

SM1109-5

**MAXIMUM RATING:**

- Maximum Input Power Level: 15 dBm (In passband)
- DC Voltage: +/-5 V
- Operating Temperature: -30 °C to +85 °C
- Storage Temperature Range: -40 °C to +100 °C
- Moisture Sensitivity Level: Level 1 (MSL 1)
- ESD: 50 V(MM), 100 V(HBM)

**ELECTRICAL CHARACTERISTICS:**

Terminating source impedance:  $Z_s = 50 \Omega$  (Single-ended)

Terminating load impedance:  $Z_L = 50 \Omega$  (Single-ended)

Parameters Description		Unit	Min.	Typ.	Max.	
<b>Center Frequency</b>		<b>Fc</b>	MHz	-	1582.47	-
<b>Insertion Loss</b>	1574.42 ~ 1576.42 MHz	dB(*1)	-	1.2	1.7	
	1597.55 ~ 1605.89 MHz	dB(*1)	-	1.8	2.5	
	1559.05 ~ 1563.14 MHz	dB(*1)	-	1.7	2.5	
<b>Amplitude Ripple</b>	1574.42 ~ 1576.42 MHz	dB	-	0.1	0.8	
	1597.55 ~ 1605.89 MHz	dB	-	0.55	1.4	
	1559.05 ~ 1563.14 MHz	dB	-	0.2	1.2	
<b>Group Delay Ripple</b>	1574.42 ~ 1576.42 MHz	ns	-	1.0	6.0	
	1597.55 ~ 1605.89 MHz	ns	-	4.0	12.5	
	1559.05 ~ 1563.14 MHz	ns	-	5.0	16.0	
<b>VSWR</b>	1574.42 ~ 1576.42 MHz	-	-	1.5	2.1	
	1597.55 ~ 1605.89 MHz	-	-	1.4	2.0	
	1559.05 ~ 1563.14 MHz	-	-	1.5	2.0	
<b>Attenuation</b> (Reference level from 0 dB)						



**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

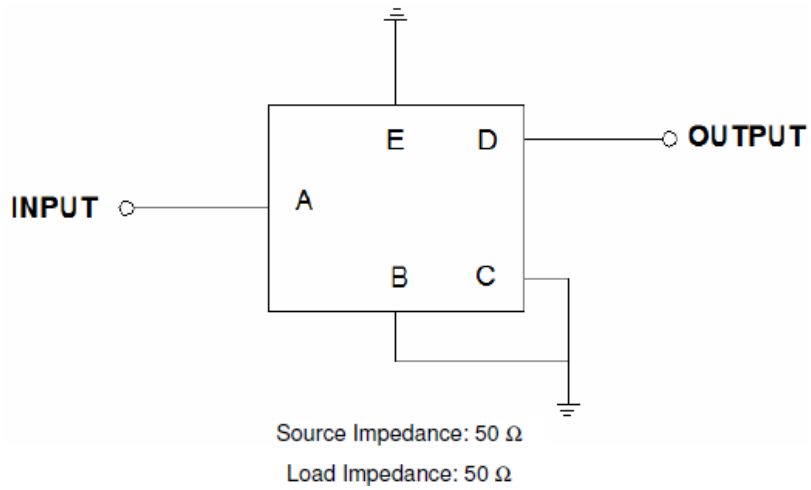
**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

