Introduction

Silicon capacitors are manufactured using semiconductor chip production processes, with silicon as the substrate and thin-film materials such as silicon dioxide/silicon nitride serving as the dielectric. Compared with ceramic capacitors (MLCC), they feature small size, thin thickness, low impedance, high-frequency low insertion loss, high temperature stability, and high reliability.

Silicon capacitors are commonly used for DC blocking, RF bypassing, or as fixed capacitive tuning elements in filters, oscillators, and matching networks. They are widely applicable in power distribution networks, aerospace, telecommunications, energy, automation, and medical fields.

This product is a 0201-sized 11V, 10nF capacitor utilizing unique 3D silicon capacitance technology, featuring an insertion loss of less than 0.35dB at operating frequencies up to 67GHz. It ensures outstanding stability of the capacitor across the entire operating voltage and temperature range.

Features

- High temperature stability（up to 150°C）
- Temperature Coefficient of Capacitance(TCC): <70 ppm /K
- Voltage Coefficient of Capacitance(VCC): <0.1%/V
- Capacitance loss due to aging is negligible
- Leakage current < 1nA@RV_{DC}
- High reliability
- high- temperature cycles during manufacturing （Over 300°C）
- IL<0.35dB@67GHz

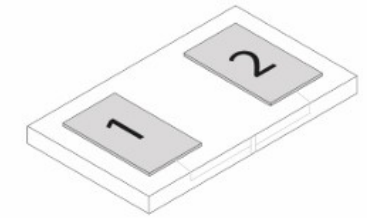
Applications

- Optical communication, optical modules
- decoupling and filtering for active devices
- High reliability applications
- High speed data processing system
- High temperature application
- high volumetric efficiency (i.e., capacitance per unit volume)

Schematic symbol



Pin definition

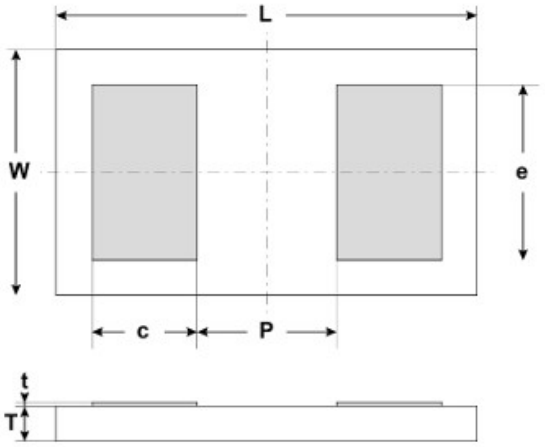


Pin #	Name	X/Y(μm)
1	Signal	-150/0
2	Signal	150/0

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
C	Capacitance	@+25℃, 1KHz	-	10	-	nF
ΔC_P	Tolerance	@+25℃	-15	-	15	%
T_{OP}	Operating temperature		-55	25	150	℃
T_{STG}	Storage temperature		-70	-	165	℃
ΔC_T	TCC	-40℃~+150℃		-	70	ppm/K
RV_{DC}	Rated voltage		-	-	6	V_{DC}
BV	Breakdown voltage	@+25℃	11	-	-	V_{DC}
ΔC_{RVDC}	VCC	From 0V to R_{VDC}@25℃	-	-	0.1	%/V_{DC}
IR	Insulation resistance	@ R_{VDC}, +25℃,120s	-	10	-	GΩ
IL	Insertion Loss	@ 67GHz, +25℃	-	0.35	-	dB
RL	Return Loss	Up to 67GHz, +25℃	20	-	-	dB
Fc-3dB	Cut-off Frequency at 3dB	50Ω system resistance	-	159	-	KHz
ESD	Electro- Static Discharge	HBM	2	-	-	KV

Product Dimensions



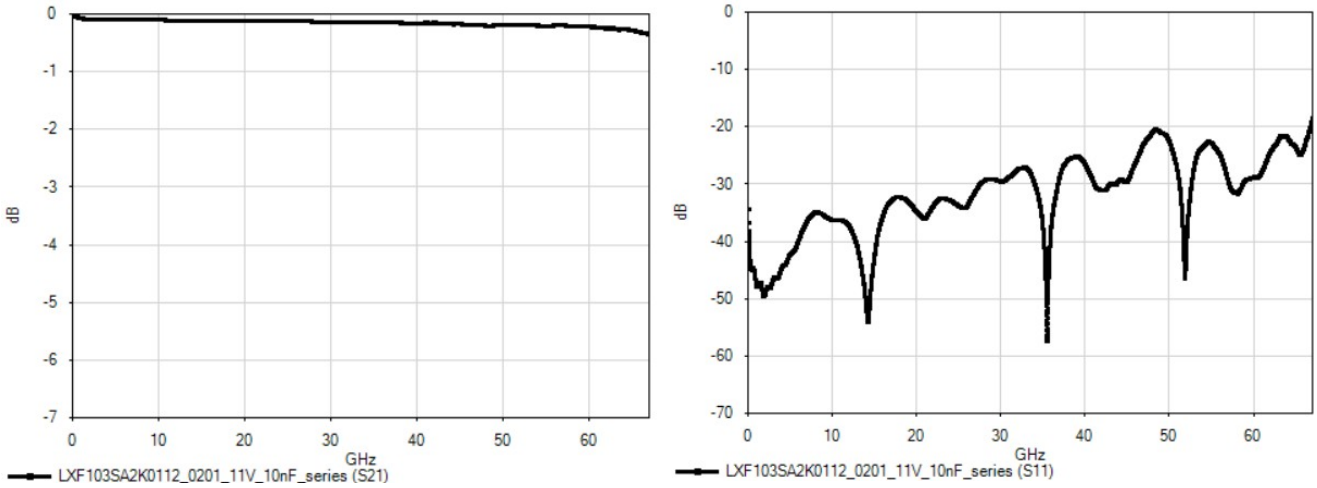
L(mm)	W(mm)	T(mm)	c (mm)	p (mm)	e (mm)	t (mm)
0.62±0.02	0.32±0.02	0.1±0.01	0.10	0.20	0.15	0.005

The typical thickness is 100 μm, which can be customized according to customer needs.
The electrode material is ENIG(Ni/Au), and other electrodes (such as SAC, Al, Cu, etc.) can be customized according to customer needs.

Ordering Part Number

Part number	Electrode material	Packaging
LXF103SA2K0112YWBX	SAC	Tape & Reel
LXF103SA2K0112NWBX	ENIG	Tape & Reel
LXF103SA2K0112YABX	SAC	Wafer
LXF103SA2K0112NABX	ENIG	Wafer

Product Characteristics



0201/11V/10nF S-parameters in series mode

Revision History

Rev.	Date	Changes	Author
1.0	2025/04/30	First release	Randy
1.1	2025/12/15	Add S-parameters	Randy
1.2	2025/12/29	Add ordering part number	Randy
1.3	2026/04/30	Add coordinate axis, update product dimensions	Randy