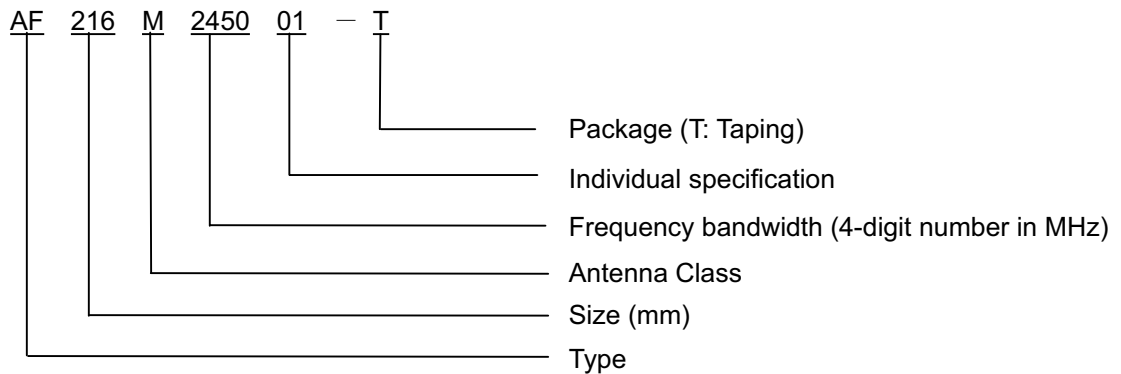


1.0 Scope

This specification covers the helical antenna in mounted condition on Taiyo Yuden evaluation board.

Part Numbering System



2.0 Environment condition (Refer to the reliability test of table -1 for the reliability assurance)

- 2.1 Operating temperature range : -20°C to +80°C
- 2.2 Humidity : 15 to 95%RH (Without dew condensation)
- 2.3 Storage temperature range (Antenna of single unit)
: -40°C to +85°C
- 2.4 Storage temperature and humidity range (packing condition)
: -10°C to +40°C, 15 to 85% RH

3.0 Electrical characteristics

- 3.1 Input Impedance : 50Ω (Specified value)
- 3.2 Frequency bandwidth : 2400 to 2500MHz
- 3.3 Gain*¹
: +1 dBi min. (Peak)
: -2 dBi min.
(Vertical polarization average gain of omni directional plane)
: -6 dBi min. (Total average gain)
- 3.4 VSWR in bandwidth*² : 3.0 (Typical)

* 1: Total average gain in 3.3 of electrical characteristics shall be total average gain of V, H polarization in X-Y, Y-Z and X-Z side (Average of total measurement points) in mounted on Taiyo Yuden evaluation board.

* 2: VSWR in bandwidth in 3.4 of electrical specification shall be VSWR mounted on Taiyo Yuden on standard board.

4.0 Mechanical performance

- 4.1 Shape dimension: Refer to figure -1.
- 4.2 Dimension of evaluation board and land-patterns: Refer to figure -2, 3.

Reflow soldering temperature profile

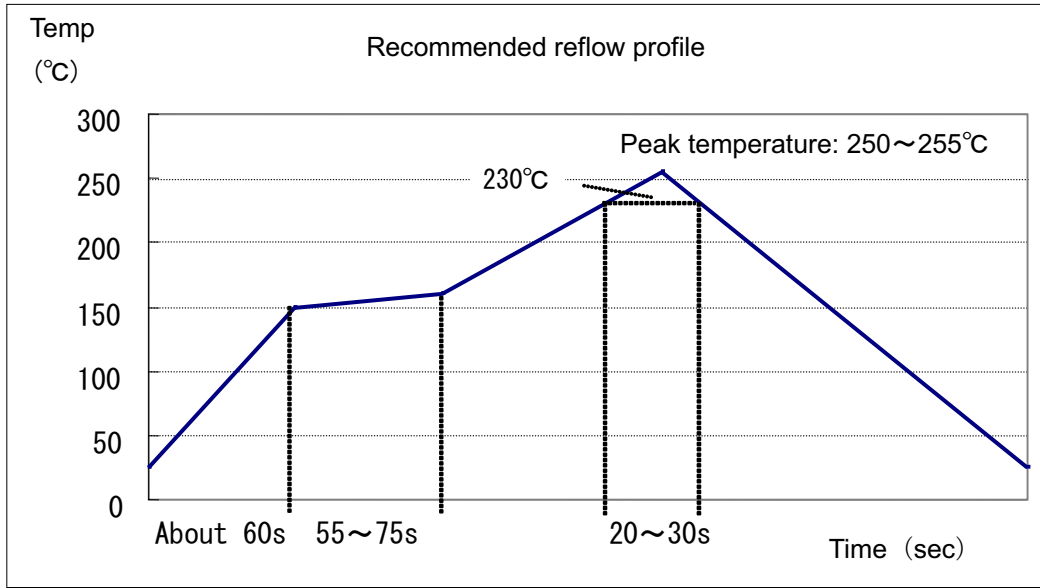
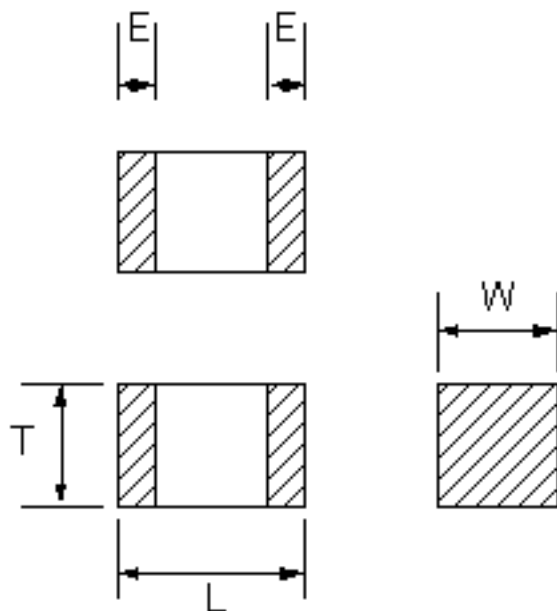


