



●FEATURE

1. Monolithic Structure for High Reliability
2. Unified Dimensions are perfect for automatic mounting
3. Bead inductor for power energy storage or noise suppressor.
4. Closed Magnetic Circuit avoids cross talk and suitable for high density PCB boards.
5. Suitable for power line & signal line circuit
6. Pass the CE/FCC Purpose
7. Operating Temperature: -40 ~ +125 °C
8. Compliant with AEC-Q200



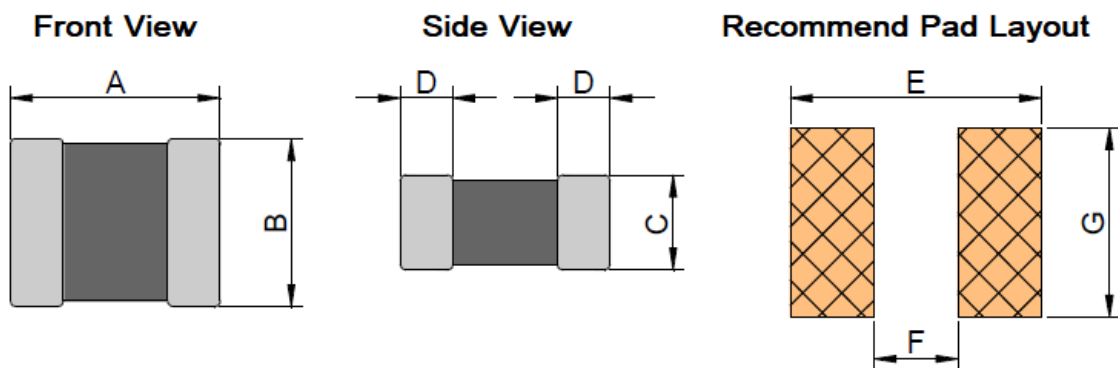
●APPLICATION

Industrial Connectivity, Wireless Communications, Machine-to-Machine, Mobile Phones, Wearable Devices, Wireless LAN, Computing/gaming Consoles, Broadband Components, RF Transceiver Modules.

●ORDERING INFORMATION

<u>WCA</u>	<u>160808</u>	<u>U</u>	<u>-47N</u>	<u>T</u>	<u>Q</u>
Series	Dimension	Material code	Impedance	Tolerance	AEC-Q
	(L*W*H)		(Ω)	K=±10%, M=±20%	

●SHAPE AND DIMENSION



●SPECIFICATION

Unit: mm (inch)

TYPE	A	B	C	D	E	F	G
100505(0402)	1.00±0.15	0.50±0.15	0.50±0.15	0.25±0.15	1.10 ref.	0.40 ref.	0.60 ref.
160808(0603)	1.60±0.15	0.80±0.15	0.80±0.15	0.40±0.20	1.80 ref.	0.60 ref.	1.00 ref.
201209(0805)	2.00±0.20	1.25±0.20	0.90±0.20	0.50±0.30	2.40 ref.	0.80 ref.	1.45 ref.
201212(0805)	2.00±0.20	1.25±0.20	1.25±0.20	0.50±0.30	2.40 ref.	0.80 ref.	1.45 ref.
321611(1206)	3.20±0.20	1.60±0.20	1.10±0.20	0.50±0.30	3.40 ref.	2.00 ref.	1.80 ref.

**•ELECTRICAL CHARACTERISTICS**

Part Number	Inductance (uH)	Q (Min.)	L&Q Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCA100505-R22M	0.22	10	25	110	1.20	25
WCA100505-1R0M	1.00	20	10	40	1.00	15
WCA100505-1R8M	1.80	20	10	30	1.45	15
WCA100505-2R2M	2.20	20	10	28	1.70	10

M=Tolerance Code = $\pm 20\%$

IDC based on increasing product temperature : Current when temperature of the product reaches +40°C

