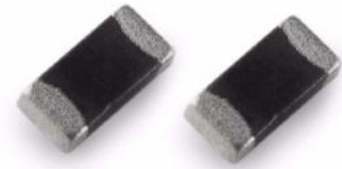




●FEATURE

1. Fit for Power Line & Signal Line Circuit
2. Pass the CE/FCC purpose
3. Operating Temperature: +40 ~ +85°C



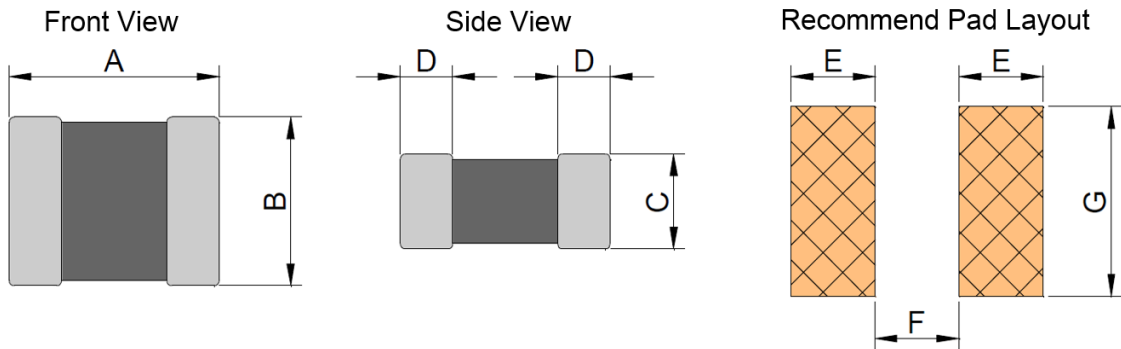
●APPLICATION

Mobil Device, Handheld Device, LowProfile Device, Panel.

●ORDERING INFORMATION

<u>WCD</u>	<u>160808</u>	<u>H</u>	<u>-R47</u>	<u>T</u>
Series	Dimension (L*W*H)	Material code	Inductance(L) (uH)	Tolerance(T) M=20±%, Y=±30%

●SHAPE AND DIMENSION



●SPECIFICATION

Unit: mm (inch)

TYPE	A	B	C	D	E	F	G
160805 (0603)	1.60±0.15	0.80±0.15	0.50±0.10	0.30±0.20	0.70±0.10	0.70±0.10	0.70±0.10
160808 (0603)	1.60±0.15	0.80±0.15	0.80±0.15	0.30±0.20	0.70±0.10	0.70±0.10	0.70±0.10
201205 (0805)	2.00±0.20	1.25±0.20	0.50±0.10	0.50±0.30	1.00±0.20	1.00±0.20	1.25±0.35
201209 (0805)	2.00±0.20	1.25±0.20	0.90±0.10	0.50±0.30	1.00±0.20	1.00±0.20	1.25±0.35
201212 (0805)	2.00±0.20	1.25±0.20	1.25±0.20	0.50±0.30	1.00±0.20	1.00±0.20	1.25±0.35
201609 (0806)	2.00±0.20	1.60±0.20	0.90±0.10	0.50±0.30	1.00±0.20	1.00±0.20	1.60±0.40
252009 (1008)	2.50±0.20	2.00±0.20	0.90±0.10	0.50±0.30	1.20±0.20	0.80±0.20	2.00±0.20
252011 (1008)	2.50±0.20	2.00±0.20	1.10±0.10	0.50±0.30	1.20±0.20	0.80±0.20	2.00±0.20



**●ELECTRICAL CHARACTEISTICS**

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	Irms (mA) (Max.)	Isat (mA) (Typ.)
WCD160805-R47T	0.47	M, Y	5	105	0.19±25%	900	500

\* T=Tolerance: M=±20%, Y=±30%

\* Irms : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* Isat : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	Irms (mA) (Max.)	Isat (mA) (Typ.)
WCD160808-R47T	0.47	M, Y	5	105	0.25±25%	800	800
WCD160808-1R0T	1.00	M, Y	1	60	0.20±25%	950	200
WCD160808-1R5T	1.50	M, Y	1	50	0.25±25%	800	160
WCD160808-2R2T	2.20	M, Y	1	40	0.30±25%	750	120
WCD160808H-4R4T	4.70	M, Y	1	65	0.40±25%	700	80

