May 2015 Ver.1.1
TDK Corporation

Multilayer Balun

For LTE

HHM Series 1608 TYPE

P/N: **HHM17165A1**

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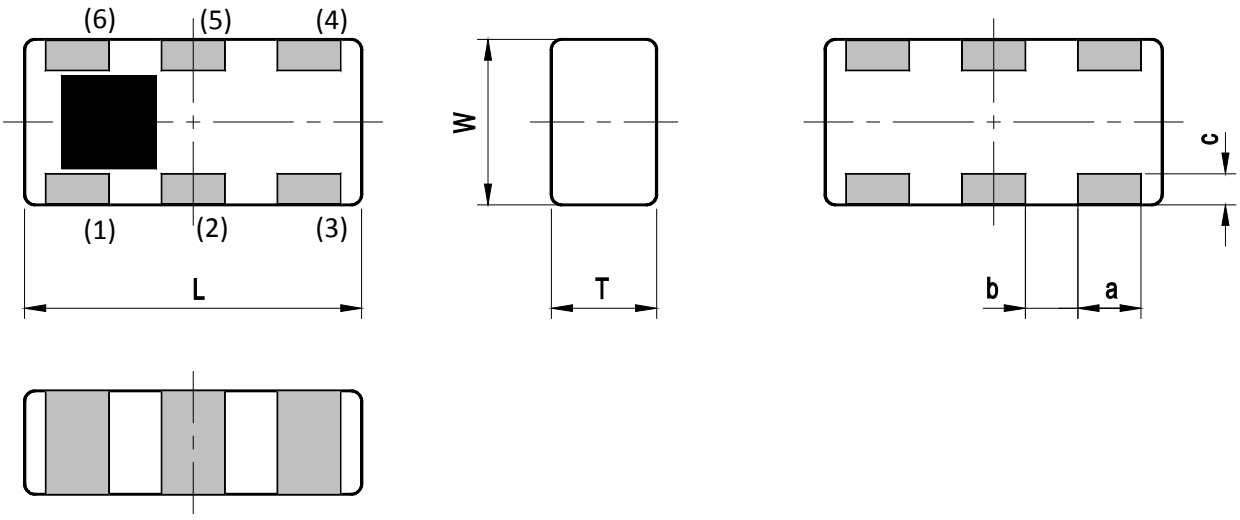
HHM17165A1

SHAPES AND DIMENSIONS



Dimensions (mm)

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

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 ℃	–40 to +85 ℃

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■ ELECTRICAL CHARACTERISTICS

(Measurement)

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Unbalanced Port Characteristic Impedance		50		
Balanced Port Characteristic Impedance		13.9-j18.1		
Return Loss at Unbalanced Port (dB)	2400 to 2800	10	13.3	-
Phase Balance (deg.)	2400 to 2800	170	180	190
Amplitude Balance (dB)	2400 to 2800	-1.00	0.42	1.00
Insertion Loss (dB)	2400 to 2800	-	1.16	1.60
Power Handling (W)		-		1

Ta = +25+/-5℃

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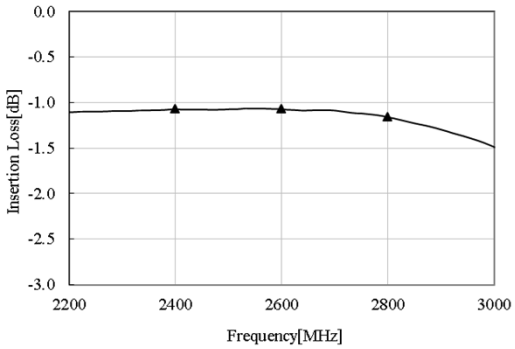
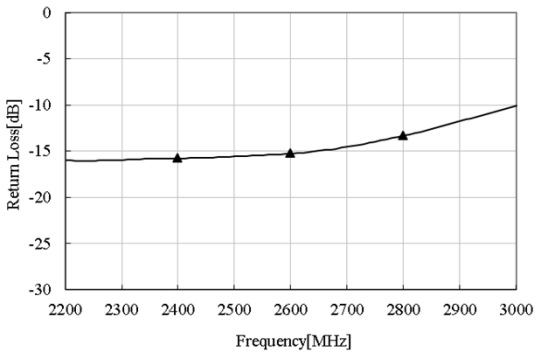
FREQUENCY CHARACTERISTICS