Figure -1

Part number: PG_AF_216M245001-T

Shape dimension



Code	L	W	T	E
Size	2.5 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.5 ± 0.3

Unit : mm

Figure -2
Dimension of evaluation board for this antenna

- Board material: FR-4
- Thickness of base material: 0.8mm
- Electrode pattern: single-side
- Thickness of electrode: 35 μ m
- Land part: Refer to figure3

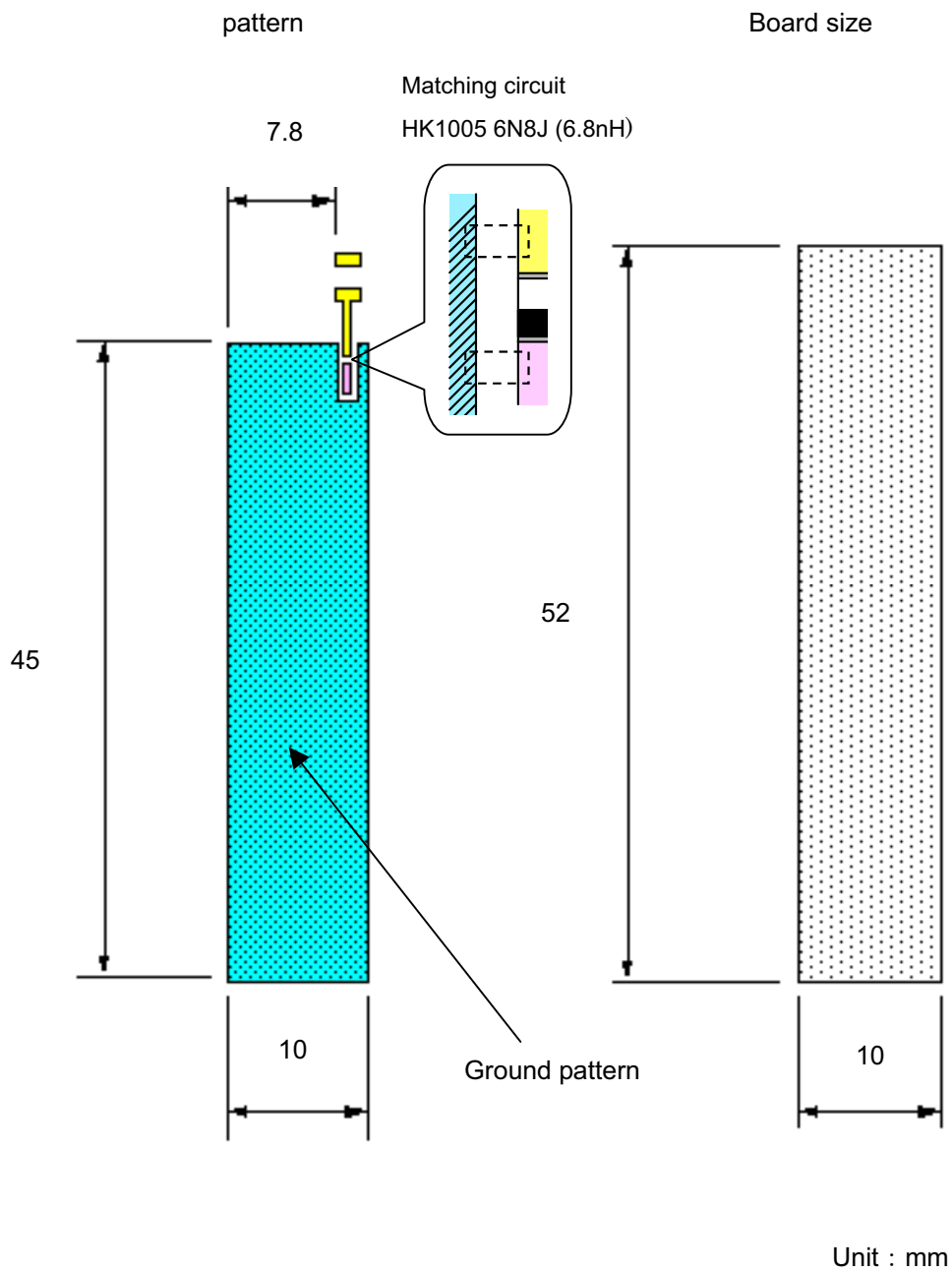
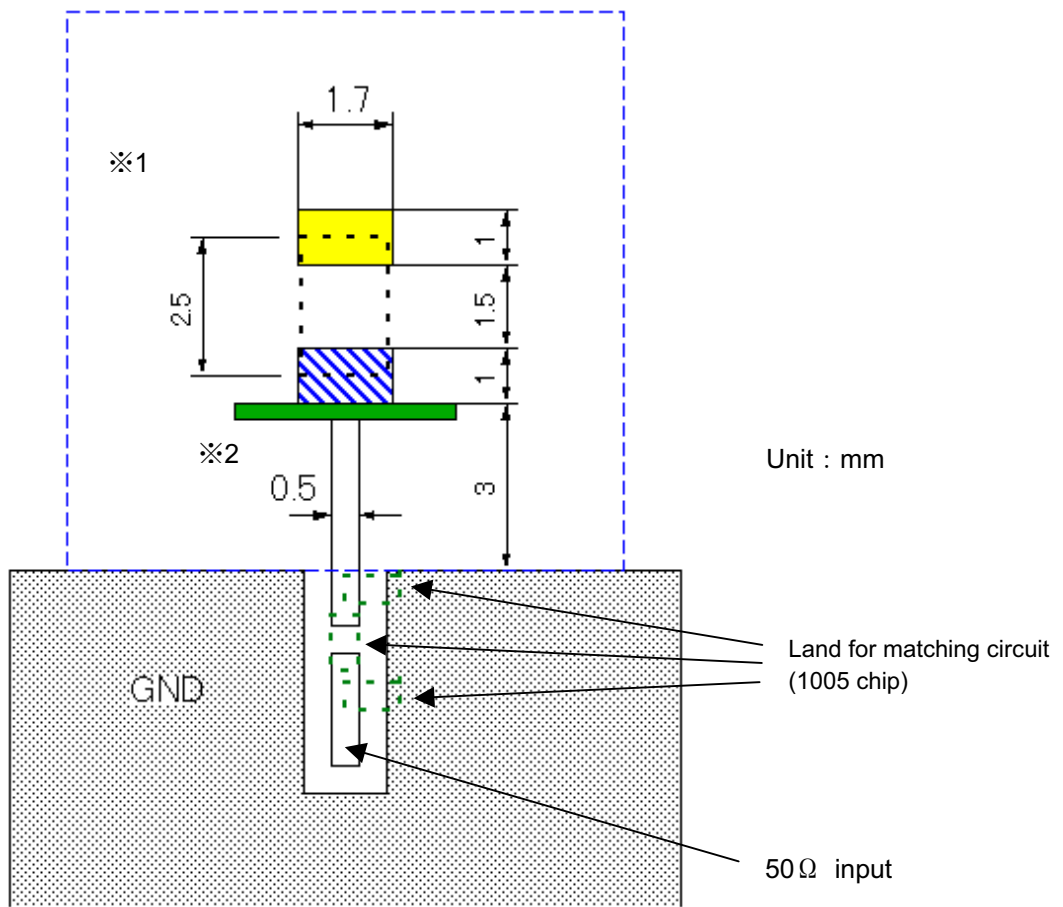




Figure -3
 Antenna land-patterns (Tentative)



-  Land for input terminal
-  Land for NC terminal

※1 : Don't arrange the pattern on near, surface and inside layer to the antenna mounting area.
 (Refer to our company evaluation circuit board.)

※2 : A solder area is set at solder resist.

