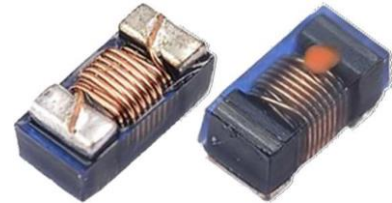




●FEATURE

1. High Current Type: DC Current Enhanced
2. Low DCR available in material code: R
3. Suitable for power line & signal line circuit
4. Pass the CE/FCC purpose
5. Operating Temperature: -40 ~ +125°C
6. Compliant with AEC-Q200



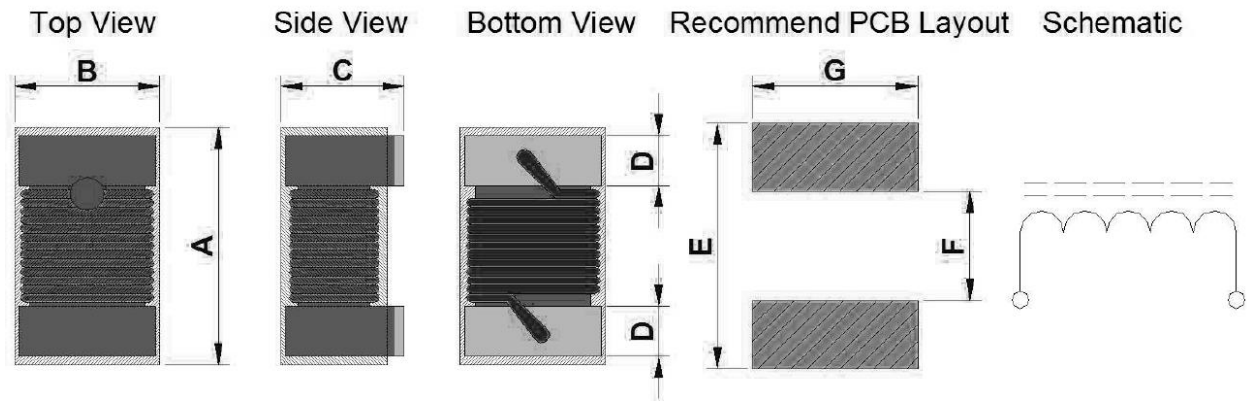
●APPLICATION

Mobil Device, Handheld Device, LowProfile Device, Panel.

●ORDERING INFORMATION

<u>WCL</u>	<u>2012</u>	<u>U</u>	<u>-1R0</u>	<u>T</u>	<u>Q</u>
Series	Dimension (L*W)	Material (R=Low DCR)	Impedance (Ω)	Tolerance J=±5%, K=±10%, M=±20%	AEC-Q

●SHAPE AND DIMENSION



●SPECIFICATION

Unit: mm

TYPE	A	B	C	D	E	F	G
1610	1.8 MAX	1.20 MAX	1.00 MAX	0.33 Ref.	1.92 Ref.	0.80 Ref.	1.02 Ref.
2012	2.4 MAX	1.65 MAX	1.25 MAX	0.44 Ref.	2.80 Ref.	0.96 Ref.	1.78 Ref.
2520	2.9 MAX	2.54 MAX	2.00 MAX	0.50 Ref.	3.31 Ref.	1.27 Ref.	2.54 Ref.
3225	3.6 MAX	2.90 MAX	2.50 MAX	0.50 Ref.	4.40 Ref.	2.00 Ref.	2.70 Ref.



