MESSRS:

INCOMP INTERNATIONAL LTD.

SPEC No.	H500-0434

RoHS Compliant
環保品

DATE: 2010/05/04

《NEW/~~AMENDED~~》

APPROVAL SPECIFICATION

DESCRIPTION : SMD POWER INDUCTOR

MODEL(PART No.): 5D28R904716

CUSTOMER`S PATR No.:

AMENDED
CUSTOMER`S PART No.:

【FOR APPROVAL】

DATE:

***THIS SPECIFICATION IS CONSTITUTED WITH PAGES INCLUDING ATTACHMENTS.**

高雅線圈製品有限公司
COILS ELECTRONIC CO., LTD

Approved by	Checked by	In charge
R&D 2010-5-04 楊向東	R&D 2010-5-04 孟聖賢	鄭何 2010.05.04

AMENDMENT RECORD

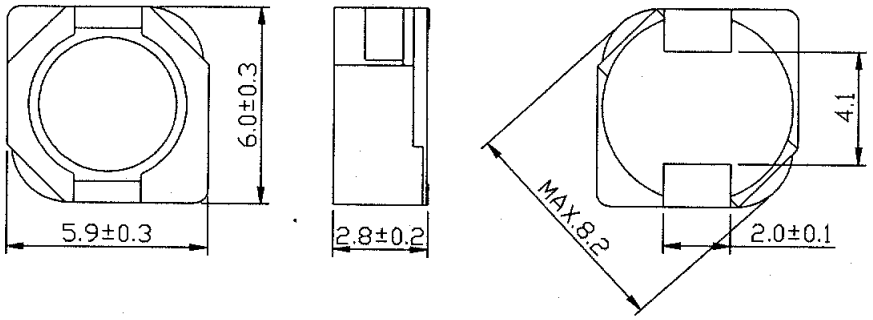
TYPE

SYMBOL	DATE	PAGE	CONTENTS	DWN. BY	CHK. BY	APP. BY
△1	2007.3.10	P5/5	Change electrode supplier to Liancheng	A.H.Yao	B.N.Jiang	T.H.Zhang

SPEC. No. 1/5

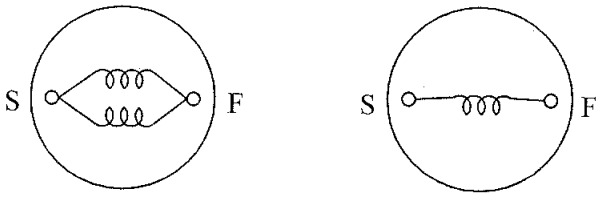
H500-0434

1. DIMENSION (UNIT: mm)



* DIMENSIONS WITHOUT TOLERANCE ARE APPROX.

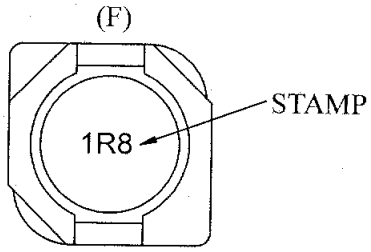
2. CONNECTION (INTERNAL)



1.8 μH~10 μH　　12 μH~560 μH

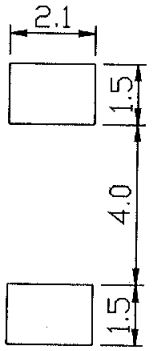
" S " IS WINDING START.

3.ST AMP (e.g.)



DIRECTLY STAMP

4.RE COMMENDED DIMENSIONS (mm)



