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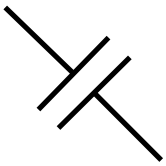
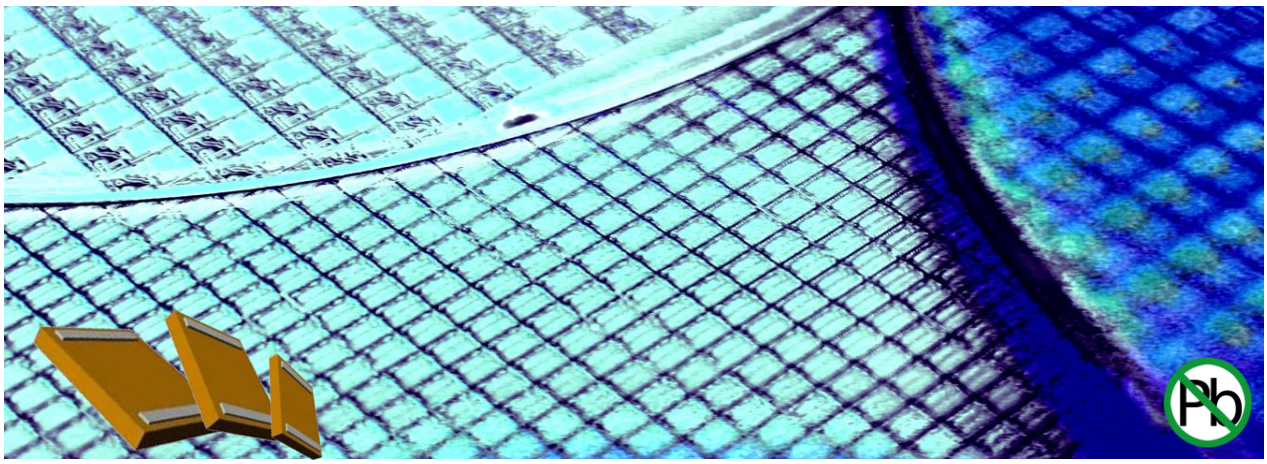


XTSC429.xxx - 1812 Extreme Temperature Silicon Capacitor

Rev 3.1



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/1812 package size, up to 3.3 µF**
- **High reliability (FIT <0.017 parts / billion hours)**
- **Low leakage current technology down to 3nA**
- **Low ESL and Low ESR**
- **Suitable for lead free reflow-soldering** ***Please refer to our assembly Application Note for further recommendations**

Key applications

- **250°C requirements, High temperature applications, such as military, aerospace, automotive and down-hole 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 **3.3µF in 1812** 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

XTSC429.xxx

Electrical specification

Unit	Capacitance value						
		10	22	27	33	47	68
	1 nF						
	10 nF	*Contact IPDIA Sales*	*Contact IPDIA Sales*	*Contact IPDIA Sales*	*Contact IPDIA Sales*		
	0,1 µF	**1µF 935.xxx.xxx.xxx**	**2.2µF 935.xxx.xxx.xxx**	**2.7µF 935.xxx.xxx.xxx**	**3.3µF 935.133.429.733**		
	1 µF						

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

(**) Other values on request.

Parameters	Value
Capacitance range	*1µF to 3.3µF(**)*
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 1nH*
Equivalent Serial Resistor (ESR)	*Max 800mΩ(**)*
Insulation resistance	*1GΩ min @ 3V,25°C* *100MΩ min @ 3V,250°C*
Ageing	*Negligible, < 0.001 % / 1000 h*
Reliability	*FIT<0.017 parts / billion hours,*
Capacitor height	*Max 400 µm (*)*

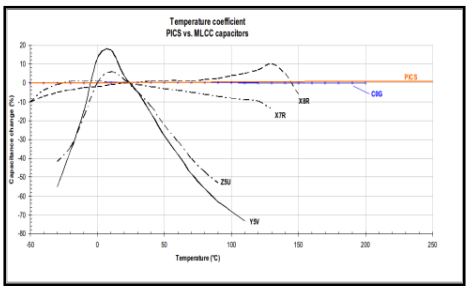


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

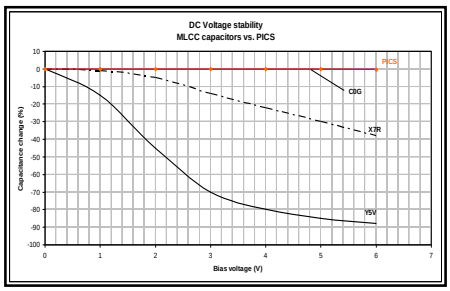


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

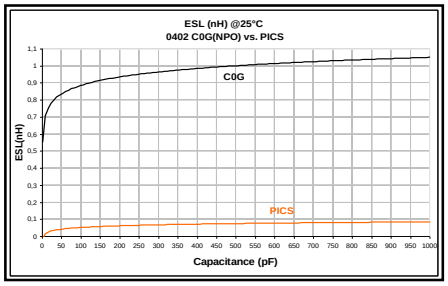


Fig.3 ESL versus capacitance value compared with alternative dielectrics

Part Number

935.133. **B.2** **S.** **U** **XX** → **Value (E6)**

Breakdown Voltage
4 = 11V

Size
9 = 1812

Unit

0 = 10 f	5 = 1 n
1 = 0.1 p	6 = 10 n
2 = 1 p	7 = 0.1 µ
3 = 10 p	8 = 1 µ
4 = 0.1 n	9 = 10 µ

Value (E6)
10
22
27
33
47
68

i.e.: 3.3 µF/1812 case (XTSC type)
→ 935.133.429.733

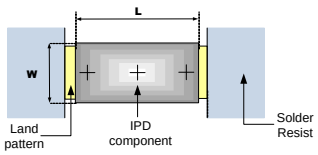
Termination and Outline

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

Typical dimensions, all dimensions in mm

Package outline

Typ.		1812
Comp. size	L	4.66 ± 0.05
	W	3.56 ± 0.05
IPD Land patterns size	X	0.9
	Y	3.4



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