OKI Semiconductor

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MBF9045BC

SAW Antenna Duplexer (700 to 1000 MHz)

GENERAL DESCRIPTION

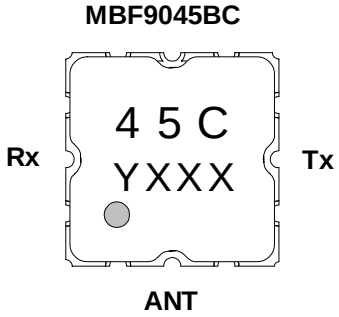
The MBF9045BC is the SAW antenna duplexer for the frequency range of 700 to 1000 MHz.
This SAW Duplexer integrates RF filters at Tx and Rx side, and matching circuit into PKG. This helps to save the space and weight greatly in the target application such as mobile telephone.
This SAW Duplexer has very low insertion loss by using high quality package.
Due to high harmonics characteristics, total number of components at RF circuit can be minimized.
Thanks to high isolation performance, high sensitivity can be expected. Low insertion loss at Tx saves the power consumption of mobile telephone which prolong the battery life.

FEATURES

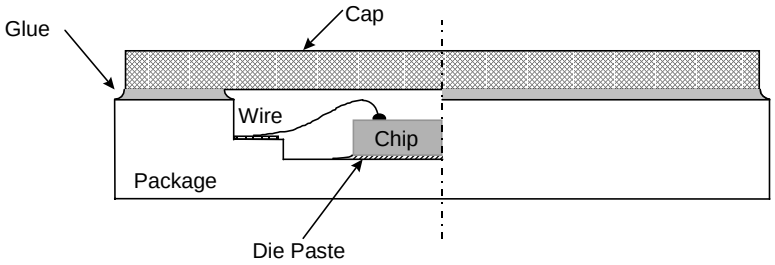
- Complying Standard AMPS, IS-95, IS-136
- Small package: 5mm x 5mm & less than 1.8 mm in height
- PKG I/O Impedance: 50 Ω

PRODUCT DESCRIPTION

Package Type

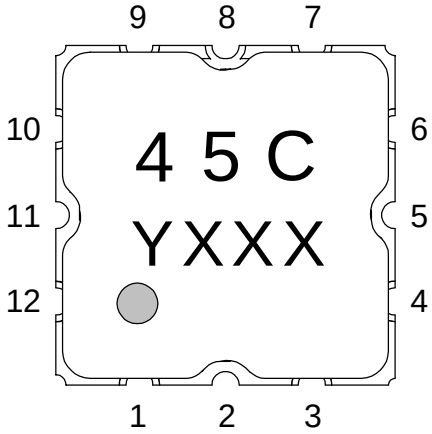


Construction

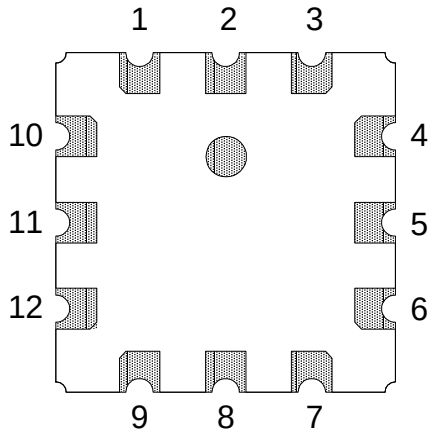


Cross-section of MBF9045BC

PIN ASSIGNMENT & DESCRIPTION



Top view



Bottom view

CONNECTION
2: ANT (Antenna Pin)
5: Tx (Transmitting Terminal Pin)
11: Rx (Receiving Terminal Pin)
13: INDEX Mark (should not be soldered)
Others: GND (Ground Pin)

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating		Unit
		Min.	Max.	
Operating Temperature	Ta	–30	+85	°C
Storage Temperature	T_{STG}	–40	+85	°C
Maximum Input Power	P_{IN}	—	1.2	W

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Rating		Unit
		Min.	Max.	
Operating Temperature	Ta	–30	+85	°C

