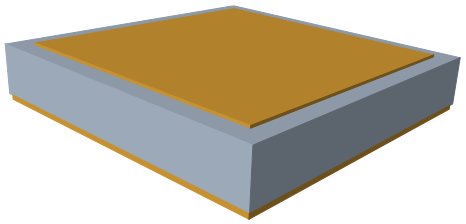
1. Description

- The M01XX MIS (Metal Insulator Silicon) chip capacitors are available as product series which covering a wide range of sizes to offer abundant choices of capacitance values. This capacitor dielectric is composed of silicon dioxide and silicon nitride, which has a low temperature coefficient of capacitance and high insulation resistance.



M01XX-PDS-F01

Figure 1. M01XX Outline

2. Applications

- Systems requiring DC blocking or RF bypassing function
- Fixed capacitance tuning unit in filters, oscillators, matching networks

3. Features

- Excellent long-term reliability silicon dioxide & silicon nitride dielectric
- Low loss: 0.04dB in a 50Ω system
- Wide temperature operation
- Large capacitance per unit area

4. Absolute Maximum Ratings

Table 1. MIS Capacitors Absolute Maximum Ratings[1]

Parameter	Symbol	Min.	Typ.	Max.	Units
Dielectric Withstand Voltage	V_D	-	100	-	V
Operating Temperature Range	T_{OP}	-55	-	+125	°C
Storage Temperature Range	T_{STG}	-65	-	+200	°C

[1]. 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.

ESD Caution: Although these devices are designed to be as robust as possible, Electrostatic Discharge (ESD) can damage these devices. These devices 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.



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5. Electrical Specifications

Table 2. MIS Chip Capacitors Electrical Specifications[1]

Parameter	Min.	Typ.	Max.	Units
Capacitance	15	-	100	pF
Capacitance Tolerance	-20	-	+20	%
Temperature Coefficient	-	40	55	ppm/°C
Dielectric Withstand Voltage	-	100	120	V
Insulation Resistance	-	10^5	-	MΩ
Leakage Current @100V	-	-	1	nA

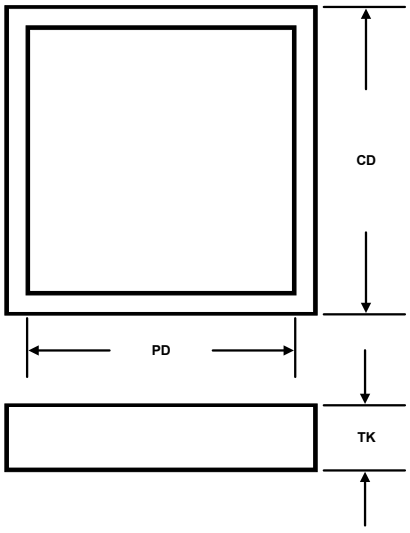
[1]. Performance is guaranteed only under the conditions listed in Table 2.

6. Part Numbers

Table 3. MIS Capacitor Part Numbers

Part Number	Capacitance (pF±20%)	Pad/Chip Dimensions (Mils±1Mil)	Pad/Chip Dimensions (um±25um)
M0101	100	27.4/32.3	696/820
M0102	33	15.7/20.3	400/516
M0103	22	15.7/20.3	400/516
M0105	15	13.1/20.3	332/516
M0106	8.2	9.8/13.3	248/338
M0107	5.6	8.1/13.3	205/338

7. Chip Dimensions



M01XX-PDS-F02

- CD: Chip Dimension, PD: Pad Dimension, TK: Thickness
- CD & PD refer to Table 3. MIS Capacitor Part Numbers, meanwhile TK fixed as 125±15um (5mils±0.6mil)