Part Number	Inductance (uH)	Tolerance (T)	Q (Min.)	L&Q Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCA160808-47NT	0.047	M	20	50	260	0.30	50
WCA160808-68NT	0.068	M	20	50	250	0.30	50
WCA160808-82NT	0.082	M	20	50	245	0.30	50
WCA160808-R10T	0.10	K,M	30	25	240	0.50	50
WCA160808-R12T	0.12	K,M	30	25	205	0.50	50
WCA160808-R15T	0.15	K,M	30	25	180	0.60	50
WCA160808-R18T	0.18	K,M	30	25	165	0.60	50
WCA160808-R22T	0.22	K,M	30	25	150	0.80	50
WCA160808-R27T	0.27	K,M	30	25	136	0.80	50
WCA160808-R33T	0.33	K,M	30	25	125	0.85	35
WCA160808-R39T	0.39	K,M	30	25	110	1.00	35
WCA160808-R47T	0.47	K,M	30	25	105	1.35	35
WCA160808-R56T	0.56	K,M	30	25	95	1.55	35
WCA160808-R68T	0.68	K,M	30	25	85	1.70	35
WCA160808-R82T	0.82	K,M	30	25	75	2.10	35
WCA160808-1R0T	1.00	K,M	35	10	65	0.60	25
WCA160808-1R2T	1.20	K,M	35	10	60	0.80	25
WCA160808-1R5T	1.50	K,M	35	10	55	0.80	25
WCA160808-1R8T	1.80	K,M	35	10	50	0.95	25
WCA160808-2R2T	2.20	K,M	35	10	45	1.15	15
WCA160808-2R7T	2.70	K,M	35	10	40	1.35	15
WCA160808-3R0T	3.00	K,M	35	10	40	1.55	15
WCA160808-3R3T	3.30	K,M	35	10	38	1.55	15
WCA160808-3R9T	3.90	K,M	35	10	36	1.70	15
WCA160808-4R7T	4.70	K,M	35	10	33	2.10	15
WCA160808-5R6T	5.60	K,M	35	4	22	1.55	5
WCA160808-6R8T	6.80	K,M	35	4	20	1.70	5
WCA160808-8R2T	8.20	K,M	30	4	18	2.10	5
WCA160808-100T	10.00	K,M	30	2	17	2.55	3
WCA160808-120T	12.00	K,M	30	1	15	2.75	3
WCA160808-150T	15.00	K,M	20	1	14	2.85	1
WCA160808-180T	18.00	K,M	20	1	13	1.80	1

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

IDC based on increasing product temperature : Current when temperature of the product reaches +40°C



Part Number	Inductance (μ H)	Tolerance (T)	Q (Min.)	L&Q Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCA201209-47NT	0.047	M	25	50	320	0.20	300
WCA201209-68NT	0.068	M	25	50	280	0.20	300
WCA201209-82NT	0.082	M	25	50	255	0.20	300
WCA201209-R10T	0.10	K,M	30	25	235	0.30	250
WCA201209-R12T	0.12	K,M	30	25	220	0.30	250
WCA201209-R15T	0.15	K,M	30	25	200	0.40	250
WCA201209-R18T	0.18	K,M	30	25	185	0.40	250
WCA201209-R22T	0.22	K,M	30	25	170	0.50	250
WCA201209-R27T	0.27	K,M	30	25	150	0.50	250
WCA201209-R33T	0.33	K,M	30	25	145	0.55	250
WCA201209-R39T	0.39	K,M	30	25	135	0.65	250
WCA201209-R47T	0.47	K,M	30	25	125	0.65	250
WCA201209-R56T	0.56	K,M	30	25	115	0.75	150
WCA201209-R68T	0.68	K,M	30	25	105	0.80	150
WCA201209-R82T	0.82	K,M	30	25	100	1.00	150
WCA201209-1R0T	1.00	K,M	45	10	75	0.45	50
WCA201209-1R2T	1.20	K,M	45	10	65	0.50	50
WCA201209-1R5T	1.50	K,M	45	10	60	0.50	50
WCA201209-1R8T	1.80	K,M	45	10	55	0.60	50
WCA201209-2R2T	2.20	K,M	45	10	50	0.65	30
WCA201209-3R3T	3.30	K,M	45	10	41	0.80	30
WCA201209-4R7T	4.70	K,M	45	10	35	1.00	30
WCA201209-100T	10.00	K,M	50	2	24	1.10	25

