

# SPECIFICATION

SPEC NO. TFA9NAA00792

DATE : Jan.29th, 2019

To

XIANGGAO

CUSTOMER'S PRODUCT NAME

TDK'S PRODUCT NAME

DPX162690DT-8122B2

## RECEIPT CONFIRMATION

DATE :      YEAR      MONTH      DAY

TDK Corporation

Sales

Electronic Components Sales &  
Marketing Group

Engineering

Electronic Components Business Company  
Communication Devices Business Group

APPROVED	PERSON IN CHARGE

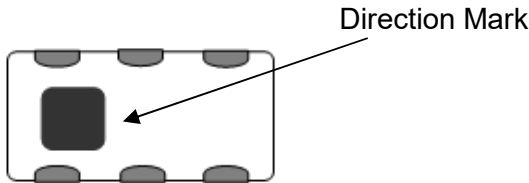
APPROVED	CHECKED	PERSON IN CHARGE
<i>N. Harada</i>	<i>K. Tsukamoto</i>	<i>H. Ashida</i>



## Diplexer Specification

( TDK Part Number : DPX162690DT-8122B2 )

### 1. Marking



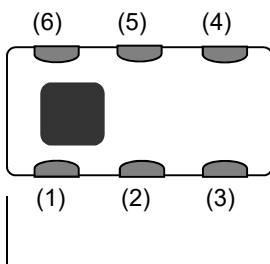
### 2. Mechanical Outline

#### 2-1 Package

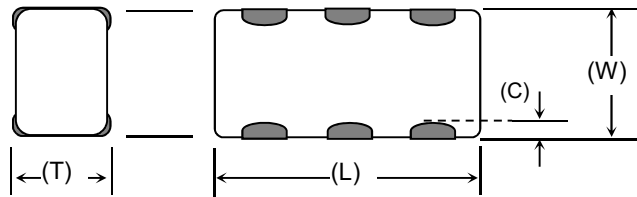
Package: Surface mount package  
 Delivery Medium: Tape on reel  
 Soldering Method: IR-reflow  
 Size: 1.60 x 0.80 mm typ.  
 Height: 0.60 mm typ.

#### Mechanical Dimensions

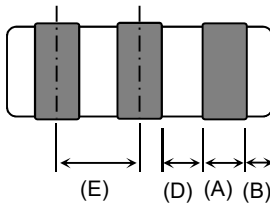
[Top View]



[Bottom View]



[Side View]



Dimension (mm)

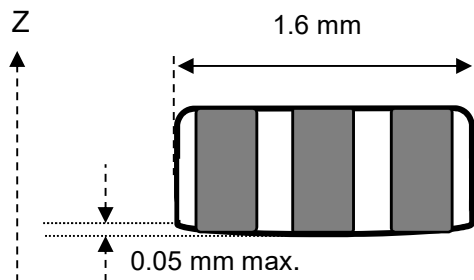
(L)	(W)	(T)	(A)	(B)	(C)	(D)	(E)
1.6	0.8	0.6	0.3	0.1	0.15	0.25	0.55
+/-0.15	+/-0.15	+/-0.10	+/-0.10	+/-0.10	+/-0.10	+/-0.10	+/-0.10

Pin Configuration

(1)	(2)	(3)	(4)	(5)	(6)
GND	Common	GND	Low-Band	GND	High-Band

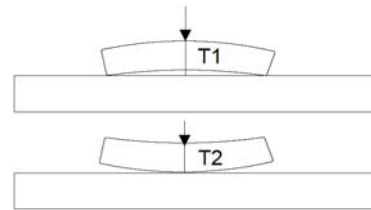
## 2-2 Coplanarity

0.05 mm max. difference in Z-direction as follows



Coplanarity measurement method

Coplanarity = T1-T2



Each terminal extends the full of the product. Hence any coplanarity deviation between terminals is due to curvature in the substrate. TDK guarantees that the edge of each terminal is within 0.05 mm of the horizontal plane.

## 3. Environment (Temperature & Humidity)

### 3-1 Operating & Storage Condition

Storage Temperature Range : -40 ~ +85 °C

Operating Temperature Range : -40 ~ +85 °C

Humidity : 0 ~ 90 % R.H. (Max. wet bulb temperature 38 °C )

### 3-2 Storage Condition before Soldering

Temperature : +5 ~ +30 °C

Humidity : 20 ~ 70 % RH

Term of Storage : Within 12 months (After the delivery) \*

Baking : Unnecessary

\* For the products stored longer than 12 months, confirm their terminals and solderability before they are used.