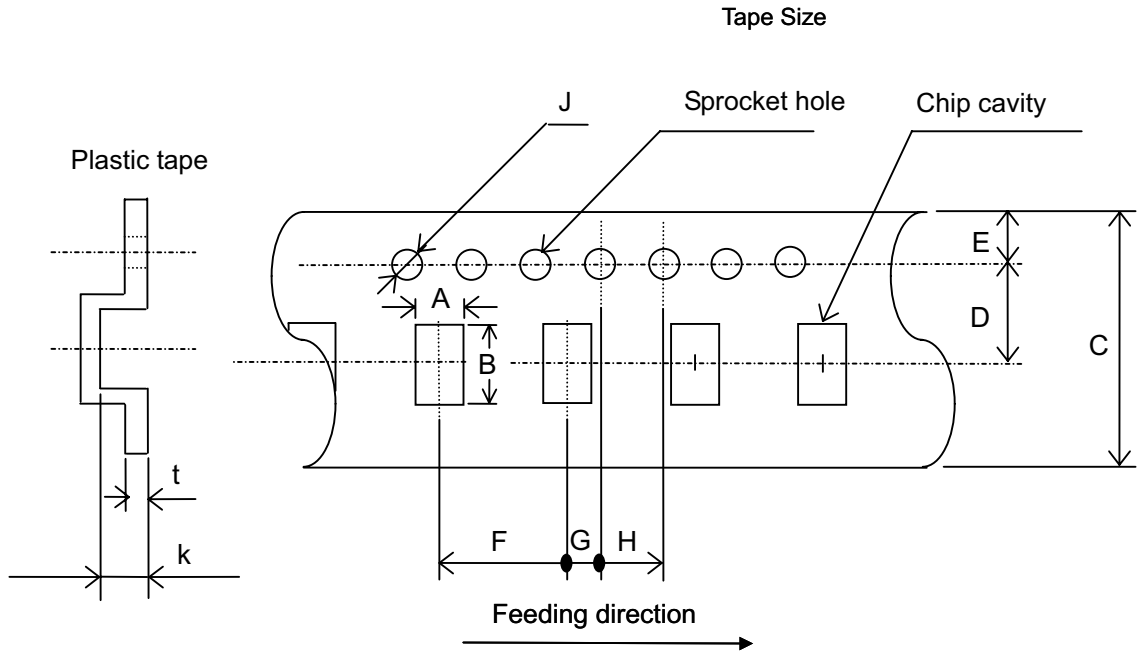
Precautions

1. Be careful of using these products because characteristics may be deteriorated when it is used in the following environment.
 - Special gas atmosphere (Such as Cl₂, NH₃, SO_x and No_x, etc.)
 - Gas atmosphere with volatility and flammability
 - Place where dust is abundant
 - Place where water splashes directly, dew condensation is ease to occur because of high humidity, direct sunlight is subjected and freeze.
2. Don't apply excessive pressure and shock because these products are made from ceramics element.
3. Don't apply excessive pressure and shock to these products during transporting and handling of print circuit board that these products are soldered.
4. Be careful of handling (Don't fall and hit) because characteristics changes when electrode is damaged and chipped out. And, don't touch these products with bare hands because it causes a solderability decline.
5. Please storage under the following condition
 - Temperature : Below +40 °C
 - Humidity : Below 85% RHUse these products after the delivery within six months. And, after more than six months have passed, confirm solderability before the use them.
6. Arrange these products of position of mounting where stress isn't applied against sled and deflection of circuit board.

Be careful not to apply stress and deflection of board during process after soldering these products (circuit board cut, break board checker, mounting of other components, installation to chassis and wave soldering to backside of the circuit board after Reflow soldering) because electrode peeling and chip break occur by stress and deflection. When separating print circuit board after mounting, please 7. Be careful not to apply excessive stress and shock to prevent break and chip out during mounting these products on print circuit board.
8. Please use flux containing less than 0.1% wt (cl conversion) of halogen material in soldering to prevent corrosion of electrodes and decline of insulation resistance.
9. Preheat in soldering so as to be less than 100°C between solder temperature and products temperate to prevent break of these products.
10. When supersonic washing is applied, please confirm cleaning condition in advance because crack may occur in these products and the soldering part by vibration and strength of the terminal electrode may be declined.
11. When repairing by hand solder iron, temperature of soldering iron should be less than less than 320°C for less than 3 seconds to prevent a terminal electrode decline.

Tape Packaging (T)

◎ In case of taping packing, plastic tapes shall be used.



Dimensions

Code	A	B	C	D	E	F	G
Size	1.85 ± 0.1	2.75 ± 0.1	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05

[Unit : mm]

Dimensions

Code	H	J	K	t
Size	4.0 ± 0.1	$\phi 1.5 \begin{matrix} +0.1 \\ -0 \end{matrix}$	1.85 max.	0.25 max.

※A, B, t : Sufficient clearance.