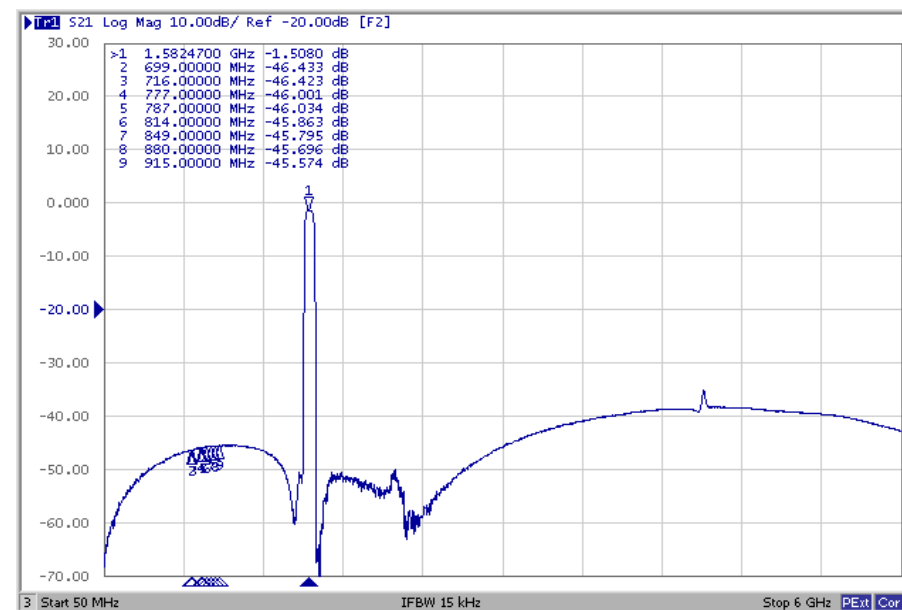
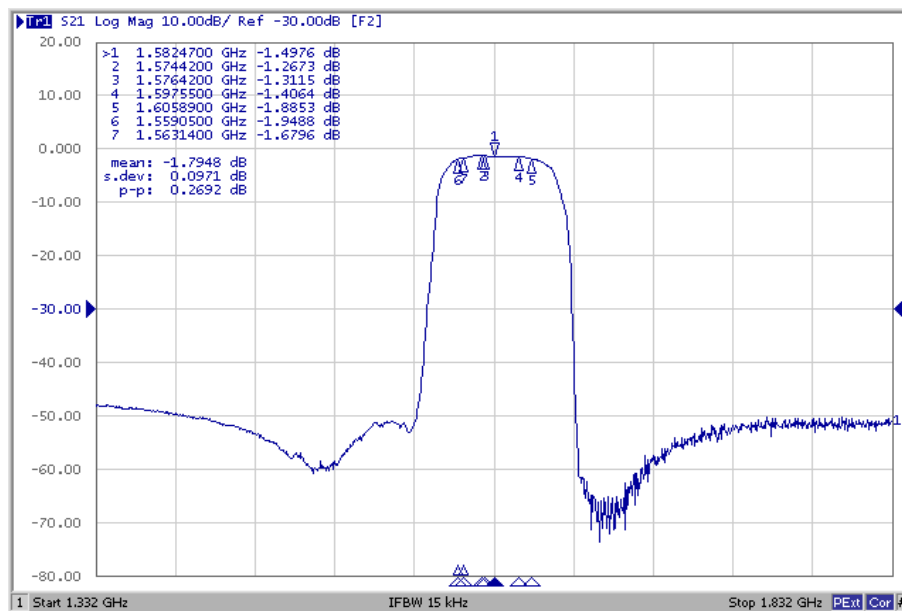
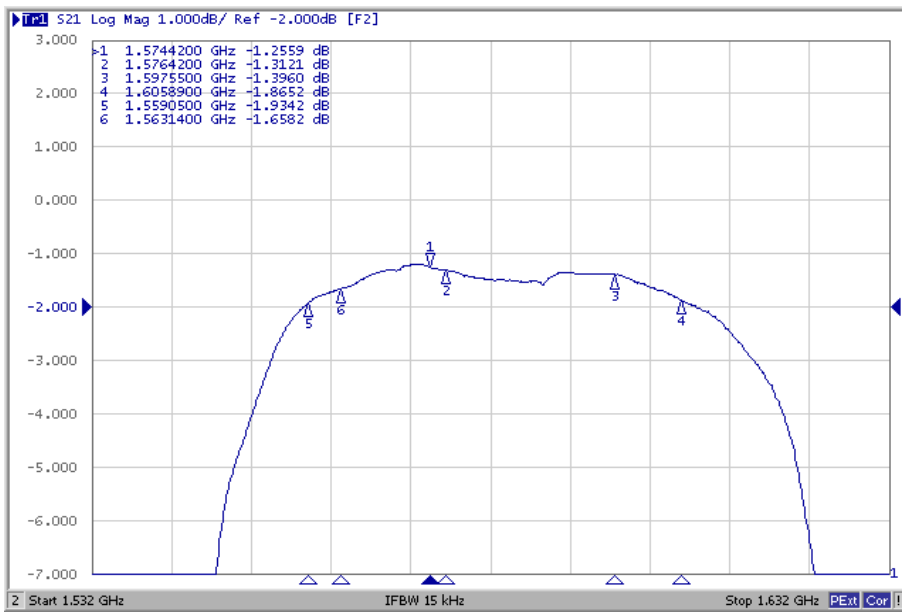
699 ~ 716 MHz	dB	43	47	-
777 ~ 787 MHz	dB	45	46.5	-
814 ~ 849 MHz	dB	45	46.5	-
880 ~ 915 MHz	dB	45	46.5	-
1427.9 ~ 1446.9 MHz	dB	45	53	-
1447.9 ~ 1462.9 MHz	dB	45	54	-
1710 ~ 1785 MHz	dB	47	54	-
1850 ~ 1915 MHz	dB	47	54	-
1920 ~ 1980 MHz	dB	47	54	-
2400 ~ 2500 MHz	dB	45	50	-
2500 ~ 2570 MHz	dB	45	50	-