Figure 2. MIS Capacitor Chip Dimensions

8. Typical Insertion Loss vs. Frequency

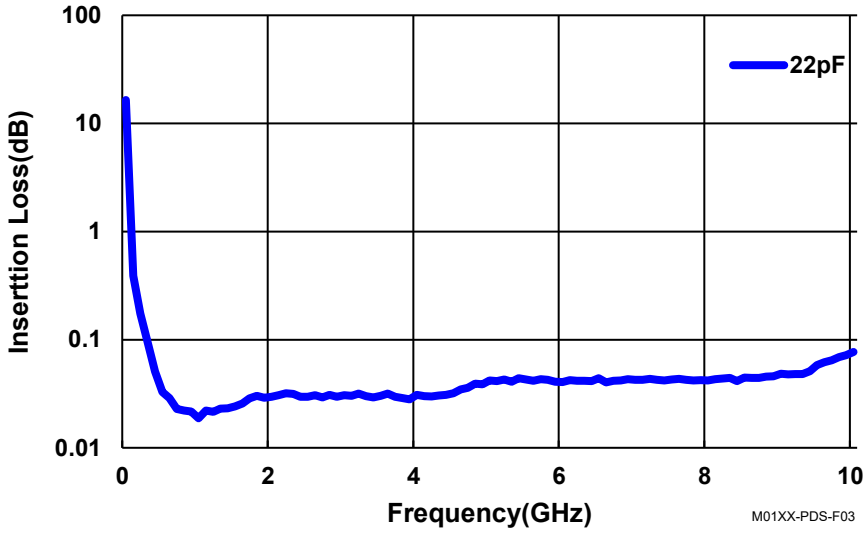
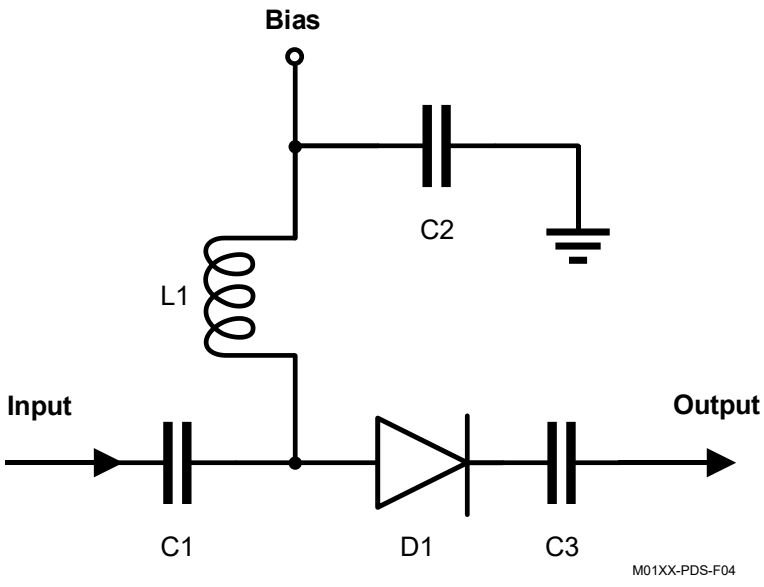


Figure 3. Typical Insertion Loss vs. Frequency

- This data is taken from an actual test circuit in a 50Ω system.
- The apparent higher insertion loss at lower frequencies is due to the capacitive reactance of the capacitor.

9. Typical Application Circuit



- This Figure illustrates the use of MIS capacitors in a typical circuit.

Figure 4. Typical Application Circuit

10. Recommended Solder Temperature Profile

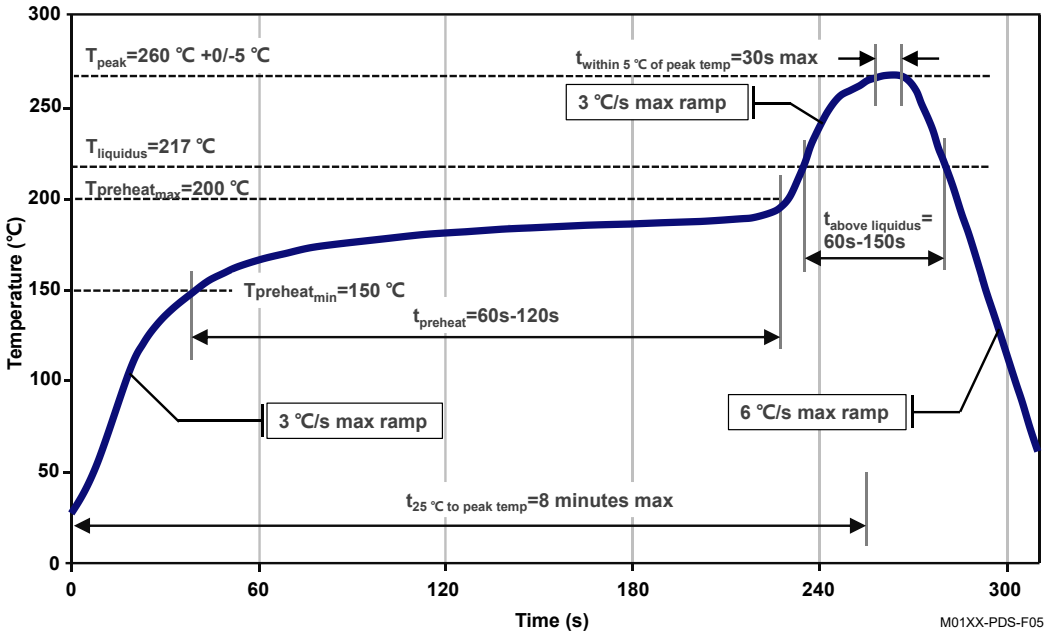


Figure 5. Recommended Solder Temperature Profile

11. Contact Information

For the latest specifications, additional product information, technical support and sales support, please contact:

- **Email:** RF.support@raytrontek.com
- **Web:** www.raytrontek.com

12. Disclaimer

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