●ELECTRICAL CHARACTERISTICS

Part Number	Inductance (μ H)	Tolerance (T)	Q value (Typ.)	Test Freq. (MHz)	S.R.F (MHz) (Typ.)	DCR (ohm) (\pm 30%)	IDC (mA) (Typ.)	Irms (mA) (Typ.)
WCL1610R-1R0T	1.00	K,M	16	7.9	390.0	0.32	860	700
WCL1610R-1R5T	1.50	K,M	16	7.9	160.0	0.40	720	600
WCL1610R-1R8T	1.80	K,M	16	7.9	121.0	0.43	640	580
WCL1610R-2R2T	2.20	K,M	16	7.9	103.0	0.56	600	580
WCL1610R-2R7T	2.70	K,M	16	7.9	72.0	0.62	540	500
WCL1610R-3R3T	3.30	K,M	16	7.9	66.0	0.70	500	500
WCL1610R-3R9T	3.90	K,M	16	7.9	61.0	0.83	460	460
WCL1610R-4R7T	4.70	K,M	16	7.9	51.0	0.97	400	420
WCL1610R-5R6T	5.60	K,M	16	7.9	47.0	1.10	380	380
WCL1610R-6R8T	6.80	K,M	16	7.9	43.0	1.50	340	340
WCL1610R-8R2T	8.20	K,M	16	7.9	40.0	1.68	300	300
WCL1610R-100T	10.00	K,M	14	2.5	36.0	1.85	280	280
WCL1610R-120T	12.00	K,M	14	2.5	32.0	2.28	260	260
WCL1610R-150T	15.00	K,M	14	2.5	29.0	2.60	240	240
WCL1610R-180T	18.00	K,M	14	2.5	28.0	2.90	220	220
WCL1610R-220T	22.00	K,M	14	2.5	24.0	3.61	200	200
WCL1610R-270T	27.00	K,M	14	2.5	20.0	5.20	140	140
WCL1610R-330T	33.00	K,M	14	2.5	15.0	6.60	120	120

* T=Tolerance Code: K= \pm 10%, M= \pm 20%

* IDC for Inductance drop 10% from its value without current.

* Irms for a 15°C rise above 25°C ambient.



Part Number	Inductance (uH)	Tolerance (T)	Q value (Typ.)	Test Freq. (MHz)	S.R.F (MHz) (Typ.)	DCR (ohm) (±30%)	IDC (mA) (Typ.)	I _{rms} (mA) (Typ.)
WCL2012R-R47T	0.47	K,M	14	7.9	850.0	0.12	1400	1500
WCL2012R-R68T	0.68	K,M	14	7.9	765.0	0.15	1200	1300
WCL2012R-1R0T	1.00	J,K,M	14	7.9	208.0	0.13	1100	1300
WCL2012R-1R2T	1.20	J,K,M	14	7.9	159.0	0.16	960	1270
WCL2012R-1R5T	1.50	J,K,M	14	7.9	159.0	0.17	920	1260
WCL2012R-1R8T	1.80	J,K,M	14	7.9	112.0	0.20	860	1080
WCL2012R-2R2T	2.20	J,K,M	13	7.9	87.0	0.22	740	1040
WCL2012R-2R7T	2.70	J,K,M	13	7.9	72.0	0.25	680	1040
WCL2012R-3R3T	3.30	J,K,M	12	7.9	70.0	0.28	620	1020
WCL2012R-3R9T	3.90	J,K,M	14	7.9	61.0	0.38	580	960
WCL2012R-4R7T	4.70	J,K,M	14	7.9	51.0	0.43	520	840
WCL2012R-5R6T	5.60	J,K,M	12	7.9	47.0	0.50	480	800
WCL2012R-6R8T	6.80	J,K,M	14	7.9	46.0	0.68	420	700
WCL2012R-8R2T	8.20	J,K,M	13	7.9	33.0	0.73	400	680
WCL2012R-100T	10.00	J,K,M	14	2.5	31.0	0.85	360	560
WCL2012R-120T	12.00	J,K,M	14	2.5	30.0	0.90	340	460
WCL2012R-150T	15.00	J,K,M	15	2.5	28.0	1.40	300	380
WCL2012R-180T	18.00	J,K,M	15	2.5	27.0	1.55	280	360
WCL2012R-220T	22.00	J,K,M	15	2.5	20.0	1.76	240	340
WCL2012R-270T	27.00	J,K,M	15	2.5	17.0	2.00	220	300
WCL2012R-330T	33.00	J,K,M	15	2.5	17.0	2.35	200	300
WCL2012R-470T	47.00	J,K,M	14	2.5	15.0	3.40	160	280
WCL2012R-560T	56.00	J,K,M	14	2.5	10.0	4.42	150	240
WCL2012R-680T	68.00	J,K,M	14	2.5	10.0	4.45	140	240
WCL2012R-820T	82.00	J,K,M	14	2.5	10.0	7.50	100	180
WCL2012R-101T	100.00	J,K,M	10	1.0	9.0	7.50	100	180

* T=Tolerance Code: J=±5%, K=±10%, M=±20%

* IDC for Inductance drop 10% from its value without current.