ELECTRICAL CHARACTERISTICS

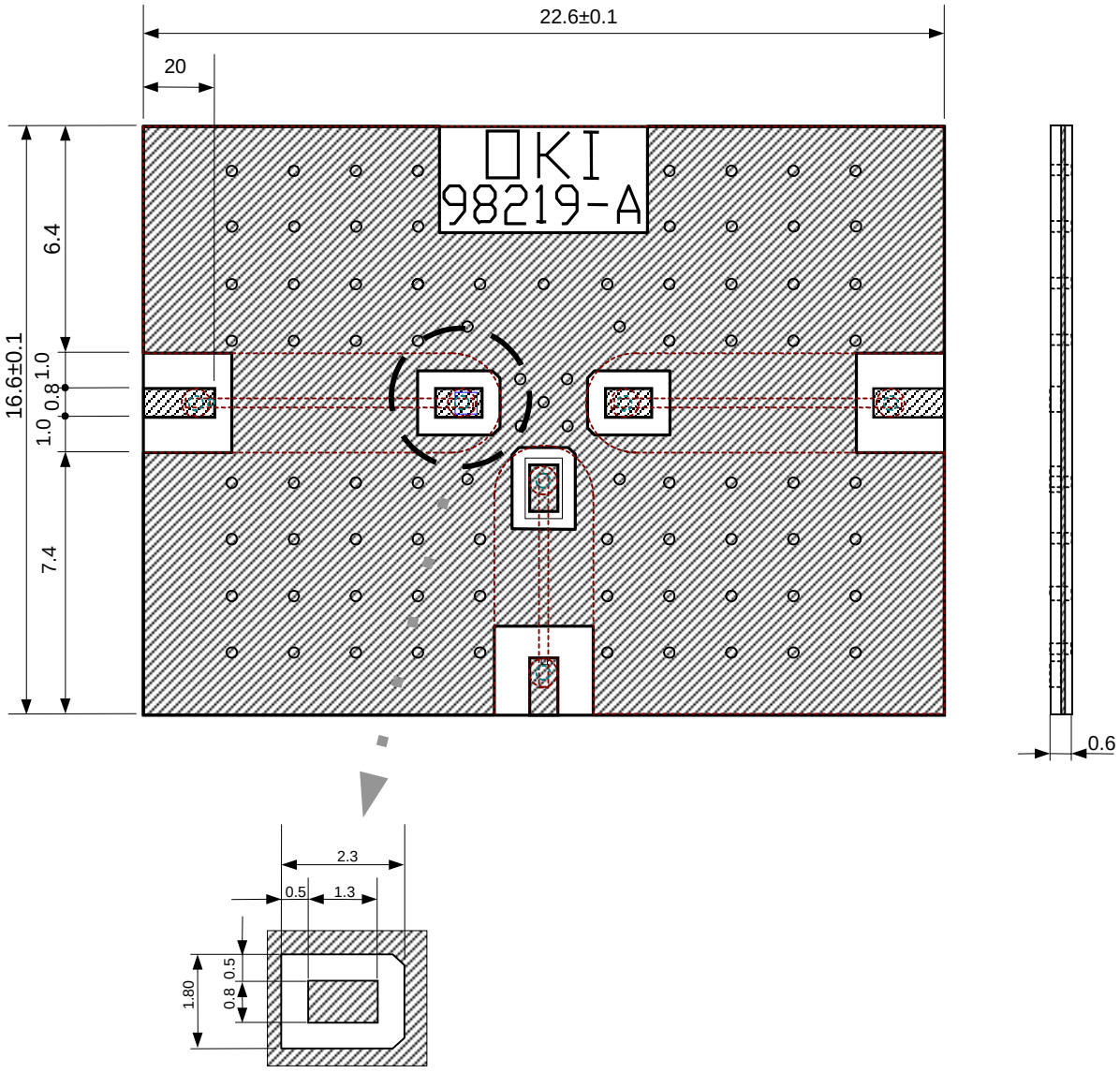
(Ta = –30 to +85°C)

