

# MIS Chip Capacitors

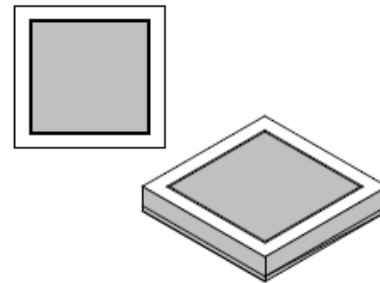


## Features:

- Silicon Oxide-Nitride Dielectric
- Low Loss
- Wide Bandwidth
- Operation thru 26 GHz
- Wide Operating Temperature Range
- RoHS Compliant

## Applications:

- DC Blocking
- Integrated Microwave Assemblies
- Tuning Circuits



## Description:

RFuW Engineering Metal Insulator Silicon (MIS) Chip Capacitors are ideal for use in Integrated Microwave Assemblies (IMA). They are available in a wide range of values: 0.8 to 1,000 pF. MIS Capacitors exhibit excellent long term stability making them an excellent choice for high reliability, mission critical applications.

RFuW Engineering' MIS Chip Capacitors consist of a dielectric layer which is thermally grown silicon dioxide grown on silicon nitride. The structure provide exceptional thermal stability of less than 50 ppm/°C and offer a high Q and low insertion loss.

## General Specifications

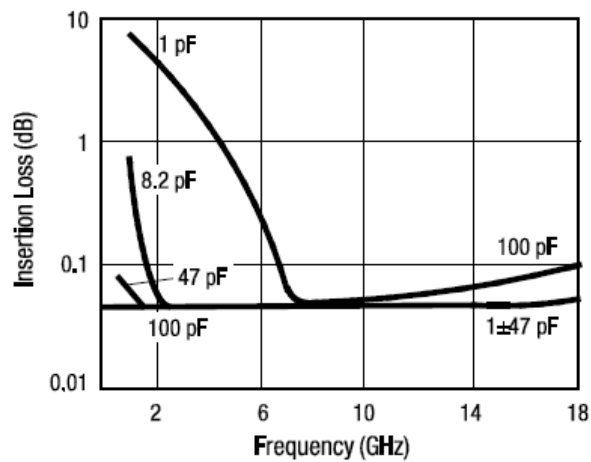
<b>Material:</b>	Silicon	<b>Operating Temperature:</b>	-65°C to +200°C
<b>Plating Finish:</b>	Gold	<b>Storage Temperature:</b>	-65°C to +200°C
<b>Environmental:</b>	RoHS Compliant	<b>Dielectric Voltage:</b>	100V

## Electrical Specifications

Parameter	Symbol	Min	typ	Max	Units
Capacitance		0.8		1,000	pF
Temperature Coefficient			50		ppm/°C
Capacitance Tolerance		-20%		+20%	%
Operating Temperature	T <sub>OP</sub>	-65		+200	°C
Dielectric Withstand Voltage			100		V
Insulation Resistance			10 <sup>5</sup>		MΩ
Leakage Current			<1		nA

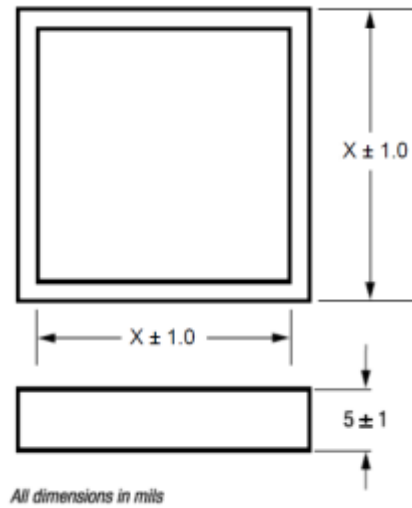
### MIS Chip Capacitor Values & Dimensions

Part Number	Capacitance	Pad/Chip Dimensions [X] (mils ±1)	Part Number	Capacitance	Pad/Chip Dimensions [X] (mils ±1)
910R8-001	0.8	9/12	9110R0-002	10	15/18
911R2-001	1.2	9/12	9115R0-001	15	9/12
911R8-001	1.8	9/12	9115R0-002	15	15/18
912R6-001	2.6	9/12	9122R0-002	22	15/18
913R8-001	3.8	9/12	9133R0-002	33	15/18
915R6-001	5.6	9/12	9147R0-002	47	15/18
916R8-001	6.8	9/12	9168R0-002	68	15/18
918R2-000	8.2	7/10	91100-003	100	24/30
918R2-002	8.2	15/18	91333-004	333	34/40
9110R0-000	10.0	7/10	91500-005	500	44/50
9110R0-001	10.0	9/12	911000-006	1000	60/68



**Figure 1. Typical Insertion Loss vs Frequency (50 Ω System)**

## Die Dimensions



## Packaging

MIS Capacitor are available in the following packaging options. They available only in increments of 100 pcs.

Part Number	Packaging
91XXRX-00Z	Waffle-Pack (100 pcs)

## Bonding and Handling Considerations

### Handling

Normal precautions used in handling hybrid semiconductors also apply to Silicon Die. A vacuum pencil should be employed when removing from waffle packs and subsequent handling. Using a vacuum pencil with metallic or non-metallic tips is acceptable.

### Soldering

Solder temperatures up to 300°C are acceptable for a duration not greater than 5 seconds for Silicon Die

### Conductive Epoxy

Any conductive epoxies available for semiconductor die attachment are acceptable for Silicon Die attachment. Follow the manufacturer's recommendations for mixing, storage temperature, shelf life, and application carefully. Care should be exercised while mounting the Silicon Die and a soft implement.

### Lead Bonding

Ball, ultrasonic, TC or pulse bonding of the wire or ribbon leads are all acceptable. Temperature for pulse bonders should not exceed 300°C. Maximum pressure applied to the Silicon Die should not exceed 25 grams for any of the methods used. Proper bonding procedure will result in bond strength which will exceed the minimum bond pull strength outlined in MIL-STD-883B Method 2011.2 for gold wire or gold ribbon.