* I_{rms} for a 15°C rise above 25°C ambient.



Part Number	Inductance (uH)	Tolerance (T)	Q value (Min.)	Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)	Irms (mA) (Typ.)
WCL2520-R22T	0.22	J,K	35	25	800	0.15	2600	2400
WCL2520-R47T	0.47	J,K	35	25	460	0.20	2400	1100
WCL2520-R82T	0.82	J,K	35	25	360	0.35	1800	1000
WCL2520-1R0T	1.0	J,K	32	7.9	340	0.34	2100	900
WCL2520-1R2T	1.2	J,K	25	7.9	290	0.25	1900	860
WCL2520-1R5T	1.5	J,K	32	7.9	230	0.42	1800	740
WCL2520-1R8T	1.8	J,K	27	7.9	180	0.45	1700	720
WCL2520-2R2T	2.2	J,K	27	7.9	140	0.50	1500	700
WCL2520-2R7T	2.7	J,K	27	7.9	130	0.55	1300	560
WCL2520-3R3T	3.3	J,K	27	7.9	125	0.60	1300	540
WCL2520-3R9T	3.9	J,K	27	7.9	100	0.80	1200	480
WCL2520-4R7T	4.7	J,K	27	7.9	90	0.90	1100	400
WCL2520-5R6T	5.6	J,K	27	7.9	60	1.00	1000	400
WCL2520-6R8T	6.8	J,K	27	7.9	60	1.05	950	420
WCL2520-8R2T	8.2	J,K	25	7.9	55	1.20	850	380
WCL2520-100T	10.0	J,K	23	2.5	55	1.55	800	240
WCL2520-120T	12.0	J,K	23	2.5	36	2.10	630	220
WCL2520-150T	15.0	J,K	23	2.5	36	2.38	580	200
WCL2520-180T	18.0	J,K	23	2.5	32	2.50	550	180
WCL2520-220T	22.0	J,K	23	2.5	29	2.92	550	180
WCL2520-330T	33.0	J,K	23	2.5	21	4.10	450	140
WCL2520-390T	39.0	J,K	18	2.5	15	5.50	340	270
WCL2520-470T	47.0	J,K	23	2.5	17	7.80	350	100
WCL2520-680T	68.0	J,K	20	2.5	9	11.50	260	100
WCL2520-101T	100.0	J,K	13	1.0	4	13.20	200	100
WCL2520-221T	220.0	J,K	13	1.0	3	25.50	140	60
WCL2520-331T	330.0	J,K	13	1.0	2	32.50	110	50

* T=Tolerance Code: J=±5%, K=±10%

* IDC for Inductance drop 10% from its value without current.

* I_{rms} for a 15°C rise above 25°C ambient.



