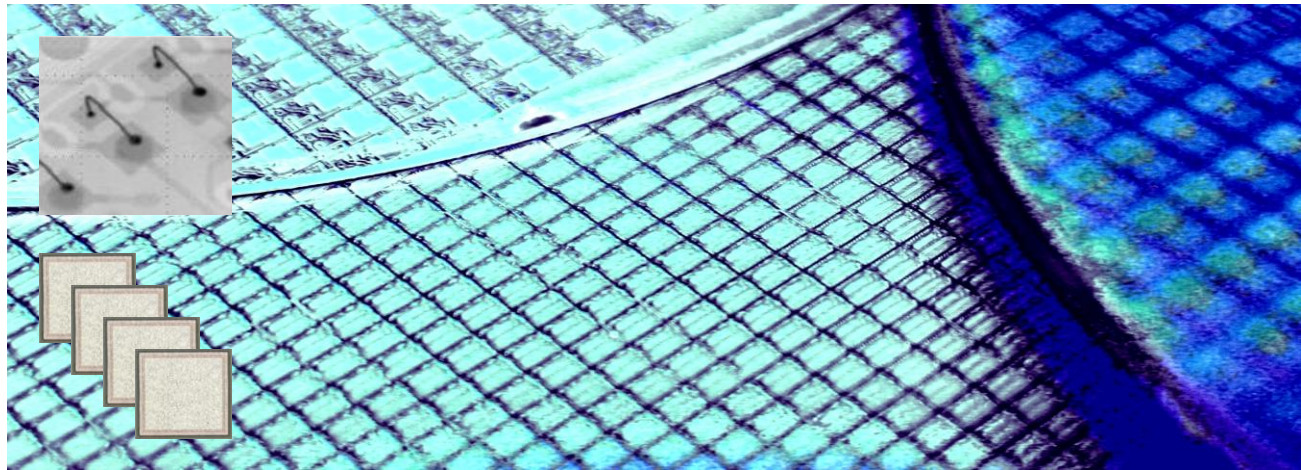


# Wire Bonding Silicon Vertical Capacitor WBSC142.xxx

Rev 3.2



## Key features

- Full compatible to monolithic ceramic capacitors
- Ultra high stability of capacitance value:
  - ◆ Temperature  $\pm 1\%$  (-55 °C to +150 °C)
  - ◆ Voltage  $< 0.1\%$  / Volts
  - ◆ Negligible capacitance loss through ageing
- Custom sizes, values, shapes, tolerances and higher voltage
- Low leakage current down to 100 pA
- Low profile

## Key applications

- Any demanding applications, such as medical, aerospace, automotive industrial...
- Applicable for standard wire bonding approach (Top & Bottom Gold metalizations)
- Decoupling / Filtering / Charge pump (i.e: Pacemakers / defibrillators)
- High reliability applications
- Downsizing

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

The capacitor integration capability (up to 250nF/mm<sup>2</sup>) allows **smaller footprint** than ceramic alternative to answer strong volumes constraints.

This technology provides industry leading performances relative to the **capacitor stability** over the full **operating voltage & temperature range**.

This technology also offers **high reliability**, up to 10 times better than ceramic capacitors and eliminates cracks phenomenon.

The IPDiA technology is the most appropriate solution for Chip On Board, Chip On Foil, Chip On Glass, Chip On Ceramic, flip chip and embedded applications, when designers are looking at **utmost decoupling behaviours**.

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



Electrical specification

(\*) Other values on request

		Capacitance value					
		10	15	22	33	47	68
Unit	1pF	10pF: 935.142.522.210 935.142.528.210	15pF: 935.142.528.215	22pF: 935.142.528.222	33pF: 935.142.528.233	47pF: 935.142.528.247	68pF: 935.142.528.268
	10pF	100pF: 935.142.522.310 935.142.521.310	150pF: 935.142.522.315 935.142.528.315	220pF: 935.142.528.322	330pF: 935.142.528.333	Contact IPDIA Sales	680pF: 935.142.521.368
	0.1nF	1nF: 935.142.521.410	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	1nF	10nF: 935.142.620.510	Contact IPDIA Sales	22nF: 935.142.827.522 935.142.624.522	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales
	10nF	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales	Contact IPDIA Sales:	Contact IPDIA Sales

