

# ATSC

## Automotive high Temperature Si Capacitors up to 200°C



Rev 1.7

### Key features

- Qualified according to AEC-Q100.
  - Ultra long life @ 200°C.
  - High stability of capacitance value over temperature, voltage and aging.
  - 16 V operating voltage.
  - Load dump.
  - 8 kV HBM ESD.
  - Suitable for high temperature leadframe mounting.
- (please refer to our Assembly Application Note for more details)

### Key applications

- Harsh conditions sensors
- 200°C sensors
- Ignition sensors
- Oil pressure sensors
- Temperature sensors
- Motor management sensors
- Turbo charger sensors
- Hall effect sensors

The ATSC capacitors target **Under-the-hood electronics** and all **sensors exposed to harsh conditions** in the automotive market segment. The deep trench MOS capacitors manufactured in **Murata\* ISO-TS 16949 certified facility**, combined with a unique Mosaic design and distributed trench capacitors drive an unprecedented level of electrical performances. Thanks to the purity of the oxide cured at a temperature of 900°C during the manufacturing process, Murata is now offering a range of capacitors tested according to **AEC-Q100 conditions up to 200°C** with a lifetime that has never been equaled.

The Sicap technology features **high reliability**- up to 10 times better than alternative capacitor technologies - coupled with **stability** and **low profile**. The ATSC capacitors offer **enhanced decoupling performances** compared with standard external SMD solutions and can be integrated directly inside a System in Package or onto a leadframe.

\*Murata Integrated Passive Solutions

## Electrical specifications

ATSC.xxx	Automotive high Temp. Si Capacitors from -55°C to 200°C			
Part number	Capacitance	BV	Case size	Thickness
935174730410-xxA	1 nF	30 V	0202	250 μm
935174732547-xxA	47 nF	30 V	0505	250 μm
935174733610-xxA	100 nF	30 V	0605	250 μm

Parameter	Value
Capacitance range	390 pF to 1 μF(*)
Capacitance tolerances	±15 %(*)
Operating temperature range	-55 to 200°C
Storage temperature range	-70 to 215°C(**)
Temperature coefficient	+60 ppm/K
Breakdown Voltage (BV)	30 VDC
Capacitance variation versus	0.1 %/V (from 0 V to RVDC)
Insulation resistance	50 GΩ @ 10 V, @ 25°C, t > 120s, for 100 nF
Aging	Negligible, < 0.001% / 1000 h
Reliability	FIT < 0.017 parts / billions hours
Capacitor thickness	250 μm
(*) other values on request	(**) w/o packing

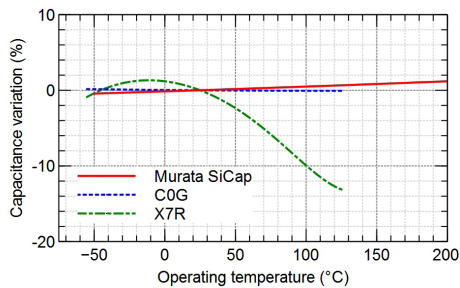


Fig. 1: Capacitance variation vs temperature (for ATSC and MLCC technologies)

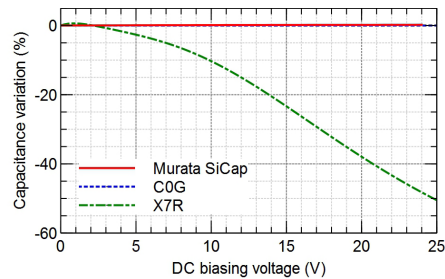
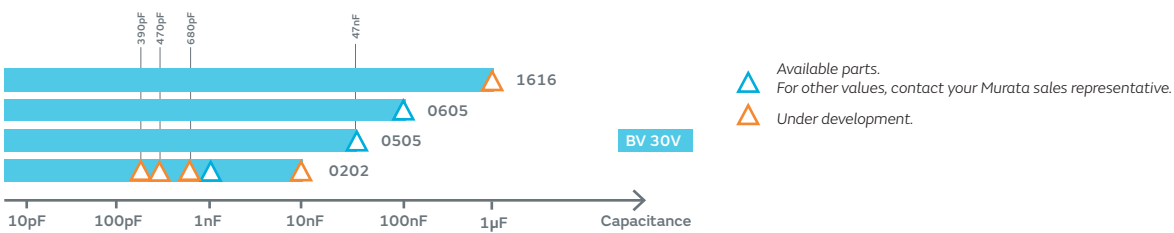


Fig. 2: Capacitance variation vs DC biasing voltage @ BV 30 (for ATSC and MLCC technologies)

## Capacitance range

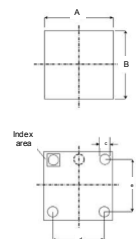


## Termination

Pad finishing in Aluminum. Applicable for high temperature wirebonding and other mountings. Other finishing available such as nickel or gold.

## Package outline

	Case size		Pad dimensions (±0.05 μm)		
	A	B	c	d	e
0202	0.65	0.65	0.15	0.30	0.30
0505	1.32	1.32	0.15	0.96	0.96
0605	1.59	1.32	0.15	0.96	0.96



## Packaging

Tape and reel, waffle pack or wafer delivery.



**Assembly by wirebonding**

The attachment techniques recommended by Murata for the ATSC capacitors on the customers substrates are fully detailed in specific documents available on our website. To assure the correct use and proper functioning of Murata Silicon capacitors please download the assembly instructions on [www.ipdia.com/assembly](http://www.ipdia.com/assembly) and read them carefully.



For ATSC assembly instructions, please go to [www.ipdia.com/assembly](http://www.ipdia.com/assembly) and download the pdf file called: 'ATSC Capacitors 250 µm - Assembly by Wirebonding'

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