Part Number	Inductance (uH)	Tolerance (T)	Q value (Min.)	Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCL3225-R39T	0.39	J	40	25.0	500	0.09	3000
WCL3225-R47T	0.47	J,K	40	25.0	500	0.09	3000
WCL3225-R56T	0.56	K	40	25.0	500	0.10	3000
WCL3225-1R0T	1.0	J,K	35	7.9	340	0.13	2600
WCL3225-1R2T	1.2	J,K	35	7.9	280	0.14	2400
WCL3225-1R5T	1.5	J,K	30	7.9	160	0.14	2200
WCL3225-1R8T	1.8	J,K	30	7.9	120	0.16	2000
WCL3225-2R2T	2.2	J,K	30	7.9	100	0.17	1900
WCL3225-2R5T	2.5	J,K	30	7.9	80	0.19	1700
WCL3225-3R3T	3.3	J,K	30	7.9	70	0.21	1500
WCL3225-4R7T	4.7	J,K	28	7.9	55	0.30	1300
WCL3225-6R8T	6.8	J,K	28	7.9	45	0.37	1100
WCL3225-8R2T	8.2	J,K	28	7.9	45	0.47	940
WCL322P-100T	10.0	J,K	22	2.5	47	0.50	900
WCL3225-120T	12.0	J,K	22	2.5	42	0.68	820
WCL3225-150T	15.0	J,K	22	2.5	34	0.72	740
WCL3225-180T	18.0	J,K	22	2.5	28	0.95	680
WCL3225-220T	22.0	J,K	22	2.5	25	1.10	640
WCL3225-270T	27.0	J,K	20	2.5	18	1.25	570
WCL3225-330T	33.0	J,K	20	2.5	13	1.37	500
WCL3225-390T	39.0	J,K	20	2.5	13	1.85	400
WCL3225-470T	47.0	J,K	20	2.5	12	1.88	440
WCL3225-560T	56.0	J,K	22	2.5	10	2.75	380
WCL3225-680T	68.0	J,K	22	2.5	10	3.00	360
WCL3225-820T	82.0	J,K	22	2.5	10	4.10	320
WCL3225-101T	100.0	J,K	15	1.0	8	4.68	280
WCL3225-121T	120.0	J,K	15	1.0	7	5.80	220
WCL3225-151T	150.0	J,K	13	1.0	7	6.10	220
WCL3225-181T	180.0	J,K	13	1.0	3	7.10	200
WCL3225-221T	220.0	J,K	13	1.0	3	7.65	200
WCL3225-331T	330.0	J,K	13	1.0	3	12.62	160
WCL3225-471T	470.0	J,K	13	1.0	3	25.00	120
WCL3225-561T	560.0	J,K	13	1.0	2	27.00	100
WCL3225-681T	680.0	J,K	13	1.0	2	31.00	100
WCL3225-821T	820.0	J,K	10	1.0	2	42.00	50
WCL3225-102T	1000.0	J,K	10	1.0	2	46.00	50

* T=Tolerance Code: J=±5%, K=±10%

* IDC for Inductance drop 10% from its value without current.

* Irms for a 15°C rise above 25°C ambient.



●RELIABILITY

Test Item	Test Condition	Specification												
Dimension	Actual Size ...	Meet Spec												
Thermal Shock (Temperature Cycle)	Temperature: -40 ~ +125°C kept stabilized for 30 min. each Cycle: 100 Cycles (power off)	Elec. no variation Appearance no deformation												
Humidity Resistance	Humidity: 90% ~ 95% RH Temperature: 60 ± 2°C Test Time: 96 ± 2 Hours	Elec. no variation Appearance no deformation												
High Temperature	Temperature: 125 ± 2°C Testing Time: 96 ± 2 Hours	Elec. no variation Appearance no deformation												
Low Temperature	Temperature: -40 ± 2°C Time: 96 ± 2 Hours	Elec. no variation Appearance no deformation												
Temperature and Humidity Cycle	<table border="1"> <thead> <tr> <th>Temperature</th> <th>Humidity</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>25°C</td> <td>90% ~ 95% RH</td> <td>3.0 Hr</td> </tr> <tr> <td>55°C</td> <td>95% ~ 96% RH</td> <td>5.0 Hr</td> </tr> <tr> <td>25°C</td> <td>90% ~ 95% RH</td> <td>3.0 Hr</td> </tr> </tbody> </table>	Temperature	Humidity	Time	25°C	90% ~ 95% RH	3.0 Hr	55°C	95% ~ 96% RH	5.0 Hr	25°C	90% ~ 95% RH	3.0 Hr	Elec. no variation Appearance no deformation
	Temperature	Humidity	Time											
	25°C	90% ~ 95% RH	3.0 Hr											
	55°C	95% ~ 96% RH	5.0 Hr											
25°C	90% ~ 95% RH	3.0 Hr												
Cycle: 20 Cycles														
Vibration	Frequency: 10Hz ~ 55Hz , Amplitude: 1.5 mm Direction: X, Y, Z, Time: 2 Hours each	Elec. no variation Appearance no deformation												
Solderability	Go through real SMT IR-Reflow The profile like our suggest profile. Preheat: 160 ± 10°C (90 sec) Peak: 245 ± 5°C Peak Time: 50 Sec. / up 217°C	Elec. no variation Appearance no deformation												
Soldering Heat Resistance	Preheat: 160 ± 10°C (90 sec) Solder: Sn / Ag / Cu (Pb Free) Solder Temp.: 260 ± 5°C, Time: 3 ± 1 seconds	Elec. no variation Appearance no deformation												
Iron Solder Heat Resistance	Solder Temp.: 350 ± 5°C Flux: Rosin, Time: 3 ± 1 seconds	Elec. no variation Appearance no deformation												
Bending Strength	<p>Unit : mm</p> <p>Force : 1Kg / min.</p>	Elec. no variation Appearance no deformation												
Flexure Strength	<p>Unit : mm</p> <p>Solder cream 0.15 mm</p>	Elec. no variation Appearance no deformation												
Terminal Strength	<p>Mount on PCB Solder Cream 0.15 mm</p> <p>Push 10N force to X , Y direction</p>	Elec. no variation Appearance no deformation												
High-Voltage	100 V DC between core & winding	Elec. no variation Appearance no deformation												
Load life	Temperature: 25 ± 3°C Load: Allowed DC Current, Test Time: 96 ± 2 Hours	Elec. no variation Appearance no deformation												