Parameters	Value
Capacitance range	10pF to 22nF
Capacitance tolerances	±15% <sup>(1)</sup>
Operating temperature range	-55 to 150 °C <sup>(1)</sup>
Storage temperatures	-70 to 165 °C
Temperature coefficient	±1%, from -55 to +150°C
Breakdown Voltage (BV)	150, 50, 30 <sup>(1)</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 100 mΩ
Insulation resistance	100GΩ @ 16V, from -55 to 150°C
Aging	Negligible, < 0.001% / 1000h
Reliability	FIT<0.017 parts / billions hours, RVDC, from -55 to +150°C
Capacitor height	Max 250µm <sup>(1)</sup>

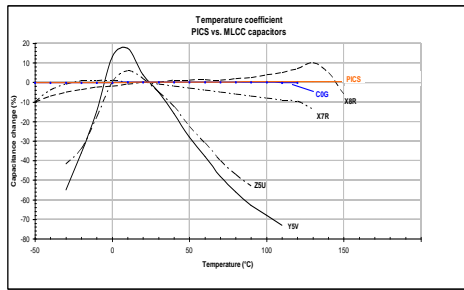


Fig.1 Capacitance change versus temperature variation compared to alternative technologies

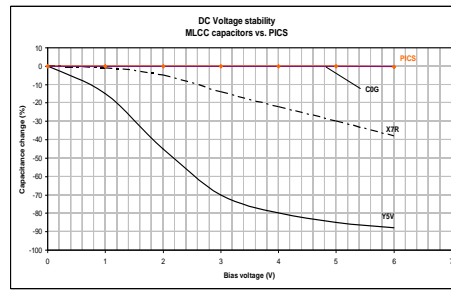


Fig.2 Capacitance change versus voltage variation compared to alternative

Part Number

**935.142**      **B.2** → **Breakdown Voltage**      **S.** → **Size**      **U** → **Unit**      **XX** → **Value (E6)**

i.e: 10nF/0303 case (WBSC type) → 935.142.620.510

Breakdown Voltage: 8= 30V, 6= 50V, 5= 150V

Size: 0 = 0303, 1 = 0202, 2 = 0101, 3 = 0404, 4 = 0504, 5 = 0302, 6 = 0503, 7 = 0402, 8 = 0201

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

Value (E6): 10, 15, 22, 33, 47, 68

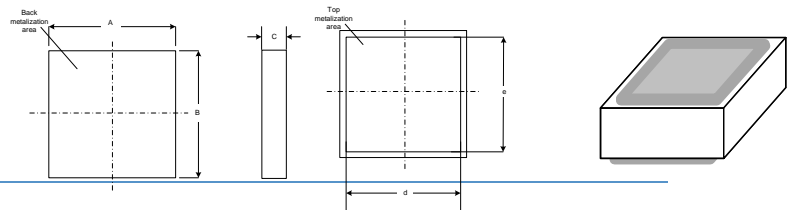
Termination & Outline

Termination

Ti (0.1µm)/Ni(0.3µm)/Au(0.2µm) for bottom Electrode metalization  
 Top electrode : TiW/Au  
 Other finishings are available on request such as Aluminum or Copper (Cu:5µm).  
 Applicable for standard wire bonding approach (ball and wedge).  
 Typical dimensions, all dimensions in mm.

Package outline

Typ.		0101	0201	0202	0303	0402	0404	0504
Comp. size	A	0.26 ±0.02	0.463 ±0.05	0.463 ±0.05	0.80 ±0.05	1.02 ±0.05	1.02 ±0.05	1.37 ±0.05
	B	0.26 ±0.02	0.26 ±0.02	0.463 ±0.05	0.80 ±0.05	0.463 ±0.05	1.02 ±0.05	1.02 ±0.05



Packaging

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

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