(\*1) Specification of insertion loss excludes loss that comes from the test board.

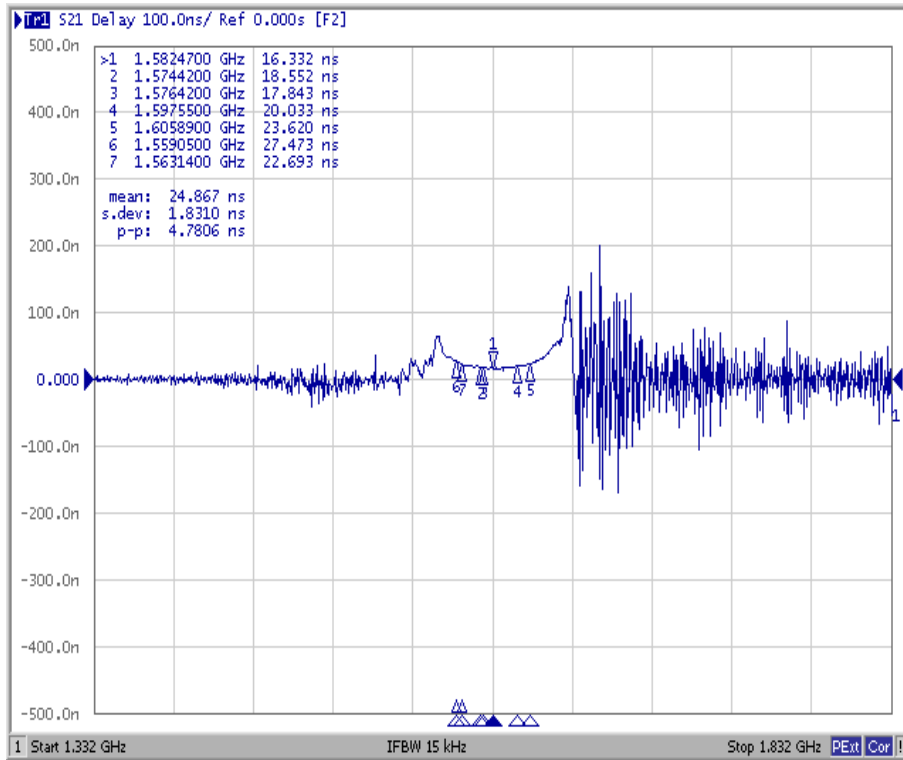
**MEASUREMENT CIRCUIT:**



# FREQUENCY