TYPE

5. ELECTRICAL CHARACTERISTICS

No.	CUST P/N.	CEC P/N.	STAMP	INDUCTANCE (μH) WITHIN	D.C.R. (mΩ) MAX.	RATED CURRENT (A) Max. ※		S.R.F. (MHz) TYP.
						Idc1	Idc2	
1			1R8	1.8±30%	14.9	3.09	5.73	118
2			2R5	2.5±30%	17.4	2.62	5.34	92
3			**3R3**	**3.3±30%**	**19.4**	**2.24**	**4.37**	**78**
4			3R9	3.9±30%	26.7	2.20	3.61	68
5			4R7	4.7±30%	30.0	2.03	3.56	63
6			5R6	5.6±30%	40.0	1.86	2.63	55
7			7R8	7.8±30%	49.3	1.53	2.46	44
8			100	10±30%	52.0	1.42	2.15	39
9			120	12±30%	66.9	1.22	1.87	39
10			150	15±30%	78.2	1.10	1.86	34
11			180	18±30%	97.5	1.05	1.51	30
12			220	22±30%	110	0.95	1.25	27
13			270	27±30%	140	0.85	1.16	23
14			330	33±30%	154	0.76	1.12	20
15			390	39±30%	176	0.68	0.96	19
16			470	47±30%	197	0.62	0.92	17
17			560	56±30%	258	0.55	0.76	16
18			680	68±30%	308	0.52	0.68	15
19			820	82±30%	403	0.45	0.56	12
20		**5D28R904716**	**101**	**100±30%**	**465**	**0.41**	**0.51**	**11**
21			121	120±30%	641	0.37	0.43	10
22			151	150±30%	737	0.34	0.39	9
23			181	180±30%	839	0.30	0.39	8
24			221	220±30%	1110	0.28	0.33	6
25			271	270±30%	1164	0.24	0.33	6
26			331	330±30%	1364	0.22	0.32	5
27			391	390±30%	1983	0.21	0.27	5
28			471	470±30%	2116	0.20	0.25	4
29			561	560±30%	2447	0.18	0.21	4

* TESTING INSTRUMENT
  INDUCTANCE: HP 4284A OR EQUIVALENT.
  D.C.R : HP 34420A OR EQUIVALENT.
* TESTING FREQUENCY OF INDUCTANCE: at 100kHz /1V
* TESTING CONDITION OF D.C.R.: at 20℃
* Idc1: THE CURRENT WHEN THE INDUCTANCE DECREASES TO 65% OF INITIAL VALUE.
* Idc2: THE CURRENT WHEN THE TEMPERATURE OF COIL IS INCREASED BY 40℃. (Ta=20℃)

※ THE RATED CURRENT INDICATES THE SMALLER ONE BETWEEN Idc1 AND Idc2.

REMARK	SPEC. No. 3/5
	H500-0434

6.GE NERAL CHARACTERISTICS

* STANDARD TESTING CONDITIONS:

UNLESS OTHERWISE SPECIFIED, THE STANDARD RANGE OF ATMOSPHERIC CONDITIONS FOR MEASUREMENTS AND TESTS ARE AS FOLLOWS: AMBIENT TEMPERATURE: 15℃~35℃. RELATIVE HUMIDITY : 25% ~85%. AIR PRESSURE : 86kPa ~106kPa.

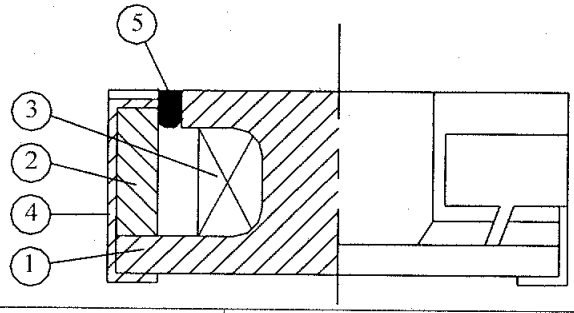
IF THERE IS ANY DOUBT ABOUT THE RESULTS, MEASUREMENT SHALL BE MADE WITHIN THE FOLLOWING LIMITS: AMBIENT TEMPERATURE: 20℃±1℃. RELATIVE HUMIDITY: 63% ~67%. AIR PRESSURE : 86kPa ~106kPa.