[Unit : mm]

Dimension of Reel

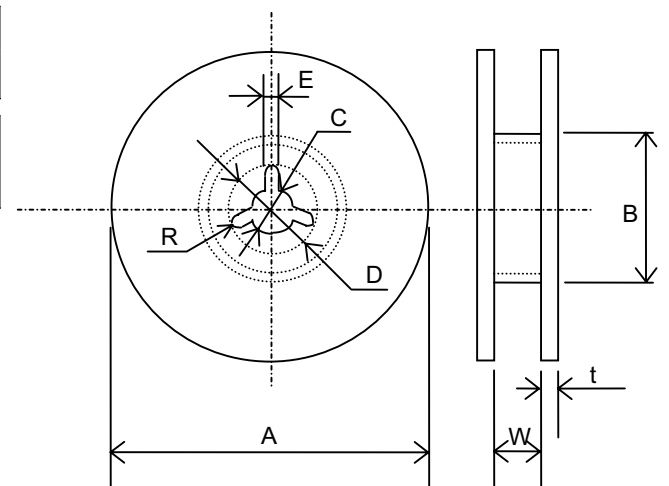
Code	A	B	C
Size	$\phi 178 \pm 2.0$	$\phi 50$ min.	$\phi 13.0 \pm 0.2$

Code	D	E	W
Size	$\phi 21.0 \pm 0.8$	2.0 ± 0.5	10 ± 1.5

Code	t	R
Size	3.0 max.	1.0

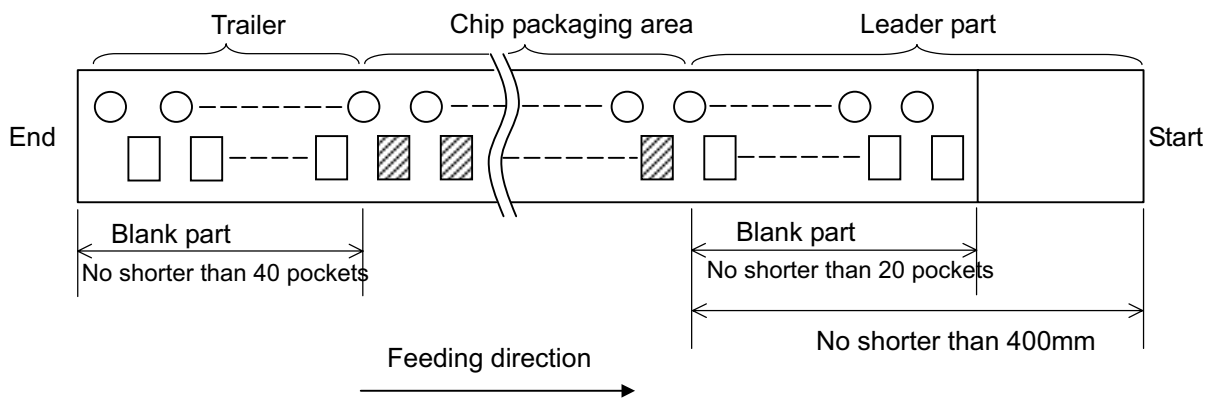
[Unit : mm]

Dimensions of Reel

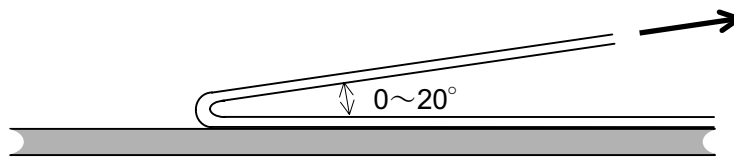


Tape Packaging (T)

1. Taping shall be right-sided wound. When the end is pulled out, sprocket hole will be at the right-hand side.
2. For packaging chips by taping, blank spaces are provided on taping as shown in the figure.
 - Leader part 400mm min.
 - Leader part (Blank part) 20 pockets min.
 - Trailer (Blank part) 40 pockets min.