•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. Product with Taping: -10 ~ 45°C, 50 ~ 60% RH
b. On Board: -40 ~ +125°C
- 3. Storage Life Time: 6 Month (Less than 40°C and 60% RH)

Standard Atmospheric Conditions:

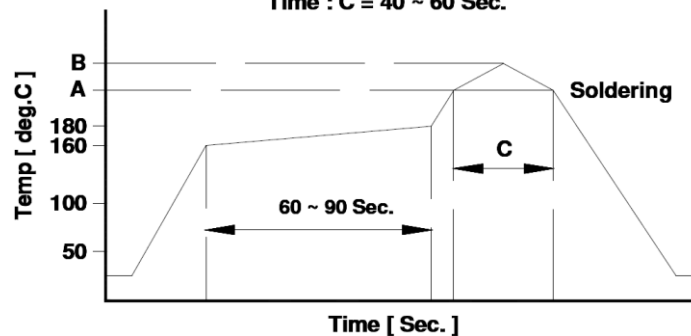
Ambient Temperature 20 ± 15°C , Humidity RH 65 ± 20%

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

Ambient Temperature 25 ± 5°C , Humidity RH 75 ± 10%

•RECOMMEND REFLOW CURVE (TIME: Second)

Lead Free Solder : A = 217 deg.C , B = 245+/-5 deg.C
Time : C = 40 ~ 60 Sec.



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:

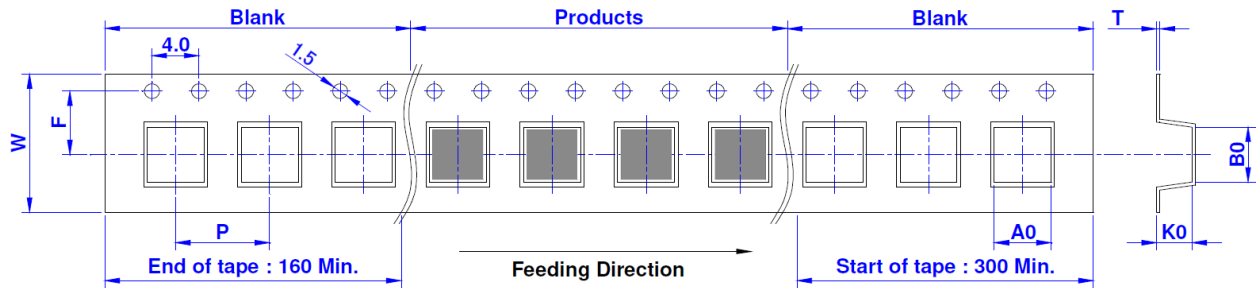
- (1) Storage Condition:
Temperature 25 to 35°C, Humidity 45 to 60% RH
- (2) Use Temperature:
 - a. Minimum Temperature: -40°C Ambient temperature of this product.
 - b. Maximum Temperature: +125°C The value of temperature including ambient and temperature rise of this product.
 - c. Reliability test temperature range from -40 ~ +125°C
 - 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.