Parameter		Condition	Mini.	Typ.	Max.	Unit/Notes
Tx → Antenna						
a)	Insertion loss	824 to 849 MHz	—	2.0	2.5	dB
b)	Passband ripple	824 to 849 MHz	—	0.7	1.5	dB
c)	VSWR	824 to 849 MHz	—	1.7	2.0	
d)	Absolute attenuation	869 to 894 MHz	40	45	—	dB
		1648 to 1698 MHz	10	16	—	dB
Antenna → Rx						
a)	Insertion loss	869 to 894 MHz	—	3.4	3.8	dB
b)	Passband ripple	869 to 894 MHz	—	1.0	2.0	dB
c)	VSWR	869 to 894 MHz	—	2.1	2.5	
d)	Absolute attenuation	779 to 804 MHz	30	—	—	dB
		824 to 849 MHz	50	53	—	dB
		979 to 1004 MHz	30	—	—	dB
		1088 to 1113 MHz	30	—	—	dB
		1648 to 1698 MHz	30	—	—	dB
		2472 to 2547 MHz	20	—	—	dB
Isolation TX → RX						
a)	Absolute attenuation	824 to 849 MHz	53	57	—	dB
		869 to 894 MHz	46	49	—	dB
Input Power						
a)	Average power	—	—	—	1.2	W

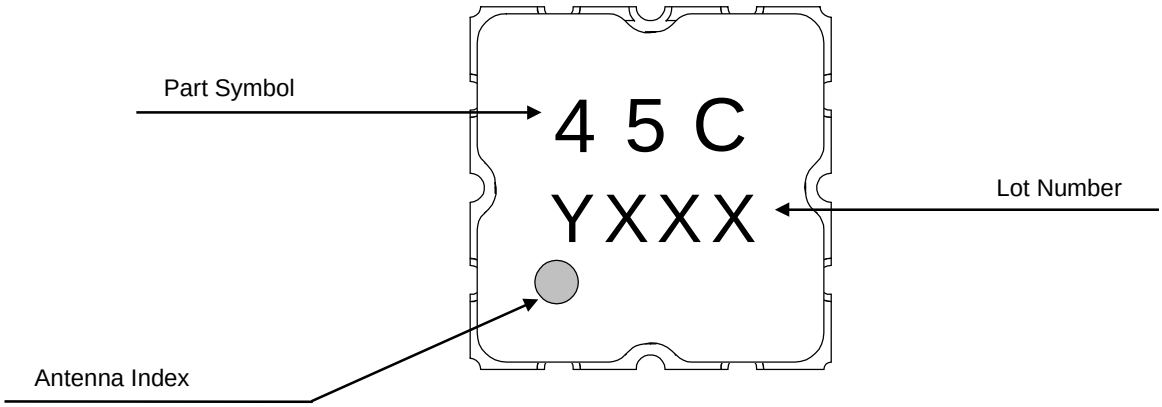
Note: Electrical characteristics described above is guaranteed by the following measurement and equipment condition.

1) Test board: See next page
2) Network analyzer: ADVANTEST R3767CH with 3 port test adapter (R3966K)
   or R3767CG