Insertion Loss



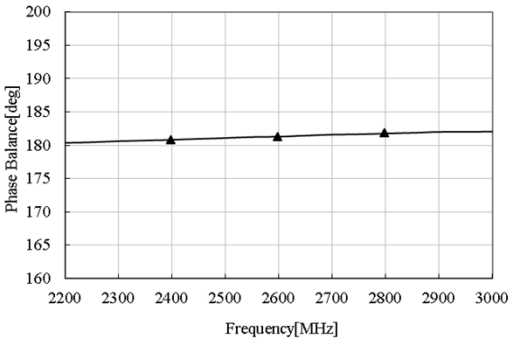
2400 MHz
-1.07 dB
2600 MHz
-1.07 dB
2800 MHz
-1.16 dB

Return Loss



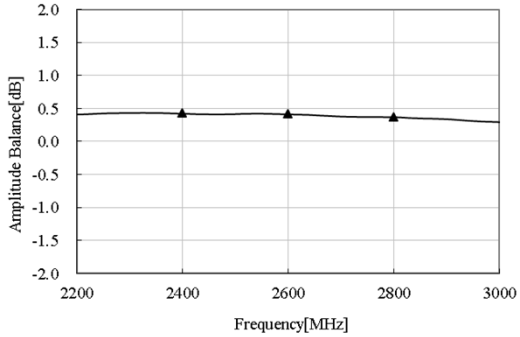
2400 MHz
-15.8 dB
2600 MHz
-15.3 dB
2800 MHz
-13.3 dB

Phase Balance



2400 MHz
180.8 deg
2600 MHz
181.3 deg
2800 MHz
181.8 deg

Amplitude Balance



2400 MHz
0.42 dB
2600 MHz
0.41 dB
2800 MHz
0.37 dB

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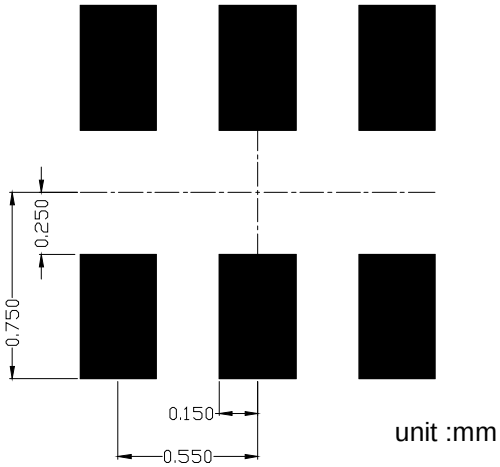
RECOMMENDED LAND PATTERN