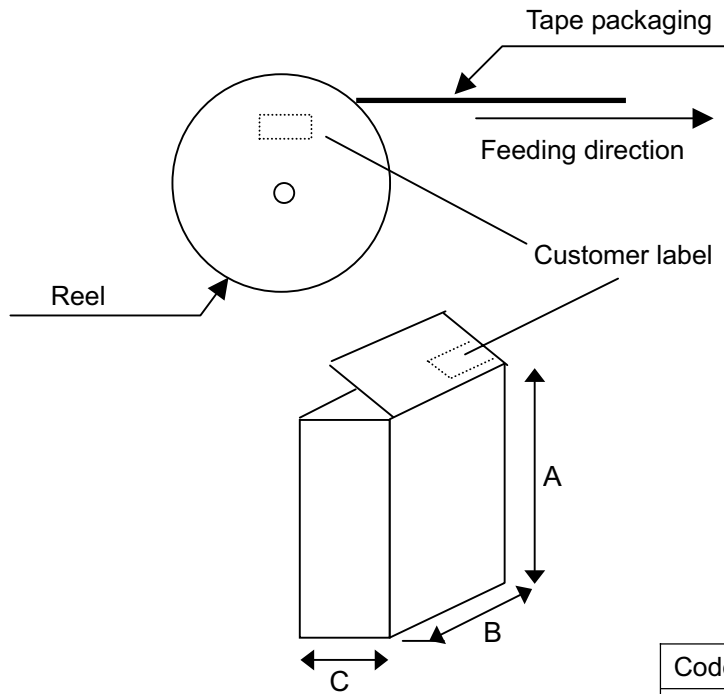


3. Seal tape of plastic taping shall not be crossed over sprocket holes.
4. Plastic tape shall not be seamed.
5. Tensile strength of tape is 5N (0.51kgf) or over.
6. Number of chips missed from tape reel shall be 1 piece maximum per reel.
7. Standard number of chips contained in a reel shall be 2,000 pieces.
8. Label indicating part No., quantity and control No. shall be attached to the outside of reel.
9. Peeling strength of seal tape (or top tape) shall be 0.1~0.7N (10.2~71.4gf) when seal tape (or top tape) is peeled from carrier tape at an angle of $0^{\circ} \sim 20^{\circ}$.



Tape Packaging (T)

[Packaging Mode]



Customer label description

1. Manufacturer Name
2. Customer Parts No.
3. Our Parts No.
4. Quantity
5. Control No.
(Shipping Lot No.)
6. Manufacturing site
(MADE IN ○○○)

Code	A	B	C	Reel
Size	190	185	70	5 reels max.
			140	10 reels max.

[Unit: mm] (The size is only for reference.)

Material: Paper

Packaging unit: Maximum 5 reels or 10 reels in a box.

- To attach labels means that all products are passed.

Operating conditions for guarantee of this product are as shown in the specification.

Please note that Taiyo Yuden Co., Ltd. shall not be responsible for a failure and/or abnormality which are caused by use under the conditions other than the aforesaid operating conditions.

This product is developed, designed and intended for use in general electronics equipments. (for AV, household, office supply, information service, telecommunications, etc.). Before incorporating the components into any equipments in the field such as aerospace, aviation, nuclear control, submarine, transportation, (automotive driving and control, passenger protection, train control, ship control), transportation signal, disaster prevention, medical, public information network etc.

where higher safety and reliability are especially required, please contact Taiyo Yuden Co., Ltd. for more detail in advance.

And before incorporating the components or devices into the equipments not mentioned in the above, if there is possibility of direct damage or injury to human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance.

