•FEATURE

1. High Frequency SRF up to 10GHz
2. Pass the CE/FCC purpose
3. Suitable for 2.4GHz / 5GHz...etc. RF circuit
4. Operating Temperature: +40 ~ +125℃
5. Compliant with AEC-Q200

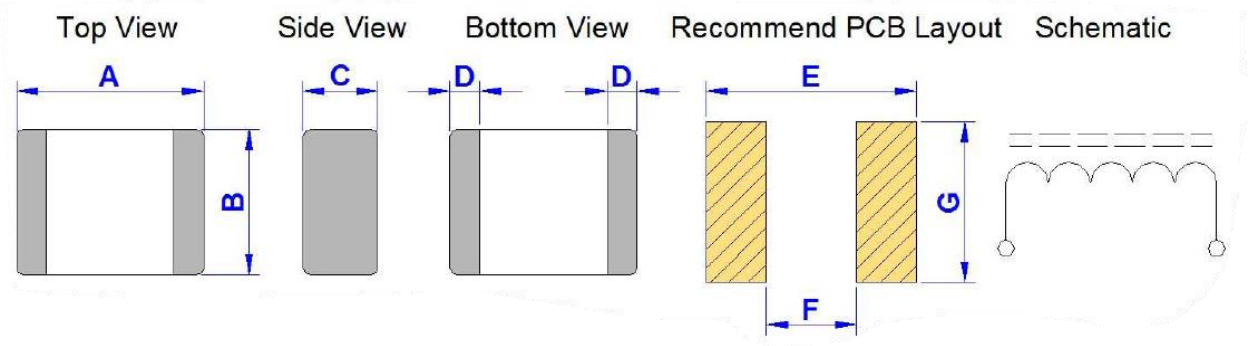
•APPLICATION

Mobil Device, Handheld Device, LowProfile Device, Panel.

•ORDERING INFORMATION

WCM	1608	U	-1N0	T	Q
Series	Dimension (L*W)	Material code	Impedance (Ω)	Tolerance	AEC-Q
				S=±0.3nH, J=±5%, K=±10%	

•SHAPE AND DIMENSION



•SPECIFICATION

Unit: mm (inch)

TYPE	A	B	C	D	E	F	G
1005 (0402)	1.00±0.15	0.50±0.20	0.50±0.15	0.15±0.10	1.20~1.40 Ref.	0.40 Ref.	0.40 Ref.
1608 (0603)	1.60±0.15	0.80±0.15	0.80±0.15	0.25±0.10	2.40~3.40 Ref.	0.80 Ref.	0.60 Ref.
2012 (0805)	2.00±0.20	1.20±0.20	0.90±0.20	0.30±0.15	3.00~4.00 Ref.	1.20 Ref.	1.00 Ref.