\* T=Tolerance: M=±20%, Y=±30%

\* Irms : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* Isat : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	Irms (mA) (Max.)	Isat (mA) (Typ.)
WCD201205-R47T	0.47	M, Y	1	100	0.12±25%	1100	700
WCD201205-1R0T	1.00	M, Y	1	60	0.19±25%	800	500
WCD201205-1R5T	1.50	M, Y	1	50	0.26±25%	700	350
WCD201205-2R2T	2.20	M, Y	1	40	0.34±25%	600	280

\* T=Tolerance: M=±20%, Y=±30%

\* Irms : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* Isat : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	Irms (mA) (Max.)	Isat (mA) (Typ.)
WCD201209-R47T	0.47	M, Y	1	100	0.09±25%	1200	1200
WCD201209-1R0T	1.00	M, Y	1	60	0.11±25%	1000	850
WCD201209-1R5T	1.50	M, Y	1	50	0.16±25%	900	700
WCD201209-2R2T	2.20	M, Y	1	40	0.25±25%	800	500
WCD201209-3R3T	3.30	M, Y	1	30	0.19±25%	900	250
WCD201209-4R7T	4.70	M, Y	1	30	0.25±25%	800	230

\* T=Tolerance: M=±20%, Y=±30%

\* Irms : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* Isat : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).



Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	I <sub>rms</sub> (mA) (Max.)	I <sub>sat</sub> (mA) (Typ.)
WCD201209H-R47T	0.47	M, Y	1	100	0.08±25%	1500	1200
WCD201209H-1R0T	1.00	M, Y	1	60	0.11±25%	1300	1150
WCD201209H-1R5T	1.50	M, Y	1	50	0.16±25%	1100	800
WCD201209H-2R2T	2.20	M, Y	1	40	0.20±25%	900	500
WCD201209H-3R3T	3.30	M, Y	1	30	0.20±25%	900	350
WCD201209H-4R7T	4.70	M, Y	1	30	0.25±25%	850	285

\* T=Tolerance: M=±20%, Y=±30%

\* I<sub>rms</sub> : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* I<sub>sat</sub> : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	I <sub>rms</sub> (mA) (Max.)	I <sub>sat</sub> (mA) (Typ.)
WCD201212-4R7T	4.70	M, Y	1	25	0.50±30%	600	360

\* T=Tolerance: M=±20%, Y=±30%

\* I<sub>rms</sub> : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* I<sub>sat</sub> : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	I <sub>rms</sub> (mA) (Max.)	I <sub>sat</sub> (mA) (Typ.)
WCD201609-R47T	0.47	M, Y	1	100	0.06±25%	1600	1300
WCD201609-1R0T	1.00	M, Y	1	70	0.09±25%	1400	900
WCD201609-1R5T	1.50	M, Y	1	60	0.11±25%	1200	700
WCD201609-2R2T	2.20	M, Y	1	50	0.11±25%	1200	450
WCD201609-3R3T	3.30	M, Y	1	40	0.12±25%	1200	250
WCD201609-4R7T	4.70	M, Y	1	30	0.14±25%	1100	180

\* T=Tolerance: M=±20%, Y=±30%

\* I<sub>rms</sub> : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* I<sub>sat</sub> : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).



Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	I <sub>rms</sub> (mA) (Max.)	I <sub>sat</sub> (mA) (Typ.)
WCD252009-R47T	0.47	M, Y	1	100	0.04±25%	1800	1350
WCD252009-1R0T	1.00	M, Y	1	60	0.06±25%	1600	900
WCD252009-1R5T	1.50	M, Y	1	50	0.07±25%	1500	700
WCD252009-2R2T	2.20	M, Y	1	40	0.08±25%	1300	550
WCD252009-3R3T	3.30	M, Y	1	30	0.10±25%	1200	250
WCD252009-4R7T	4.70	M, Y	1	25	0.11±25%	1100	200

\* T=Tolerance: M=±20%, Y=±30%

\* I<sub>rms</sub> : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* I<sub>sat</sub> : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).