### 3-3 Moisture Sensitivity Level

Equal to Level 1

## 4. Electrical Specification

### 4-1 Electrical Characteristics

Low-Band

(Ta= +25 ± 5 °C)

Parameter	Freq. (MHz)	Specification	Typ.	Unit
Insertion Loss (Ta=+25 °C)	704 -960	0.5 max.	0.31	dB
Insertion Loss (Ta=-40~+85°C)	704 -960	0.65 max.	-	dB
Attenuation	1710-2170	15 min.	19.4	dB
	2170-2690	10 min.	16.1	dB
VSWR	704-960	1.5 max.	1.19	-

High-Band

(Ta= +25 ± 5 °C)

Parameter	Freq. (MHz)	Specification	Typ.	Unit
Insertion Loss (Ta=+25 °C)	1710-1800	0.70 max.	0.55	dB
	1800-1990	0.60 max.	0.41	dB
	1990-2170	0.55 max.	0.33	dB
	2170-2690	1.40 max.	0.79	dB
Insertion Loss (Ta=-40~+85°C)	1710-1800	0.90 max.	-	dB
	1800-1990	0.75 max.	-	dB
	1990-2170	0.65 max.	-	dB
	2170-2690	1.60 max.	-	dB
Attenuation	704-960	20 min.	24.2	dB
VSWR	1710-2170	1.7 max.	1.37	-
	2170-2690	2.8 max.	1.89	-

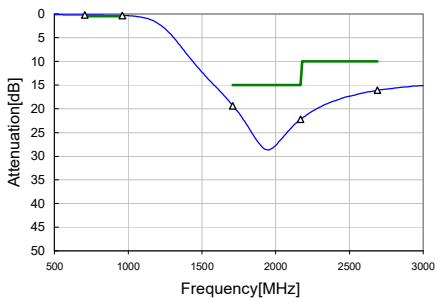
We recommend to terminate for all port with 50ohm at all times.

### 4-2 Maximum Ratings

Parameter	TDK Spec		Conditions
	Min.	Max.	
Human Body Model : HBM @Each Port (V)	-1000	1000	100pF / 1500ohm
Machine Model : MM @Each Port (V)	-150	150	200pF / 0ohm
Charged Device Model : CDM @Each Port (V)	-500	500	Relative humidity : 60%RH max

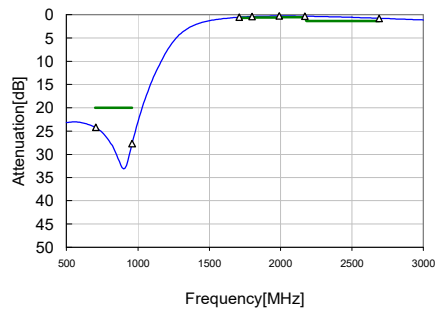
## 5. Typical Electrical Characteristics

Low-Band Port



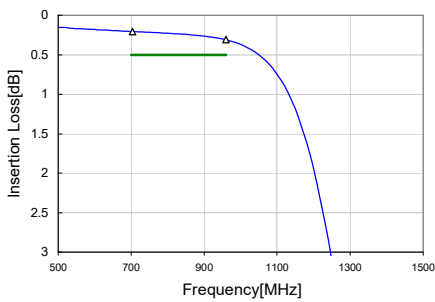
Attenuation	
1710 MHz	19.35 dB
2170 MHz	22.18 dB
2690 MHz	16.09 dB

High-Band Port



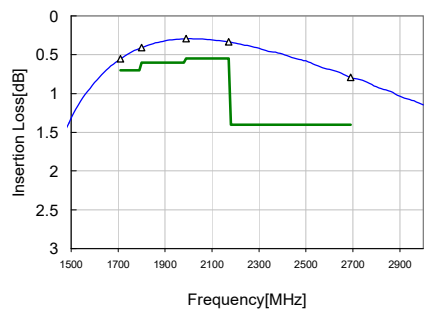
Attenuation	
704 MHz	24.18 dB
960 MHz	27.65 dB

Low-Band Port



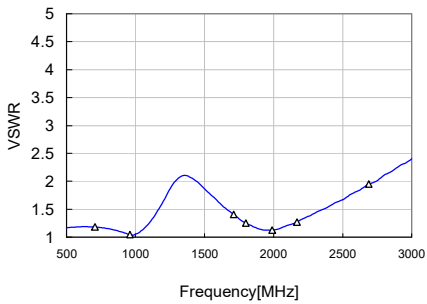
Insertion Loss	
704 MHz	0.21 dB
960 MHz	0.31 dB

