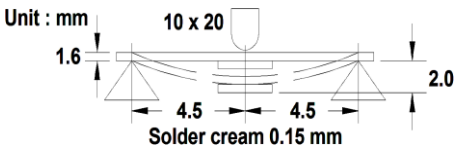
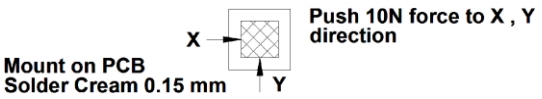
| Part Number | Inductance ( uH ) | Tolerance (T) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|---|
| WCJ252012L-R24T | 0.24 | Y | 16.0 | 21.0 | 9000 | 5400 |
| WCJ252012L-R33T | 0.33 | M | 20.0 | 24.0 | 7100 | 4800 |
| WCJ252012L-R47T | 0.47 | M | 24.0 | 29.0 | 6000 | 4500 |
| WCJ252012L-R68T | 0.68 | M | 27.0 | 36.0 | 5400 | 4000 |
| WCJ252012L-1R0T | 1.00 | M | 38.0 | 46.0 | 4600 | 3500 |
| WCJ252012L-1R5T | 1.50 | M | 56.0 | 67.0 | 3500 | 3000 |
| WCJ252012L-2R2T | 2.20 | M | 76.0 | 91.0 | 3100 | 2500 |

Inductance test Freq.: 1MHz / 1V
T=Tolerance = M±20%, Y=±30%
Isat : For Inductance drop 30% from its value without current.
Irms : For a 40℃ temperature rise from 25℃ ambient.

| Part Number | Inductance ( uH ) | DCR (mΩ) Typ. | DCR (mΩ) Max. | Isat (mA) Typ. | Irms (mA) Typ. |
|---|---|---|---|---|---|
| WCJ322512A-R47M | 0.47 | 21.0 | 27.0 | 9000 | 5800 |
| WCJ322512A-1R0M | 1.00 | 34.0 | 42.0 | 6300 | 4200 |
| WCJ322512A-1R5M | 1.50 | 58.0 | 68.0 | 4500 | 3200 |
| WCJ322512A-2R2M | 2.20 | 75.0 | 85.0 | 4000 | 2700 |

Inductance test Freq.: 2MHz / 0.2V
M=Tolerance = ±20%
Isat : For Inductance drop 30% from its value without current.
Irms : For a 40℃ temperature rise from 25℃ ambient.

## ●RELIABILITY

<table>
<tr><th>Test Item</th><th>Test Condition</th><th>Specification</th></tr>
<tr><td>Dimension</td><td>Actual Size ...</td><td>Meet Spec</td></tr>
<tr><td>Thermal Shock<br>(Temperature Cycle)</td><td>Temperature: -40 ~ +125℃ kept stabilized for 30 min. each<br>Cycle: 100 Cycles (power off)</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Humidity Resistance</td><td>Humidity: 90% ~ 95% RH<br>Temperature: 60 ± 2℃ Test Time: 96 ± 2 Hours</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>High Temperature</td><td>Temperature: 125 ± 2℃<br>Testing Time: 96 ± 2 Hours</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Low Temperature</td><td>Temperature: -40 ± 2℃<br>Time: 96 ± 2 Hours</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Temperature and<br>Humidity Cycle</td><td><table><tr><th>Temperature</th><th>Humidity</th><th>Time</th></tr><tr><td>25℃</td><td>90% ~ 95% RH</td><td>3.0 Hr</td></tr><tr><td>55℃</td><td>95% ~ 96% RH</td><td>5.0 Hr</td></tr><tr><td>25℃</td><td>90% ~ 95% RH</td><td>3.0 Hr</td></tr></table>Cycle: 20 Cycles</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Vibration</td><td>Frequency: 10Hz ~ 55Hz , Amplitude: 1.5 mm<br>Direction: X, Y, Z, Time: 2 Hours each</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Solderability</td><td>Go through real SMT IR-Reflow ....<br>The profile like our suggest profile.<br>Preheat: 160 ± 10℃ (90 sec)<br>Peak: 245 ± 5℃<br>Peak Time: 50 Sec. / up 217℃</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Soldering Heat<br>Resistance</td><td>Preheat: 160 ± 10℃ (90 sec)<br>Solder: Sn / Ag / Cu (Pb Free)<br>Solder Temp.: 260 ± 5℃, Time: 3 ± 1 seconds</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Iron Solder Heat<br>Resistance</td><td>Solder Temp.: 350 ± 5℃<br>Flux: Rosin, Time: 3 ± 1 seconds</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Bending Strength</td><td> 
</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Flexure Strength</td><td> 
</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Terminal Strength</td><td> 
</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>High-Voltage</td><td>100 V DC between core & winding</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
<tr><td>Load life</td><td>Temperature: 25 ± 3℃<br>Load: Allowed DC Current, Test Time: 96 ± 2 Hours</td><td>Elec. no variation<br>Appearance no deformation</td></tr>
</table>