No.	ITEMS	CONDITIONS	SPECIFICATION
1	OPERATION TEMPERATURE STORAGE TEMPERATURE		-30 ～ +100℃ (INCLUDING COIL TEMPERATURE RISE) -40 ～ +100℃
2	TEMPERATURE COEFFICIENT	-40 ～ +100℃	0 ～ 2000 ppm/℃
3	FIXING STRENGTH	SAMPLE IS PUSHED IN THREE DIRECTIONS OF X, Y AND Z WITH FORCE OF 5. 0N FOR 10±5 SECONDS. AFTER SOLDERING BETWEEN COPPER PLATE AND ELECTRODES.	NO ELECTRODE DETACHMENT.
4	RESISTANCE TO SOLDERING HEAT TEST	PLEASE REFER TO THE ATTACHMENT STD-002NP.	NO MECHANICAL BREAKAGE. DEVIATION RELATIVE TO INITIAL VALUE: L: WITHIN ±5.0%
5	SOLDER ABILITY TEST	IMMERSE THE ELECTRODE IN FLUX FOR 5 SECONDS. THEN DIP THE ELECTRODE INTO A SOLDERING BATH OF 245±5℃ FOR 2±0.5 SECONDS.	OVER 95% OF THE SURFACE BEING IMMERSED SHALL BE COVERED WITH NEW SOLDER UNIFORMLY.
6	VIBRATION TEST	AMPLITUDE: 1.5mm P-P FREQUENCY:10～55～10Hz (1 MINUTE PER CYCLE) DURATION: 1 HOUR IN EACH OF X, Y, Z AXIS.	DEVIATION RELATIVE TO INITIAL VALUE: L: WITHIN ±2.0%
7	SHOCK TEST	PEAK ACCELERATION: 981m/s^2 DURATION OF PULSE: 10ms SHOCK TIMES: ONCE IN EACH OF X, Y, Z AXIS.	
8	HUMIDITY TEST	TEMPERATURE: 40℃±2℃ HUMIDITY: 90%～95%RH DURATION: 96±4 HOURS.	DEVIATION RELATIVE TO INITIAL VALUE: L: WITHIN ±5.0%
9	HIGH TEMPERATURE LOAD LIFE TEST	TEMPERATURE: 100℃±2℃ LOAD CONDITION: RATED CURRENT DURATION: 96±4 HOURS.	DEVIATION RELATIVE TO INITIAL VALUE: L: WITHIN ±3.0%
10	LOW TEMPERATURE LOAD LIFE TEST	TEMPERATURE: -40℃±3℃ LOAD CONDITION: RATED CURRENT DURATION: 96±4 HOURS.	

7.RoHS COMPLIANCE REMARKS

LEAD WILL BE PRESENT IN THE FERRITE CORE OF THE FRIT MATRIX IN THE COMPONENT. THIS USE, IS EXEMPT FROM RoHS LEGISLATION PER THE ANNEX (ITEM 7), WHICH REFERS TO "LEAD IN ELECTRONIC CERAMIC PART".

8.MA TERIAL LIST



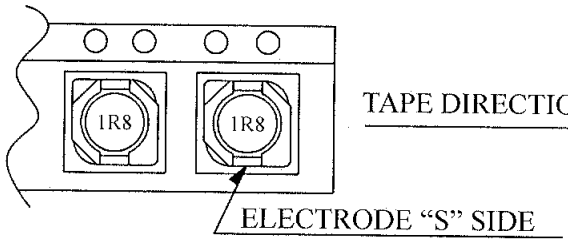
TYPE

No.	PARTS	MATERIAL	MANUFACTURER	COUNTRY OF ORIGIN	UL FILE NO.	TEMP. CLASS
①	DRUM CORE	FERRITE CORE L7H OR EQUIVALENT	TDK MANUFACTURING (H.K) CO., LTD.	JAPAN	NA	NA
②	RING CORE	FERRITE CORE L7H OR EQUIVALENT	TDK MANUFACTURING (H.K) CO., LTD.	JAPAN	NA	NA
③	WIRE	POLYURETHANE ENAMELED COPPER WIRE OR EQUIVALENT	JUNG SHING WIRE CO., LTD.	CHINA TAIWAN	E174837	155℃
			PACIFIC-THAI ELECTRIC WIRE & CABLE CO., LTD.	THAILAND	E142108	155℃
			TA YA ELECTRIC WIRE FACTORY	CHINA	E197768	155℃
1 ④	ELECTRODE	COPPER PLATTING Sn OR EQUIVALENT	LIANCHENG ENTERPRISE CO.,LTD	CHINA	NA	NA
⑤	ADHESIVE	EPOXY RESIN(XNR3614) OR EQUIVALENT	NAGASE (HONG KONG) LTD.	JAPAN	NA	NA
	SOLDER	Sn99.3-Cu0.7 OR EQUIVALENT	ALPHA METALS LTD.	CHINA HONG KONG	NA	NA
			YUNNAN TIN CO.,LTD.	CHINA	NA	NA
	STAMP	INK(Z370) OR EQUIVALENT	TOYO INK	JAPAN	NA	NA
	ADHESIVE	EPOXY RESIN(6016H-7A) OR EQUIVALENT	GUANGZHOU WELLS CHEMICAL CO., LTD.	CHINA	NA	NA

* NA: NOT APPLICABLE.

9.P ACKING

* ENCLOSING CONDITION OF COILS.



* PACKAGE TO BE ACCORDING TO SPECIFICATION (TICK THE RELEVANT " √ ").
CARRIER TAPE PACKING SPECIFICATION IN DETAIL
☑KB-CTR018.☐KB –CTR627 ☐ KB –CTR827
☐SPECIAL FOR CUSTOMER KB _____ .