機種名: MW-145BT

機種コード: FSV6103-09014

機構区分: (PRINT MECHANISM)SV6103-09002-045

品目コード	1個数	品名	記事	構造	補給サイン	和品名
LB4912001	1	MAIN FRAME UNIT 145BT		01	1	メインフレームソクミ145
LB2692002	1	MAIN FRAME ASSY2		01.01	9	メインフレームクミ2
LB1442000	1	MAIN FRAME		01.01.01	9	メインフレーム
LB1443001	1	PU ROLLER ASSY		01.01.02	9	PUローラクミ
LB1444000	1	PU ROLLER SHAFT		01.01.02.01	9	PUローラジク
LB1445001	1	LINK GUIDE R ASSY		01.01.03	9	リンクガイドRクミ
LB1446000	1	LINK GUIDE R		01.01.03.01	9	リンクガイドR
LB1447000	1	STOPPER R		01.01.03.02	9	ストッパR
LB1448000	1	LINK LEVER R		01.01.04	9	リンクレバR
LB1448001	1	LINK GUIDE L ASSY		01.01.05	9	リンクガイドLクミ
LB1450000	1	LINK GUIDE L		01.01.05.01	9	リンクガイドL
LB1451000	1	STOPPER L		01.01.05.02	9	ストッパL
LB1452000	1	LINK LEVER L		01.01.06	9	リンクレバL
LB1453001	1	PLATEN ROLLER ASSY		01.01.07	9	プラテンローラクミ
LB1454001	1	PLATEN ROLLER SHAFT		01.01.07.01	9	プラテンローラジク
LB1455001	1	BEARING R		01.01.08	9	ジクウケR
LB1456000	1	BEARING L		01.01.09	9	ジクウケL
LB2696001	1	HEAD RELEASE CAM R2		01.01.10	9	ヘッドリリースカムR2
LB2697000	1	HEAD RELEASE CAM L2		01.01.11	9	ヘッドリリースカムL2
LB1597001	4	TAPTITE PRECISE B M2X3	リンクガイドR, リンクガイドL, ジクウケL, ジクウケR	01.01.12	9	セイミツBタイM2X3
LB1883000	2	PLASTIC RETAINING RING E2	PUローラ, プラテンクミ	01.01.13	9	ジュシトメウ E2
LB1460002	1	SEPARATION PLATE		01.01.14	9	プランパン
LB1461000	1	PAPER GUIDE		01.01.15	9	ペーパーガイド
LB1462001	2	P-GUIDE SPRING COMPRESSION		01.01.16	9	Pガイドバネ
LB1643001	1	P GUIDE FILM		01.01.17	9	Pガイドフィルム
LB1463003	1	GEARBOX UNIT		01.02	9	ギヤボックスユニット
LB1464001	1	GEAR CASE A ASSY		01.02.01	9	ギヤケースAクミ
LB1465000	1	GEAR CASE A		01.02.01.01	9	ギヤケースA
LB1466000	4	Z2 & Z3 SHAFT		01.02.01.02	9	Z2&Z3ジク
LB1467000	1	Z5 SHAFT		01.02.01.03	9	Z5ジク
LB1468000	1	Z2 GEAR		01.02.02	9	Z2ギヤ
LB1469000	2	Z3 GEAR		01.02.03	9	Z3ギヤ
LB1470003	1	Z4 GEAR ASSY		01.02.04	9	Z4ギヤクミ
LB1471000	1	Z4 GEAR		01.02.04.01	9	Z4ギヤ
LB1472003	1	Z4 PINION		01.02.04.02	9	Z4ピニオン
LB1473001	1	Z4 SHAFT		01.02.04.03	9	Z4ジク
LB1474001	1	CLUTCH SPRING SPIRAL		01.02.04.04	9	クラッチバネ
LB1475000	1	WASHER PLAIN		01.02.04.05	9	ワザナ
048008346	1	RETAINING RING E0.8		01.02.04.06	9	トメウE0.8
LB1476000	1	Z5 GEAR		01.02.05	9	Z5ギヤ
LB1477000	2	Z7 GEAR		01.02.06	9	Z7ギヤ
LB1478000	1	GEAR CASE B		01.02.07	9	ギヤケースB
LB1903001	2	TAPTITE PRECISE B M2X4	ギヤケースB	01.02.08	9	セイミツBタイM2X4
LB1480000	1	PLATEN GEAR		01.03	9	プラテンギヤ
LB1481000	1	PU DRIVING CAM		01.04	9	PUドゥカム
LB1482000	1	Z8 GEAR		01.05	9	Z8ギヤ
LB4869001	1	FPC MOTOR SENSOR ASSY		01.06	9	FPCモータセンサクミ
LB1484002	1	FPC SENSOR ASSY		01.06.01	9	FPCセンサクミ
LB1485002	1	FPC ASSY		01.06.01.01	9	FPCクミ
LB1486001	1	PHOTO INTERRUPTER CNB 1001		01.06.01.02	9	センサCNB1001
LB4870001	1	MOTOR ASSY		01.06.02	9	モータクミ
LB4871001	1	MOTOR SM10-*****		01.06.02.01	9	モータSM10-*****
LB1489000	1	FIX PLATE		01.06.02.02	9	コティタ
LB1490000	1	MOTOR PINION		01.07	9	モータピニオン
LB2694001	1	HEAD UNIT2		01.08	9	ヘッドクミ2
LB2679001	1	H ASSY KF3003-11		01.08.01	9	HクミKF3003-11
LB2683001	1	HF ASSY KF3003-11		01.08.01.01	9	HFクミKF3003-11
LB2690001	1	HF KF3003-11		01.08.01.01.01	9	HクミKF3003-11
LB2681001	1	F KF3003-11		01.08.01.01.02	9	FクミKF3003-11
LB2682001	1	HS KF3003-11		01.08.01.02	9	HSクミKF3003-11
LB2693001	1	HEAD PRESSURE PLATE ASSY2		01.08.02	9	ヘッドオサエイクミ2
LB2695000	1	HEAD PRESSURE PLATE2		01.08.02.01	9	ヘッドオサエイクミ2
LB1500001	1	HEAD SPRING SHAFT		01.08.02.02	9	ヘッドバネジク
LB1501001	1	HEAD SPRING TORSION R		01.08.02.03	9	ヘッドネジリバネR
LB1502001	1	HEAD SPRING TORSION L		01.08.02.04	9	ヘッドネジリバネL
048015346	1	RETAINING RING E1.5		01.08.02.05	1	トメウE1.5
048020346	2	RETAINING RING E2		01.08.02.06	1	トメウE2
LB1459001	4	PRECISE SCREW M2X2.5	ヘッドオサエイクミ3, モータクミ1	01.09	1	セイミツコネジM2X2.5
LB1596001	2	PRECISE SCREW M2X8	ギヤケースB	01.10	9	セイミツコネジM2X8

