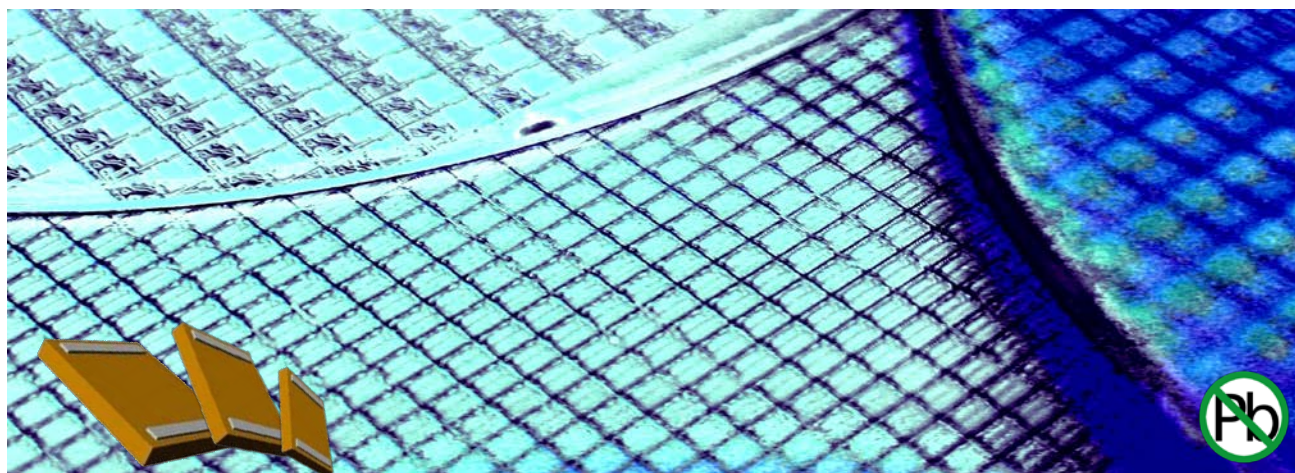


# HTSC427.xxx - 1206 High Temperature Silicon Capacitor

Rev 3.0



## Key features

- High stability up to 200°C:
  - ◆ Temperature  $\leq \pm 1\%$  (-55 °C to +200 °C)
  - ◆ Voltage  $< 0.1\%$ /V
  - ◆ Negligible capacitance loss through aging
- Unique high capacitance in EIA/1206 package size, up to 1  $\mu\text{F}$
- High reliability (FIT  $< 0.017$  parts / billion hours)
- Low leakage current  $< 100$  pA
- Low ESL and Low ESR
- Suitable for lead free reflow-soldering

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

High Temperature Silicon Capacitors are dedicated to applications where **reliability** up to **200°C** is the main parameter.

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

HTSC provides the highest capacitor **stability** over the full -55°C/+200°C temperature range in the market with a **Temperature coefficient Lower than  $\pm 1\%$** .

## Key applications

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

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.

## Electrical specification

		Capacitance value					
Unit	1 nF	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	10 nF	935.132.427.610	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	935.132.427.647	Contact IPDIA Sales
	0,1 µF	935.132.427.710					
	1 µF						
	1 µF						

(\*) 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 to 1 µF <sup>(***)</sup>
Capacitance tolerances	±15 % <sup>(***)</sup>
Operating temperature range	-55 °C to 200 °C <sup>(***)</sup>
Storage temperatures	-70 °C to 215 °C
Temperature coefficient	<±1 %, from -55 °C to +200 °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 1nH
Equivalent Serial Resistor (ESR)	Max 500mΩ <sup>(***)</sup>
Insulation resistance	100GΩ min @ RVDC, 25°C 60GΩ min @ RVDC, 200°C
Ageing	Negligible, < 0.001 % / 1000h
Reliability	FIT<0.017 parts / billion hours,
Capacitor height	Max 400 µm <sup>(*)</sup>

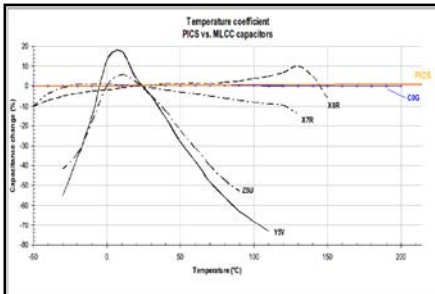


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

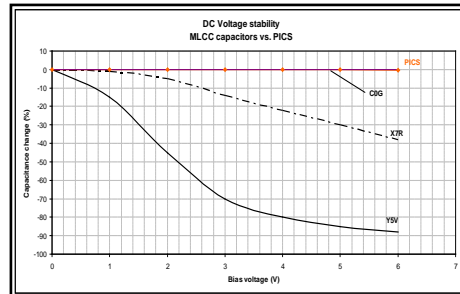


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

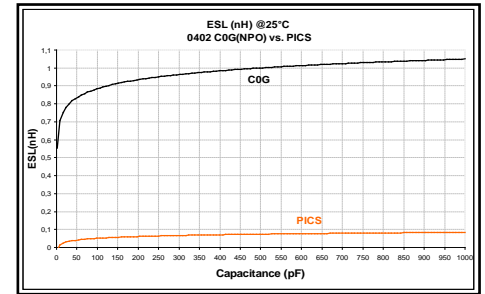


Fig.3 ESL versus capacitance value compared with alternative dielectrics

## How to order

**935.132.**

i.e.: 1 µF/1206 case (HTSC type)  
→ 935.132.427.710

**BV** → Breakdown Voltage  
42 = 11V

**S.** → Size  
5 = 1206

**U** → Unit

**XX** → Value (E6)

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

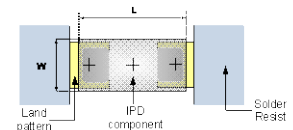
### Termination

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

Typical dimensions, all dimensions in mm

### Package outline

Typ.		1206
Comp. size	L	3.40±0.05
	W	1.80±0.05



(1206 PCB footprint)

## Packaging

Tape and reel, tray, waffle pack or wafer delivery

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