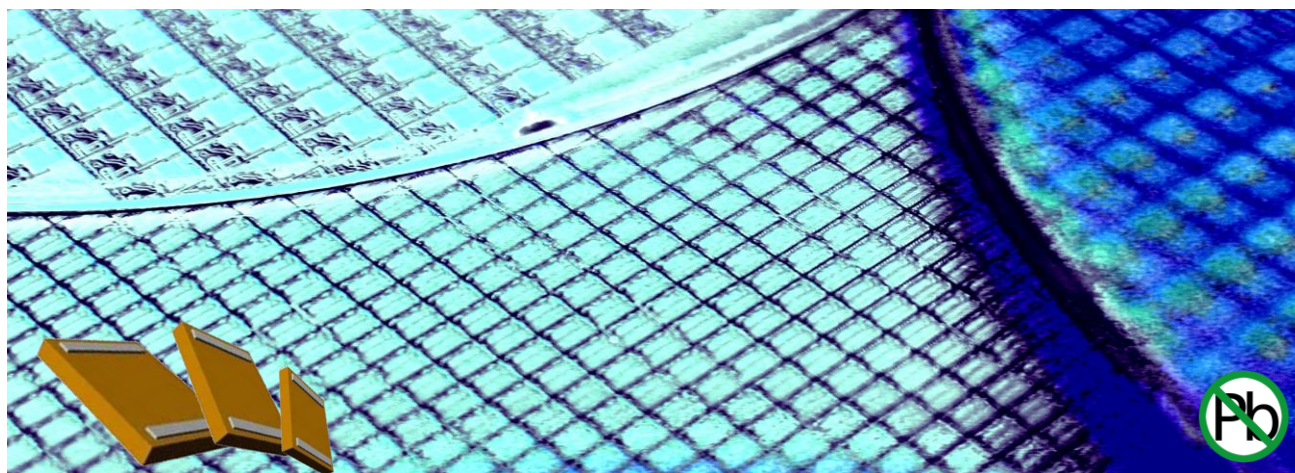


HSSC424.xxx - 0402 High Stability Silicon Capacitor

Rev 3.2



Key features

- Ultra high stability :
 - ◆ Temperature $\leq \pm 0.5\%$ (-55 °C to +150 °C)
 - ◆ Voltage $< 0.1\%$ /V
 - ◆ Negligible aging $< 0.001\%$ /1000hours
- Unique high capacitance in EIA/0402 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 with lead free reflow-soldering *Please refer to our assembly Application Note for further recommendations

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 **Reliability** is the main parameter thanks to our end of production Burn-in.

HSSC avoid 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 NP0
- Downsizing

The IPDiA technology features a capacitor integration capability (up to 250nF/mm²) 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		10	15	22	33	47	68
		Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
1 pF	100 pF:	935.131.424.310	935.131.424.315	935.131.424.322	935.131.424.333	935.131.424.347	935.131.424.368
10 pF	1 nF:	935.131.424.410	935.131.424.415	935.131.424.422	935.131.424.433	935.131.424.447	935.131.424.468
0.1 nF	1 nF:	935.131.424.510	935.131.424.515	935.131.424.522	935.131.424.533	935.131.724.547	Contact IPDIA Sales
1 nF	10 nF:	935.131.424.610					
10 nF	100 nF:						

(*) 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 pF to 100 nF ^(***)
Capacitance tolerances	±15 % ^(***)
Operating temperature range	-55 °C to 150 °C ^(**)
Storage temperatures	-70 °C to 165 °C
Temperature coefficient	<±0.5 %, from -55 °C to +150 °C
Breakdown voltage (BV)	11, 30 V ^(***)
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	100GΩ min @ 3V, from -55 °C to +150 °C
Ageing	Negligible, < 0.001 % / 1000h
Reliability	FIT < 0.017 parts / billion hours,
Capacitor height	Max 400 µm ^(*)

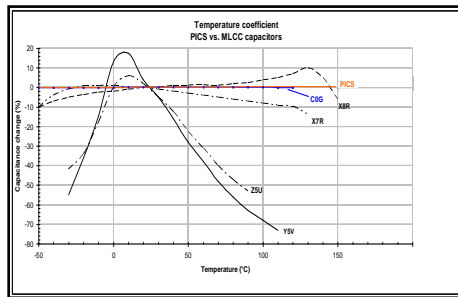


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

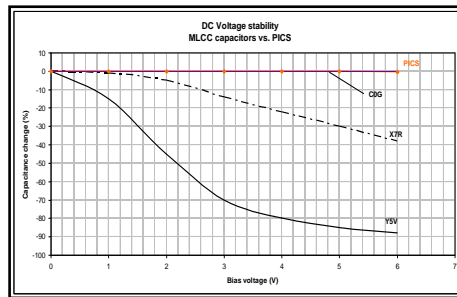


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

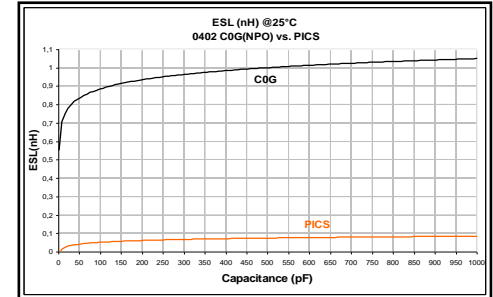


Fig.3 ESL versus capacitance value compared with alternative dielectrics

Part Number

935.131.	B.2	S.	U	XX	Value (E6)
	Breakdown Voltage	Size	Unit		
	4 = 11V	4 = 0402	0 = 10 f		10
	7 = 30V		1 = 0.1 p	5 = 1 n	15
			2 = 1 p	6 = 10 n	22
			3 = 10 p	7 = 0.1 µ	33
			4 = 0.1 n	8 = 1 µ	47
				9 = 10 µ	68

i.e.: 100 nF/0402 case (HSSC type)
→ 935.131.424.610

Termination and Outline

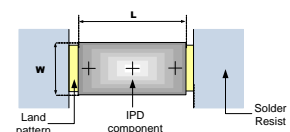
Termination

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

Typical dimensions, all dimensions in mm.

Package outline

Typ.		0402
Comp. size	L	1.16±0.05
	W	0.66±0.05



(0402 PCB footprint)

Packaging

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

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935131424533	935142521410	935151424610	939118492510	935152424610	935174733610	939114733510	935131426610	935152722456
935153630510	935142831510	935153521410	935152724547	935142521310	935152723510	935156722410	935156492510	935153521310
935131424522	935155733510	935154634522	935153831510	935154630510	935156733510	935156722456	935174730510	935132424533
939118722456	935133424547	935174732547	935174730410	935133424533	935133424522	935152722410	935146521410	939113733510
935152492510	935156424610	939113424610	935155424610	935151723510				