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TDK Corporation

Multilayer Directional Coupler

HHM Series 1608mm TYPE [mm]

P/N: **HHM22152A2**

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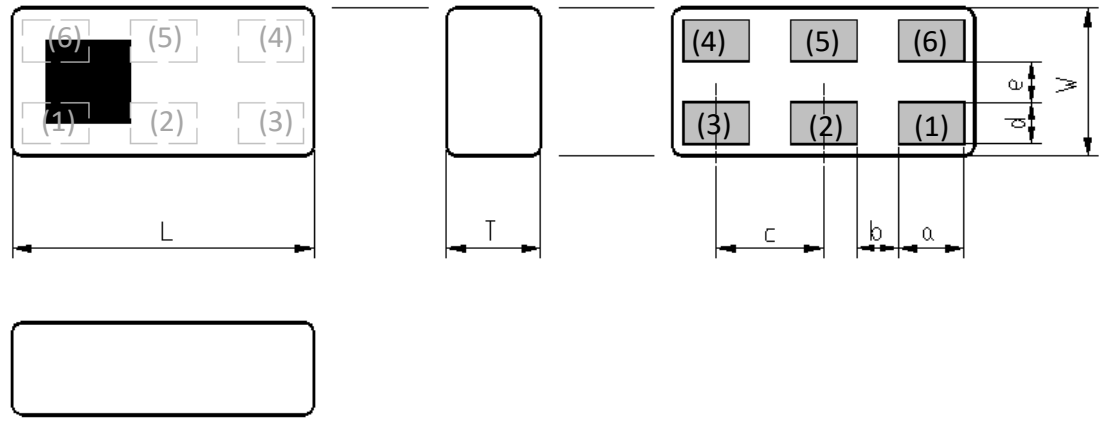
SHAPES AND DIMENSIONS

[Top View] [Bottom View]



Dimensions (mm)

L	W	T	a	b	c	d	e
1.60 +/-0.05	0.80 +/-0.05	0.60 +/-0.05	0.35 +/-0.05	0.22 +/-0.05	0.57 +/-0.05	0.225 +/-0.05	0.22 +/-0.05

Terminal functions

(1)	Input Port
(2)	GND
(3)	Output Port
(4)	50ohm Termination
(5)	GND
(6)	Coupling Port

TERMINATION FINISH

Material
Au plate

• All specifications are subject to change without notice.

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■ ELECTRICAL CHARACTERISTICS

(Measurement)

Parameter	Frequency (MHz)	TDK Spec.		
		Min.	Typ.	Max.
Coupling Factor (dB)	450 to 700	26.0	28.5	31.0
	700 to 2700	22.5	25.0	27.5
	3400 to 3800	22.3	23.4	24.5
Insertion Loss (dB)	450 to 2700	-	0.18	0.25
	3400 to 3800	-	0.32	0.40
Isolation (dB)	450 to 2700	45	51.5	-
	3400 to 3800	40	59.7	-
Return Loss(dB)	450 to 3800	10	15.0	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

Coupler Type

Daisy Chain Available	Yes
Bi-Directional	No

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■ MAXIMUM RATINGS

Parameter	TDK Spec		Conditions
	Min.	Max.	
Operating temperature (°C)	–40 to +85 °C		
Storage temperature (°C)	–40 to +85 °C		
Power Handling (W)	-	3	CW
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 : 51%RH max