CHARACTERISTICS:

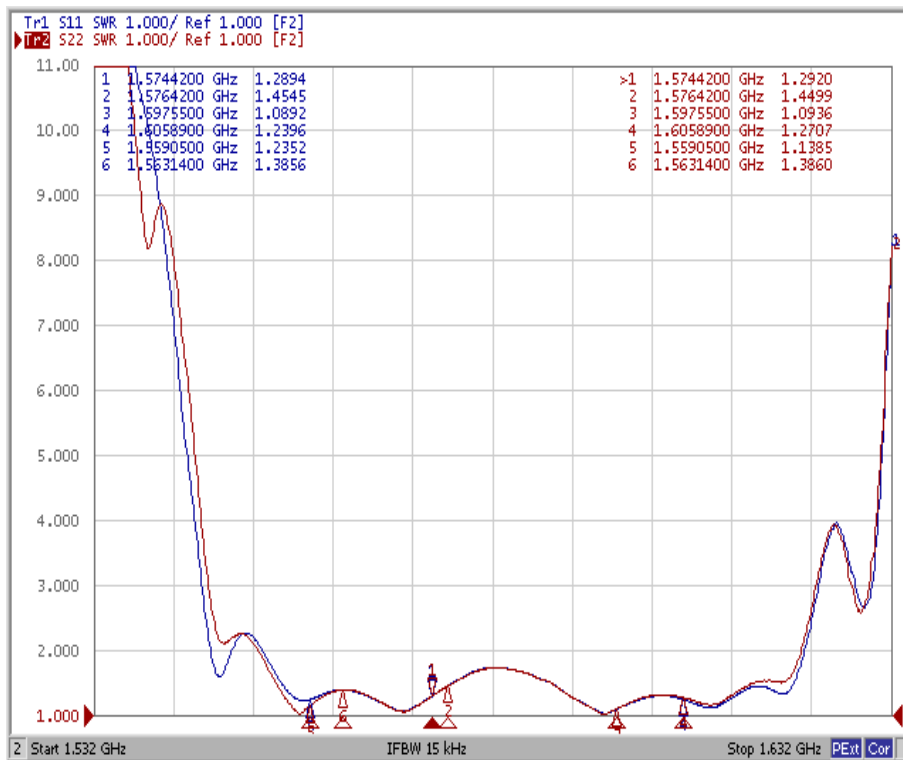


## Group Delay Ripple

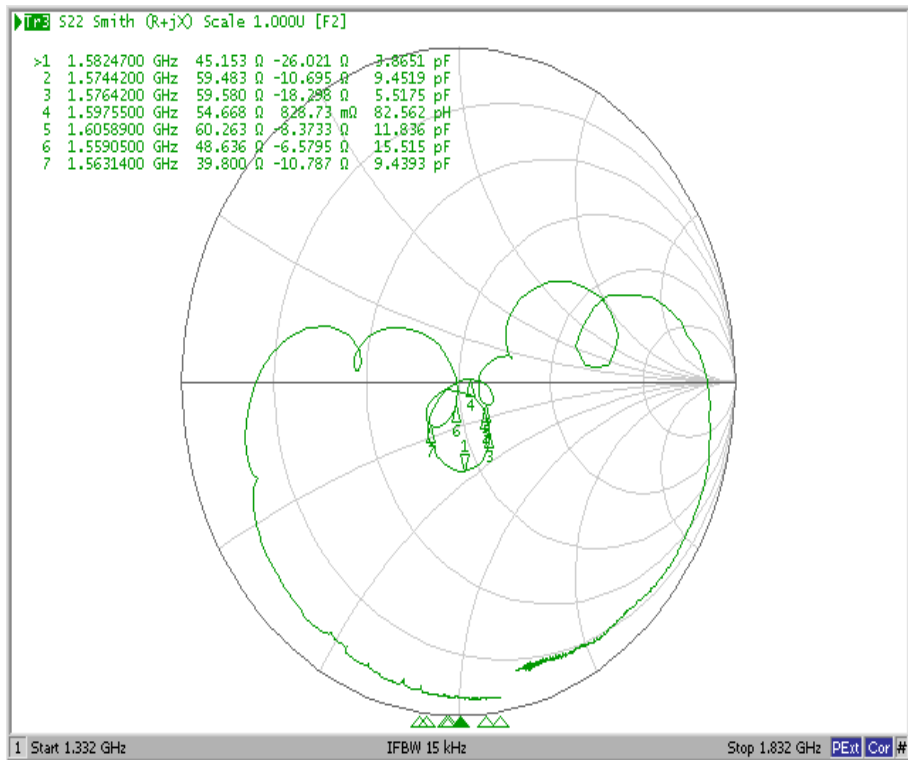
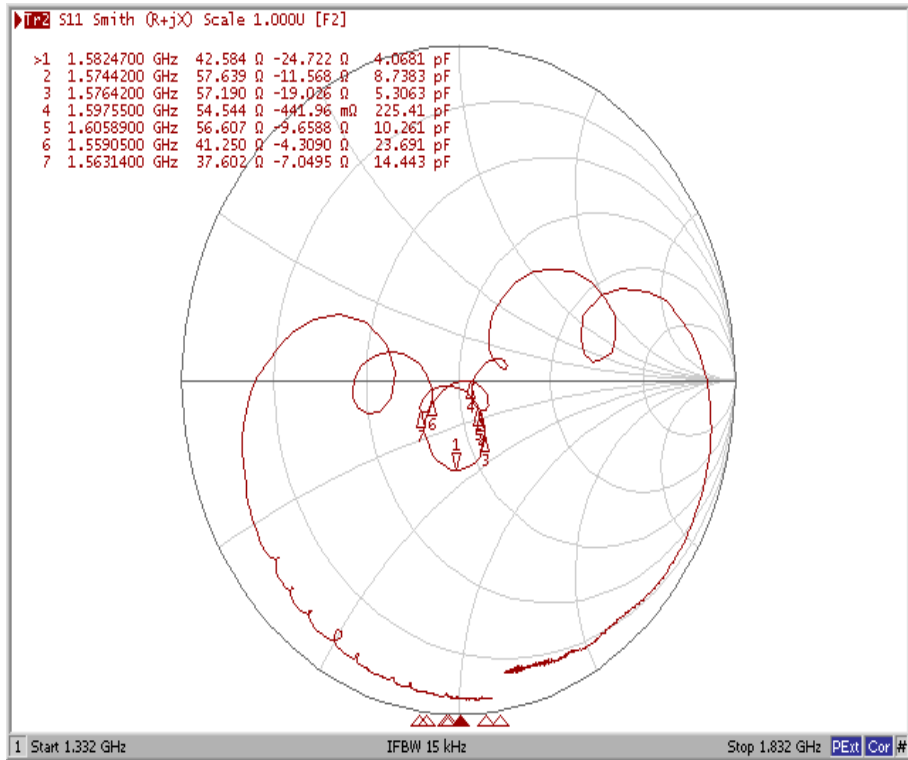