Part Number	Inductance (L) (uH)	Tolerance (T)	Inductance Test Freq. (MHz)	SRF (MHz) (Min.)	DCR $\Omega$	I <sub>rms</sub> (mA) (Max.)	I <sub>sat</sub> (mA) (Typ.)
WCD252011-1R0T	1.00	M, Y	1	70	0.09±25%	1500	1800
WCD252011-2R2T	2.20	M, Y	1	40	0.12±25%	1000	900
WCD252011-3R3T	3.30	M, Y	1	30	0.12±25%	1000	450
WCD252011-4R7T	4.70	M, Y	1	25	0.14±25%	900	350
WCD252011-100T	10.00	M, Y	1	15	0.30±30%	800	200

\* T=Tolerance: M=±20%, Y=±30%

\* I<sub>rms</sub> : Is direct electric current as chip surface temperature rose just 40°C against chip initial surface 25°C

\* I<sub>sat</sub> : Is the value of DC current as inductance L ( uH ) decreased just 30% against initial value L ( 0A ).



●RELIABILITY

ITEM	TEST CONDITIONS	REMARKS																				
Temperature	Temperature range: -40°C/ +85°C kept Reference temperature: +20°C	Inductance change should be within ± 20% of the initial value measuring at 20°C																				
Humidity Resistance	Humidity: 90%~ 95% RH Temperature: 60± 2°C Test Time: 1000 ± 24 Hours	No visible mechanical damage. Inductance change: Within ± 20%																				
High Temperature	Temperature: 85 ± 2°C Testing Time: 1000 ± 24 Hours	No visible mechanical damage. Inductance change: Within ± 20%																				
Low Temperature	Temperature: -40 ± 2°C Time: 1000 ± 24 Hours	No visible mechanical damage. Inductance change: Within ± 20%																				
Thermal Shock	<table border="1"> <thead> <tr> <th>Step</th> <th>Temp</th> <th>Humidity</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25 ± 2°C</td> <td>95~100%RH</td> <td>20 sec</td> </tr> <tr> <td>2</td> <td>85 ± 2°C</td> <td>95~96%RH</td> <td>0.5 Hr</td> </tr> <tr> <td>3</td> <td>25 ± 2°C</td> <td>95~100%RH</td> <td>20 sec</td> </tr> <tr> <td>4</td> <td>-40 ± 2°C</td> <td>95~96%RH</td> <td>0.5 Hr</td> </tr> </tbody> </table>	Step	Temp	Humidity	Time	1	25 ± 2°C	95~100%RH	20 sec	2	85 ± 2°C	95~96%RH	0.5 Hr	3	25 ± 2°C	95~100%RH	20 sec	4	-40 ± 2°C	95~96%RH	0.5 Hr	No visible mechanical damage. Inductance change: Within ± 20%
	Step	Temp	Humidity	Time																		
	1	25 ± 2°C	95~100%RH	20 sec																		
	2	85 ± 2°C	95~96%RH	0.5 Hr																		
	3	25 ± 2°C	95~100%RH	20 sec																		
4	-40 ± 2°C	95~96%RH	0.5 Hr																			
Tested cycle: 100 cycles.																						
Vibration	Frequency: 10Hz~55Hz Amplitude: 1.5mm Direction: X, Y, Z Time: 2 Hours each																					
Solderability	Solder: Sn / 3.0 Ag / 0.5Cu Solder Temp.: 240± 2 o C Time: 3 sec. Flux: 25% Resin and 75% ethanol in weight	No visible mechanical damage. Wetting shall exceed 95% coverage.																				
Resistance to Soldering Heat	Solder Temp.: 260 ± 3 o C Duration: 5 sec. Solder: Sn / 3.0 Ag / 0.5Cu Flux: 25% Resin and 75% ethanol in weight. The chip shall be stabilized at normal condition for 1~2 hours before measuring	No visible mechanical damage. Wetting shall exceed 95% coverage. Inductance change : Within ± 20%																				
Bending Strength		The terminal electrode and the ferrite must not be damaged by the forces applied on the test conditions.																				
Flexure Strength		No mechanical damage shall be noticed even when the board is bent 2 mm																				
Terminal Strength		The terminal electrode and the ferrite must not be damaged by the forces applied on the test conditions.																				