Ambient temperature : +25+/-5°C

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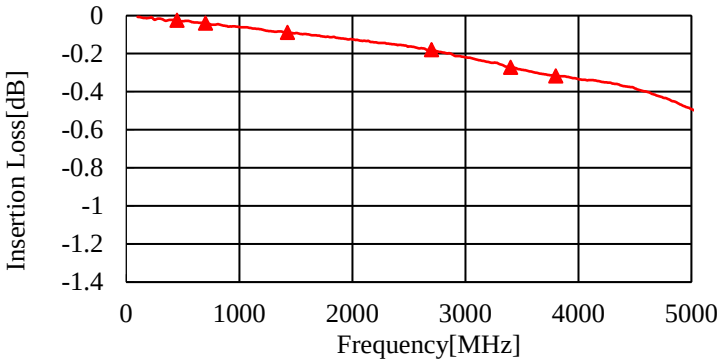
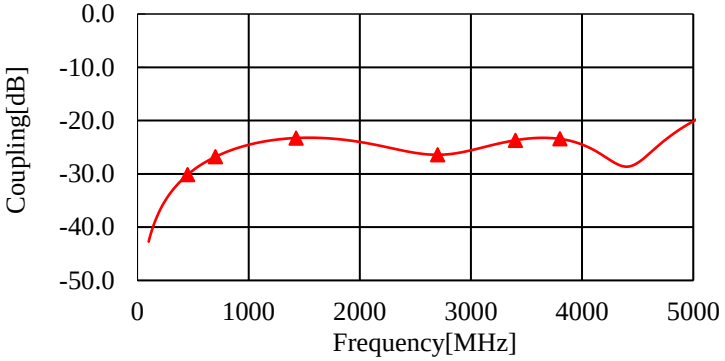
■ FREQUENCY CHARACTERISTICS

Insertion Loss



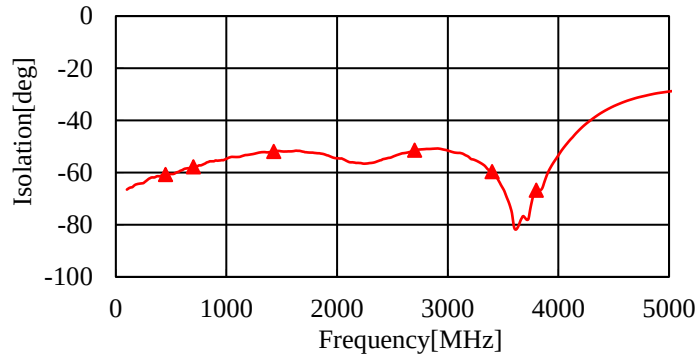
Frequency	
450 MHz	-0.02 dB
700 MHz	-0.04 dB
1427 MHz	-0.09 dB
2700 MHz	-0.18 dB
3400 MHz	-0.27 dB
3800 MHz	-0.32 dB

coupling



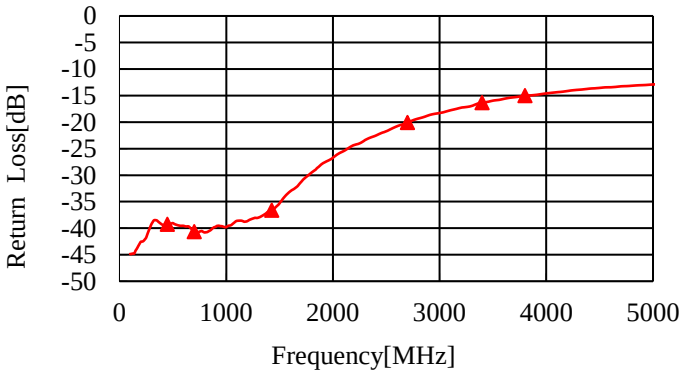
Frequency	
450 MHz	-30.2 dB
700 MHz	-26.8 dB
1427 MHz	-23.3 dB
2700 MHz	-26.4 dB
3400 MHz	-23.7 dB
3800 MHz	-23.4 dB

Isolation



Frequency	
450 MHz	-60.7 dB
700 MHz	-57.8 dB
1427 MHz	-51.9 dB
2700 MHz	-51.5 dB
3400 MHz	-59.7 dB
3800 MHz	-66.8 dB

Return Loss



Frequency	
450 MHz	-39.3 dB
700 MHz	-40.6 dB
1427 MHz	-36.6 dB
2700 MHz	-20.1 dB
3400 MHz	-16.3 dB
3800 MHz	-15.0 dB