## •TEST EQUIPMENT

1. HP4284A, HP42841A - L , Q , DCR , IDC
2. HP8753D Network analyzer - SRF

## •Operating & Storage Condition

1. Operating Temp: -40 ~ +125°C (Including self - temperature rise)
2. Storage Temp: a. -10 ~ +45°C, 50 ~ 60% RH (Product with taping)
   b. -40 ~ +125°C (On board)
3. Storage Life Time: 6 Month (Less than 40°C and 60% RH)

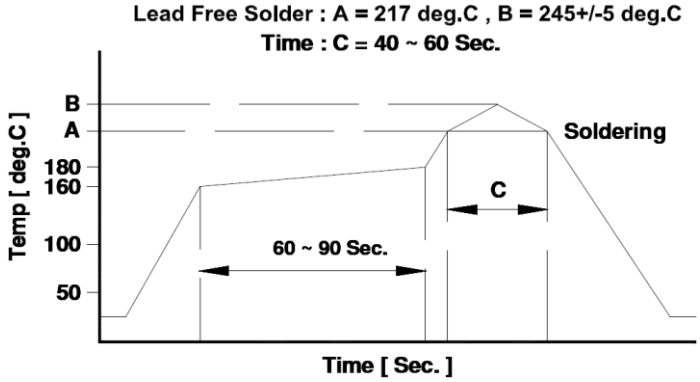
Standard Atmosphere Conditions:

Ambient Temp: 20 ±15°C; Relative Humidity: 65 ±20%

If there may be any doubt on the result, measurement shall be made within the following limits :

Ambient Temp: 25 ±5°C; Relative Humidity: 75 ±10%

## •RECOMMEND IR REFLOW CURVE: (TIME: Second)




Notice: Iron Soldering, Solder < 30 Watt,
Direct touch the terminal x 3 Sec. Max. @ 350°C

## •ATTENTION & CAUTION

* Keep out of: Splashing water or salt water
* Avoid: Toxic Gas (Hydrogen sulfide, Sulfurous acid, Chlorine, Ammonia)
* Vibrations or shocks which exceed the specified condition, Dew condense
* Layout near the edge of PCB
* Over flexure after SMT mounting & PCBA
* Pin foot or SMD pad solder ability: Pb free type is best within 6 months after delivery
* Humidity sensitive, IPC/JEDEC J-STD-020 MSL if over Level 1,recommend bake 30mins@150°C before PCBA
* Caution for human life relative applications: PLS contact & consult with AiT team in design stage.

Care Note for Use:

(1) Storage Condition:
Temperature 25 to 35℃, Humidity 45 to 60% RH

(2) Use Temperature:
a. Minimum Temperature: -40℃ Ambient temperature of this product.
b. Maximum Temperature: +125℃ The value of temperature including ambient and temperature rise of this product.
c. Reliability test temperature range from -40 ~ +125℃
d. However, this is not meant as temperature grade guarantee for UL.

(3) Model:
When this product was used in a similar or as new product to the original one, sometimes it might be unable to satisfy the specifications due to difference in condition of usage.

(4) Drop:
If this product suffered mechanical stress such as drop, characteristics may become poor ( due to damage on coil / bobbin / ferrite … etc. )
Never use such stressed product.

Care Note for Safety:

(1) Provision to Abnormal Condition:
This product itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc.
Therefore, it shall be confirmed from the end product that there is no risk of smoking, fire, dielectric withstand voltage insulation resistance, etc. in abnormal conditions to provide protective devices and /or protection circuit in the end product.

(2) Temperature Rise:
Temperature rise on this product depends on the installation condition on end products.
It shall be confirmed on the actual end product that temperature rise of this product is within the specified temperature class limit.

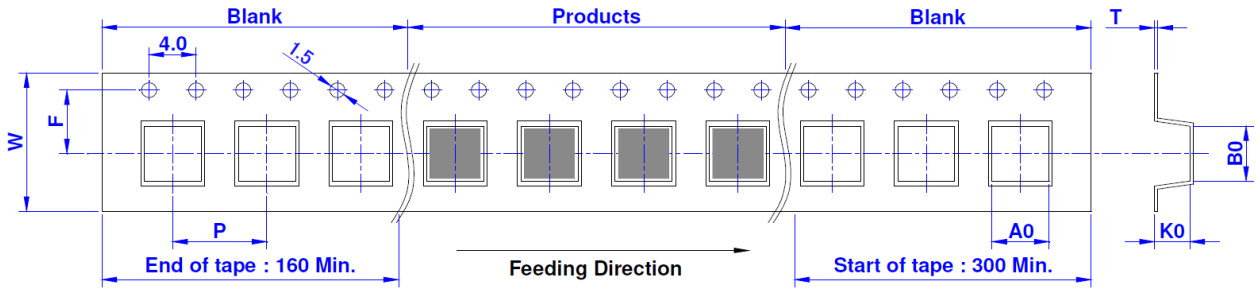
(3) Dielectric Strength:
Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.

(4) Water:
This product must not be used in wet condition resulted from water, coffee or any liquid contact because insulation strength becomes very low under such condition.

(5) Potting:
If this product is potted in some compound, coating material of magnet wire might be occasionally damaged. Please ask us if you intend to pot this product.