## Reflection Functions:

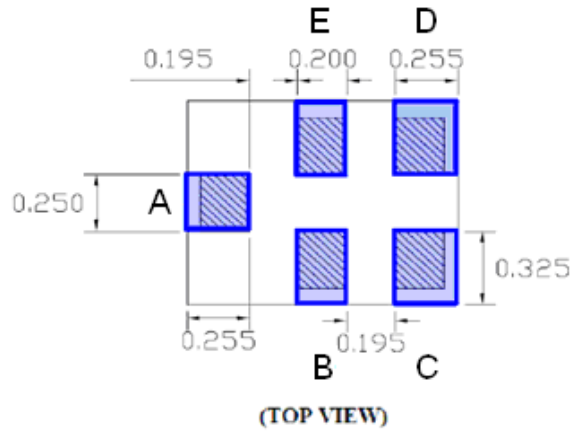
### VSWR



## Smith Chart

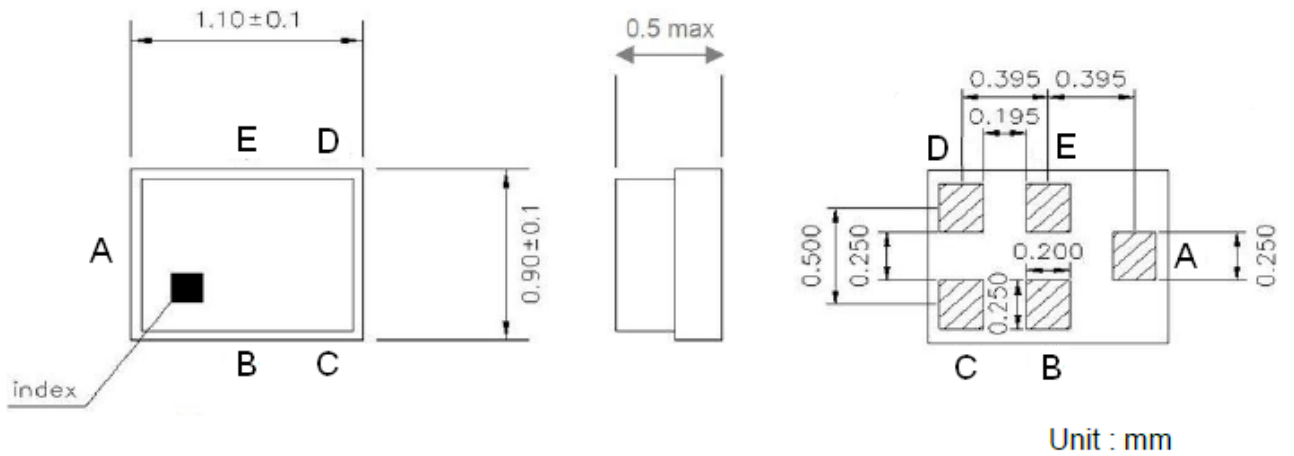


**PCB Footprint:**



**OUTLINE DRAWING:**

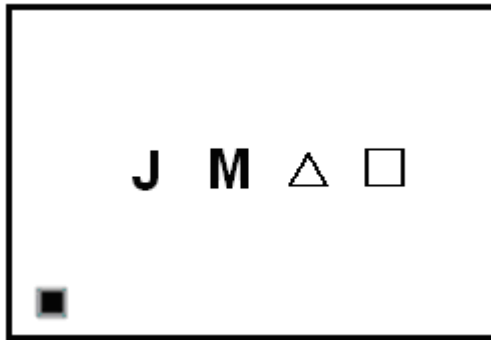
Device size: 1.1typ. x 0.9typ. x 0.5max.



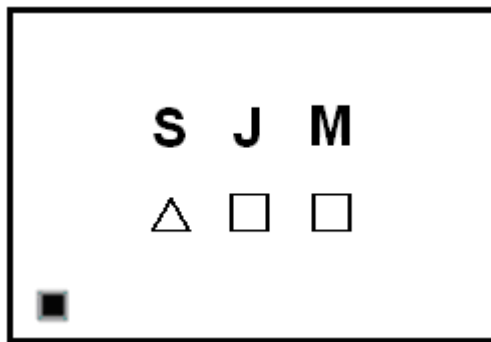
**Pin Configuration**

Pin No.	Symbol	Function
A	IN	Unbalanced input
B	GND	Ground
C	GND	Ground
D	OUT	Unbalanced output
E	GND	Ground

**Top View (Sample Production):**



**Top View (Mass Production):**



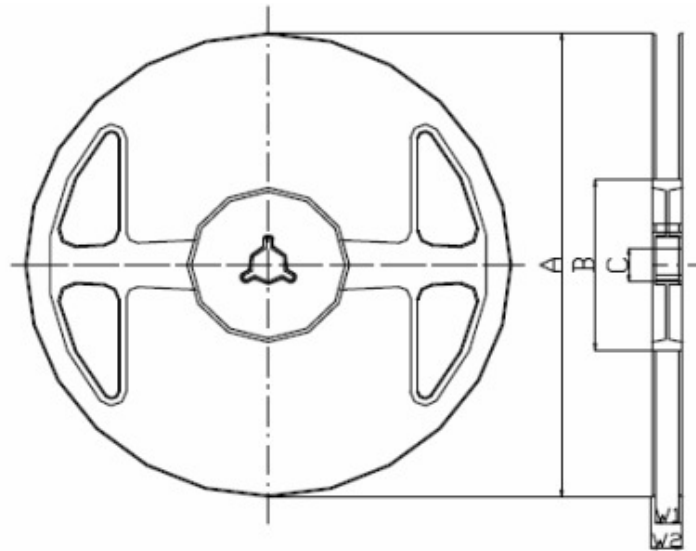
△ : Date Code

□ : Lot No. (Indicated by 0~9 or A to Z and a to z, except I, O, i, o and l)