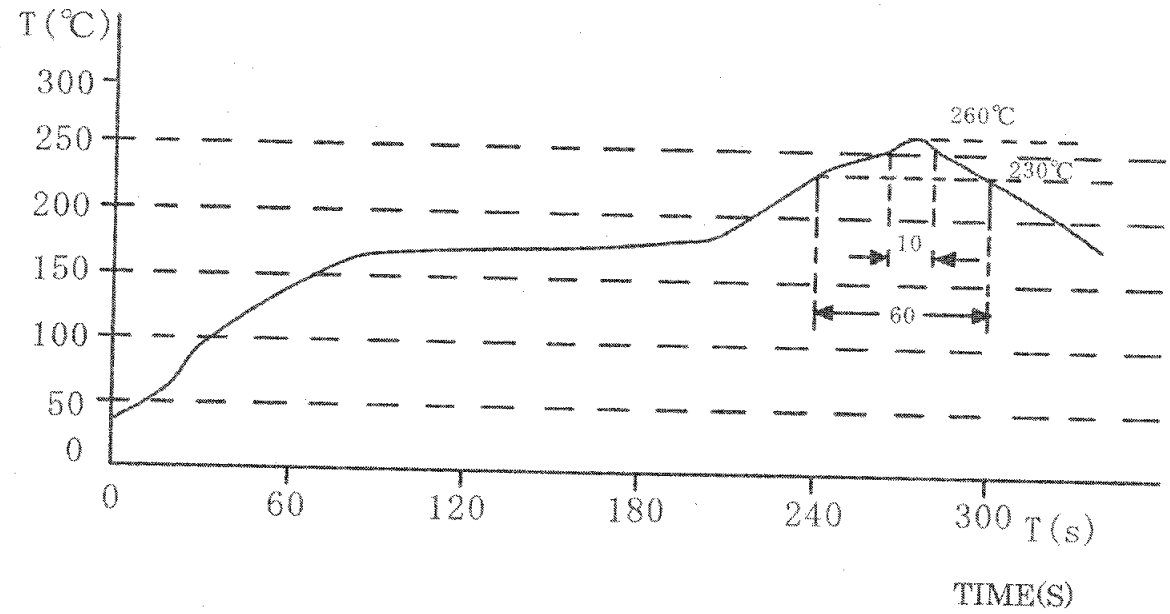
10. REMARK

* RECOMMENDED REFLOW CONDITION BASES ON STD-001NP.

REMARK	SPEC. No. 5/5
	H500-0434

HEAT ENDURANCE TEST (LEAD FREE)

TEMPERATURE



TIME(S)