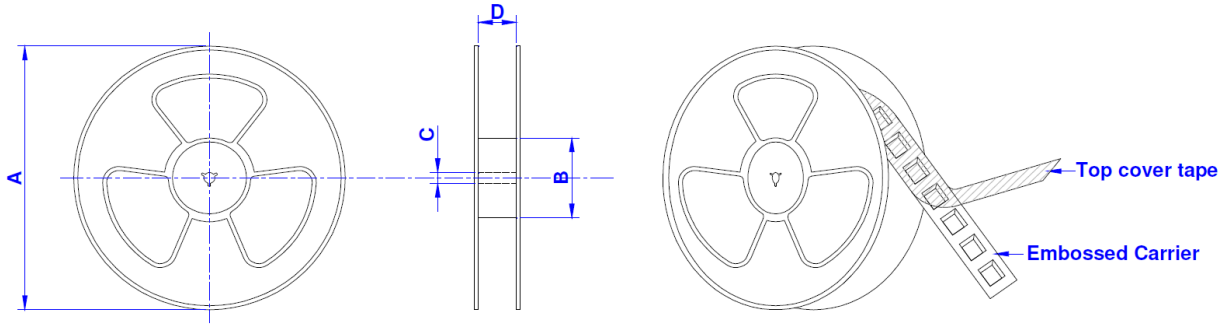
(6) Detergent:
Please consult AiT Semi immediately once under such circumstances because product reliability confirmation etc. is needed when this product come in contact with these chemicals.

## •TAPE DIMENSION: mm



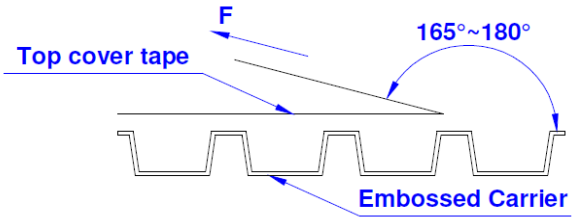

| SIZE/mm | W | P | A0 | B0 | T | F |
|---|---|---|---|---|---|---|
| 201608 | 8.0 | 4.0 | 1.80 | 1.15 | 0.22 | 3.5 |
| 201610 | 8.0 | 4.0 | 1.80 | 1.15 | 0.22 | 3.5 |
| 252010 | 8.0 | 4.0 | 2.25 | 1.35 | 0.22 | 3.5 |
| 252012 | 8.0 | 4.0 | 2.25 | 1.35 | 0.22 | 3.5 |
| 322512 | 8.0 | 4.0 | 2.80 | 1.35 | 0.22 | 3.5 |

## •REEL DIMENSION: mm




| SIZE / mm | REEL SIZE | A | B | C | D | QTY/REEL |
|---|---|---|---|---|---|---|
| 201608 | 7” x 8mm | 178 | 60 | 13 | 8.5 | 3000 PCS |
| 201610 | 7” x 8mm | 178 | 60 | 13 | 8.5 | 3000 PCS |
| 252010 | 7” x 8mm | 178 | 60 | 13 | 8.5 | 3000 PCS |
| 252012 | 7” x 8mm | 178 | 60 | 13 | 8.5 | 3000 PCS |
| 322512 | 7” x 8mm | 178 | 60 | 13 | 8.5 | 3000 PCS |

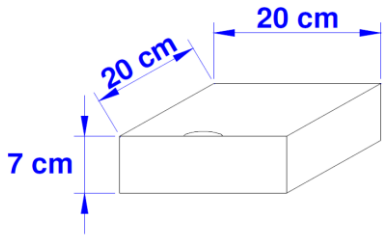
## •TEARING OFF FORCE:



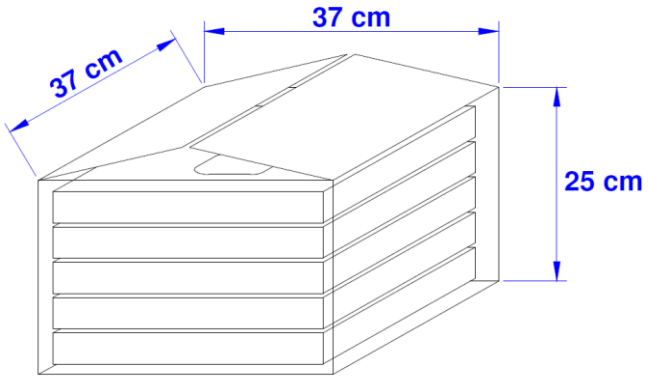

The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA - 481 - D - 2008 of 4.11stadnard).

| Room Temp. (℃) | Room Humidity (%) | Room Atm. (hPa) | Tearing Speed (mm/min) |
|---|---|---|---|
| 5 ~ 35 | 45 ~ 85 | 860~1060 | 300 |

## •BOX PACKAGE: cm




7" Small Box




Large Box

| SIZE / mm | Reels in Small Box | Small Box in Large Box |
|---|---|---|
| 201608 | 5 | 8 |
| 201610 | 5 | 8 |
| 252010 | 5 | 8 |
| 252012 | 5 | 8 |
| 322512 | 5 | 8 |

## IMPORTANT NOTICE

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