



Mar. 2020 Ver3.0
TDK Corporation

Multilayer Balun

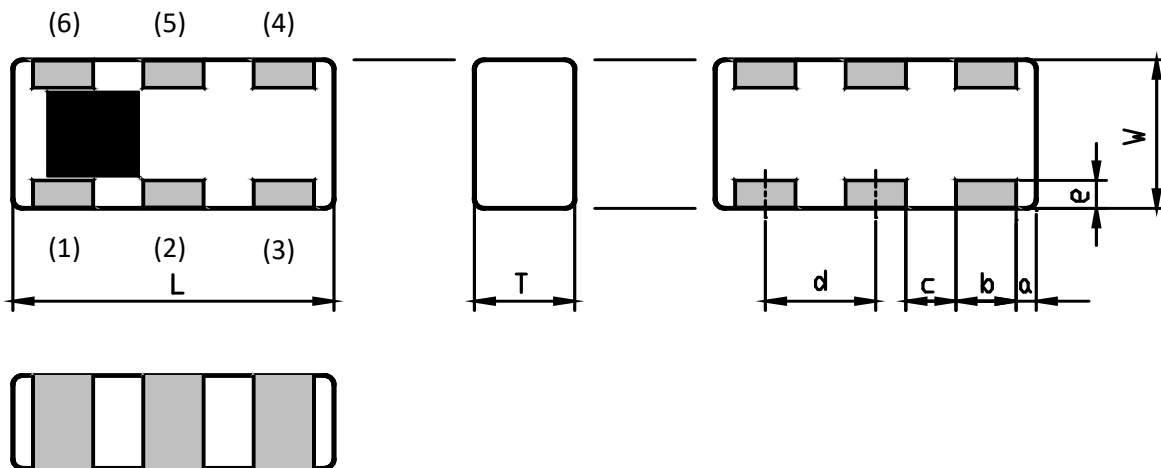
For 791-960MHz

HHM Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **HHM17144A1**

HHM17144A1

■ SHAPES AND DIMENSIONS



Dimensions (mm)

L	W	T	a	b	c	d	e
1.60	0.80	0.50	0.10	0.30	0.25	0.55	0.15
+/-0.10	+/-0.10	Max	+/-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.

Note1:

These samples are marked with trial sample identification.

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

■ TERMINATION FINISH

Material
Sn plate

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■ ELECTRICAL CHARACTERISTICS

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Unbalanced Port Characteristic Impedance (ohm)		50		
Balanced Port Characteristic Impedance (ohm)		100		
Return Loss at Unbalanced Port (dB)	791 to 960	10	19.0	-
Phase Balance (deg.)	791 to 960	170	182	190
Amplitude Balance (dB)	791 to 960	-1.5	0.8	1.5
Insertion Loss (dB)	791 to 960	-	0.87	1.2

Ta = +25+/-5°C

■ MAXIMUM RATINGS

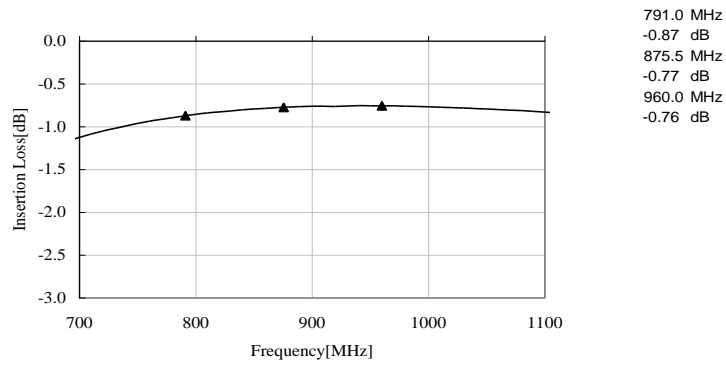
Parameter		TDK Spec	Conditions
Operating temperature (°C)		-40 to +85 °C	
Storage temperature (°C)		-40 to +85 °C	
Power Handling (W) *1	Frequency (MHz)		
	791 to 960	1	CW
Current Handling (mA)		300	
Human Body Model : HBM	@Each Port (V)	+/-1000	100pF / 1500ohm
Machine Model : MM	@Each Port (V)	+/-150	200pF / 0ohm
Charged Device Model : CDM	@Each Port (V)	+/-500	Humidity : 60%RH max