Test Board



MARKING

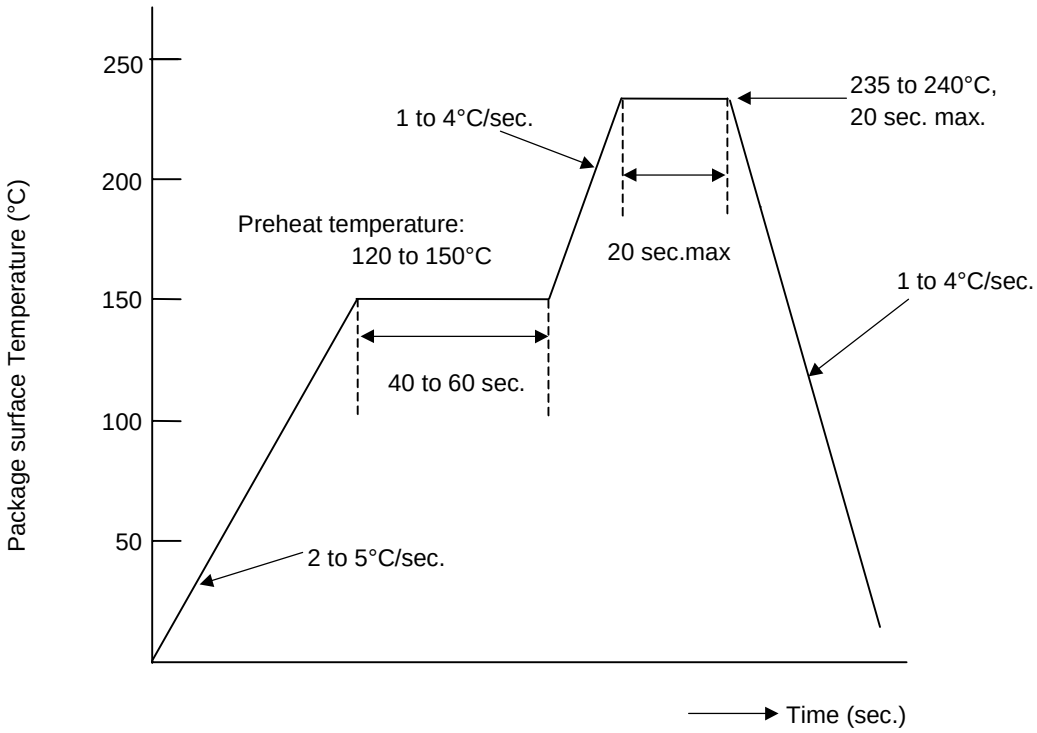


Note)
Lot Number
Y: Last number of year
XXX: Serial number

REFLOW TEMPERATURE PROFILE

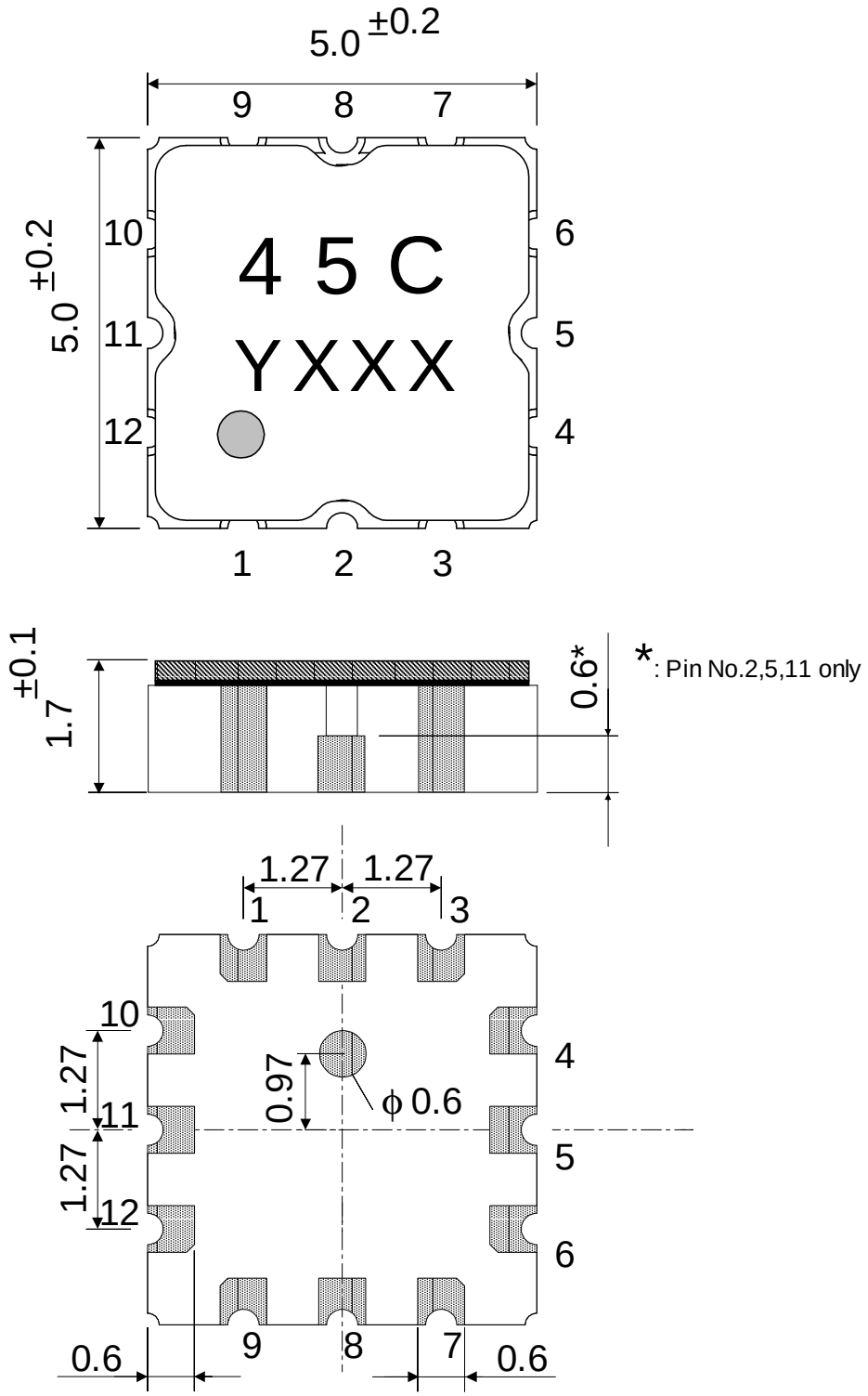
The figure below shows recommended temperature profile of infrared reflow and air reflow. Other type of reflow is not recommended.

