



May. 2015 Ver.1.1  
TDK Corporation

## Multilayer Balun

For LTE

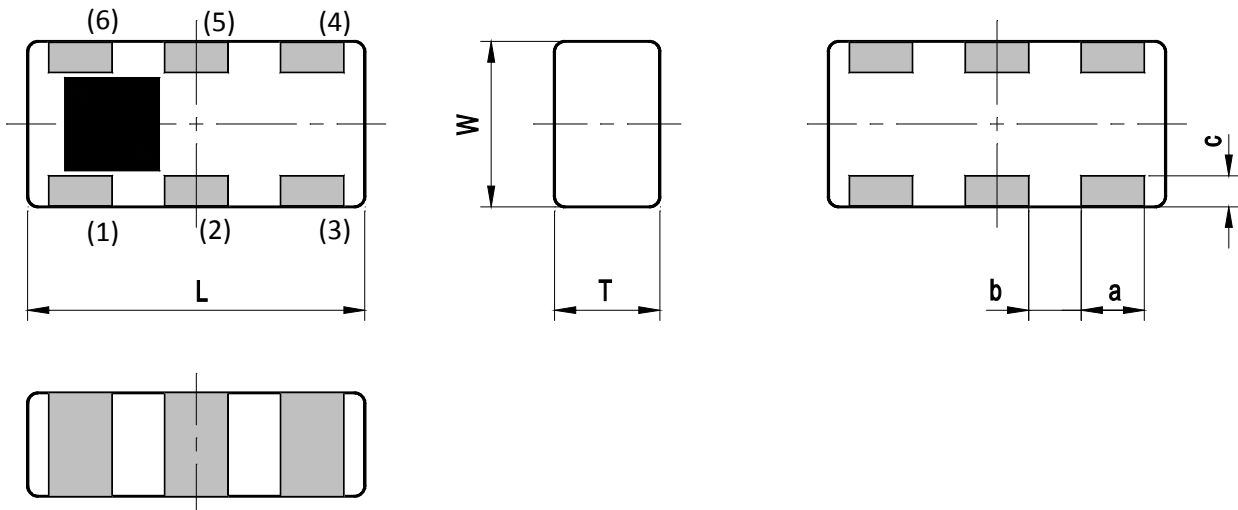
HHM Series

1608 TYPE

P/N: **HHM17168B1**

## HHM17168B1

### SHAPES AND DIMENSIONS



Dimensions (mm)

L	W	T	a	b	c
1.60	0.80	0.60	0.30	0.25	0.15
+/-0.10	+/-0.10	+/-0.10	+/-0.10	+/-0.10	+/-0.10

Terminal functions

(1)	Unbalanced Port
(2)	DC feed + RF GND or GND
(3)	Balanced Port
(4)	Balanced Port
(5)	GND

(6)	N.C.
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**Note:**

These samples are marked with trial sample identification.

In mass production, this sample marking will be changed to show in the TDK full specification.

### TEMPERATURE RANGE

Operating temperature	Storage temperature
-40 to +85 °C	-40 to +85 °C

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### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

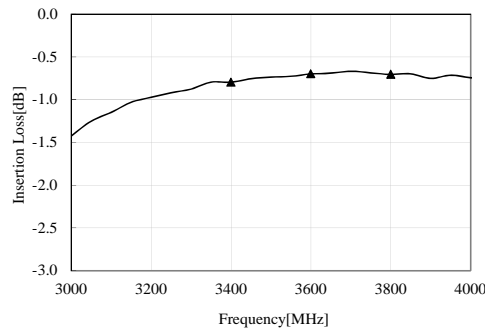
Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Unbalanced Port Characteristic Impedance		50		
Balanced Port Characteristic Impedance		30.5-j55.2		
Return Loss at Unbalanced Port (dB)	3400 to 3800	10	18.6	-
Phase Balance (deg.)	3400 to 3800		182	
Amplitude Balance (dB)	3400 to 3800		0.55	
Insertion Loss (dB)	3400 to 3800	-	0.80	
Power Handling (W)		-		1

Ta = +25+/-5°C

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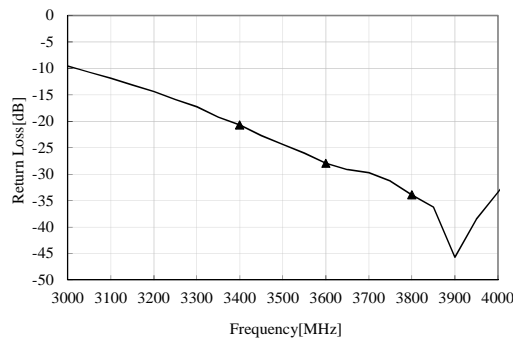
## FREQUENCY CHARACTERISTICS