*1 : Refer to 3GPP TS 38.101-1 V15.2.0

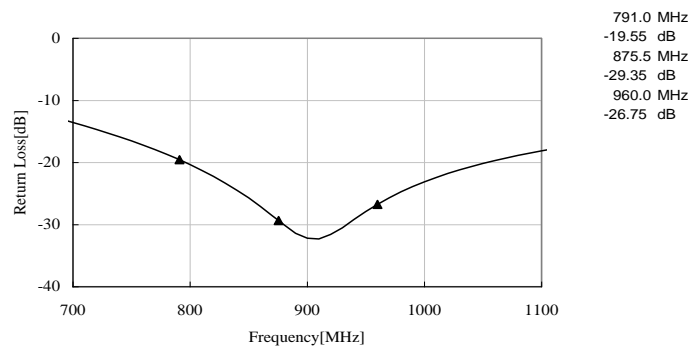
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FREQUENCY CHARACTERISTICS

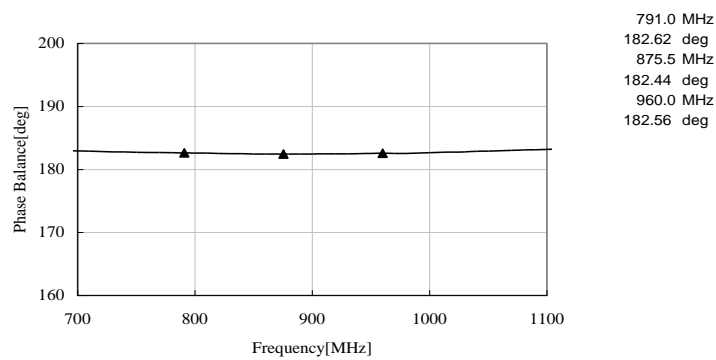
Insertion Loss



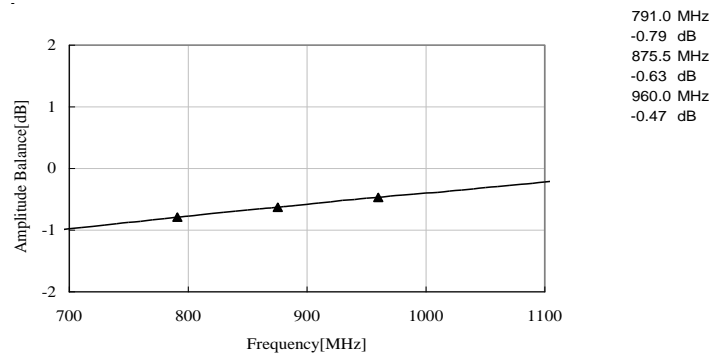
Return Loss



Phase Balance

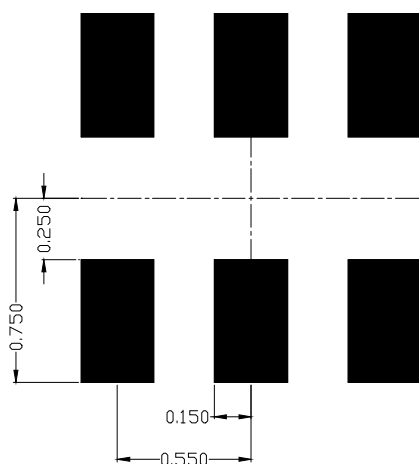


Amplitude Balance



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■ RECOMMENDED LAND PATTERN