The maximum reflow count is 2 times. Washing of this device after reflow process is prohibited.



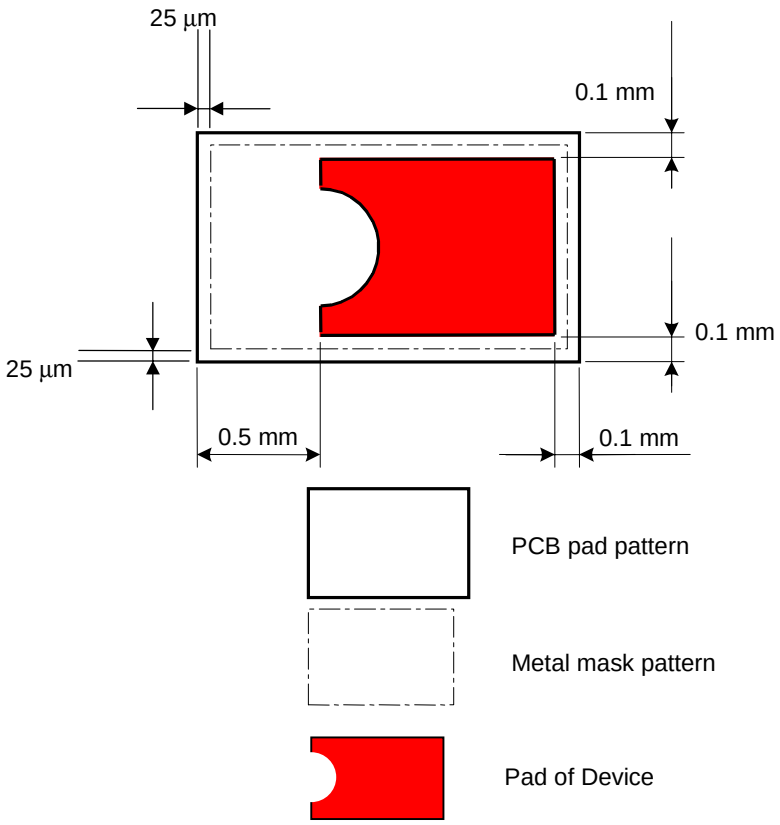
PACKAGE DIMENTION

Unit: mm
General tolerance: ±0.15



RECOMMENDATION FOR SOLDER PAD PATTERN

The solder pad pattern should be designed by customers because it depends on the electrical performance of the customers' system. Following is an example of solder pad pattern which is used in OKI's package evaluation board. Please be noted that this is for reference purpose only.



Please pay attention to the following items to maintain electrical performance.

(1) Metal mask pattern for cream solder should be 25 µm smaller on each side. Metal mask is 0.15 mm in thickness.
(2) As the impedance of Tx, Rx, ANT is designed for 50Ω, please consider this for the design of mother board.

NOTICE

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.

2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.

3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.

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