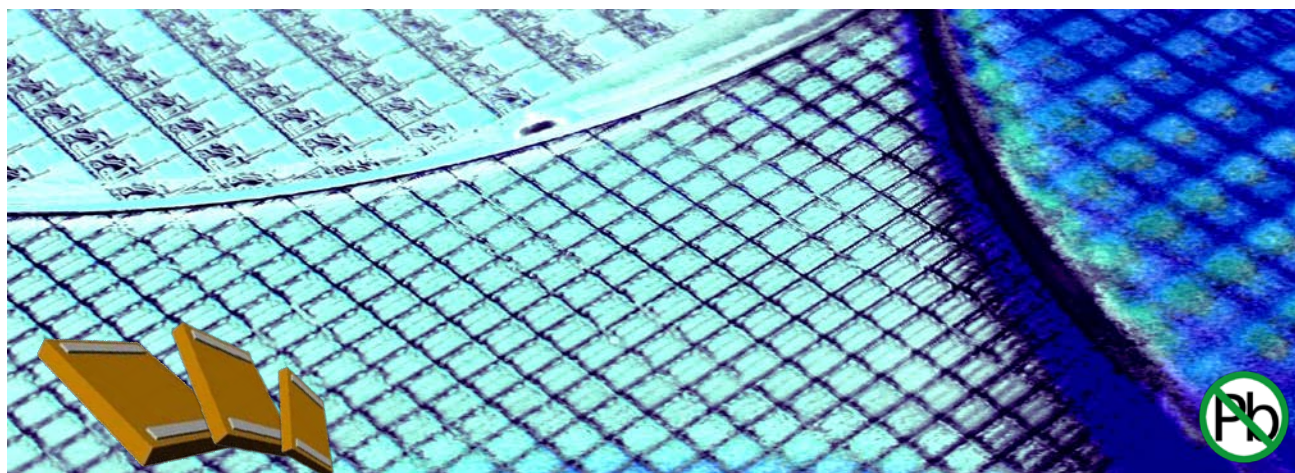


# HSSC423.xxx - 0201 High Stability Silicon Capacitor

Rev 3.0



## Key features

- Ultra high stability :
  - ◆ Temperature  $\pm 0.5\%$  ( $-55\text{ }^{\circ}\text{C}$  to  $+150\text{ }^{\circ}\text{C}$ )
  - ◆ Voltage  $< 0.1\text{ } \%/V$
  - ◆ Negligible aging  $< 0.001\%$  /1000hours
- Unique high capacitance in EIA/0201 package size, up to 10 nF
- High reliability (FIT  $< 0.017$  parts / billion hours)
- Low leakage current  $< 100\text{ pA}$
- Low ESL and Low ESR
- Suitable with lead free reflow-soldering

Thanks to the unique IPDiA Silicon capacitor technology, most of the problems encountered in demanding application can be solved.

High Stability Silicon Capacitors are dedicated to applications where **stability** is the main parameter.

HSSC avoids the need to oversize the capacitor value for sensitive capacitive circuitry and offers 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.

## 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

The IPDiA technology features a capacitor integration capability (up to  $250\text{nF/mm}^2$ ) 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.

## Electrical specification

		Capacitance value					
Unit	1 pF	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	10 pF	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	0.1 nF	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	1 nF	10nF: 935.131.423.510					

(\*) Thinner thickness (as low as 100 µm thick) available, see Low Profile Silicon Capacitor product: LPSC

(\*\*) Extended temperature range (up to +250 °C) available, see Xtreme Temperature Silicon Capacitor product: XTSC

(\*\*\*) Other values on request.

Parameters	Value
Capacitance range	10 nF <sup>(***)</sup>
Capacitance tolerances	±15 % <sup>(***)</sup>
Operating temperature range	-55 °C to 150 °C <sup>(**)</sup>
Storage temperatures	-70 °C to 165 °C
Temperature coefficient	<±0.5 %, from -55 °C to +150 °C
Breakdown voltage (BV)	11 VDC <sup>(***)</sup>
Capacitance variation versus RVDC	0.1 % / V (from 0 V to RVDC)
Equivalent Serial Inductor (ESL)	Max 100 pH
Equivalent Serial Resistor (ESR)	Max 400mΩ <sup>(***)</sup>
Insulation resistance	100GΩ min @ RVDC, from -55 °C to +150 °C
Ageing	Negligible, < 0.001 % / 1000 h
Reliability	FIT<0.017 parts / billion hours,
Capacitor height	Max 400 µm <sup>(*)</sup>

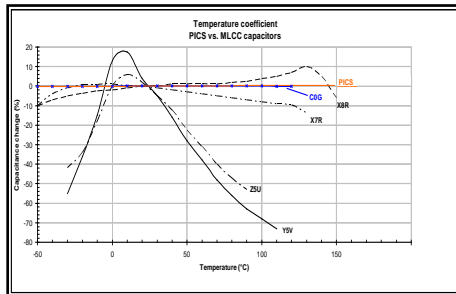


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

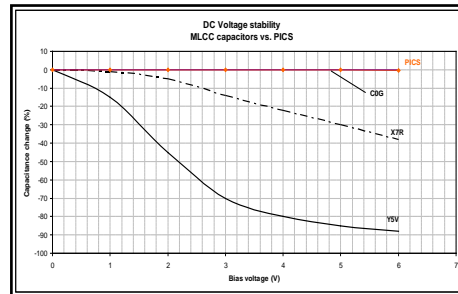


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

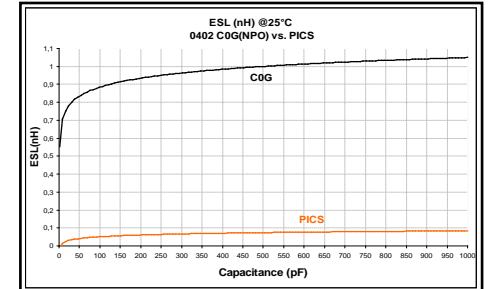


Fig.3 ESL versus capacitance value compared with alternative dielectrics

## How to order

**935.131.**      **BV** → Breakdown Voltage 42 = 11V      **S.** → Size 3 = 0201      **U**      **XX** → Unit  
 i.e.: 10 nF/0201 case (HSSC type) → 935.131.423.510  
 0 = 10f      5 = 1n  
 1 = 0.1p      6 = 10n  
 2 = 1p      7 = 0.1u  
 3 = 10p      8 = 1u  
 4 = 0.1n      9 = 10u

## Termination and Outline

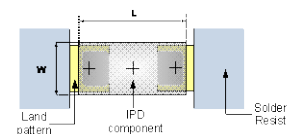
### Termination

Lead-free nickel/solder coating compatible with automatic soldering technologies: reflow and manual

Typical dimensions, all dimensions in mm

### Package outline

Typ.		0201
Comp. size	L	0.8±0.03
	W	0.60±0.03



(0201 PCB footprint)

## Packaging

Tape and reel, tray, waffle pack or wafer delivery

Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

IPDiA:

[935131423510-T3N](#)