● **TEST EQUIPMENT**

1. HP4291B + HP16192A – L, IDC, SRF
2. HP4338B - DCR

● **OPERATING & STORAGE CONDITION**

1. Operating Temp: -40 ~ +85°C
2. Storage Temp: -10 ~ 40°C
3. Storage Life Time: 12 Month (25°C and 70% RH)

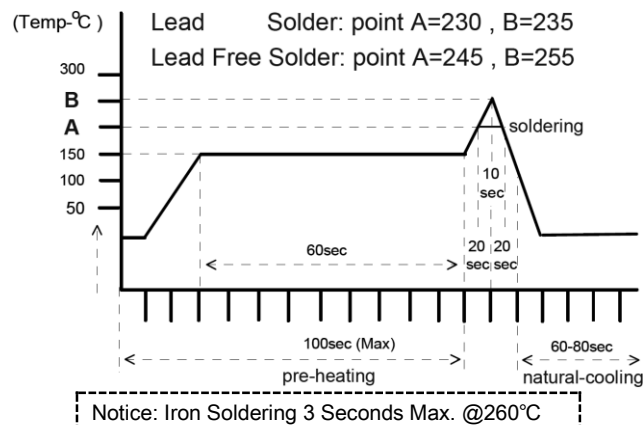
Standard Atmosphere Conditions:

Ambient Temperature 20 ± 15°C; Humidity RH 65 ± 20%

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

Ambient Temperature 20 ± 2°C; Humidity RH 65 ± 5%

● **RECOMMEND REFLOW CURVE (TIME: Second)**

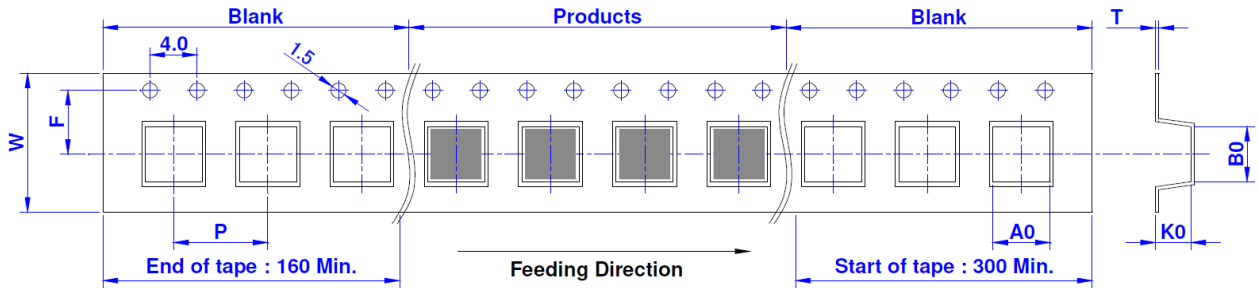


● **ATTENTION & CAUTION:**

- \* 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.

