

ATSC

Automotive high Temperature Si Capacitors up to 200°C



Rev 1.8

Key features

- Qualified according to AEC-Q100
- Ultra long life @ 200°C
- High stability of capacitance value over temperature, voltage and ageing
- 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* IATF 16949 certified facility**, combined with a unique Mosaic structure 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 qualified 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 **high stability** and **low profile**. The ATSC capacitors offer **enhanced decoupling performances** compared with standard competitors SMD solutions and is fully compatible with a System in Package assembly and 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
935174730339-T3A	390 pF	30 V	0202	250 μm
935174730347-T3A	470 pF	30 v	0202	250 μm
935174730368-T3A	680 pF	30 V	0202	250 μm
935174730410-T3A	1 nF	30 V	0202	250 μm
935174730510-T3A	10 nF	30 V	0202	250 μm
935174732547-T3A	47 nF	30 V	0505	250 μm
935174733610-T3A	100 nF	30 V	0605	250 μm
935174736710-T3A	1 μF	30 V	1616	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	+80 ppm/K
Breakdown Voltage (BV)	30 VDC
Rated voltage	16 VDC
Capacitance variation versus voltage	0.1 %/V (from 0 V to RVDC)
Insulation resistance	50 GΩ @ 10 V, @ 25°C, t>120s, for 100 nF, or 15GΩ @15V for 100 nF
Ageing	Negligible, < 0.001% / 1000 h
Reliability	FIT<0.017 parts / billions hours
(*) other values on request (**) w/o packing	

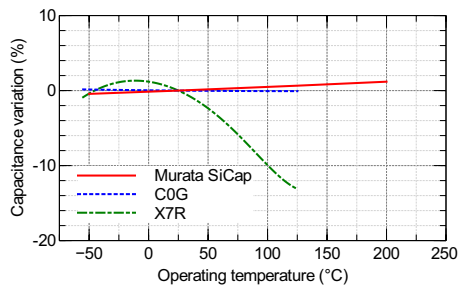


Fig. 1: Capacitance variation vs temperature (for ATSC and MLCC technologies)

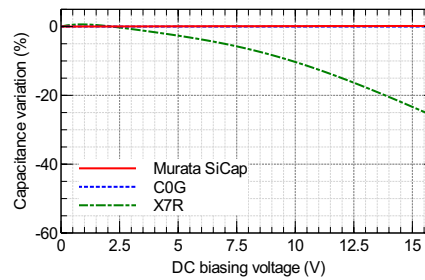
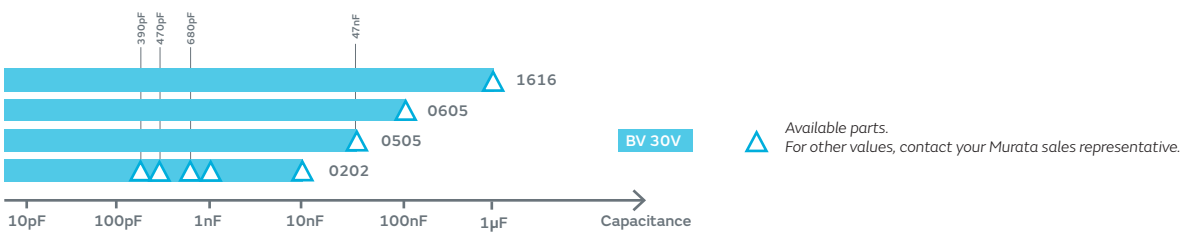


Fig.2: Capacitance variation vs DC biasing voltage @ BV 30 (for ATSC and MLCC technologies)

Capacitance range

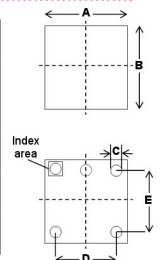


Termination

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	0.63	0.63	0.15	0.293	0.293
0505	1.32	1.32	0.15	0.96	0.96
0605	1.59	1.32	0.15	1.160	0.96
1616	4.07	4.07	0.15	3.44	3.44



Packaging

Tape and reel, waffle pack or wafer delivery.



Assembly

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 latest assembly instructions on www.murata.com and read them carefully.



For the assembly instructions, please go to :
<https://www.murata.com/> and follow the sections :
 Products > Capacitor > Silicon Capacitor > ATSC

Download the pdf files called “Assembly Note ATSC”

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www.murata.com

mis@murata.com