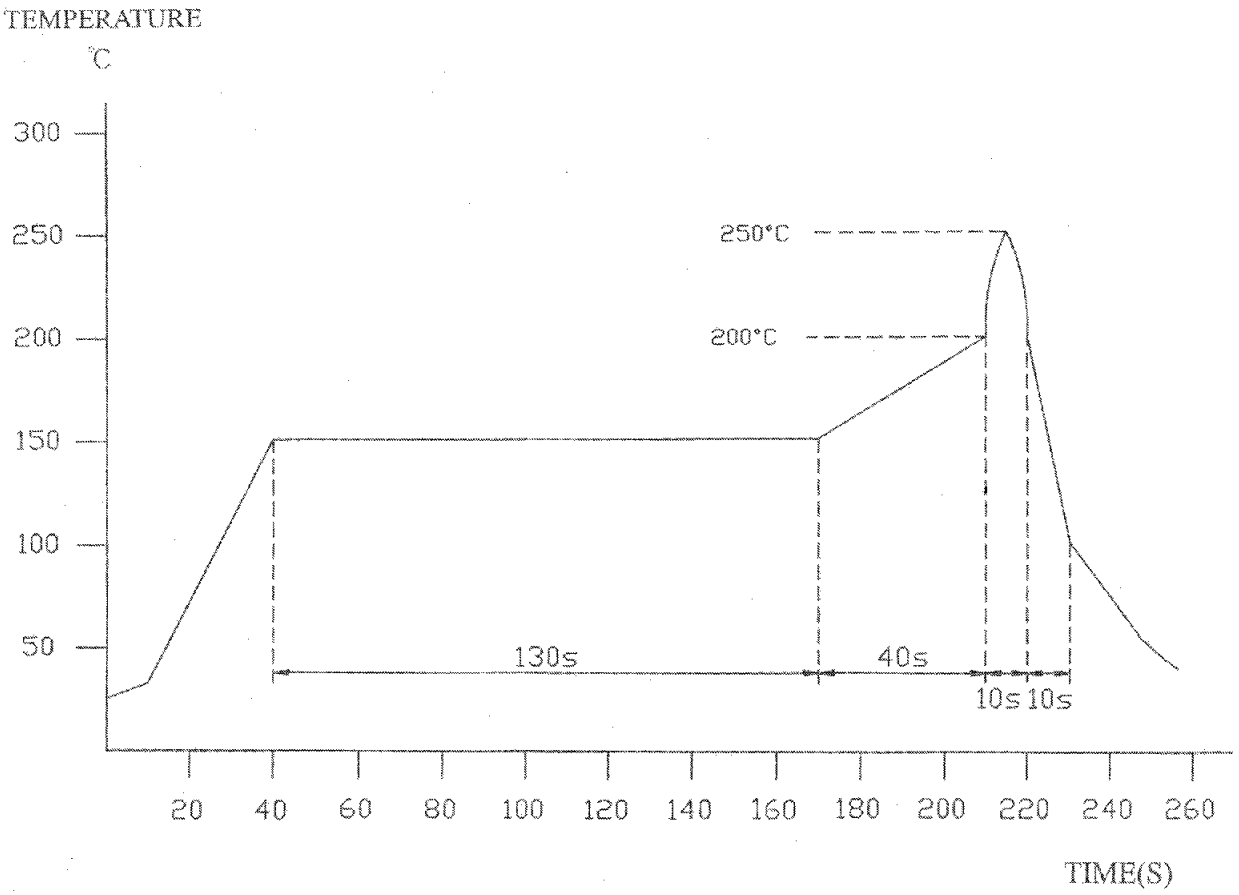
* THE TEST SHOULD BE MADE UNDER THE CONDITIONS ACCORDING TO THE CHART,AFTER THE TEST IT IS KEPT FOR 2 HOURS UNDER THE NORMAL TEMPERATURE AND HUMIDITY. THEN, NO MECHANICAL AND ELECTRICAL DEFECT SHOULD BE FOUND OUT.

* THE REFLOW TEST CAN BE DONE TWICE,BUT THE INTERVAL SHOULD BE MORE THAN ONE HOUR UNDER THE NORMAL CONDITIONS.
* THE REFLOW TEST CONDITIONS ARE BASED ON THE TESTING INSTRUMENTS AVAILABLE IN CEC.

25th, Feb.,2004			REVISIONS	FILE No. 1/1
APPROVAL	CHECK	PREPARE		STD-002NP
R&D 2004.2.25	R&D 2004.2.27	R&D 2004.2.27		

COILS ELECTRONIC CO., LTD.

THE RECOMMENDED REFLOW CONDITION (LEAD FREE)



* THE REFLOW CONDITION RECOMMENDED ABOVE IS ACCORDING TO THE MACHINE USED BY OUR COMPANY. BIG DIFFERENCES WILL ARISE AS A RESULT OF THE TYPE OF MACHINE, REFLOW CONDITIONS, METHOD, ETC USED. HENCE, BEFORE SETTING UP YOUR REFLOW CONDITIONS, PLEASE CONFIRM WITH THE ABOVE. MOREOVER, PLEASE CLEAR ALL DOUBTS WITH OUR COMPANY BEFORE STARTING.

25th, Feb.,2004			VERSIONS	1	25th, Feb.,2004	FILE No. 1/1
APPROVAL	CHECK	PREPARE		2	9th, Nov.,2004	**STD-001NP**

COILS ELECTRONIC CO., LTD.

PACKAGE SPECIFICATION AMENDMENT RECORD

SYMBOL	DATE	PAGE	CONTENTS	DWN. BY	CHK. BY	APP. BY
1	28th,Sep.,2001	P.2/5	TYPE DRH5D28 ADDED.	BANGHUA	DONGRONG	YUEJIANG
2	2th,Feb.,2002	P2/5 P4/5 P5/5	1500→2200 A0: 6.30→6.20 B0:6.30→6.20 K0:3.20→3.10 T:0.40→0.30 1500pcs →2200pcs	BANGHUA	DONGRONG	YUEJIANG
3	2006/10/20	P4/5	CHANGE CARRIER TAPE DIMENSIONS: W:12.0 $^{+0.30}_{-0.10}$ →16.0±0.30 A0: 6.20±0.10→6.25±0.10 B0: 6.20±0.10→6.25±0.10 T: 0.30±0.05→ ±0.05	BNJIANG	AHYAO	THZHANG
4	2008/03/18	P. 4/5 P.2/5,5/5	1. CHANG CARRIER TAPE: A0: 6.25±0.10→6.30±0.10; B0: 6.25±0.10→6.30±0.10; K0: 3.10±0.05→3.30±0.10; P: 8.00±0.10→12.10±0.10; T: 0.35±0.05→0.30±0.05; 2. CHANGE QUANTITY: 2200 pcs/reel →1500pcs/reel; (P.3/6,P.5/6) 19,800 pcs/carton → 13,500pcs/carton. (P.5/6)	BNJIANG	YXLI	ZHXIAO

