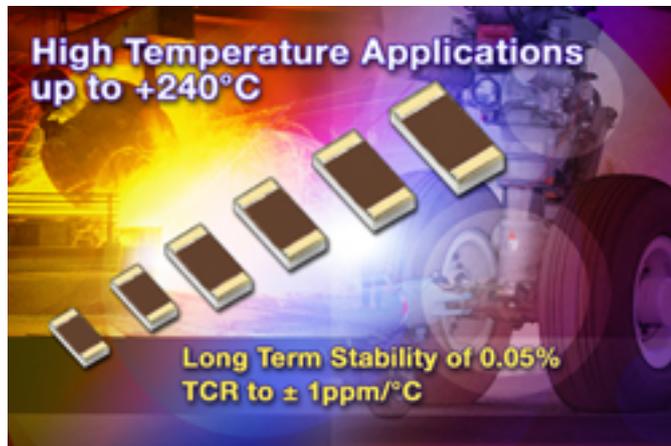


Foil Resistors Operate at up to +240°C, Tout Desirable Load-Life Stability



Vishay Precision Group announced that its Vishay Foil Resistors division (VFR) has introduced a new series of ultra-high-precision Bulk Metal Z1-Foil hybrid chip resistors designed for demanding high-temperature applications to +240°C. The devices are designed for hybrid circuits with aluminum wire bonding technology. The HTHA series is based on VFR's next-generation Z1-Foil technology, which provides an order of magnitude reduction in the Bulk Metal Foil element's sensitivity to temperature changes — both external and internal — while providing long-term stability in high-temperature environments, according to the company. HTHA devices offer TCR of ± 1 ppm/°C from -55°C to +125°C and ± 2.5 ppm/°C from -55°C to +220°C, +25°C ref. The resistors feature exceptional load-life stability to $\pm 0.05\%$ at +220°C for 2,000 hours at working power, long-term stability to $\pm 0.05\%$ at +240°C for 2,000 hours (no power), and tight tolerances to $\pm 0.02\%$. The devices are capable of withstanding electrostatic discharges to at least 25 kV without degradation.

The HTHA series is offered in six case sizes ranging from 0603 to 2512 and features working power to 150 mW at +220°C. The devices provide a wide resistance range from 5 Ω to 125 k Ω , with any resistance value within this range available at any tolerance with no additional cost or lead time effect. The resistors feature a rise time of 1.0 ns, with effectively no ringing, a thermal stabilization time of <1 s (nominal value achieved within 10 ppm of steady state value), current noise of 0.010 μ Vrms per volt of applied voltage (<-40 dB), and a voltage coefficient of <0.1 ppm/V.

The HTHA series is optimized for a wide variety of high-temperature applications, including geothermal measuring equipment, turbine engine control, and environmental test chambers in military, industrial, automotive, and down-hole drilling systems. Many analog circuits in these applications require passive components such as resistors to have a minimal drift from their initial values when operating above +175°C and in humid environments. In high-temperature applications, the most important factor is the end-of-life tolerance, and, to a lesser extent, the initial tolerance. HTHA resistors provide stabilities well under the

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maximum allowable drift required by customers' specifications through thousands of hours of operation under harsh conditions.

The Z1-Foil technology allows VFR to produce customer-oriented products designed to satisfy unique and specific technical requirements. In addition to the special chip stabilization under extreme environment conditions in the production line, additional specially oriented post manufacturing operations (PMO) are offered for high-temperature applications that require an even higher degree of reliability and stability.

Vishay Precision Group

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[1] <http://www.vishaypg.com>