Why don t power amplifiers use tantalum capacitors

Are tantalum capacitors bad?
Tantalum caps have a reputation for spontaneously shorting out and exploding. As well,they don't sound very good when used in the audio path. In my career as an electronics tech working on medical and industrial equipment I never found a defective tantalum capacitor other than a few that were installed backwards.

Can a tantalum electrolytic capacitor be used as a voltage regulator?
An aluminum electrolytic would handle it OK,but a tantalum might go poof. Honestly the best place to use these depending on voltage and size is as power supply decoupling capacitors and in voltage regulator circuits. Thanks again for all the information..

What ohm is a tantalum capacitor?
Many have an output inpedance of only 0.02 ohms for a damping factor of 400. Tantalum capacitors change their value when their DC voltage changes. So they "modulate" the signal with even harmonics when used as audio coupling capacitors. Electrolytic capacitors modulate a small amount and plastic film capacitors are perfect.

What is a tantalum capacitor used for?
Tantalum is used to create small sized capacitors with 'large' capacitance. Compared to other materials the oxide layer can be quite thin. So for all applications where pcb space is limited (e.g. mobile phones) they are the to go to type of capacitor when ceramic doesn't cut it anymore. Also tantalum capacitors can be created with quite small ESR.

Do tantalum capacitors have a business in an audio chain?
People at say that distorting ceramic, electrolytic and tantalum capacitors have no business in an audio chain. Tantalum capacitors are small so i think their ripple current rating is low. I have had many tantalum capacitors blow up and disappear so I don't use them anymore. Uncle $crooge Decoupling the DC from an audio signal???

Can a tantalum be used as a voltage regulator?
Do NOT ever allow the tantalum to see reverse bias in this application. An aluminum electrolytic would handle it OK,but a tantalum might go poof. Honestly the best place to use these depending on voltage and size is as power supply decoupling capacitors and in voltage regulator circuits.

So I wanted to start a discussion about tantalum caps with the main questions being: - When and why to use tantalum capacitors? - Why avoid using tantalum capacitors? - Alternatives to tantalum capacitors with pros and cons. I did some quick research already and here"s summary of what I"ve found so far Why and when to use tantalum capacitors?

Why don t power amplifiers use tantalum capacitors

A Tantalum capacitor has good capacitance per volume and low ESR, at the expense of a propensity to (any or all of) smoke, shriek, burst into flame and explode when subjected to small voltage excursions above rated ...

"Some audio power amplifier designs have used small Tantalum bead capacitors, with apparent success. Initial measurements of a number of Tantalum capacitors revealed large distortions. Measured at 0.3 volts with and without DC bias, my Tantalum capacitor stocks produced at least ten times more distortion than found with low cost ...

Capacitors play key roles in the design of filters, amplifiers, power supplies and many additional circuits. Here"s a brief guide to the different types and the applications they"re best suited for.

Solid SMD tantalum capacitors: These capacitors use solid electrolyte, and are sensitive to voltage spikes or current surges. Characterized by high capacitance density within a specific temperature range. They are used in several electronic applications, but characteristics are little different from polymer electrolyte capacitors. These are available in standard values ...

The only other capacitor commonly available that cares about this DC orientation is the tantalum capacitor - other plastic and ceramic types aren"t concerned about their orientation with regard to DC voltages. Aluminium electrolytic and tantalum capacitors that have a reverse DC voltage applied to them will be destroyed by the experience (see pic, left), and if ...

Tantalum capacitors are fine so long as you apply the correct guidelines. Lots of space rated circuits use tantalum capacitors - they win on high volumetric efficiency and low ESR. 1) Don"t run a 6V tantalum cap as a decoupling capacitor on a 5V rail. You need to derate to use at least a 12V or even better a 20V component here. They ...

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Tantalum capacitors are a type of polarized electrolytic capacitor. It uses a tantalum metal as the anode (+), a Manganese dioxide (MnO2) electrolyte as the cathode (-), and a thin coating of tantalum oxide acting as the dielectric. In this blog post, we will discuss its characteristics, uses, and failure reasons.

Aging: Electrolytic capacitors have a limited lifespan (typically 20-30 years), after which they dry out or leak.; Leakage: Over time, electrolytic capacitors can leak electrolyte fluid, leading to corrosive damage inside the amplifier.; Capacity Loss: Capacitors lose their ability to hold a charge, leading to weak or distorted sound output.; Power Issues: Failing capacitors can lead ...

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Stan explained at the time that from his experimentation, solid dielectric capacitors (tantalum, silver mica) consistently provided better sonic performance when used in the signal path. I recall his comment that the capacitors in his designs remain powered up at all times and are biased in the middle of their operating voltage range ...

A Tantalum capacitor has good capacitance per volume and low ESR, at the expense of a propensity to (any or all of) smoke, shriek, burst into flame and explode when subjected to small voltage excursions above rated value when connected to an other than low energy source. In this application it may be safe enough. Or not.

I have a query regarding the application of LM1117-3.3V regulator. The applications information suggests the use of Tantalum Bypass Capacitors. Can I instead use a ceramic bypass capacitor? And, what would be things I would have to keep in mind in case I prefer the said option? Thank you, Harsh Songara

Large Capacitance at a Competitive Price: Although aluminum capacitors don"t match tantalum capacitors in terms of capacitance-to-size ratio, they offer a significant amount of capacitance at an attractive price point. They are compact and cost-effective. Great Reliability Under Normal Use: The lifespan of aluminum electrolytic capacitors depends on ...

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