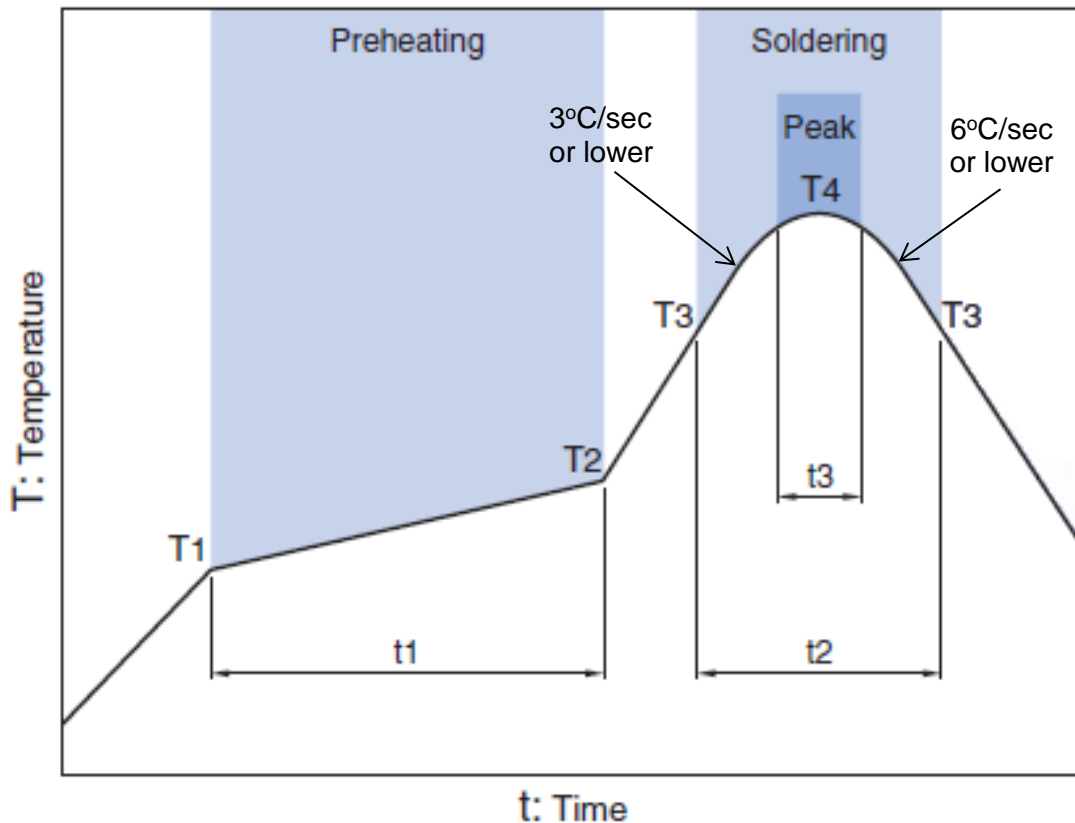


■ ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

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RECOMMENDED REFLOW PROFILE



Preheating			Soldering			
Temp.		Time	Critical zone (T3 to T4)		Peak	
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

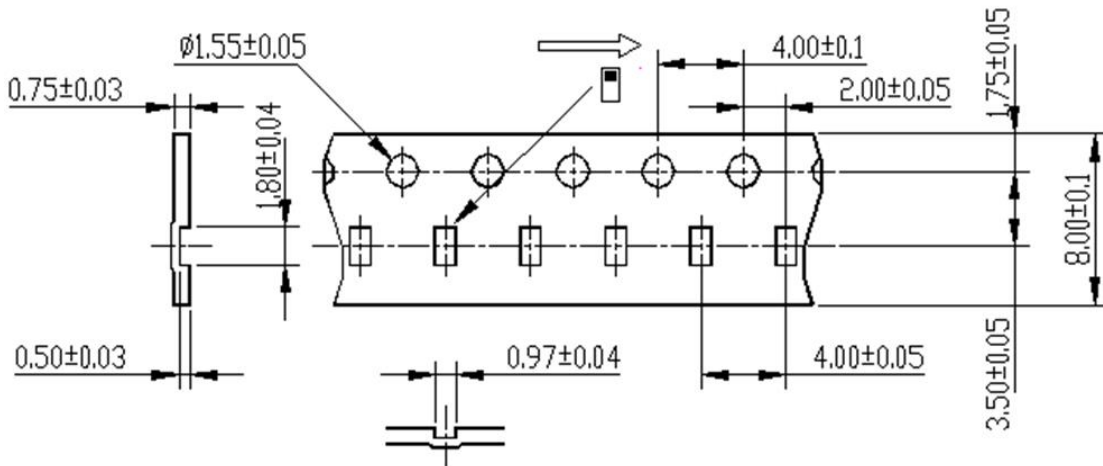
The maximum number of reflow is 3.

Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

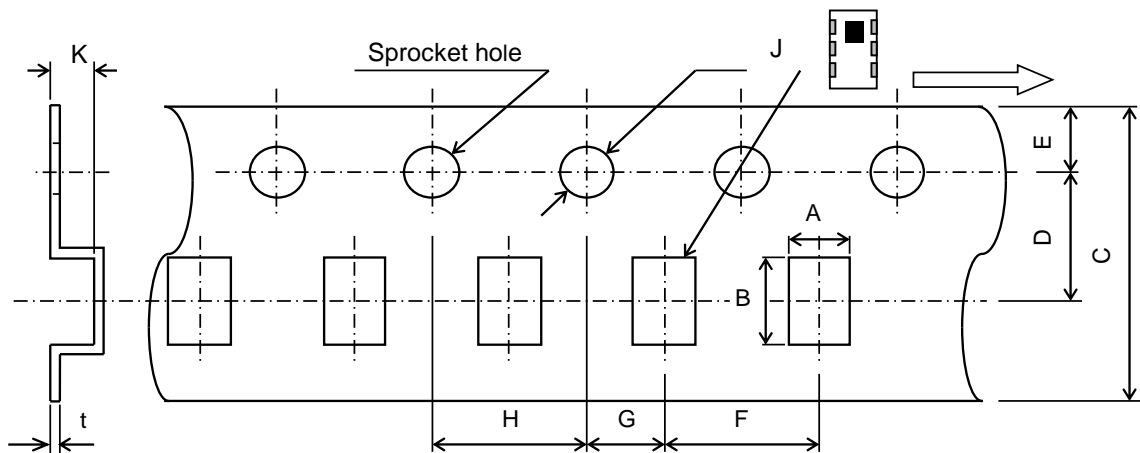
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PACKAGING STYLE

Carrier Tape 1 Material : Paper



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	0.55	0.25
+/-0.05	+/-0.05	+/-0.2	+/-0.05	+/-0.1	+/-0.1	+/-0.05	+/-0.1	+0.1/-0	MAX	+/-0.05

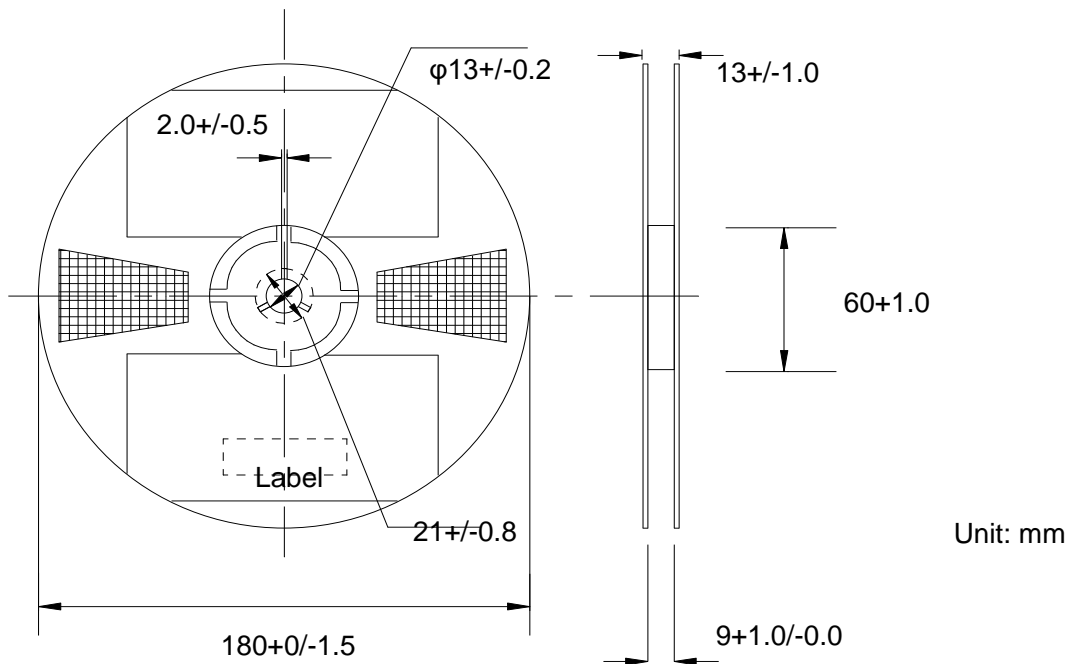
"Carrier tape 1" is currently adopted. "Carrier tape 2" will be running change after Feb.2016.

STANDARD PACKAGE QUANTITY (pieces/reel)
4,000

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■ PACKAGING STYLE

Reel Dimensions



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 catalog 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 catalog.

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

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.