Insertion Loss



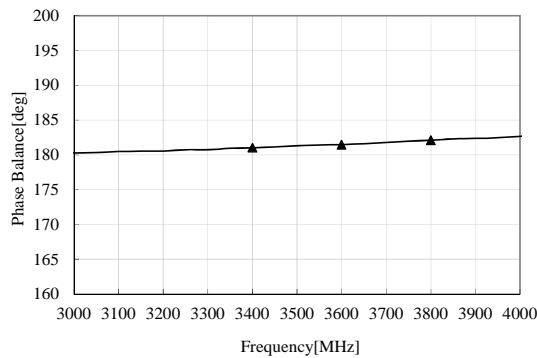
3400 MHz  
-0.80 dB  
3600 MHz  
-0.70 dB  
3800 MHz  
-0.71 dB

Return Loss



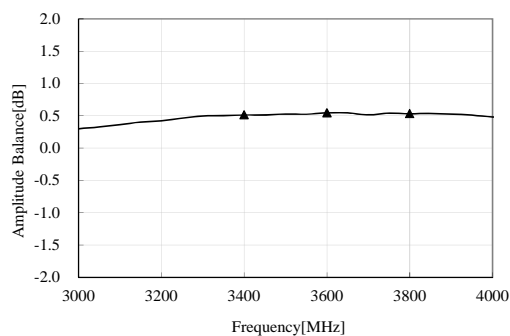
3400 MHz  
-20.7 dB  
3600 MHz  
-27.9 dB  
3800 MHz  
-33.9 dB

Phase Balance



3400 MHz  
181 deg  
3600 MHz  
181 deg  
3800 MHz  
182 deg

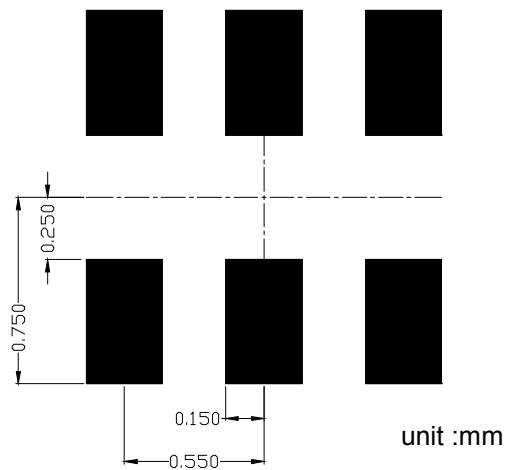
Amplitude Balanc



3400 MHz  
0.51 dB  
3600 MHz  
0.55 dB  
3800 MHz  
0.53 dB

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### ■ RECOMMENDED LAND PATTERN



