

Approved by:

Checked by:

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SPECIFICATION

PRODUCT: SAW FILTER

MODEL: HDF418MS3

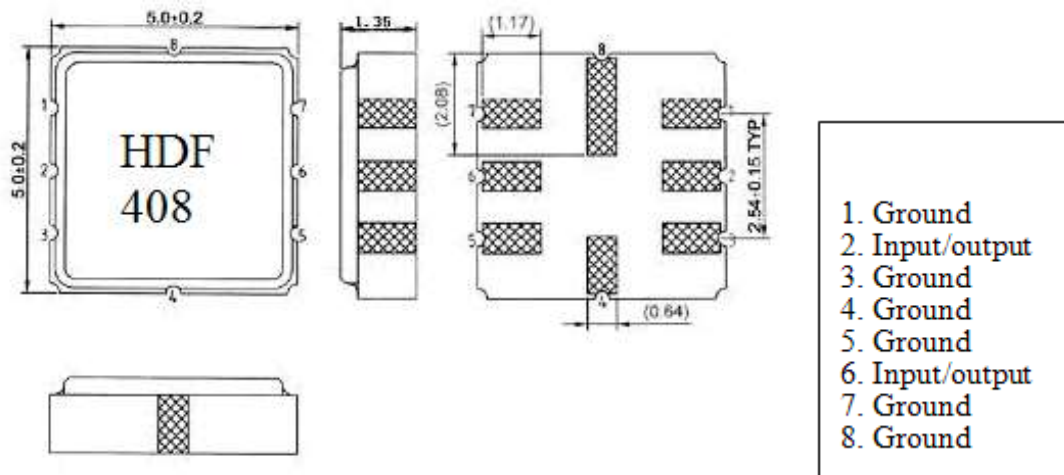
MARKING: HDF408



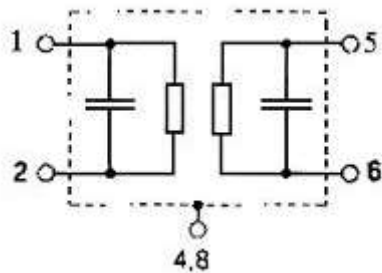
SHOULDER ELECTRONICS LIMITED

1.Package

Ceramic package QCC8C



Dimensions in mm, appr. weight 0.1g



2. Performance

2.1 Absolute Maximum Ratings

Rating	Value	Units
Incident RF Power	+13	dBm
Case Temperature	-40 to +85	°C
DC Voltage Between Any Two Pins (Observe ESD Precautions)	±30	VDC

2.2 Electrical Characteristics

Reference temperature: $T_A = 25^\circ\text{C}$

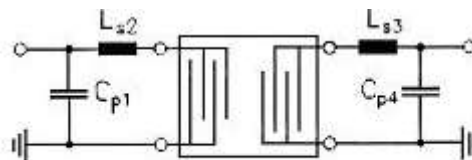
Terminating source impedance: $Z_S = 50\ \Omega$ and matching network

Terminating load impedance: $Z_L = 50\ \Omega$ and matching network

Characteristic		Min.	Typ.		
Center Frequency f_c (center frequency between 3dB points)		--	418.00	--	MHz
Insertion Loss IL		--	3.0	5.5	dB
3dB Passband BW_3			± 300		kHz
3 dB Reject Band BW_3				± 500	kHz
Rejection	at $f_c-21.4\text{MHz}$ (Image)	40	50	--	dB
	at $f_c-10.7\text{MHz}$ (LO)	15	30	--	
	Ultimate	--	80	--	
Temperature	Operating Case Temperature T_c	-35		+85	$^\circ\text{C}$
	Turnover Temperature T_o	15	25	40	
	Turnover Frequency f_o		f_c		MHz
	Frequency Temperature Coefficient FTC		0.032		ppm/ $^\circ\text{C}$
Frequency Aging Absolute Value during the First Year $\Delta f/f$			10		ppm/yr

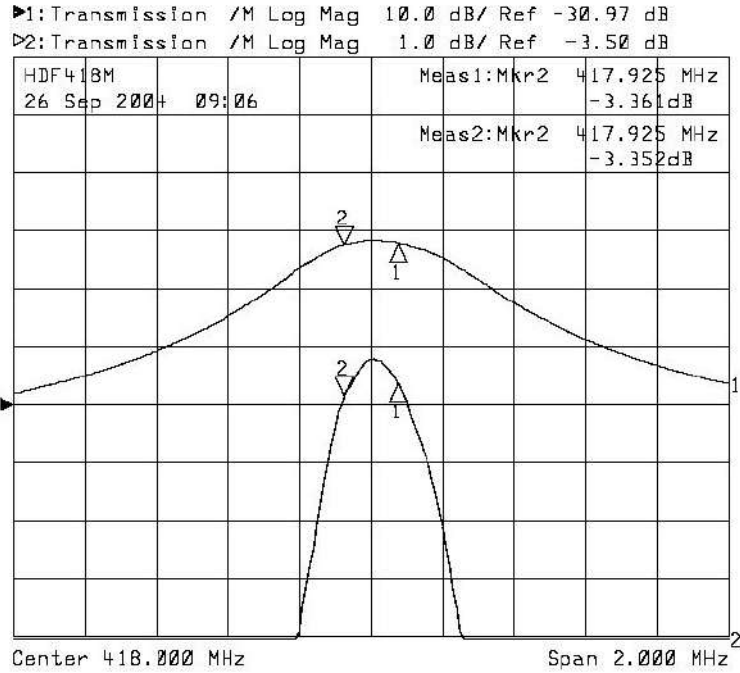
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!