•ELECTRICAL CHARACTEISTICS

Part Number	L - Value (nH) @100MHz 0.25V	Tolerance (T)	Q @100MHz (Min.)	Q Typcial @		S.R.F (MHz) Ref.	DCR (ohm) Max.	IDC (mA) Max.
				100MHz	800MHz			
WCM1005-1N0T	1.0	S	8	9	28	10000	0.10	300
WCM1005-1N2T	1.2	S	8	9	28	10000	0.10	300
WCM1005-1N5T	1.5	S	8	10	28	9000	0.10	300
WCM1005-1N8T	1.8	S	8	10	28	8700	0.12	300
WCM1005-2N0T	2.0	S	8	10	29	8100	0.15	300
WCM1005-2N2T	2.2	S	8	10	29	8100	0.15	300
WCM1005-2N4T	2.4	S	8	10	30	6000	0.13	300
WCM1005-2N7T	2.7	S	8	11	30	7700	0.15	300
WCM1005-3N0T	3.0	S	8	11	30	6300	0.15	300
WCM1005-3N3T	3.3	S, K	8	11	30	6300	0.16	300
WCM1005-3N9T	3.9	S, K	8	11	31	6100	0.21	300
WCM1005-4N3T	4.3	S, K	8	11	31	5400	0.21	300
WCM1005-4N7T	4.7	S, K	8	11	31	5400	0.21	300
WCM1005-5N1T	5.1	S, K	8	10	30	5700	0.23	300
WCM1005-5N6T	5.6	S, K	8	11	31	5100	0.23	300
WCM1005-6N8T	6.8	J, K	8	11	31	4550	0.25	250
WCM1005-7N5T	7.5	J, K	8	11	31	4300	0.25	250
WCM1005-8N2T	8.2	J, K	8	12	31	4100	0.30	250
WCM1005-9N1T	9.1	J, K	8	12	31	3900	0.35	250
WCM1005-10NT	10.0	J, K	8	12	31	3900	0.35	250
WCM1005-12NT	12.0	J, K	8	12	31	3000	0.40	250
WCM1005-15NT	15.0	J, K	8	12	31	2600	0.50	250
WCM1005-18NT	18.0	J, K	8	12	31	2350	0.55	200
WCM1005-22NT	22.0	J, K	8	12	31	2000	0.70	200
WCM1005-27NT	27.0	J, K	8	12	32	1900	0.80	200
WCM1005-33NT	33.0	J, K	8	10	32	1700	1.00	200
WCM1005-39NT	39.0	J, K	8	10	32	1600	1.20	150
WCM1005-47NT	47.0	J, K	8	10	33	1300	1.30	150
WCM1005-56NT	56.0	J, K	8	10	34	1250	2.00	150
WCM1005-68NT	68.0	J, K	8	10	35	1000	2.20	100
WCM1005-82NT	82.0	J, K	8	10	35	900	2.50	100
WCM1005-R10T	100.0	J, K	8	10	35	850	2.50	100
WCM1005-R12T	120.0	J, K	8	10	35	750	2.50	100
WCM1005-R27T	270.0	J, K	8	-	35	500	4.80	100

* T=Tolerance: S=±0.3nH, J=±5%, K=±10%

* IDC based on increasing product temperature : Current when temperature of the product reaches +40℃

Part Number	L - Value (nH) @100MHz 0.25V	Tolerance (T)	Q @100MHz (Min.)	Q Typcial @		S.R.F (MHz) Ref.	DCR (ohm) Max.	IDC (mA) Max.
				100MHz	800MHz			
WCM1608-1N0T	1.0	S	8	12	50	>17000	0.10	300
WCM1608-1N2T	1.2	S	8	13	65	>17000	0.10	300
WCM1608-1N5T	1.5	S	8	13	55	>17000	0.10	300
WCM1608-1N7T	1.7	S	8	13	51	8000	0.10	300
WCM1608-1N8T	1.8	S	8	13	51	6000	0.10	300
WCM1608-2N2T	2.2	S	8	13	45	6000	0.10	300
WCM1608-2N7T	2.7	S	8	13	45	8600	0.10	300
WCM1608-3N3T	3.3	S, K	8	13	51	6500	0.12	300
WCM1608-3N9T	3.9	S, K	8	13	52	6300	0.14	300
WCM1608-4N7T	4.7	S, K	8	13	41	5400	0.16	300
WCM1608-5N6T	5.6	S, K	8	13	41	4600	0.18	300
WCM1608-6N8T	6.8	J, K	8	13	44	4500	0.22	300
WCM1608-8N2T	8.2	J, K	8	13	44	3800	0.24	300
WCM1608-10NT	10.0	J, K	8	13	45	3700	0.26	300
WCM1608-12NT	12.0	J, K	8	15	46	3200	0.28	300
WCM1608-15NT	15.0	J, K	8	15	48	2900	0.32	300
WCM1608-18NT	18.0	J, K	10	15	48	2100	0.35	300
WCM1608-22NT	22.0	J, K	10	17	45	2100	0.40	300
WCM1608-27NT	27.0	J, K	10	17	43	2000	0.45	300
WCM1608-33NT	33.0	J, K	10	18	39	1600	0.55	300
WCM1608-39NT	39.0	J, K	10	18	37	1500	0.60	300
WCM1608-47NT	47.0	J, K	12	18	35	1200	0.70	300
WCM1608-56NT	56.0	J, K	12	18	32	1100	0.75	300
WCM1608-62NT	62.0	J, K	12	18	32	1050	0.85	300
WCM1608-68NT	68.0	J, K	12	18	32	1050	0.85	300
WCM1608-82NT	82.0	J, K	12	18	32	850	1.00	300
WCM1608-R10T	100.0	J, K	12	18	20	750	1.20	300
WCM1608-R12T	120.0	J, K	8 @50MHz	16	23	700	2.30	300
WCM1608-R15T	150.0	J, K	8 @50MHz	14	23	650	2.40	300
WCM1608-R18T	180.0	J, K	8 @50MHz	14	21	550	2.70	300
WCM1608-R22T	220.0	J, K	8 @50MHz	13	20	450	3.00	250