機構区分: (COVERS)SV6103-09014-061

品目コード	1個数	品名	記事	構造	補給サイン	和品名
LB4873001	1	FRAME COVER ASSY 145BT		01	1	フレームカバークミ145BT
LB4875001	1	FRAME COVER 145BT		01.01	9	フレームカバー145BT
LB1507001	1	LED GUIDE		01.02	9	LEDガイド
LB4876001	1	SW ACTUATOR 145BT		01.03	9	SWアクチュエータ145BT
LB3073001	1	EMBLEM MW260		01.04	1	エンブレムMW260
LB1511001	1	CASSETTE GUIDE		02	1	カセットガイド
LB1512001	1	PAPER PRESSURE SPRING		03	1	ヨウソクバネ
LB4877001	1	GND SPRING PLATE D2 145BT		04	1	アースイタバネD2 145BT
LB1514001	1	CASSETTE SPRING PLATE		05	1	カセットオシバネ
LB4878001	1	OPEN SPRING TORSION 145BT		06	1	カイヘネジリバネ 145BT
LB4879001	1	LOWER COVER 145BT		07	1	カバシタ145BT
LB4880001	1	CASSETTE COVER ASSY 145BT		08	1	カセットカバークミ145BT
LB4881001	1	CASSETTE COVER UPPER 145BT		08.01	9	カセットカバーウエ145BT
LB1523001	1	GROUND SPRING PLATE C		08.02	9	アースイタバネC
LB4882001	1	CASSETTE COVER LOWER ASSY BT		08.03	9	カセットカバーシタクミBT
LB4883001	1	CASSETTE COVER LOWER 145BT		08.03.01	9	カセットカバーシタ145BT
LB1525001	2	CASSETTE SPRING SPIRAL		08.04	9	カセットエンシバネ
LB4884001	1	PRESSURE PLATE 145BT		08.05	9	オウソクイタ145BT
LB4919001	1	LIGHT PROTECT FILM		08.06	9	メイウボクシシート
LB4885002	1	RATING LABEL MW145BT		09	9	メイバン MW145BT
LB4886001	2	GND SPRING PLATE K2 145BT		10	1	アースイタバネK2 145BT
LB4887001	1	GND SPRING PLATE U2 145BT		11	1	アースイタバネU2 145BT
LB1479001	9	TAPTITE PRECISE B M2X4.5		12	1	セイミツBタイM2X4.5
LB1633001	1	GROUND SPRING PLATE F		13	1	アースイタバネF
LB4888001	1	SW COVER 145BT		14	1	SWカバー145BT
LB4889001	1	PCB PROTECT SHEET 145BT		15	1	キバンシ145BT
LB4890001	1	FCC LABEL 145BT		16	1	FCCラベル145BT
LB4892001	1	BATTERY LID 145BT		17	1	デンチフタ145BT
LB4893001	1	CUSHION 145BT		18	1	クッション145BT
LB0635001	1	SAMPLE CAUTION LABEL		19	1	サンプルチヨウイラベル
LB4024001	1	USB STICKER		20	1	USBステッカー

機構区分: (BATTERY)SV6103-09002-121

品目コード	1個数	品名	記事	構造	補給サイン	和品名
LB4895001	1	L-ION BATTERY 780MAH 145BT		01	P	L-IONデンチ780 145

機構区分: (ACCESSORY)SV6103-09014-910

品目コード	1個数	品名	記事	構造	補給サイン	和品名
LB332001	1	ADAPTER AD-210 UK		01	9	アダプタAD-210UK
LB2878001	1	USB CABLE LF		02	9	USBケーブルLF
LB4928001	1	C-11 CASSETTE ASSY WLD	コウセイズLB4921	03	9	C-11カセットクミWLD
LB4927001	1	C-11 PAPER CASSETTE WLD		03.01	9	C-11紙カセットWLD
LB2192001	50	C-11L PAPER		03.02	9	C-11Lヨウシ
LB4027001	1	CD-ROM MW-145BT		04	1	CD-ROM MW-145BT

機構区分: (PRINTED MATTER)SV6103-09014-920

品目コード	1個数	品名	記事	構造	補給サイン	和品名
LB1661001	1	WARRANTY CARD EURO CH		01	1	ホシヨウシEURO CH
LB2142001	1	ACCESSORY POST CARD GBR		02	1	アクセサリポストカード GBR
LW2157001	1	3YEAR WARRANTY CARD UK		03	1	3年ホシヨウシUK