3. Matching network to $50\ \Omega$ (element values depend on pcb layout and equivalent circuit)



$C_{p1} = 10\text{pF}$, $L_{s2} = 51\text{nH}^*$, $L_{s3} = 51\text{nH}^*$, $C_{p4} = 10\text{pF}$

Typical Frequency Response



4. ENVIRONMENTAL CHARACTERISTICS

4-1 Temperature cycling

Subject the device to a low temperature of -40°C for 30 minutes. Following by a high temperature of $+25^{\circ}\text{C}$ for 5 Minutes and a higher temperature of $+85^{\circ}\text{C}$ for 30 Minutes. Then release the device into the room conditions for 1 to 2 hours prior to the measurement. It shall meet the specifications in table 1.

4-2 Resistance to solder heat

Submerge the device terminals into the solder bath at $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10 ± 1 sec. Then release the device into the room conditions for 4 hours. It shall meet the specifications in table 1.

4-3 Solderability

Submerge the device terminals into the solder bath at $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 5s, More than 95% area of the soldering pad must be covered with new solder. It shall meet the specifications in table 1.

4-4 Mechanical shock

Drop the device randomly onto the concrete floor from the height of 1 m 3 times. the filter shall fulfill the specifications in table 1.

4-5 Vibration

Subject the device to the vibration for 2 hour each in x,y and z axes with the amplitude of 1.5 mm at 10 to 55 hz. The filter shall fulfill the specifications in table 1.

5. REMARK

5.1 Static voltage

Static voltage between signal load & ground may cause deterioration & destruction of the component. Please avoid static voltage.

5.2 Ultrasonic cleaning

Ultrasonic vibration may cause deterioration & destruction of the component. Please avoid ultrasonic cleaning

5.3 Soldering

Only leads of component may be soldered. Please avoid soldering another part of component.

7. Packing

7.1 Dimensions

(1) Carrier Tape: Figure 1

(2) Reel: Figure 2

(3) The product shall be packed properly not to be damaged during transportation and storage.

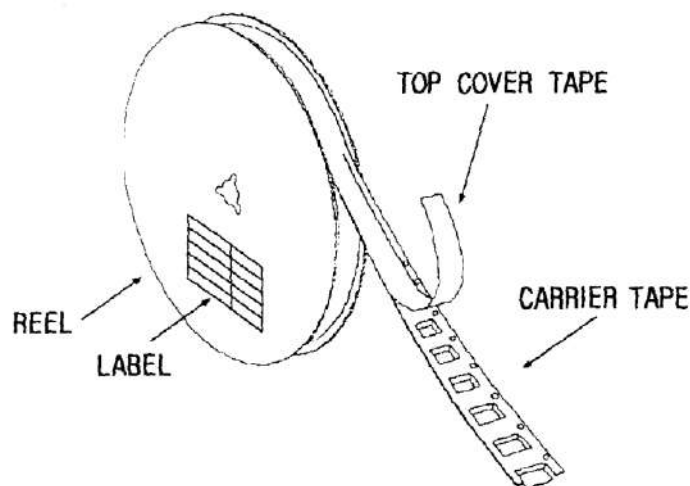
7.2 Reeling Quantity

1000 pcs/reel 7"

3000 pcs/reel 13"

7.3 Taping Structure

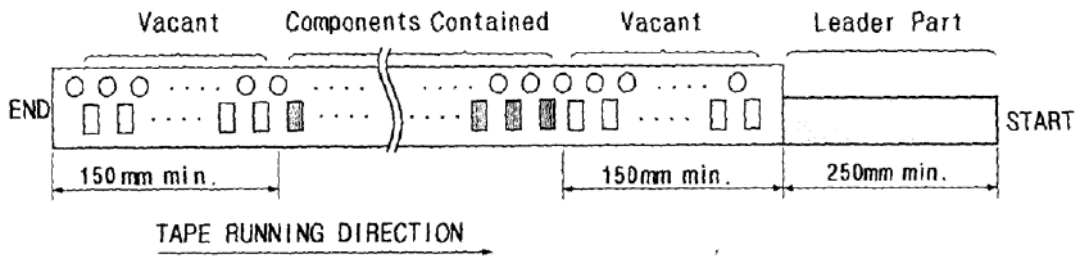
(1) The tape shall be wound around the reel in the direction shown below.



(2) Label

Device Name	
User Product Name	
Quantity	
Lot No.	