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

IDC based on increasing product temperature : Current when temperature of the product reaches +40°C



Part Number	Inductance (uH)	Tolerance (T)	Q (Min.)	L&Q Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCA201212-2R7T	2.70	K,M	45	10	45	0.75	30
WCA201212-3R3T	3.30	K,M	45	10	41	0.80	30
WCA201212-3R9T	3.90	K,M	45	10	38	0.90	30
WCA201212-4R7T	4.70	K,M	45	10	35	1.00	30
WCA201212-5R6T	5.60	K,M	45	4	32	1.00	15
WCA201212-6R8T	6.80	K,M	45	4	29	1.00	15
WCA201212-8R2T	8.20	K,M	45	4	26	1.10	15
WCA201212-100T	10.00	K,M	45	2	24	1.15	15
WCA201212-120T	12.00	K,M	45	2	22	1.25	15
WCA201212-150T	15.00	K,M	30	1	19	0.80	5
WCA201212-180T	18.00	K,M	30	1	18	0.90	5
WCA201212-220T	22.00	K,M	30	1	16	1.10	5
WCA201212-270T	27.00	K,M	30	1	14	1.15	5
WCA201212-330T	33.00	K,M	30	0.4	13	1.25	5

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

IDC based on increasing product temperature : Current when temperature of the product reaches +40°C



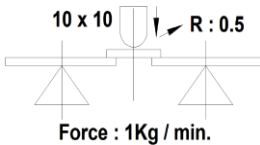
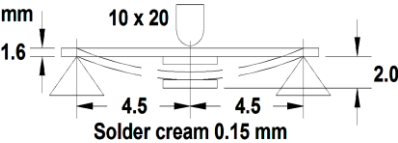
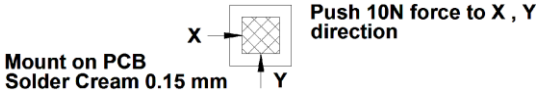
Part Number	Inductance (uH)	Tolerance (T)	Q (Min.)	L&Q Test Freq. (MHz)	S.R.F (MHz) (Min.)	DCR (ohm) (Max.)	IDC (mA) (Max.)
WCA321611-47NT	0.047	M	25	50	320	0.15	300
WCA321611-68NT	0.068	M	25	50	280	0.25	300
WCA321611-82NT	0.082	M	25	50	250	0.25	300
WCA321611-R10T	0.10	K,M	30	25	235	0.25	250
WCA321611-R12T	0.12	K,M	30	25	220	0.30	250
WCA321611-R15T	0.15	K,M	30	25	200	0.30	250
WCA321611-R18T	0.18	K,M	30	25	185	0.40	250
WCA321611-R22T	0.22	K,M	30	25	170	0.40	250
WCA321611-R27T	0.27	K,M	30	25	150	0.50	250
WCA321611-R33T	0.33	K,M	30	25	145	0.60	250
WCA321611-R39T	0.39	K,M	30	25	135	0.60	200
WCA321611-R47T	0.47	K,M	30	25	125	0.60	200
WCA321611-R56T	0.56	K,M	30	25	115	0.70	150
WCA321611-R68T	0.68	K,M	30	25	105	0.80	150
WCA321611-R82T	0.82	K,M	30	25	100	0.90	150
WCA321611-1R0T	1.00	K,M	45	10	75	0.40	100
WCA321611-1R2T	1.20	K,M	45	10	65	0.50	100
WCA321611-1R5T	1.50	K,M	45	10	60	0.50	80
WCA321611-1R8T	1.80	K,M	45	10	55	0.50	70
WCA321611-2R2T	2.20	K,M	45	10	50	0.60	60
WCA321611-2R7T	2.70	K,M	45	10	45	0.60	60
WCA321611-3R3T	3.30	K,M	45	10	41	0.70	60
WCA321611-3R9T	3.90	K,M	45	10	38	0.80	50
WCA321611-4R7T	4.70	K,M	45	10	35	0.90	50
WCA321611-5R6T	5.60	K,M	45	4	32	0.70	25
WCA321611-6R8T	6.80	K,M	45	4	29	0.80	25
WCA321611-8R2T	8.20	K,M	45	4	26	0.90	25
WCA321611-100T	10.00	K,M	45	2	24	1.00	25
WCA321611-120T	12.00	K,M	45	2	22	1.05	15
WCA321611-150T	15.00	K,M	35	1	19	0.70	5
WCA321611-180T	18.00	K,M	35	1	18	0.75	5
WCA321611-220T	22.00	K,M	35	1	16	0.90	5
WCA321611-270T	27.00	K,M	35	1	14	0.95	5
WCA321611-330T	33.00	K,M	35	0.4	13	1.05	5
WCA321611-390T	39.00	K,M	40	2	11	3.00	5
WCA321611-470T	47.00	K,M	40	2	10	3.40	5