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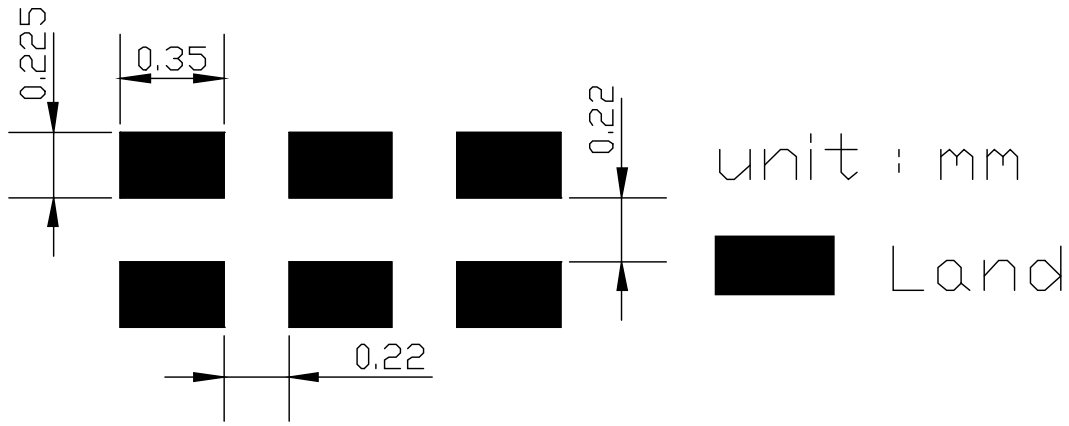
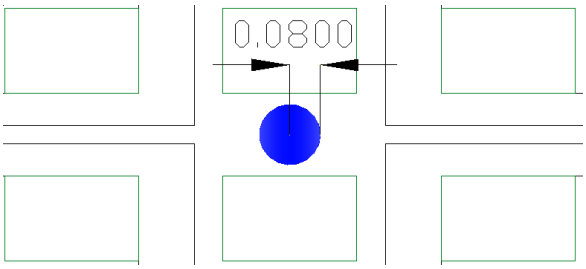
RECOMMENDED LAND PATTERN



Evaluation Board



* Line width be designed to match 50ohm characteristic impedance, depending on PCB material and thickness.

Through hole Land

ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

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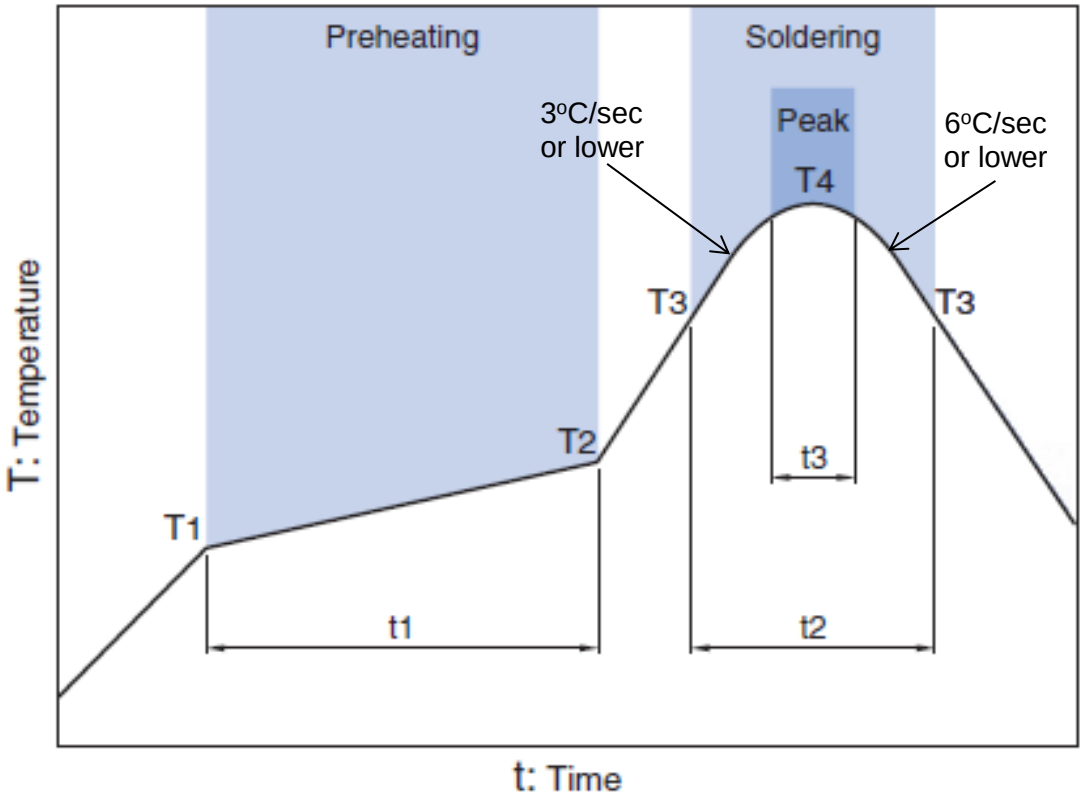
■ RECOMMENDED REFLOW PROFILE