High-Band Port



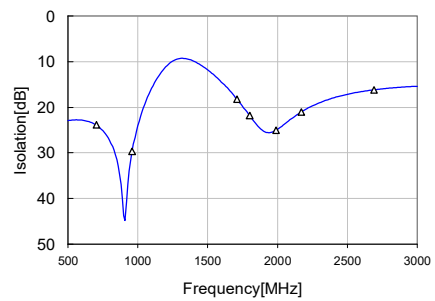
Insertion Loss	
1710 MHz	0.55 dB
1800 MHz	0.41 dB
1990 MHz	0.29 dB
2170 MHz	0.33 dB
2690 MHz	0.79 dB

Common Port VSWR



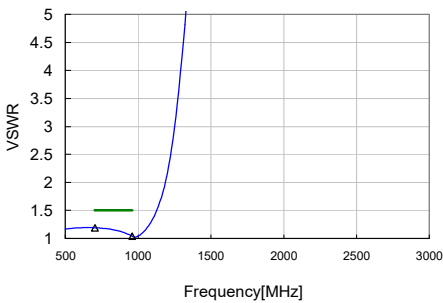
704 MHz	1.18
960 MHz	1.04
1710 MHz	1.41
1800 MHz	1.25
1990 MHz	1.13
2170 MHz	1.27
2690 MHz	1.95

Isolation



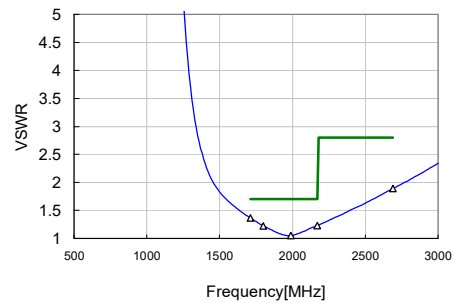
704 MHz	23.8 dB
960 MHz	29.7 dB
1710 MHz	18.2 dB
1800 MHz	21.8 dB
1990 MHz	25.0 dB
2170 MHz	21.0 dB
2690 MHz	16.2 dB