T=Tolerance Code : K= ±10%, M= ±20%

IDC based on increasing product temperature : Current when temperature of the product reaches +40°C



●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> Cycle: 20 Cycles	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												
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	Unit : mm  Force : 1Kg / min.	Elec. no variation Appearance no deformation												
Flexure Strength	Unit : mm  Solder cream 0.15 mm	Elec. no variation Appearance no deformation												
Terminal Strength	 Mount on PCB Solder Cream 0.15 mm Push 10N force to X , Y direction	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: 12 Month (Less than 40°C and 60% RH)

Standard Atmosphere Conditions:

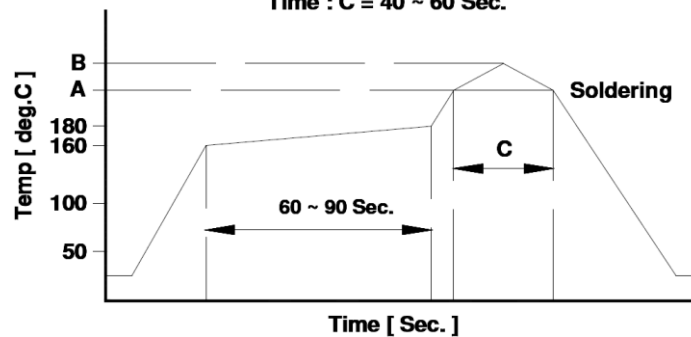
Ambient Temperature 20 ± 15°C; Humidity RH 65 ± 20%

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

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

● **RECOMMEND IR 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:

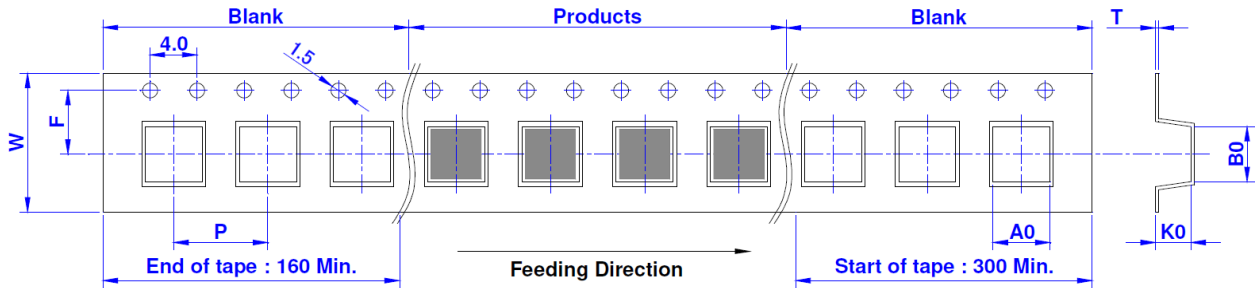
- (1) Storage Condition:
Temperature 25 to 35°C, Humidity 45 to 60% RH
- (2) Use Temperature:
 - a. Minimum Temperature: -40°C Ambient temperature of this product.
 - b. Maximum Temperature: +125°C The value of temperature including ambient and temperature rise of this product.
 - c. Reliability test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