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)

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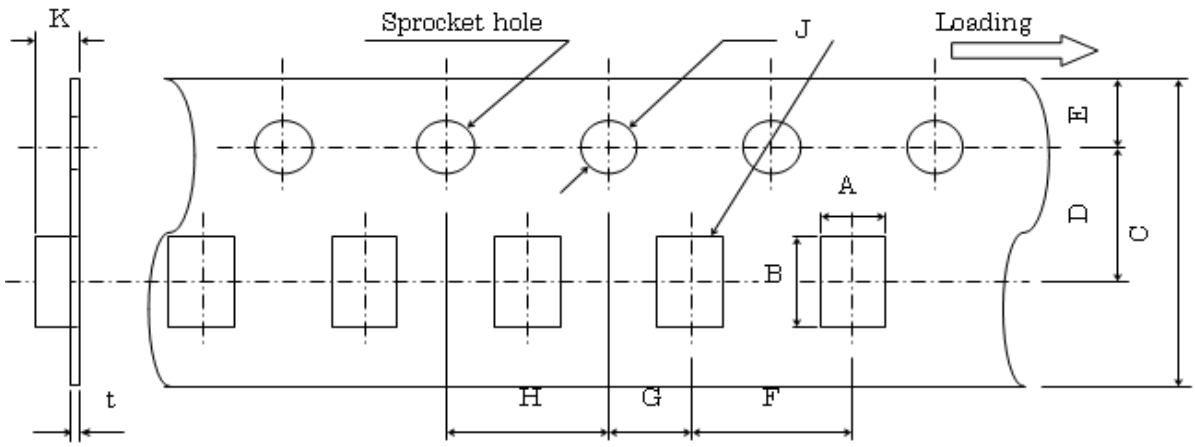
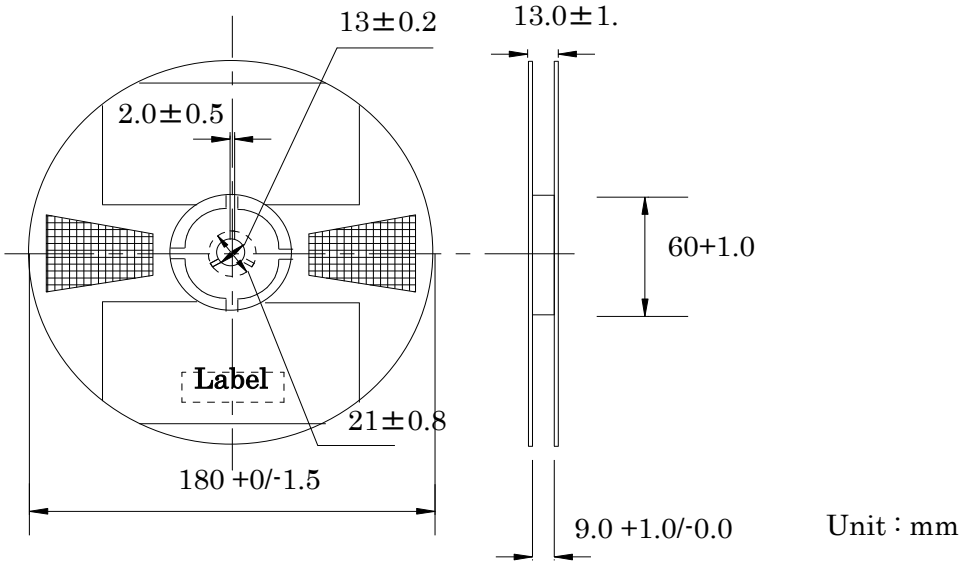


A	B	C	D	E	F	G	H	J	K	t
1.45 +/-0.1	2.25 +/-0.1	8.0 +/-0.2	3.5 +/-0.05	1.75 +/-0.1	4.0 +/-0.1	2.0 +/-0.05	4.0 +/-0.1	1.55 +/-0.05	0.8 MAX	0.25 +/-0.05



4000pcs./reel

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.

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