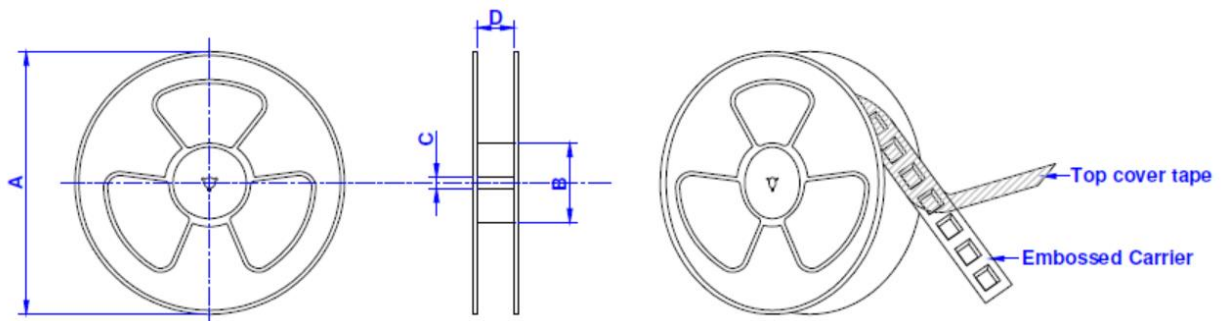


●TAPE DIMENSION: mm



SIZE/mm	W	P	A0	B0	K0	T	F
1610	8.00	4.00	1.25	1.90	1.00	0.22	3.50
2012	8.00	4.00	1.65	2.40	1.30	0.22	3.50
2520	8.00	4.00	2.50	2.85	2.00	0.22	3.50
3225	8.00	4.00	2.88	3.72	2.50	0.22	5.50

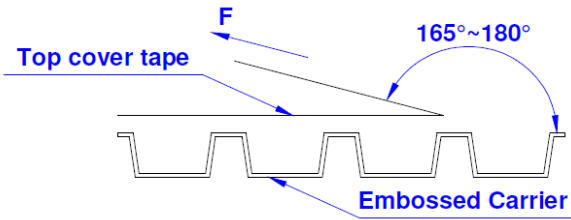
●REEL DIMENSION: mm



SIZE / mm	REEL SIZE	A	B	C	D	QTY/REEL
1610	7" x 8mm	178	60	13	8.5	4000 PCS
2012	7" x 8mm	178	60	13	8.5	2000 PCS
2520	7" x 8mm	178	60	13	8.5	2000 PCS
3225	7" x 8mm	178	60	13	8.5	2000 PCS



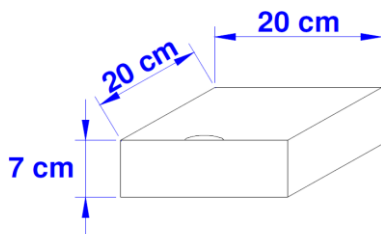
● **TEARING OFF FORCE:**



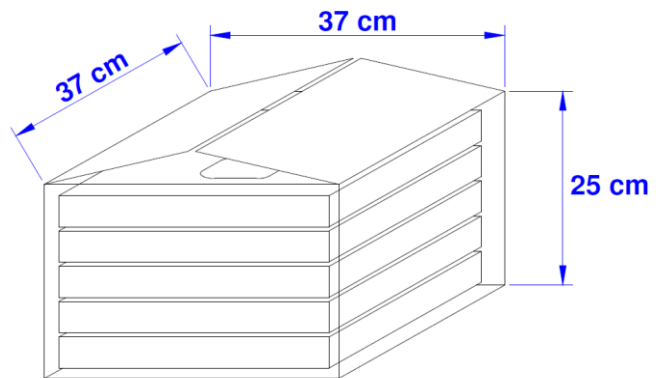
The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA - 481 - D - 2008 of 4.11 standard).

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
1610	5	8
2012	5	8
2520	5	8
3225	5	8



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or severe property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.