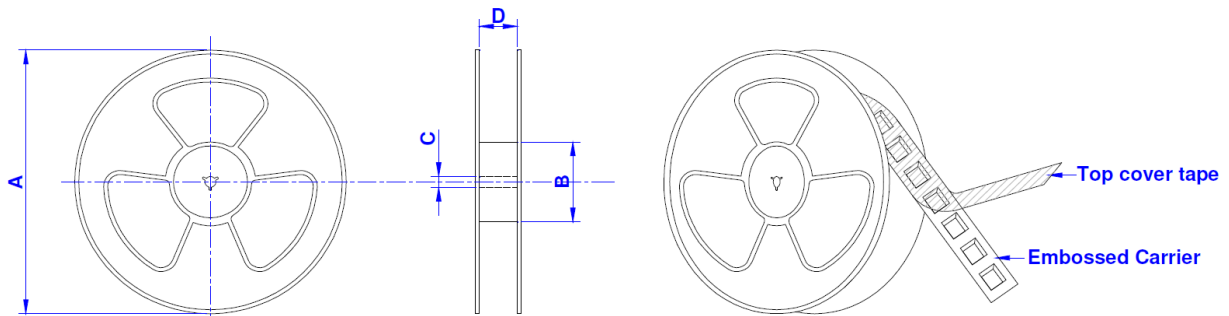


●TAPE DIMENSION: mm



SIZE/mm	W	P	A0	B0	K0	T
100505	8.00	2.00	0.62	1.12	0.60	-
160808	8.00	4.00	1.05	1.85	0.95	-
201209	8.00	4.00	1.50	2.30	0.94	-
201212	8.00	4.00	1.35	2.25	1.35	0.22
321611	8.00	4.00	1.88	3.50	1.27	0.22

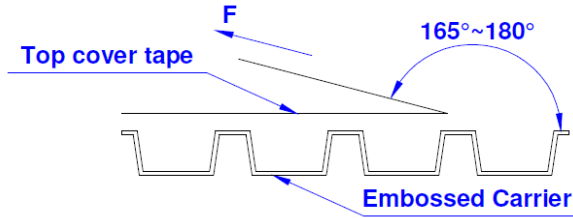
●REEL DIMENSION: mm



SIZE / mm	Reel Size	A	B	C	D	QTY/REEL
100505	7" x 8mm	178	60	12	10	10000 PCS
160808	7" x 8mm	178	60	12	10	4000 PCS
201209	7" x 8mm	178	60	12	10	4000 PCS
201211	7" x 8mm	178	60	12	10	4000 PCS
321611	7" x 8mm	178	60	12	10	3000 PCS



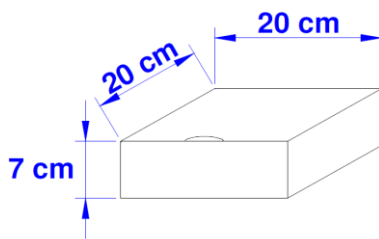
●TEARING OFF FORCE:



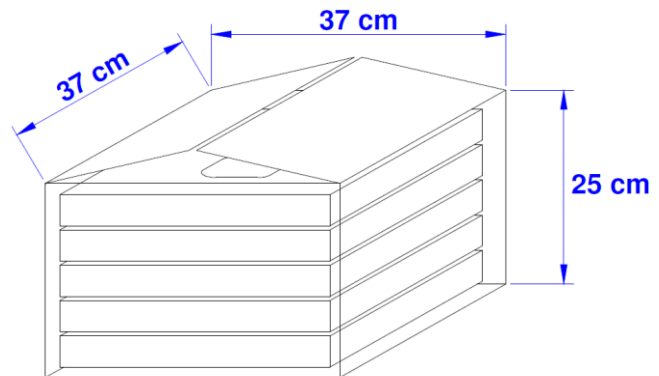
The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA - 481 - D - 2008 of 4.11 standard).

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
100505	5	8
160808	5	8
201209	5	8
201211	5	8
321611	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 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.