Low-Band Port VSWR



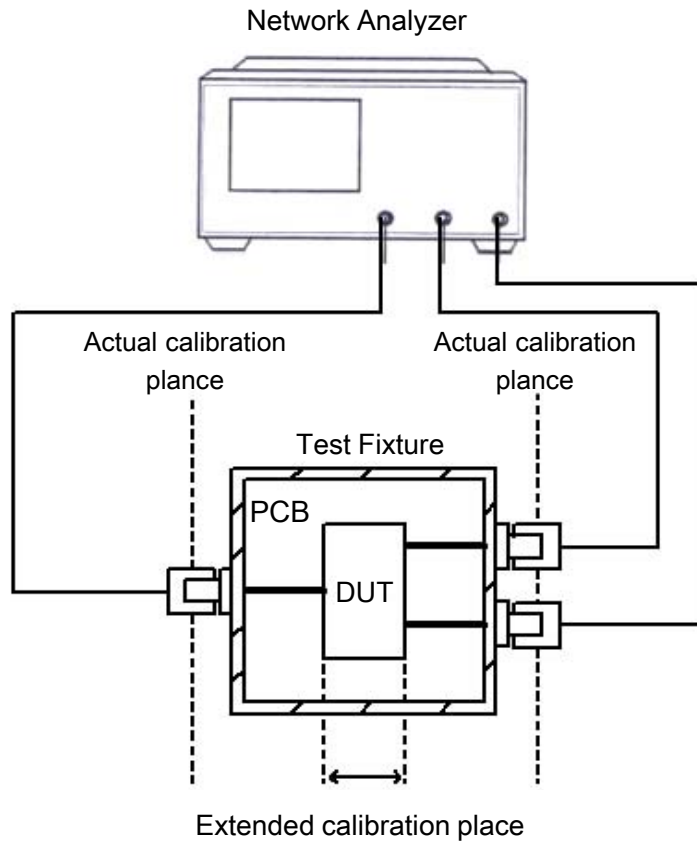
704 MHz	1.19
960 MHz	1.04

High-Port VSWR



1710 MHz	1.37
1800 MHz	1.23
1990 MHz	1.05
2170 MHz	1.23
2690 MHz	1.89

## 6. Test Circuit



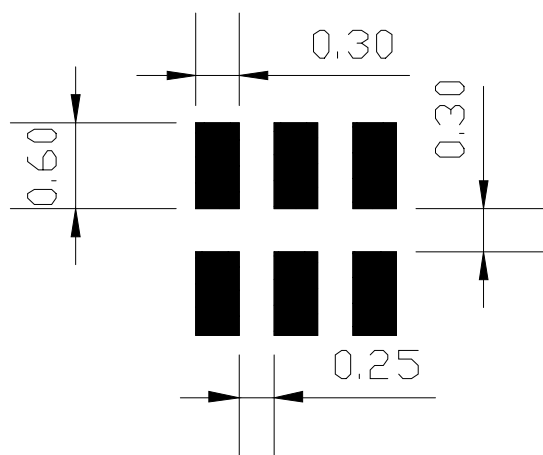
**Note 1:**

The Port Extension function on the Network Analyzer is used to extend the calibration plane to the DUT terminals.

**Note 2:**

Loss in the PCB traces is compensated for by measurement data taken on a PCB Thru' line.

## 7. Recommended Land Pattern



unit : mm

■ Land

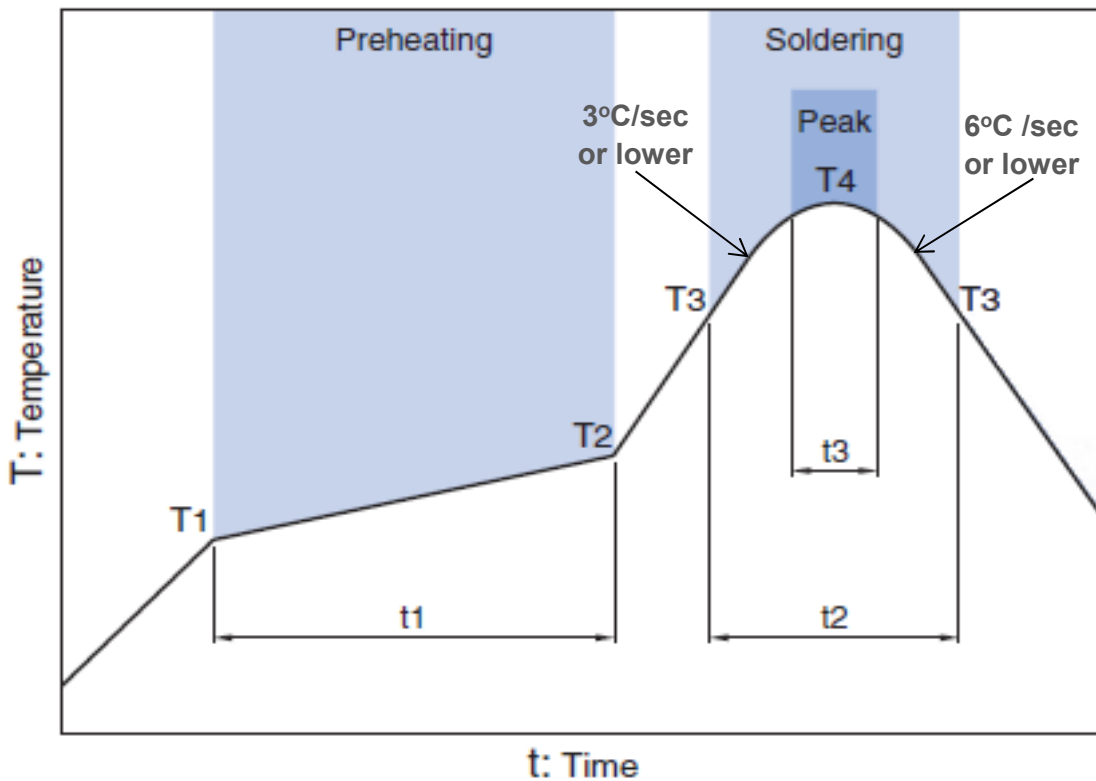
### 8. Environmental and Quality Proposal

This product satisfies the electrical specification after the following tests.  
 (When measured after two hours in normal conditions)