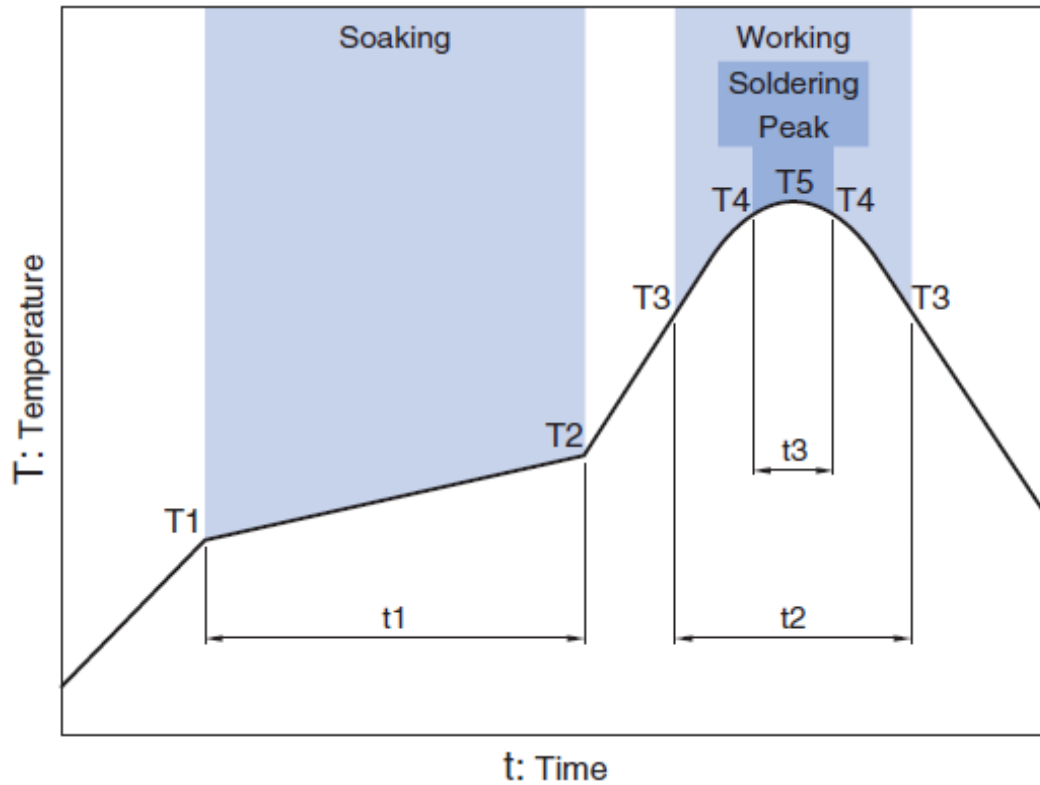
### ■ ENVIROMENT INFORMATION

RoHS Statement  
RoHS Compliance

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### ■ RECOMMENDED REFLOW PROFILE

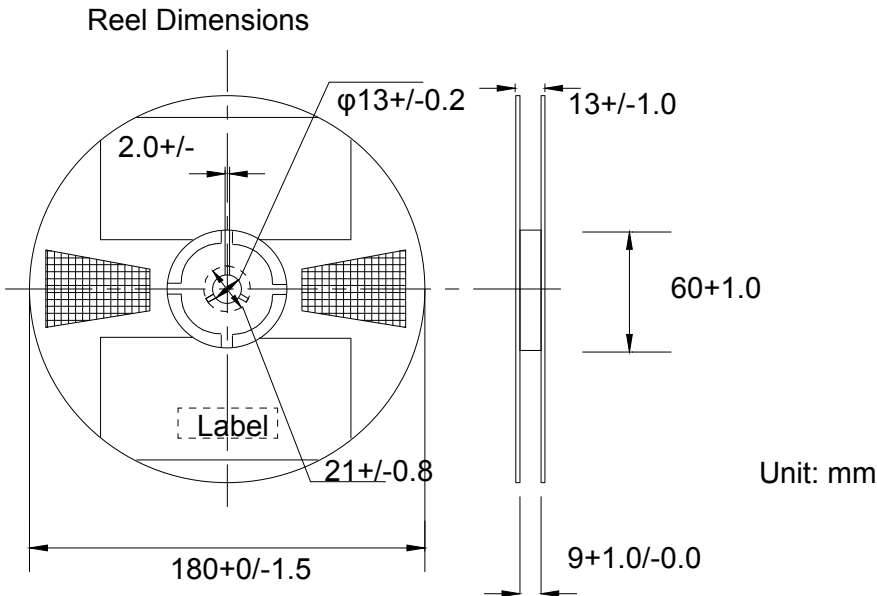
Pb free solder



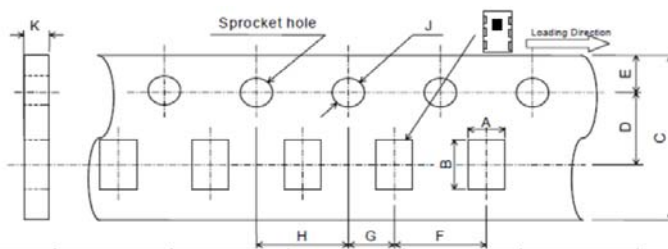
Soaking			Working		Soldering		Peak
Temp.	Temp.	Time	Temp.	Time	Temp.	Time	Temp.
T1	T2	t1	T3	t2	T4	t3	T5
150°C	180°C	60 to 120sec	230°C	more than 30sec	247 to 253°C	within 10sec	260°C Max.

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## PACKAGING STYLE



### Carrier Tape



A	B	C	D	E	F
0.97+/-0.05	1.8+/-0.05	8.0+/-0.2	3.5+/-0.05	1.75+/-0.1	4.0±0.1
G	H	J	K		
2.0+/-0.05	4.0+/-0.1	1.5+0.1/-0	0.75+/-0.05		

<b>STANDARD PACKAGE QUANTITY</b>
<b>( pieces/reel )</b>
4,000

## REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

### SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

#### REMINDERS

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.

1. Aerospace/Aviation equipment
2. Transportation equipment (cars, electric trains, ships, etc.)
3. Medical equipment
4. Power-generation control equipment
5. Atomic energy-related equipment
6. Seabed equipment
7. Transportation control equipment
8. Public information-processing equipment
9. Military equipment
10. Electric heating apparatus, burning equipment
11. Disaster prevention/crime prevention equipment
12. Safety equipment
13. Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.