PACKAGE SPEC. No. 1/5

KB-CTR018

PACKAGE SPECIFICATIONS

1. APPLICATION OF THIS SPECIFICATION

1) APPLIES TO CEC COILS ELECTRONIC CO., LTD. PACKING.

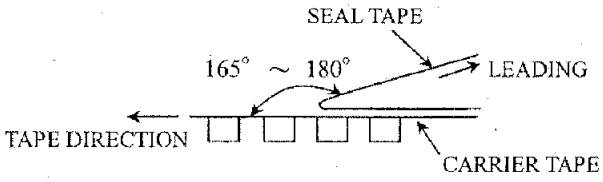
2. APPLICATION (TYPES): DRH5D28R,DRH5D28 △1

3. TAPING SPECIFICATION

1) REEL DIMENSIONS····· FIGURE 1
2) TAPE DIMENSIONS····· FIGURE 2
3) TAPE DIMENSIONS····· FIGURE 3

4. TAPING

1) THE CARRIER TAPE AND SHIELD TAPE IS WOUND IN ONE CONTINUOUS REEL WITHOUT ANY JOINTED PORTIONS. SHOULD ANY PIECE OF COIL BE MISSING FROM THE CARRIER TAPE, A "CROSS(X)" SLIT WOULD BE MADE ON THE SHIELD OF THE CARTRIDGE AND A COIL REPLACED. AFTER WHICH, CELLOPHANE TAPE IS USED TO RESEAL THE CATRIDGE.
2) THE ANGLE BETWEEN THE SEAL TAPE DURING PEELOFF AND THE DIRECTION OF B UNREELING SHALL BE 165° TO 180° .THE SEAL TAPE SHALL ADHERE UNIFORMLY TO THE CARRIER TAPE ALONG BOTH SIDES IN THE DIRECTION OF UNREELING .THE PEEL FORCE WITH A PEEL SPEED OF 300mm/MIN± 10mm/MIN SHALL BE AS FOLLOWS:
   0.1N TO 1.0N FOR AN 8mm TAPE WIDTH.
   0.1N TO 1.3N FOR A 12mm~56mm TAPE WIDTH.



3) PRECAUTION: COMPLETED REELS WITH RADIUS LESS THAN 40mm WILL RESULT IN THE FOLLOWING.
   (Ⅰ) CRACKS ON THE CARRIER TAPE
   (Ⅱ) SHIELD TAPE TEARING OFF

5. PACKING

1) POSITION OF COILS IN THE CARRIER TAPE: REFER TO THE SPECIFICATION OF THE INDIVIDUAL PART.
2) THERE SHOULD NOT BE:
   (Ⅰ) WRONG POSITION OF GOODS IN THE CARRIER TAPE
   (Ⅱ) REJECTED GOODS IN THE CARRIER TAPE
   (Ⅲ) MISSING GOODS FROM THE CARRIER TAPE
3) ONE REEL CONSISTS OF 1500 PIECES OF COIL. △2 △4
4) ON THE COMPLETED END OF THE REEL, THE CARRIER TAPE IS FIXED WITH A DRIVING TAPE.

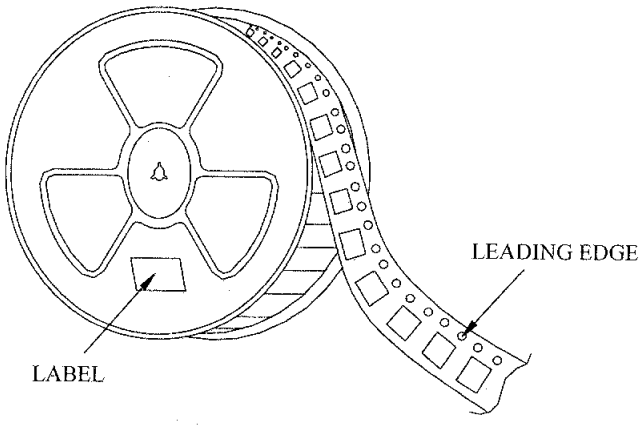
30th, Aug., 2001				
APPROVAL	CHECK	DESIGN		
R&D 2008-05-19 肖中華	R&D 2008-3-18 黎應祥	R&D 2008-3-18 蔣博龍 Q	REMARK	PACKAGE SPEC. No. 2/5 **KB-CTR018**

6. INDICATION

1) THE FOLLOWING WILL BE INDICATED ON ONE SIDE OF THE REEL:

TYPE NAME	
CUSTOMER PART NO.	
SUPPLIER PART NO.	
SUPPLIER SPEC. NO.	
QUANTITY	
LOT NO.	