Temperature Characteristics	All data initially taken at +25°C, then repeated at -40°C and again at +85 °C	
Heat Proof	+85 +/- 2 °C for 1000 hours	
Cold Proof	-40 +/- 2 °C for 500 hours	
Moisture Proof	+60 +/- 2 °C, 90~95% R.H. for 1000 hours	
Heat Shock	-40 ~ +85 °C for 350 cycles, each cycle being 30 min	
Vibration	10-500Hz vibration frequency (10G Max.) with 1.52mmp-p amplitude for two hours in x,y,z directions	
Mechanical Shock	1.Acceleration 1000m/s <sup>2</sup> 2.Direction X, Y, Z ,X',Y',Z', axes 3.Time 6ms duration and 3 times in each direction	
Solderability	The dipped surface of the terminal shall be at least 75% covered with solder after dipped in solder bath of 245 +/- 3 °C for 3 +/- 0.5 sec. Remark solder: Sn-3.0Ag-0.5Cu Remark flux: Rosin 25%, Alcohol 75%	
Solder Heat Shock	It shall be possible to hot air reflow the components three times with a temperature profile shown below.	
Drop Shock	Dropped onto steel plate or concrete from 100cm height three times.	
Bending Test	<p>Solder specimen components on the test printed circuit board(L:100 x w:40 x t:0.8mm) in appended recommended PCB pattern.                      Apply the load in direction of the arrow until bending reaches 1mm for 5+/-1 sec.</p>	
Board Adhesion (Push Test)	<p>Solder specimen components on the test printed circuit board(L:100 x w:40 x t:0.8mm) in appended recommended PCB pattern.                      Apply the load in direction of the arrow until 5N for 5+/-1 sec.</p>	



### 9. Recommended Reflowing Temperature Profile



Preheating			Soldering			
			Critical zone (T3 to T4)		Peak	
Temp.		Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3 *
150°C	200°C	60 to 120sec	217°C	60 to 120sec	240 to 260°C	30 sec Max

\* t3 : Time within 5°C of actual peak temperature.

The maximum number of reflow is 3.

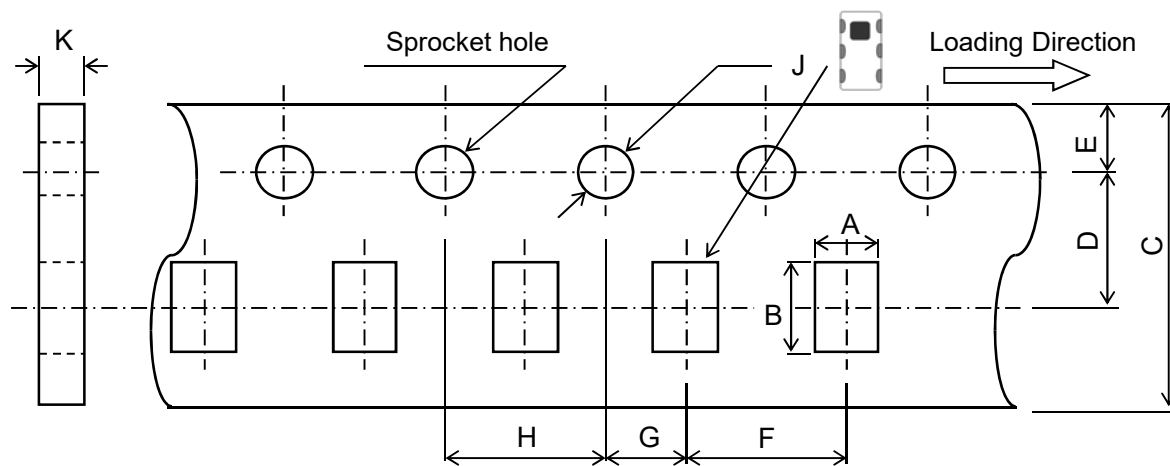
Note: Lead free solder is recommended.

Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

## 10. Packing

### 10-1 Carrier Tape

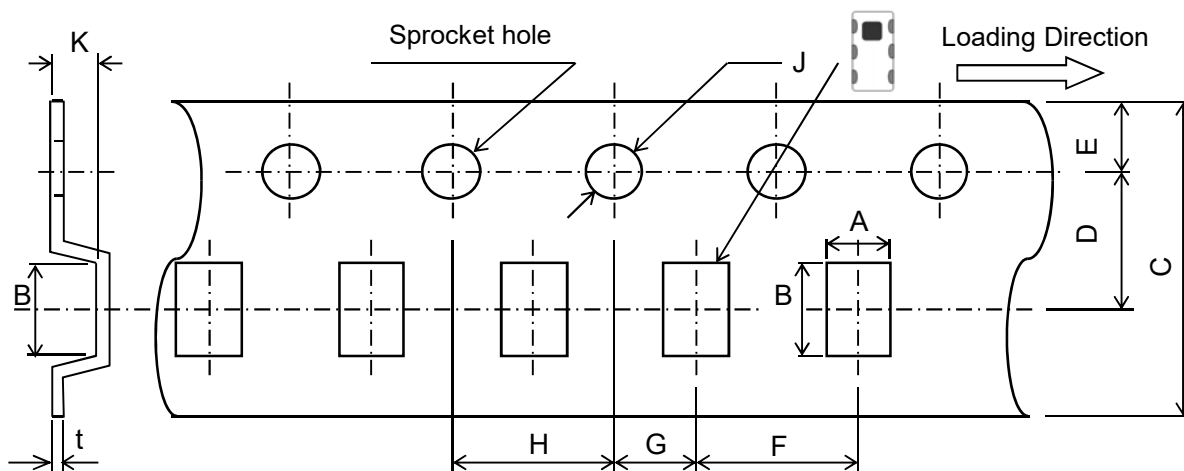
Carrier tape 1 , Material : paper



Unit : mm

A	B	C	D	E	F	G	H	J	K
0.97	1.8	8.0	3.5	1.75	4.0	2.0	4.0	1.5	0.8
+/-0.05	+/-0.05	+/-0.2	+/-0.05	+/-0.1	+/-0.1	+/-0.05	+/-0.1	+0.1/-0	Max

Carrier tape 2 , Material : PS

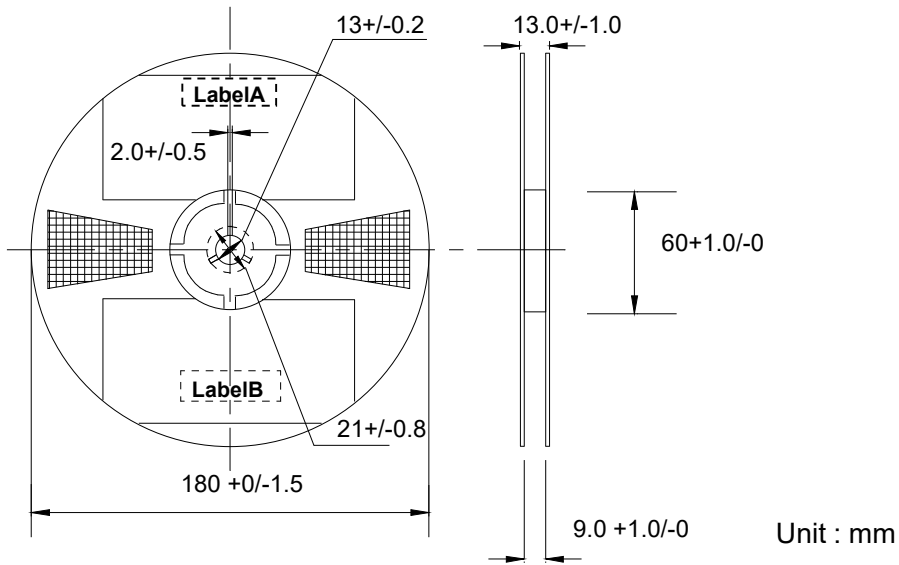


Unit : mm

A	B	C	D	E	F	G	H	J	K	t
0.97	1.8	8.0	3.5	1.75	4.0	2.0	4.0	1.5	0.8	0.25
+/-0.05	+/-0.05	+/-0.2	+/-0.05	+/-0.1	+/-0.1	+/-0.05	+/-0.1	+0.1/-0	Max	+/-0.05

"Carrier tape 1" is currently adopted. "Carrier tape 2" will be running change after Feb.2016.

### 10-2 Reel Dimensions



### 10-3 Standard Reel Packaging Quantities

4000pcs./reel

## **11. Other**

### **11-1 Notice**

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

- Aerospace/Aviation equipment
- Transportation equipment (cars, electric trains, ships, etc.)
- Medical equipment
- Power-generation control equipment
- Atomic energy-related equipment
- Seabed equipment
- Transportation control equipment
- Public information-processing equipment
- Military equipment
- Electric heating apparatus, burning equipment
- Disaster prevention/crime prevention equipment
- Safety equipment
- Other applications that are not considered general-purpose applications

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

### **11-2 Product Origin**

1. TDK Akita Corporation, Akita, Japan
2. TDK Dalian Corporation, Dalian, China

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