(3) Leader part and vacant position specifications.

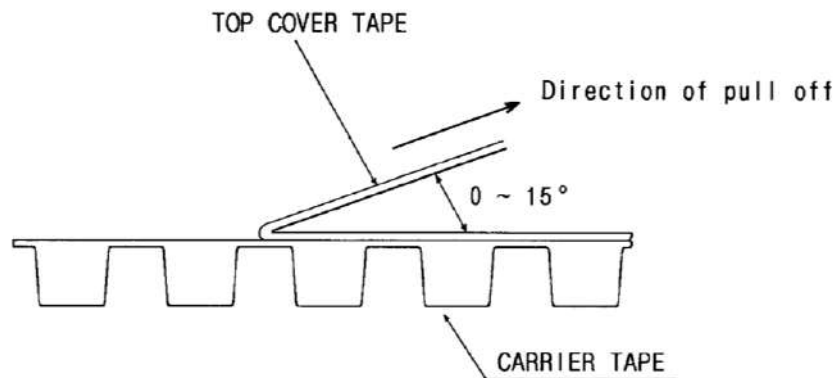


8. TAPE SPECIFICATIONS

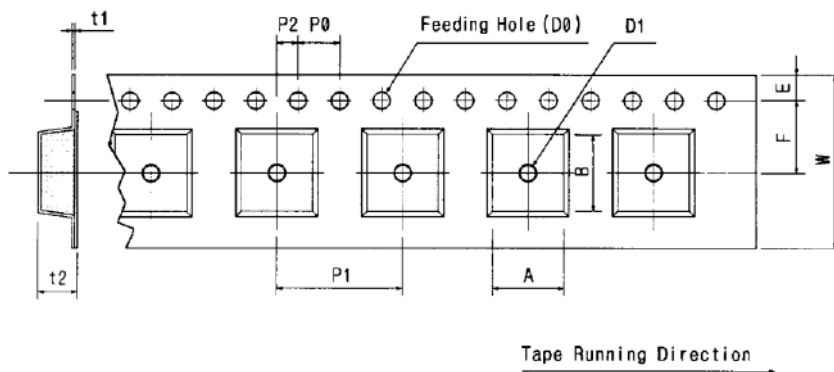
8.1 Tensile Strength of Carrier Tape: 4.4N/mm width

8.2 Top Cover Tape Adhesion (See the below figure)

- (1) pull off angle: 0~15°
- (2) speed: 300mm/min.
- (3) force: 20~70g



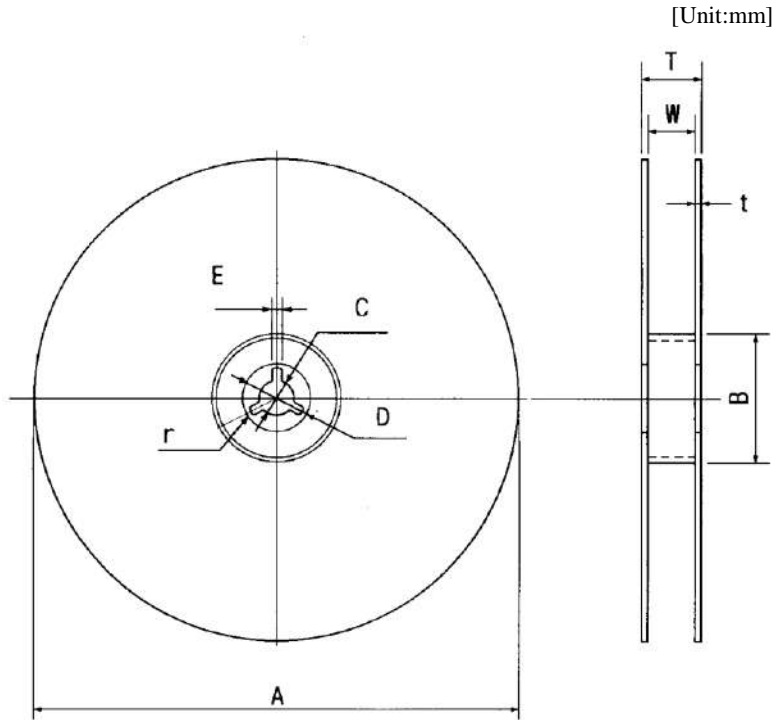
[Figure 1] Carrier Tape Dimensions



[Unit:mm]

W	F	E	P0	P1	P2	D0	D1	t1	t2	A	B
12.0± 0.3	5.5 ±0.05	1.75± 0.1	4.0 ±0.1	8.0 ±0.1	2.0 ±0.05	∅1.5± 0.1	∅1.0 ±0.25	0.3 ±0.05	2.10± 0.1	6.40± 0.1	5.20± 0.1

[Figure 2]



A	B	C	D	E	W	t	r
∅330 ±1.0	∅100 ±0.5	∅13 ±0.5	∅21 ±0.8	2 ±0.5	13 ±0.3	3 max.	1.0 max.