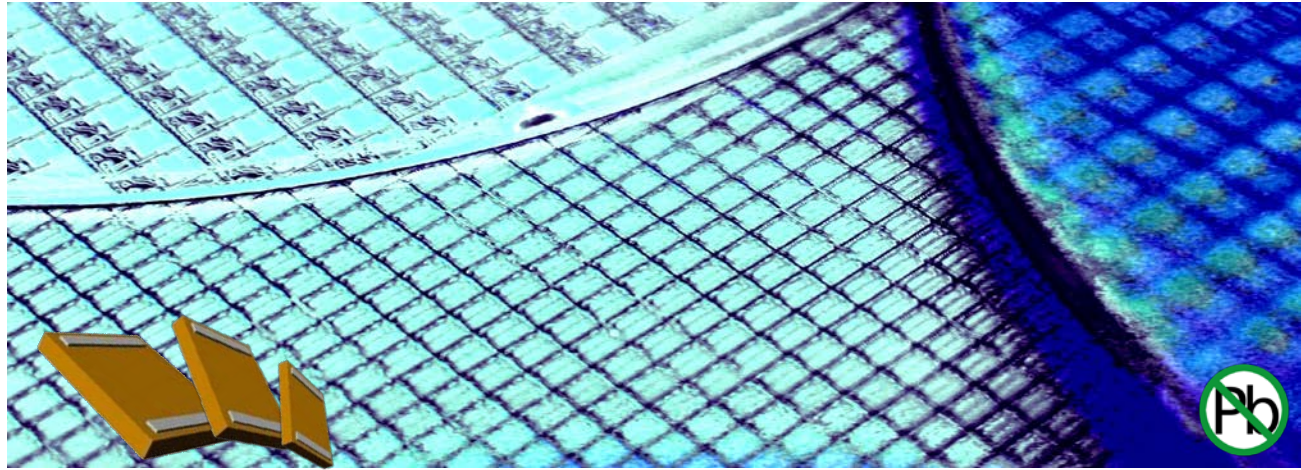


# LPSC424.xxx - 0402 Low Profile Silicon Capacitor

Rev 3.0



## Key features

- Ultra low profile (100µm)
- High stability of capacitance value:
  - ◆ Temperature  $<\pm 0.5\%$  (-55°C to +150°C)
  - ◆ Voltage  $<0.1\%$ /Volts
  - ◆ Negligible capacitance loss through ageing
- Unique high capacitance in EIA/0402 package size, up to 100 nF
- 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.

Low Profile Silicon Capacitors are available with **thicknesses down to 80µm** and are the most appropriate solution in applications with height constraints.

LPSC is the perfect choice for embedded technologies, modules, systems in package, when designers are looking at **utmost decoupling behaviours**.

The Silicon capacitor technology offers a capacitor integration capability (up to 250nF/mm<sup>2</sup>) which allows **downsizing** compared to Tantalum and MLCC.

## Key applications

- All demanding applications, such as medical, telecom, computer industries
- Decoupling / Filtering / Charge pump (i.e.: Pacemakers / mobile phones)
- High reliability applications
- Devices with battery operations
- Extreme miniaturization
- Suitable for Embedded technologies

The IPDiA technology features **high reliability**, up to 10 times better than alternative capacitor technologies such as Tantalum or MLCC, and eliminates cracking phenomena.

Silicon Capacitor technology also offers a very stable capacitor value over the full operating voltage & temperature range, with a high and stable insulation resistance.

This Silicon based technology is RoHS compliant and compatible with lead free reflow soldering process.

Electrical specification

		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	100 pF: 935.121.424.310	150 pF: 935.121.424.315	220 pF: 935.121.424.322	330 pF: 935.121.424.333	470 pF: 935.121.424.347	680 pF: 935.121.424.368
	0.1 nF	1 nF: 935.121.424.410	1.5 nF: 935.121.424.415	2.2 nF: 935.121.424.422	3.3 nF: 935.121.424.433	4.7 nF: 935.121.424.447	6.8 nF: 935.121.424.468
	1 nF	10 nF: 935.121.424.510	15 nF: 935.121.424.515	22 nF: 935.121.424.522	33 nF: 935.121.424.533	47 nF: 935.121.424.547	Contact IPDIA Sales
	10 nF	100 nF: 935.121.424.610					

(\*) 80 µm thickness on request

(\*\*) 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 <sup>(***)</sup>
Capacitance tolerances	±15 % <sup>(***)</sup>
Operating temperature range	-55 °C to 150 °C <sup>(**)</sup>
Storage temperatures	-70 °C to 165 °C
Temperature coefficient	<±0.5 %, from -55 °C to +150 °C
Breakdown voltage (BV)	11 VDC, 30VDC <sup>(***)</sup>
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 <sup>(***)</sup>
Insulation resistance	100GΩ min @ RVDC,25°C
Ageing	Negligible, < 0.001 % / 1000 h
Reliability	FIT<0.017 parts / billion hours,
Capacitor height	Max 100 µm <sup>(*)</sup>

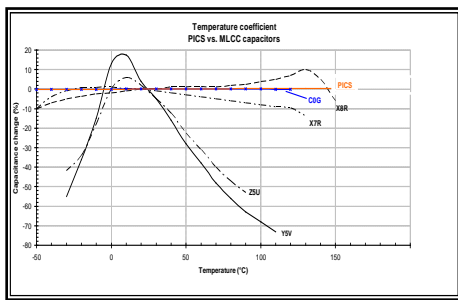


Fig.1 Capacitance change versus temperature variation compared with alternative dielectrics

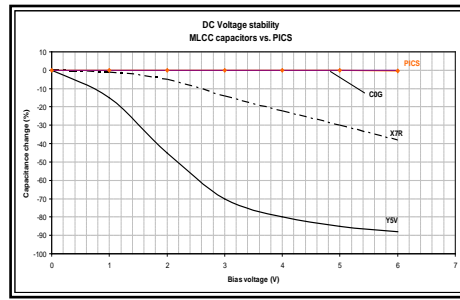


Fig.2 Capacitance change versus voltage variation compared with alternative dielectrics

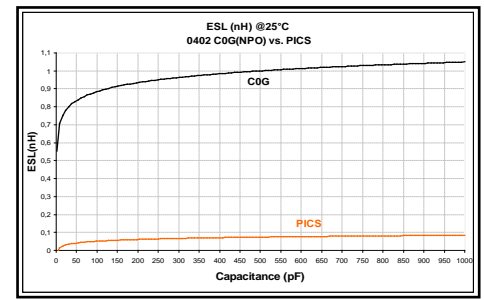


Fig.3 ESL versus capacitance value compared with alternative dielectrics

How to order

**935.121.**      **BV** → Breakdown Voltage (42 = 11V, 12 = 30V)      **S.** → Size (4 = 0402)      **U** → Unit (0 = 10f, 1 = 0.1p, 2 = 1p, 3 = 10p, 4 = 0.1n, 5 = 1n, 6 = 10n, 7 = 0.1u, 8 = 1u, 9 = 10u)      **XX** → Value (E6)

i.e.: 100 nF/0402 case (LPSC type) → 935.121.424.610

Termination and Outline

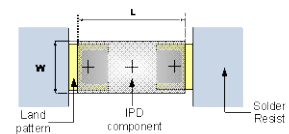
Termination

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	1.20±0.05
	W	0.70±0.05



(0402 PCB footprint)

Packaging

Tape and reel, tray, waffle pack or wafer delivery

Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.