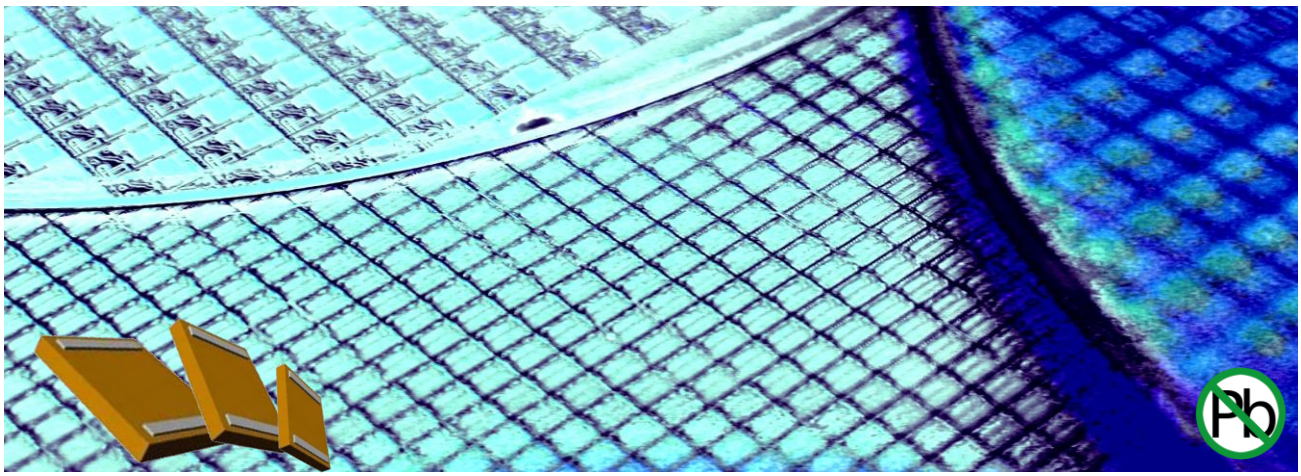
HTSC425.xxx - 0603 High Temperature Silicon Capacitor

Rev 3.1



Key features

- **High stability up to 200°C:**
  - **Temperature <±1% (-55 °C to +200 °C)**
  - **Voltage <0.1 %/V**
  - **Negligible capacitance loss through aging**
- **Unique high capacitance in EIA/0603 package size, up to 100 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** ***Please refer to our assembly Application Note for further recommendations**

Key applications

- **All applications up to 200°C, such as military, aerospace and automotive industries**
- **High reliability applications**
- **Replacement of X7R and C0G dielectrics**
- **Decoupling / Filtering / Charge pump (i.e.: motor management, temperature sensors)**
- **Downsizing**

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

High **T**emperature **S**ilicon **C**apacitors are dedicated to applications where **reliability** up to **200°C** is the main parameter.

This technology features a capacitor integration capability (up to 250nF/mm^2) which offers capacitance value similar to X7R dielectric, but with better electrical performances than C0G/NP0 dielectrics, up **to 200°C**

HTSC provide the highest capacitor **stability** over the full -55°C/+200°C temperature range in the market with a **Temperature coefficient**

Lower than ±1%.

The IPDiA technology offers industry leading performances relative to **Failure rate** with a FIT<0.017.

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
	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	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	10 nF	100 nF: 935.132.425.610					

(*) 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	*100 nF(***)*
Capacitance tolerances	*±15 %(***)*
Operating temperature range	*-55 °C to 200 °C (**)*
Storage temperatures	*- 70 °C to 215 °C*
Temperature coefficient	*<±1 %, from -55 °C to +200 °C*
Breakdown voltage (BV)	*11 VDC(***)*
Capacitance variation versus RVDC	*0.1 % /V (from 0 V to RVDC)*
Equivalent Serial Inductor (ESL)	*Max 250 pH*
Equivalent Serial Resistor (ESR)	*Max 400mΩ(***)*
Insulation resistance	*50GΩ min @ 3V,25°C* *20GΩ min @ 3V,200°C*
Ageing	*Negligible, < 0.001 % / 1000 h*
Reliability	*FIT<0.017 parts / billion hours,*
Capacitor height	*Max 400 µm (*)*

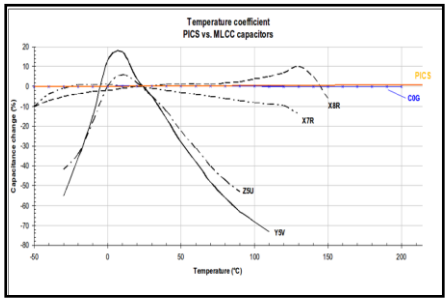


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

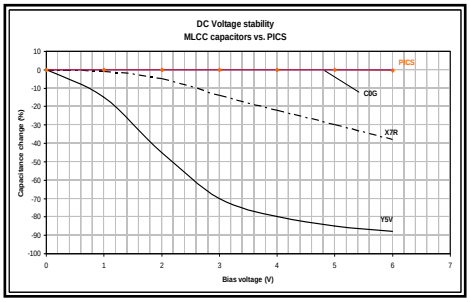


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

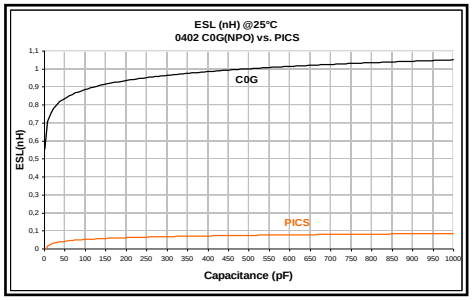


Fig.3 ESL versus capacitance value compared with alternative dielectrics

Part Number

935.132. **B.2** → **Breakdown Voltage**: 4 = 11V; **S.** → **Size**: 5 = 0603; **U** → **Unit**: 0 = 10 f, 1 = 0.1 p, 2 = 1 p, 3 = 10 p, 4 = 0.1 n, 5 = 1 n, 6 = 10 n, 7 = 0.1 µ, 8 = 1 µ, 9 = 10 µ; **XX** → **Value (E6)**: 10, 15, 22, 33, 47, 68

i.e.: 100 nF/0603 case (HTSC type)
→ 935.132.425.610

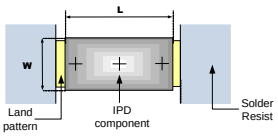
Termination and Outline

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

Typical dimensions, all dimensions in mm.

Package outline

Typ.		0603
Comp. size	L	1.80±0.05
	W	1.10±0.05



(0603 PCB footprint)

Packaging

Tape and reel, tray, waffle pack or wafer delivery.

For more information, please visit: http://www.ipdia.com
To contact us, email to: sales@ipdia.com

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