2) LABEL POSITION DESCRIPTION REFER TO THE FIGURE SHOWN BELOW:



7. HANDING PRECAUTION

THE SURFACE OF THE REEL CANNOT WITHSTAND A WEIGHT/FORCE EXCEEDING 9.8N.

8. STORAGE

GOODS TO BE STORED UNDER TEMPERATURES LESS THAN 60℃, WITH HUMIDITY NOT EXCEEDING 90%. IF THE STORAGE PERIOD IS LONG, REEL SHOULD BE REWOUND.

9. OTHERS

UNIT OF MEASURE USED WHEN PLACING ORDERS: REEL.

FIGURE 1 REEL DIMENSIONS

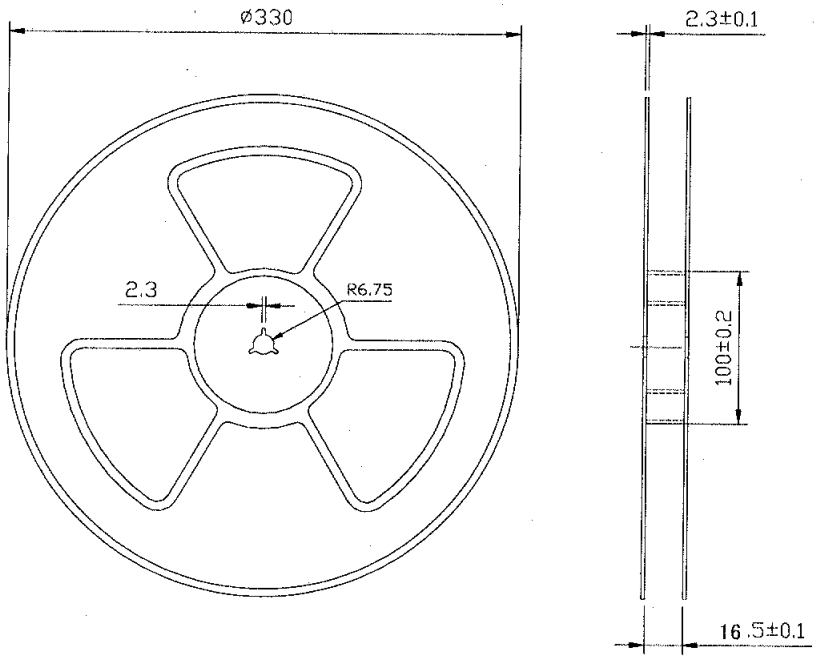
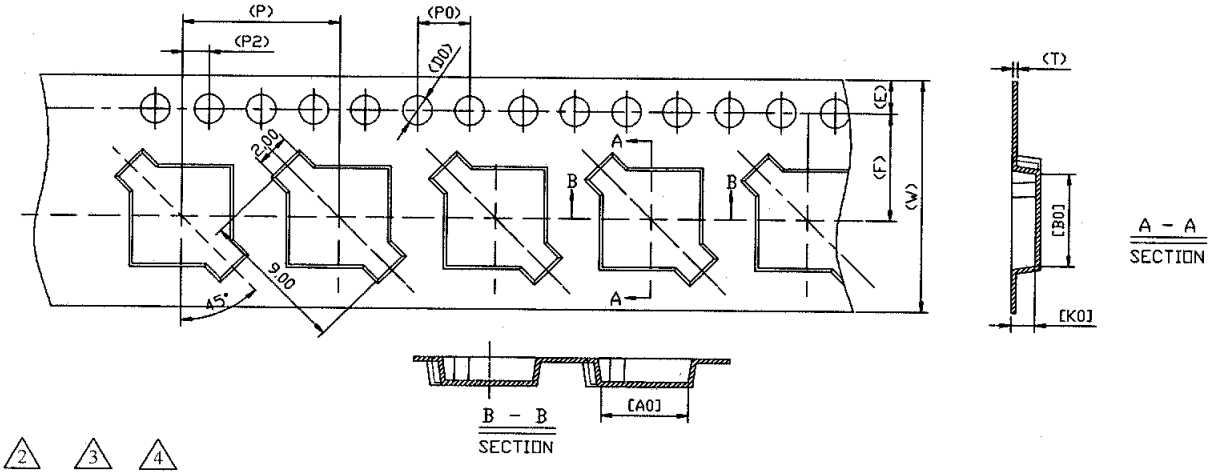


