

Table 1. MIS Capacitors Absolute Maximum Ratings

| Parameter | Symbol | Minimum | Typical | Maximum | Units |
|------------------------------|------------------|---------|---------|---------|-------|
| Dielectric withstand voltage | | | 100 | | V |
| Operating temperature | T _{OP} | -65 | | +200 | °C |
| Storage temperature | T _{STG} | -65 | | +200 | °C |

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value.

CAUTION: Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

Table 2. MIS Chip Capacitors Electrical Specifications (Note 1)

| Parameter | Symbol | Test Condition | Min | Typical | Max | Units |
|------------------------------|-----------------|----------------|-----|-----------------|------|--------|
| Capacitance | | | 0.8 | | 1000 | pF |
| Temperature coefficient | | | | 50 | | ppm/°C |
| Capacitance tolerance | | | -20 | | +20 | % |
| Operating temperature | T _{OP} | | -65 | | +200 | °C |
| Dielectric withstand voltage | | | | 100 | | V |
| Insulation resistance | | | | 10 ⁵ | | MΩ |
| Leakage current | | | | <1 | | nA |

Note 1: Performance is guaranteed only under the conditions listed in this Table.

Electrical and Mechanical Specifications

The absolute maximum ratings of the MIS chip capacitors are provided in Table 1. Electrical specifications are provided in Table 2.

A graph of typical insertion loss versus frequency is shown in Figure 1. This data is taken from an actual test circuit with series mounted beam-lead or chip capacitors on a 50 Ω microstrip transmission line. The apparent higher loss at lower frequencies on the lower capacitance units is strictly due to the capacitive reactance of the capacitor.

Table 3 provides a list of the available MIS chip capacitors (by part number) and the capacitance and chip dimensions for each one.

Performance

Tests on typical MIS capacitors at the L and S bands show insertion loss to be 1/2 to 1/3 that of equivalent ceramic type capacitors, without any of the associated resonance problems. Power tests indicate that the only limitation is the actual breakdown voltage of the device.

Figure 2 illustrates the use of MIS capacitors in a typical Single-Pole, Double-Throw (SPDT) circuit.

Package Dimensions

Figure 3 provides a visual representation of the capacitor chip sizes and part markings.

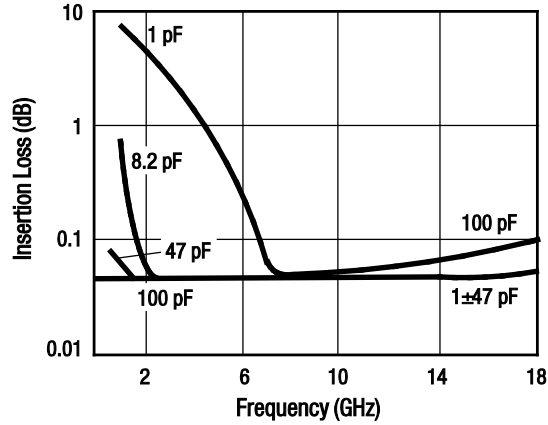


Figure 1. Typical Insertion Loss vs Frequency (50 Ω System)

Table 3. MIS Capacitor Part Numbers

| Part Number | Capacitance, ±20% (pF) | Pad/Chip Dimensions (Mils ±1 Mil) | Part Number | Capacitance, ±20% (pF) | Pad/Chip Dimensions (Mils ±1 Mil) |
|-------------|------------------------|-----------------------------------|-------------|------------------------|-----------------------------------|
| SC00080912 | 0.8 | 9/12 | SC01001518 | 10 | 15/18 |
| SC00120912 | 1.2 | 9/12 | SC01500912 | 15 | 9/12 |
| SC00180912 | 1.8 | 9/12 | SC01501518 | 15 | 15/18 |
| SC00260912 | 2.6 | 9/12 | SC02201518 | 22 | 15/18 |
| SC00380912 | 3.8 | 9/12 | SC03301518 | 33 | 15/18 |
| SC00560912 | 5.6 | 9/12 | SC04701518 | 47 | 15/18 |
| SC00680912 | 6.8 | 9/12 | SC06801518 | 68 | 15/18 |
| SC00820710 | 8.2 | 7/10 | SC10002430 | 100 | 24/30 |
| SC00821518 | 8.2 | 15/18 | SC33303440 | 333 | 34/40 |
| SC01000710 | 10.0 | 7/10 | SC50004450 | 500 | 44/50 |
| SC01000912 | 10.0 | 9/12 | SC99906068 | 1000 | 60/68 |

Note: Part # structure: SCXXXXYYZZ:
 SC = Silicon Conductor
 XXXX = Capacitance (pF)
 YY = Square contact size (mils), also see Figure 3
 ZZ = Square chip size (mils), also see Figure 3

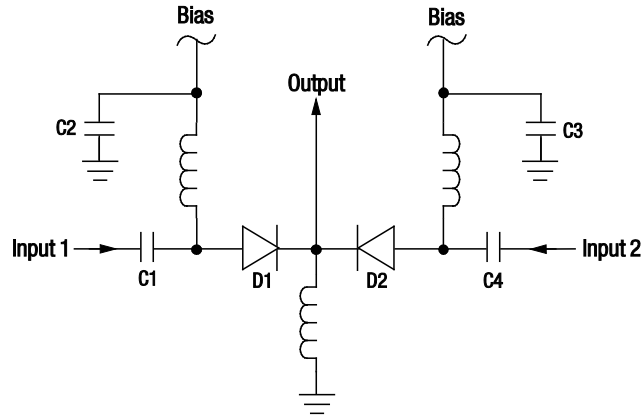


Figure 2. Typical MIS Capacitor Application Circuit

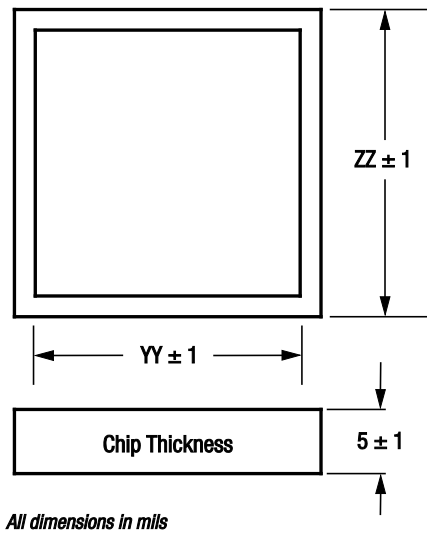


Figure 3. MIS Capacitor Chip Dimensions

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