ENVIROMENT INFORMATION

RoHS Statement
RoHS Compliance

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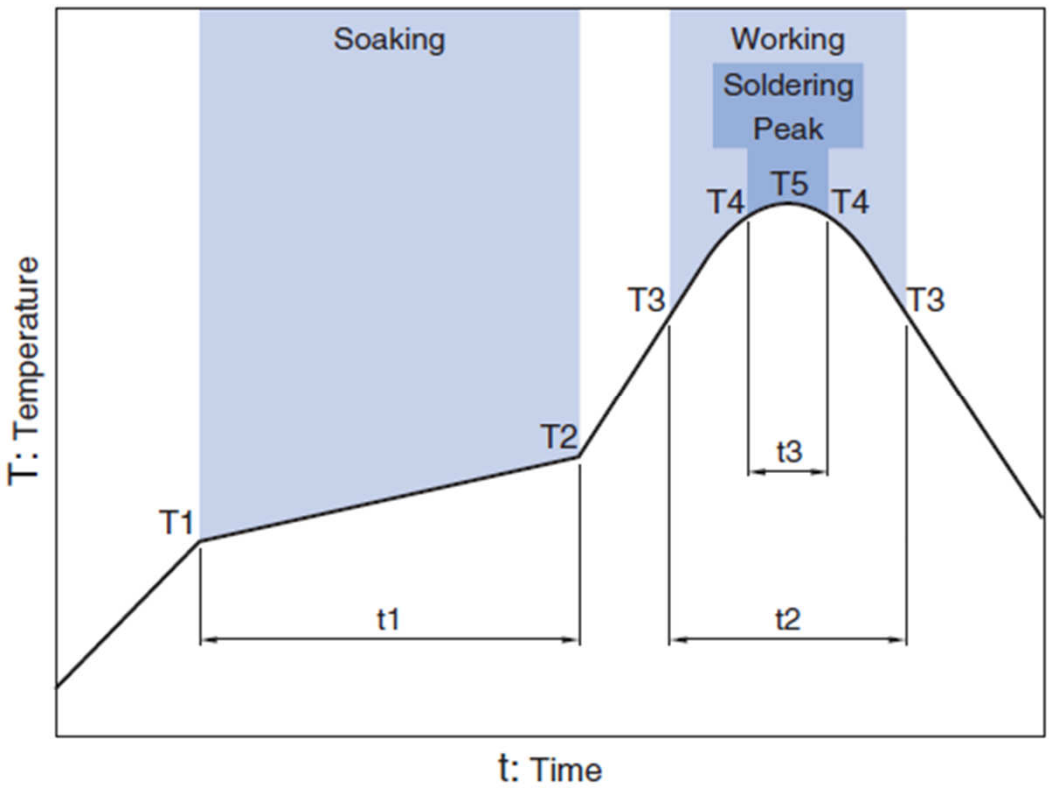
■ RECOMMENDED REFLOW PROFILE

Pb free solder



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

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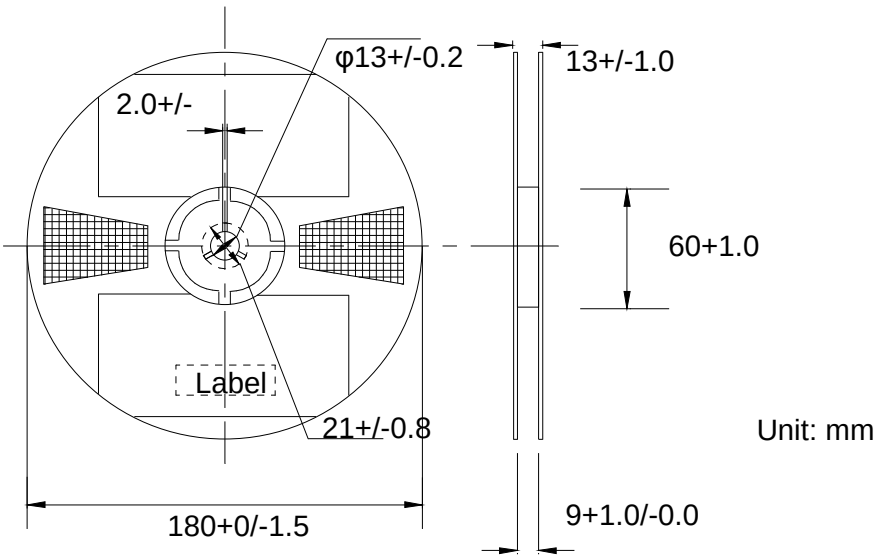
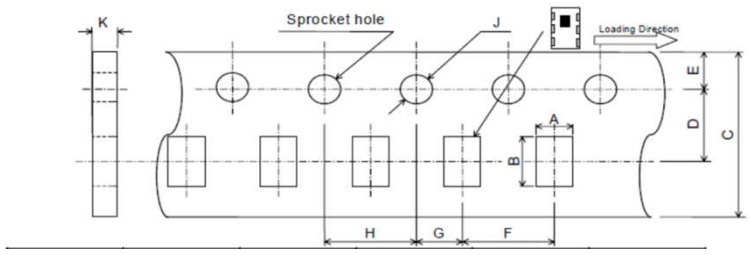
■ PACKAGING STYLE

Reel Dimensions



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		

STANDARD PACKAGE QUANTITY (pieces/reel)
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.