

HSSC

High Stability and reliability Silicon Capacitors (JEDEC/EIA compatible)



Rev 2.0

Key features

- Ultra high stability (temperature, voltage, aging).
- Low leakage current (high insulation resistance).
- Very low ESR and ESL.
- Negligible capacitance change with temperature variation.
- Low profile.
- Suitable with lead free reflow soldering

(please refer to our Assembly Application Note for more details)

Key applications

- All demanding applications, such as medical, aerospace, automotive industry
- High stability applications
- Decoupling / Filtering / Charge pump (i.e.: Pacemakers / defibrillators)
- Devices with battery operations
- Replacement of X7R and NPO
- Downsizing

Thanks to the unique Murata* Silicon capacitor technology, most of the problems encountered in demanding applications can be solved. High Stability Silicon Capacitors are dedicated to applications where **stability** is the main parameter. The HSSC avoid the need to oversize the capacitor value for sensitive capacitive circuitry and offer a **higher DC voltage stability**. This technology provides industry leading performances relative to the **capacitor stability** over the full **operating voltage & temperature range**. The very high and stable insulation resistance of silicon capacitors can enhance up to 30 % the **battery lifetime** in mobile applications.

The Murata Silicon technology features a capacitor integration capability (up to 250 nF/mm²) which allows a **smaller case size** than existing solutions to answer high volume constraints. This technology also offers **high reliability**, up to 10 times better than alternative capacitor technologies, such as Tantalum or MLCC, and eliminates cracking phenomena. This Silicon based technology is RoHS compliant and compatible with lead free reflow soldering process.

*Murata Integrated Passive Solutions



Electrical specifications

High Stability and reliability Silicon Capacitors from -55°C to 150°C					
HSSC-xxx	Part number	Capacitance	BV	Case size	Thickness
	935131424247-xxN	47 pF	11 V	0402	400 μm
	935131424310-xxN	100 pF	11 V	0402	400 μm
	935131424347-xxN	470 pF	11 V	0402	400 μm
	935131424410-xxN	1 nF	11 V	0402	400 μm
	935131424510-xxN	10 nF	11 V	0402	400 μm
	935131424522-xxN	22 nF	11 V	0402	400 μm
	935131424533-xxN	33 nF	11 V	0402	400 μm
	935131424547-xxN	47 nF	11 V	0402	400 μm
	935131424610-xxN	100 nF	11 V	0402	400 μm
	935131425610-xxN	100 nF	11 V	0603	400 μm
	935131426610-xxN	100 nF	11 V	0805	400 μm
	935131427610-xxN	100 nF	11 V	1206	400 μm
	935131427710-xxN	1 μF	11 V	1206	400 μm
	935131429733-xxN	3.3 μF	11 V	1812	400 μm

Parameter	Value
Capacitance range	47 pF to 3.3 μF(*)
Capacitance tolerance	±15%(*)
Operating temperature range	-55°C to 150°C
Storage temperature	-70°C to 165°C(**)
Temperature coefficient	+60 ppm/K
Breakdown voltage (BV)	11 VDC
Capacitance variation versus RVDC	0.1 %/V (from 0 to RVDC)
Insulation resistance	100 GΩ @ 3 V, @ 25°C, t>120s, for 100 nF
Aging	Negligible, < 0.001% / 1000 h
Reliability	FIT<0.017 parts / billions hours
Capacitor height	400 μm
(*) Other values on request (**) w/o packing	

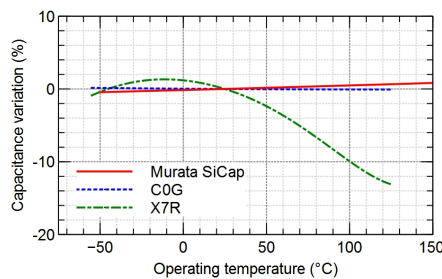


Fig. 1: Capacitance variation vs temperature (for HSSC and MLCC technologies)

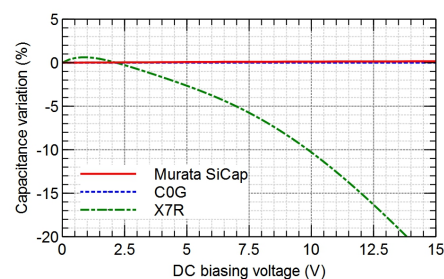
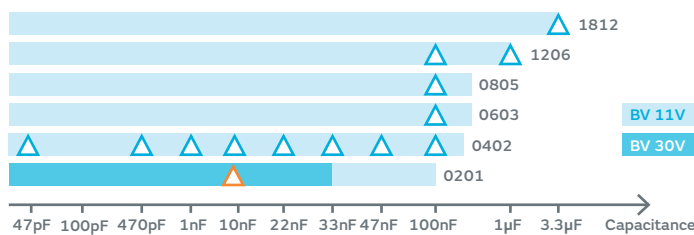


Fig.2: Capacitance variation vs DC biasing voltage @ BV11 (for HSSC and MLCC technologies)

Capacitance range



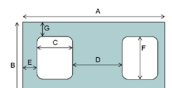
▲ Available parts.
For other values, contact your Murata sales representative.
▲ Under development.

Termination

Lead-free NiAu finishing compatible with automatic soldering technologies (reflow and manual). Other terminations available on request.

Package Outline

	Case size		Pad dimensions (μm)				
	A	B	C	D	E	F	G
0201	0.80	0.60	0.15	0.3	0.1	0.4	0.1
0402	1.20	0.70	0.3	0.4	0.1	0.5	0.1
0603	1.80	1.10	0.4	0.8	0.1	0.9	0.1
0805	2.20	1.40	0.5	1	0.1	1.2	0.1
1206	3.40	1.80	0.6	2	0.1	1.6	0.1
1812	4.70	3.60	0.8	2.9	0.1	3.4	0.1



Packaging

Tape and reel, waffle pack or wafer delivery.



Assembly by Soldering

The attachment techniques recommended by Murata for the HSSC capacitors on the customers substrates are fully detailed in specific documents available on our website. To assure the correct use and proper functioning of Murata Silicon capacitors **please download the assembly instructions on www.ipdia.com/assembly and read them carefully.**



Please download the **assembly instructions**
on www.ipdia.com/assembly
and **read them carefully before use.**

在使用IPDIA电容之前请从
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For HSSC assembly instructions,
please go to :
www.ipdia.com/assembly and
download the pdf file called
**“HSSC Capacitors 400 µm -
Assembly by Soldering”**

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