* T=Tolerance: S=±0.3nH, J=±5%, K=±10%

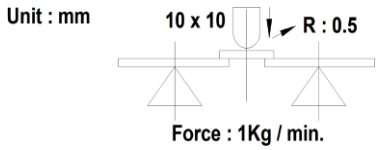
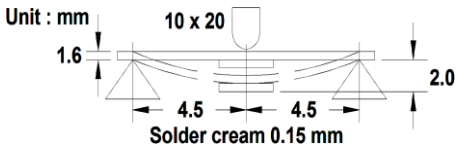
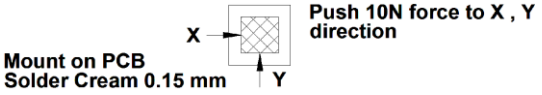
* IDC based on increasing product temperature : Current when temperature of the product reaches +40℃

Part Number	L - Value (nH) @100MHz 0.25V	Tolerance (T)	Q @100MHz (Min.)	Q Typcial @		S.R.F (MHz) Ref.	DCR (ohm) Max.	IDC (mA) Max.
				100MHz	800MHz			
WCM2012-1N0T	1.0	S	10	12	38	>6000	0.10	300
WCM2012-1N2T	1.2	S	10	12	38	>6000	0.10	300
WCM2012-1N5T	1.5	S	10	13	40	>6000	0.10	300
WCM2012-1N8T	1.8	S	10	13	45	>6000	0.10	300
WCM2012-2N2T	2.2	S	10	13	48	>6000	0.10	300
WCM2012-2N7T	2.7	S	12	13	40	>6000	0.12	300
WCM2012-3N3T	3.3	S, K	12	15	56	>6000	0.13	300
WCM2012-3N9T	3.9	S, K	12	15	54	5600	0.15	300
WCM2012-4N7T	4.7	S, K	12	15	50	5500	0.20	300
WCM2012-5N6T	5.6	S, K	12	15	53	4700	0.23	300
WCM2012-6N8T	6.8	J, K	15	15	51	3900	0.25	300
WCM2012-8N2T	8.2	J, K	15	15	53	3200	0.28	300
WCM2012-10NT	10.0	J, K	15	16	45	3100	0.30	300
WCM2012-12NT	12.0	J, K	15	16	48	2800	0.35	300
WCM2012-15NT	15.0	J, K	15	17	48	2400	0.40	300
WCM2012-18NT	18.0	J, K	15	17	43	2100	0.45	300
WCM2012-22NT	22.0	J, K	15	17	47	2000	0.50	300
WCM2012-27NT	27.0	J, K	15	18	38	1800	0.55	300
WCM2012-33NT	33.0	J, K	15	19	35	1700	0.60	300
WCM2012-39NT	39.0	J, K	18	21	40	1400	0.65	300
WCM2012-47NT	47.0	J, K	18	21	38	1200	0.70	300
WCM2012-56NT	56.0	J, K	18	21	31	1000	0.75	300
WCM2012-68NT	68.0	J, K	18	21	28	900	0.80	300
WCM2012-82NT	82.0	J, K	18	22	25	900	0.85	300
WCM2012-R10T	100.0	J, K	18	23	25	700	0.90	300
WCM2012-R12T	120.0	J, K	13 @50MHz	22	25	600	0.95	300
WCM2012-R15T	150.0	J, K	13 @50MHz	22	24	500	1.00	300
WCM2012-R18T	180.0	J, K	13 @50MHz	23	23	430	1.10	300
WCM2012-R22T	220.0	J, K	12 @50MHz	20	22	400	1.20	300
WCM2012-R27T	270.0	J, K	12 @50MHz	20	22	340	1.30	300
WCM2012-R33T	330.0	J, K	12 @50MHz	22	20	320	1.50	300
WCM2012-R39T	390.0	J, K	10 @50MHz	17	20	270	1.60	300
WCM2012-R47T	470.0	J, K	10 @50MHz	17	20	250	1.80	300
WCM2012-R56T	560.0	J, K	10 @50MHz	17	20	230	2.50	300
WCM2012-R68T	680.0	J, K	10 @50MHz	17	20	180	3.00	300