FIGURE 2 TAPE DIMENSIONS



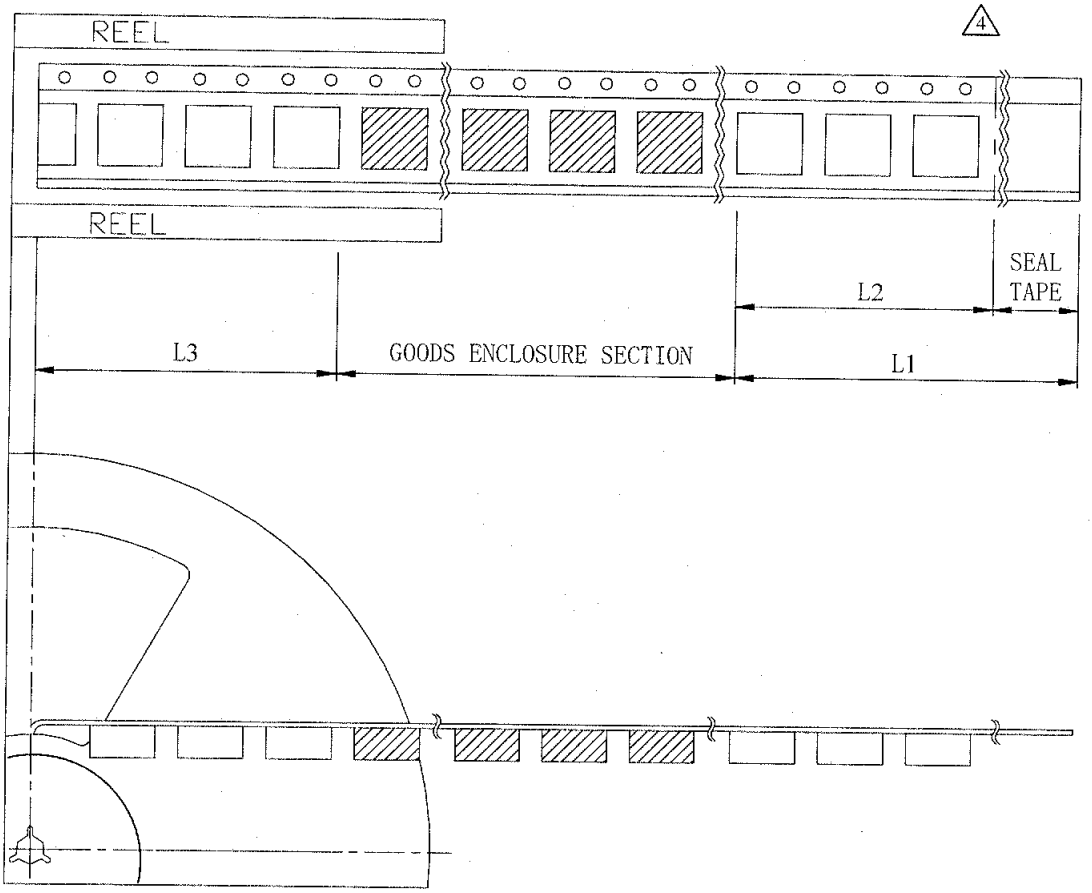
△2 △3 △4

DIMENSIONS (UNIT: mm)										
W	A0	B0	K0	P	F	E	D	P0	P2	T
16.0±0.30	6.30±0.10	6.30±0.10	3.30±0.10	12.00±0.10	5.50±0.10	1.75±0.10	$1.5^{+0.10}_{-0.00}$	4.00±0.10	2.00±0.10	0.30±0.05

REMARK	PACKAGE SPEC. No. 4/5
	KB-CTR018

FIGURE 3 TAPE DIMENSION

L1	LEADER SECTION LENGTH	MIN. 400mm
L2	START CARRIER TAPE LENGTH	MIN. 100mm
L3	TRAILER SECTION LENGTH	MIN. 160mm
	QUANTITY	1500pcs



REMARK	PACKAGE SPEC. No. 5/5
	KB-CTR018