



Attain Audiophile-Level Music With Vishay MELF Resistors

Devices Deliver Superior Audio Quality for VentureCraft's SounDroid Vantam Headphone Amplifiers

While currently in its infancy state in the audio market, the evolution of high-resolution technology is already well under way. One company leading the charge is VentureCraft, a Tokyo-based leader in the development of high-resolution portable amplifiers, music players, and headphone amplifiers, including the popular SounDroid Vantam line.



Vantam's latest headphone amplifiers support PCM up to 384K/32 bit and DSD to 11.2 MHz, while allowing users to enjoy the breadth and stereoscopic effect of balanced audio. The units combine a high-performance operation amplifier, headphone amplifiers, a DAC, and digital sound upsampling (DSUS) and USB audio processors, all in a stylish, rugged, carbon-fiber reinforced case.

For the fine tuning of the Vantam's analog signal paths — including the low-pass filter (LPF), negative feedback circuits (NFB), pre-amp IC, IV converters, and headphone amplifying circuits — VentureCraft has previously relied on carbon thick film chip resistors. Over the past several years, as it focused on delivering differentiated audio performance, the company made the switch to thin film technology. Last year VentureCraft began specifying Vishay's thin film MELF resistors when it learned the components could provide superior sound quality.

Vishay's MELF resistors are manufactured by applying an advanced sputtering process, depositing a proprietary NiCr alloy of extremely high microstructural quality on a perfectly smooth alumina substrate inside an ultra-high vacuum chamber. This sophisticated internal structure provides an ideal basis for low-noise performance, which is further enhanced by the cylindrical shape of the resistors — keeping in mind that the local electric field strength is a major contributor in generating current noise. With a 3.14x larger surface area compared to flat chip resistors on the same pad size, the devices yield a much higher aspect ratio, which in turn results in a very low field of strength along the resistor. These two factors make Vishay's MELF resistors the premium choice for high-end audio applications requiring low noise. Compared to thick film resistors, the devices typically offer an improvement in spectral density on the order of -40 dB V/Hz, and relative to thin film resistors roughly -10 dB V/Hz.



SounDroid VANTAM R627 II

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Before incorporating Vishay components into the newly released SounDroid Vantam, VentureCraft performed extensive testing as well as personal sound evaluations of the MMU 0102, MMA 0204, and MMB 0207 thin film MELF resistors. The tests and evaluations were conducted using a network analyzer and the human ear, which all confirmed the improved sound quality.

“By dramatically reducing thermal noise, Vishay’s MELF devices are very effective solutions in high-resolution audio products,” said Mr. Masaaki Nemoto, engineering director at VentureCraft. “They provide a feeling of definition across all frequency bands, improving the quality of sound without fatigue. The sound is very clear, especially in high-frequency zones, where it provides a sense of transparency. After evaluating the devices, we began incorporating them into the Vantam line to give our customers the best listening experience possible, starting with Red Shoulder, and then the piano white Vishay limited, the Jazz Master Limited, the Classic Master Limited, and the red R627II. The results have been fantastic and we will continue to rely on Vishay as the Vantam line grows.”

As this new era of improved sound quality begins, further developments in audio circuit design are likely to magnify the need precision resistors and will require designers to have an understanding of the effects of performance in their circuit design. Companies like VentureCraft are already at the front of the pack.