* T=Tolerance: S=±0.3nH, J=±5%, K=±10%

* IDC based on increasing product temperature : Current when temperature of the product reaches +40℃

●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
(Temperature Cycle)</td><td>Temperature: -40 ~ +125℃ kept stabilized for 30 min. each
Cycle: 100 Cycles (power off)</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Humidity Resistance</td><td>Humidity: 90% ~ 95% RH
Temperature: 60 ± 2℃ Test Time: 96 ± 2 Hours</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>High Temperature</td><td>Temperature: 125 ± 2℃
Testing Time: 96 ± 2 Hours</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Low Temperature</td><td>Temperature: -40 ± 2℃
Time: 96 ± 2 Hours</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Temperature and
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
Appearance no deformation</td></tr>
<tr><td>Vibration</td><td>Frequency: 10Hz ~ 55Hz , Amplitude: 1.5 mm
Direction: X, Y, Z, Time: 2 Hours each</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Solderability</td><td>Go through real SMT IR-Reflow ....
The profile like our suggest profile.
Preheat: 160 ± 10℃ (90 sec)
Peak: 245 ± 5℃
Peak Time: 50 Sec. / up 217℃</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Soldering Heat
Resistance</td><td>Preheat: 160 ± 10℃ (90 sec)
Solder: Sn / Ag / Cu (Pb Free)
Solder Temp.: 260 ± 5℃, Time: 3 ± 1 seconds</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Iron Solder Heat
Resistance</td><td>Solder Temp.: 350 ± 5℃
Flux: Rosin, Time: 3 ± 1 seconds</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Bending Strength</td><td> 
</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Flexure Strength</td><td> 
</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Terminal Strength</td><td> 
</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>High-Voltage</td><td>100 V DC between core & winding</td><td>Elec. no variation
Appearance no deformation</td></tr>
<tr><td>Load life</td><td>Temperature: 25 ± 3℃
Load: Allowed DC Current, Test Time: 96 ± 2 Hours</td><td>Elec. no variation
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℃ (Including self - temperature rise)
2. Storage Temp: a. Product with Taping: -10 ~ 45℃, 50 ~ 60% RH
   b. On Board: -40 ~ +125℃
3. Storage Life Time: 12 Month (Less than 40℃ and 60% RH)

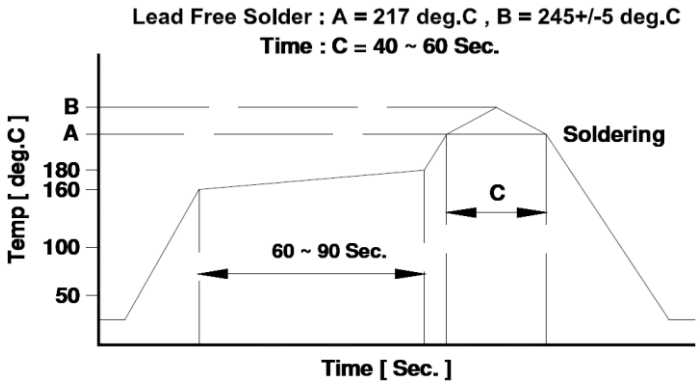
Standard Atmosphere Conditions:

Ambient Temperature 20 ± 15℃; 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℃; Humidity RH 75 ± 10%

•RECOMMEND REFLOW CURVE (TIME: Second)



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

•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℃ 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.

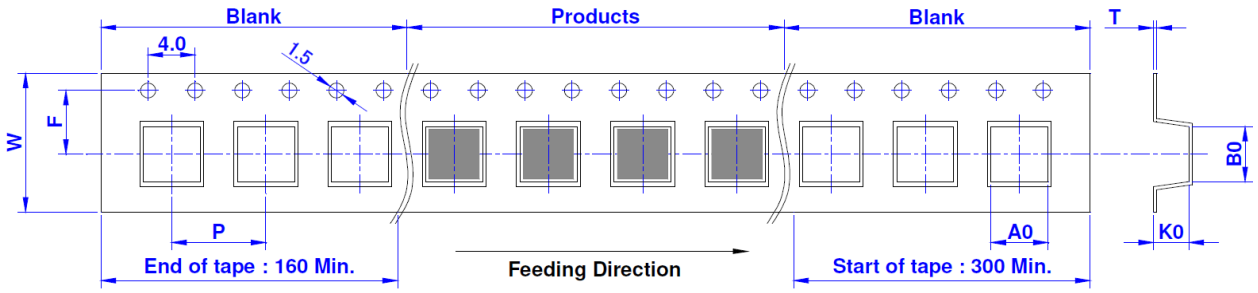
(3) Dielectric Strength:
Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.

