

Fast Facts

WIN – Water Insoluble Nitride Thin Film Precision Resistors



WIN series thin film chip resistors use an advanced metal film technology to provide high levels of reliability and stability for precision applications. The water insoluble nitride film avoids the moisture vulnerability problems of nichrome and passivated nichrome technologies. WIN series delivers very low and predictable life drift and high reliability even under conditions of high humidity and in the event of damage to the component coating layer.

Available in 0603, 0805 and 1206 sizes at 0.1W, 0.25W and 0.33W respectively, the series offers resistance values from 10R to 1MΩ with a tolerance of $\pm 0.1\%$ and TCR of $\pm 25\text{ppm}/^\circ\text{C}$.

Market Segments

- Industrial
- Medical
- IT & communications
- Aerospace

Applications

- Server power supplies
- Process control
- Safety critical systems
- Exposed telecom systems
- Portable medical products

Features

- Reliable water insoluble nitride film
- Low typical 2000 hour life drift of $\pm 0.08\%$
- Low typical moisture resistance drift of $\pm 100\text{ppm}$ ($\pm 0.01\%$)
- Good pulse performance up to 3kV peak on 1.2/50μs

Benefits

- Inherent moisture resistance removes reliance on expensive assembly-level sealing or encapsulation processes.
- Low, predictable life drift frees up error budget to enable precision requirements to be relaxed elsewhere in the design.
- Biased moisture stability ($+85^\circ\text{C}$ / 85%RH with dc bias) at 2000 hours is better than 0.1% giving high reliability and so reducing field failure costs
- Inherently sulfur resistant (Ag-free), as demonstrated in ASTM B809 pass result, which gives high reliability and so reduces field failure costs

Our Advantage

For circuit designers who need to guarantee reliable and stable analogue circuit performance in adverse or unpredictable environmental and pulse conditions we provide WIN series which guarantees inherent moisture resistance without relying on coating, sealing or encapsulation strategies, and competitive pulse performance, as demonstrated in Appendix 1.

Appendix 1 Competitor Comparison

The only close equivalent parts are Vishay PTN0603, PTN0805 & PTN1206, and WIN series may be used as an alternative in these cases.

WIN has competitive surge performance compared to MELF metal film resistors, as follows:

1.2/50 μ s Peak Voltage Comparison (Maximum voltages relate to values above about 10K.)			
WIN	Maximum Peak Voltage	Closest Footprint Vishay MELF	Maximum Peak Voltage
T0603	1.0kV	-	-
T0805	1.7kV	MMU0102	1.0kV
T1206	3.0kV	MMA0204	2.0kV
ΔR < 0.1%		ΔR < 0.5%	

10/700 μ s Peak Voltage Comparison (Maximum voltages relate to values above about 10K.)			
WIN	Maximum Peak Voltage	Closest Footprint Vishay MELF	Maximum Peak Voltage
T0603	0.6kV	-	-
T0805	1.0kV	MMU0102	0.6kV
T1206	2.0kV	MMA0204	1.0kV
ΔR < 0.1%		ΔR < 0.5%	

WIN offers a significant humidity performance advantage over the closest available technology, which is passivated nichrome. This has been demonstrated as follows:

Accelerated Life Test (Pressure Cooker 15 psi, 120°C , 10 hours)