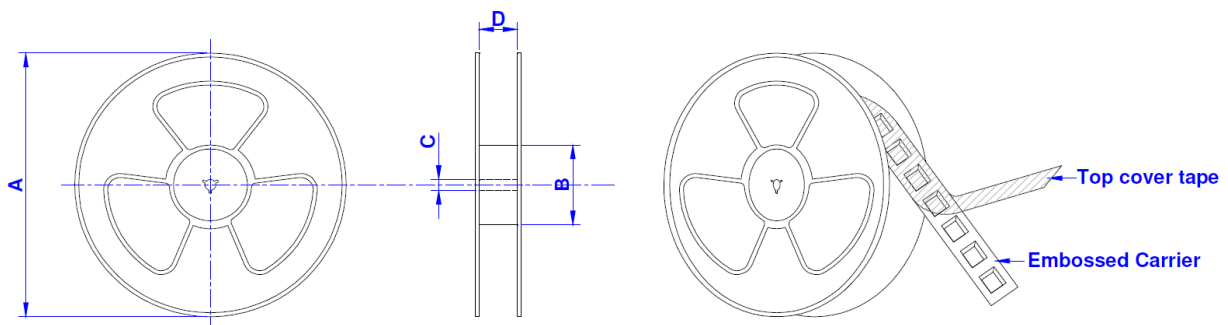


●TAPE DIMENSION: mm



SIZE/mm	W	P	A0	B0	K0	T	F
160805	8.00	4.00	1.00	1.80	-	0.80	3.50
160808	8.00	4.00	1.00	1.80	-	1.10	3.50
201205	8.00	4.00	1.60	2.30	-	0.80	3.50
201209	8.00	4.00	1.55	2.30	1.45	0.30	3.50
201212	8.00	4.00	1.55	2.30	1.75	0.30	3.50
201609	8.00	4.00	1.90	2.30	1.45	0.30	3.50
252009	8.00	4.00	2.30	2.80	1.45	0.30	3.50
252011	8.00	4.00	2.30	2.80	1.75	0.30	3.50

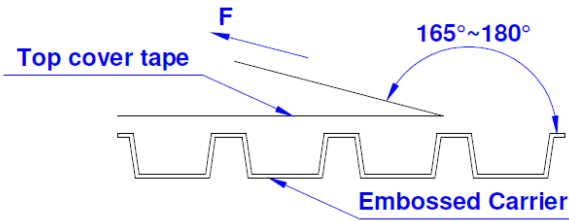
●REEL DIMENSION: mm



SIZE / mm	REEL SIZE	A	B	C	D	QTY/REEL
160805	7" x 8mm	178	58	14.4	8.4	5000 PCS
160808	7" x 8mm	178	58	14.4	8.4	4000 PCS
201205	7" x 8mm	178	58	14.4	8.4	5000 PCS
201209	7" x 8mm	178	58	14.4	8.4	3000 PCS
201212	7" x 8mm	178	58	14.4	8.4	3000 PCS
201609	7" x 8mm	178	58	14.4	8.4	3000 PCS
252009	7" x 8mm	178	58	14.4	8.4	3000 PCS
252011	7" x 8mm	178	58	14.4	8.4	3000 PCS



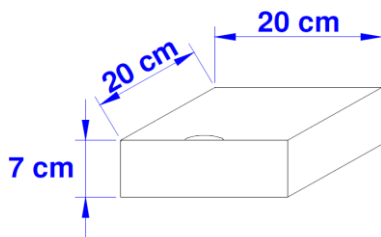
● **TEARING OFF FORCE:**



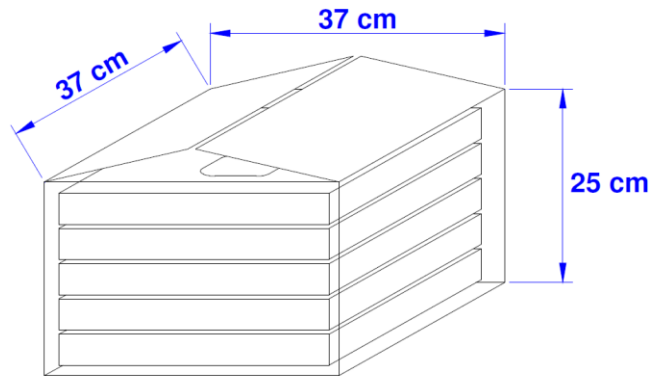
The force for tearing off cover tape is 10 to 100 grams in the arrow direction under the following conditions (referenced ANSI/EIA - 481 - D - 2008 of 4.11 standard).

Room Temp. (°C)	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
160805	5	8
160808	5	8
201205	5	8
201209	5	8
201212	5	8
201609	5	8
252009	5	8
252011	5	8





## **IMPORTANT NOTICE**

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