(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.

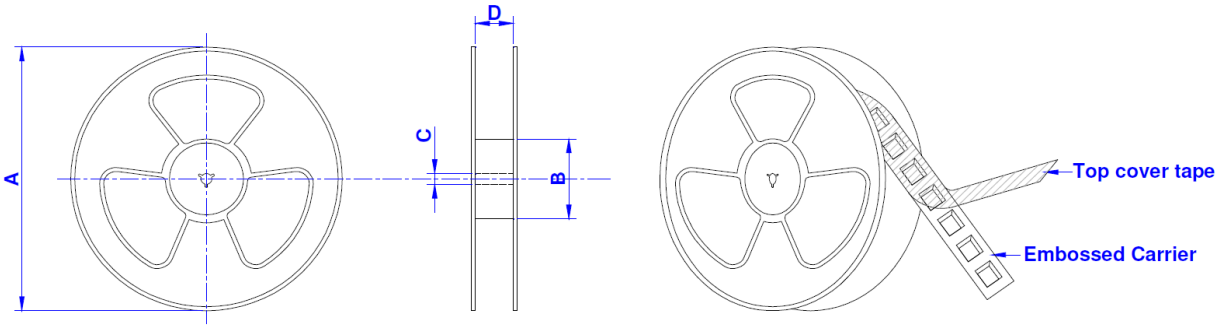
(6) Detergent:
Please consult AiT Semi immediately once under such circumstances because product reliability confirmation etc. is needed when this product come in contact with these chemicals.

•TAPE DIMENSION: mm



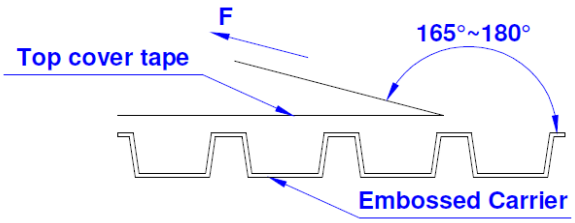
SIZE/mm	W	P	A0	B0	K0	T	F
1005	8.00	2.00	0.60	1.15	0.70	0.35	3.50
1608	8.00	4.00	1.00	1.90	1.05	0.35	3.50
2012	8.00	4.00	1.60	2.25	1.15	0.35	3.50

•REEL DIMENSION: mm



SIZE / mm	REEL SIZE	A	B	C	D	QTY/REEL
1005	7” x 8mm	178	60	12	1.5	10000 PCS
1608	7” x 8mm	178	60	12	1.5	4000 PCS
2012	7” x 8mm	178	60	12	1.5	4000 PCS

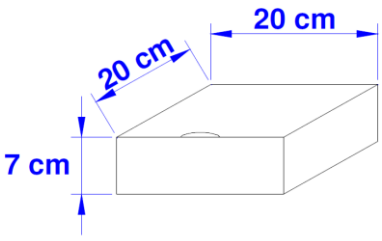
•TEARING OFF FORCE:



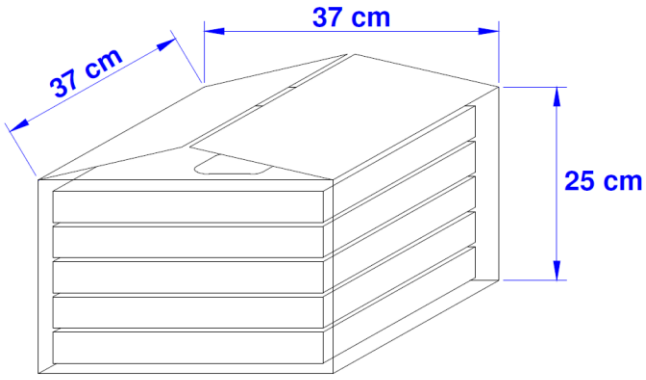
The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA - 481 - D - 2008 of 4.11stadnard).

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
1005	5	8
1608	5	8
2012	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 servere 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.