**Date Code:**

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2020	n	p	q	r	s	t	u	v	w	x	y	z
2021	A	B	C	Đ	E	F	G	H	J	K	L	M
2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2023	a	b	c	d	e	f	g	h	j	k	l	m

**PACKING:  
REEL DIMENSION**



**Materials of Reel**

Material : Polystyrene + Carbon

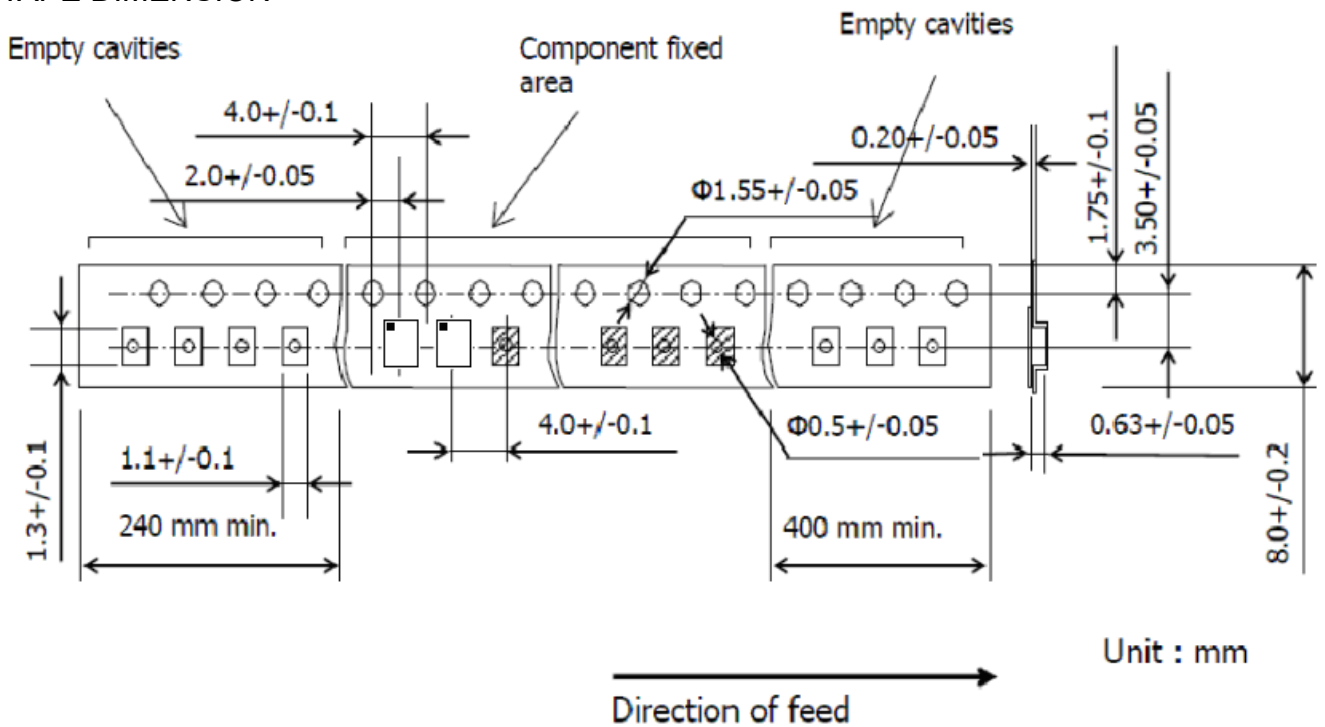
Color : Black

Surface resistance (reference value) :  $10^9 \Omega/\text{sq}$  Max.

Unit : mm

Code	Quantity	A	B	C	W1	W2
J	5,000 pcs	$\phi$ 180.0 +0.0/-1.5	$\phi$ 66.0 +/-0.5	$\phi$ 13.0 +/-0.2	9.0 +1.0/-0.0	11.4 +/--1.0

**TAPE DIMENSION**



Unit : mm



## Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

