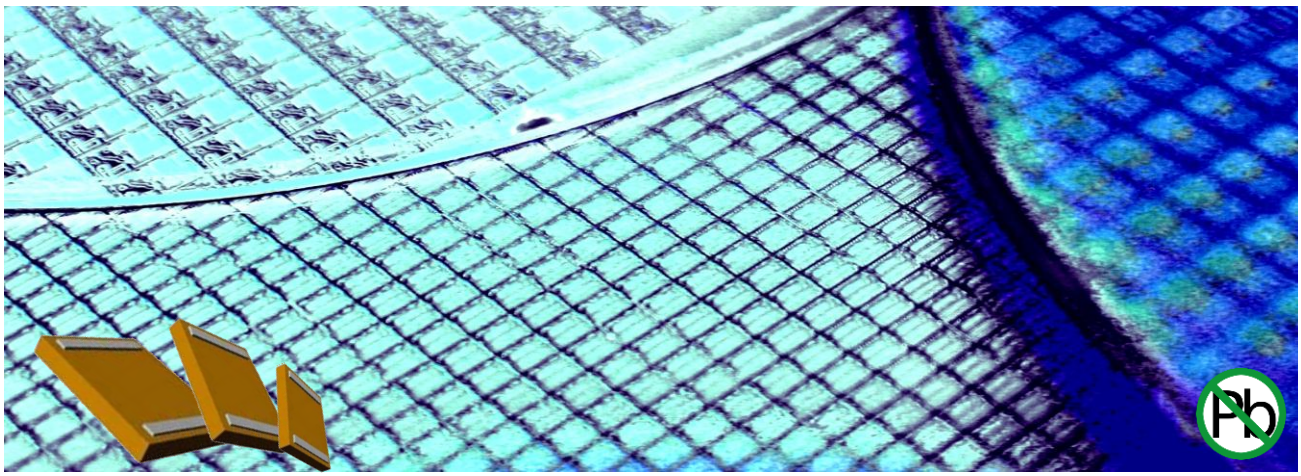
XTSC423.xxx - 0201 Extreme Temperature Silicon Capacitor

Rev 3.0



Key features

- **Ultra High temperature up to 250°C:**
  - **Temperature Coeff : <±1.5%(-55 °C to +250°C)**
  - **Voltage <0.1 %/V**
  - **Negligible capacitance loss through aging**
- **Unique high capacitance in EIA/0201 package size, up to 10 nF**
- **High reliability (FIT <0.017 parts / billion hours)**
- **Low leakage current down to 100 pA**
- **Low ESL and Low ESR**
- **Suitable for lead free reflow-soldering**

Key applications

- **250°C requirements, High temperature applications, such as military, aerospace, automotive and downhole industries.**
- **High reliability applications**
- **Replacement of X8R and COG dielectrics**
- **Decoupling / Filtering / Charge pump (i.e.: pressure sensor, motor management)**
- **Downsizing**

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

E**X**treme **T**emperature **S**ilicon **C**apacitors are appropriate for applications used in extreme operating temperature range (up to **250°C**).

XTSC industry leading performances allows to propose a **10nF in 0201** with a **TC<±1.5%** over the full -55°C/+250°C temperature range.

This technology also offers a **negligible ageing** and a stable insulation resistance, even at very high temperature, as well as a stable capacitor value over the full operating.

The IPDiA technology features a capacitor integration capability (up to 250nF/mm^2) which allows a capacitance value similar to X8R dielectric, but with better electrical performances than COG/NPO dielectrics.

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.

ipdia
The 3D Silicon Leader

Electrical specification

Unit	Capacitance value	10	15	22	33	47	68
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: 935.133.423.510					

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

(**) Other values on request.

Parameters	Value
Capacitance range	*10 nF(**)*
Capacitance tolerances	*±15 %(**)*
Operating temperature range	*-55 °C to 250 °C*
Storage temperatures	*- 70 °C to 265 °C*
Temperature coefficient	*<±1.5 %, from -55 °C to +250 °C*
Breakdown voltage (BV)	*11 VDC(**)*
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(**)*
Insulation resistance	*50GΩ min @ 3V,25°C* *10GΩ min @ 3V,250°C*
Ageing	*Negligible, < 0.001 % / 1000 h*
Reliability	*FIT<0.017 parts / billion hours,*
Capacitor height	*Max 400 µm (*)*

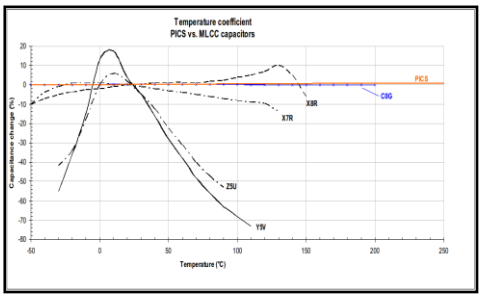


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

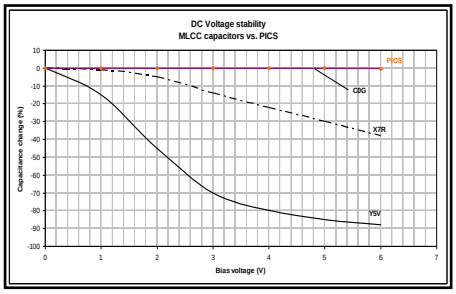


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

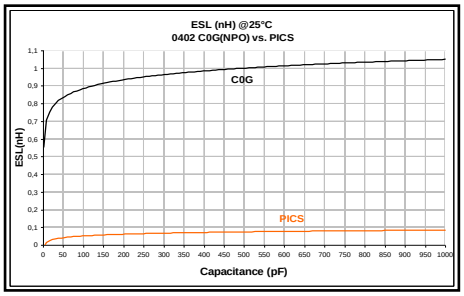


Fig.3 ESL versus capacitance value compared with alternative dielectrics

Part Number

935.133. **B.2** (Breakdown Voltage: 4 = 11V) **S.** (Size: 3 = 0201) **U** **XX** (Unit: 0 = 10f; 1 = 0.1p; 2 = 1p; 3 = 10p; 4 = 0.1n; 5 = 1n; 6 = 10n; 7 = 0.1u; 8 = 1u; 9 = 10u) — Value (E6)

i.e.: 10 nF/0201 case (XTSC type)
→ 935.133.423.510

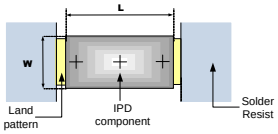
Termination and Outline

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

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To contact us, email to: sales@ipdia.com

Date of release: 7th July 2011
Document identifier: CL431 111 614 935

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935133423510-T3N