GORE® High Temperature Film
For Capacitors in Aerospace & Defense Power Electronics

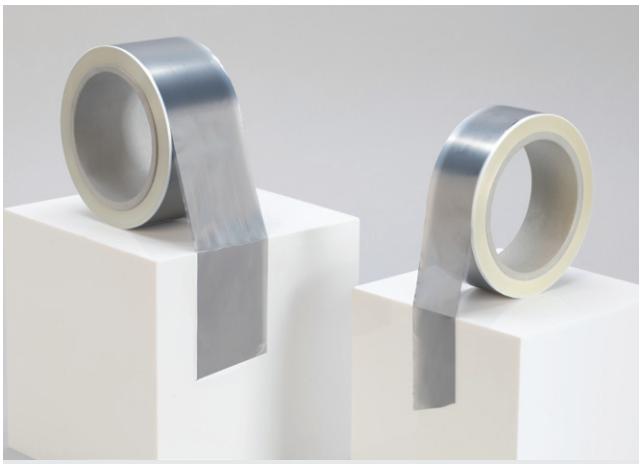
Increase System Power Density

Conventional capacitor films, such as polypropylene (BOPP), used in high-power electronics must be cooled (typically to 80°C), negating the power density benefits of silicon carbide (SiC) switches. Gore offers an innovative capacitor film technology that increases system power density at higher temperatures unmatched by conventional films.

GORE® High Temperature Film withstands higher power loads with low dielectric loss, reducing or eliminating system cooling requirements. Capacitors featuring Gore's unique film deliver reliable, long-lasting capacitance performance at elevated temperatures in electrification systems (Table 1). As a result, fewer components need to be combined in a series-parallel connection to handle extreme aerospace and defense conditions.

Table 1: Key Film Attributes

Property	Value
Temperature Range °C (°F)	- 55 to +200 (-67 to +392)
Material Construction	Engineered Fluoropolymer
Thickness µm	4
Dielectric Constant	2.1
Loss Tangent (Tanδ)	0.0002
Insulation Resistance MΩ x µF at 25 °C	7,000,000



Features & Benefits

- Increases system power density with low-dielectric loss
- Withstands high temperatures, power spikes, shock, vibration
- Enables stable, reliable capacitance over longer periods
- Reduces or eliminates system cooling requirements
- Extends system longevity and lowers maintenance costs

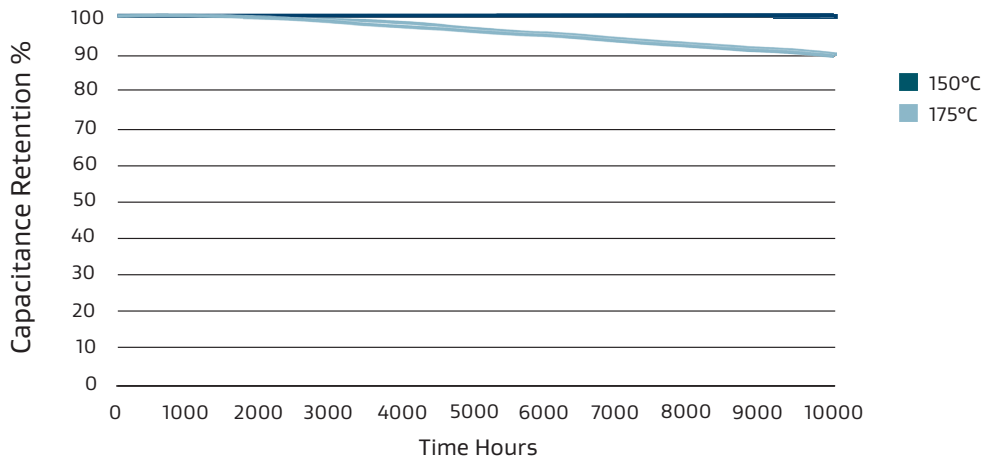
Together, improving life

Stable & Reliable Capacitance Over Longer Periods

Self-clearing is a predictable and measurable phenomenon that can and should be modeled to predict real-world performance accurately. Therefore, Gore tested the temperature and voltage accelerated life performance of their capacitor film technology.

Results validated that GORE® High Temperature Film endures higher temperatures, ensuring stable and reliable performance over longer periods without failure to meet demanding mission profiles (Figure 1).

Figure 1: Voltage Endurance at Temperature[a] of GORE® High Temperature Film



a. Results from 150 finished-good capacitors. Data represents lower 10 percentile at 90% confidence.

Simplified Design & Integration with Minimal De-Rating

Traditional capacitors require complex system design and integration due to substantial de-rating to meet high capacitance and voltage requirements at high temperatures, resulting in excessive amounts of small capacitors. In addition, these capacitors can experience elevated dielectric loss, especially at high temperatures, resulting in excessive capacitance required to meet power handling needs.

Alternatively, capacitors featuring GORE® High Temperature Film deliver stable capacitance with minimal de-rating under high temperature and voltage conditions (Figures 2–4). Aircraft engineers can simplify system design and integration, reduce failure points, and decrease weight — particularly when integrating SiC switches into existing architectures.

Figure 2: Capacitance Stability across Temperatures Comparison

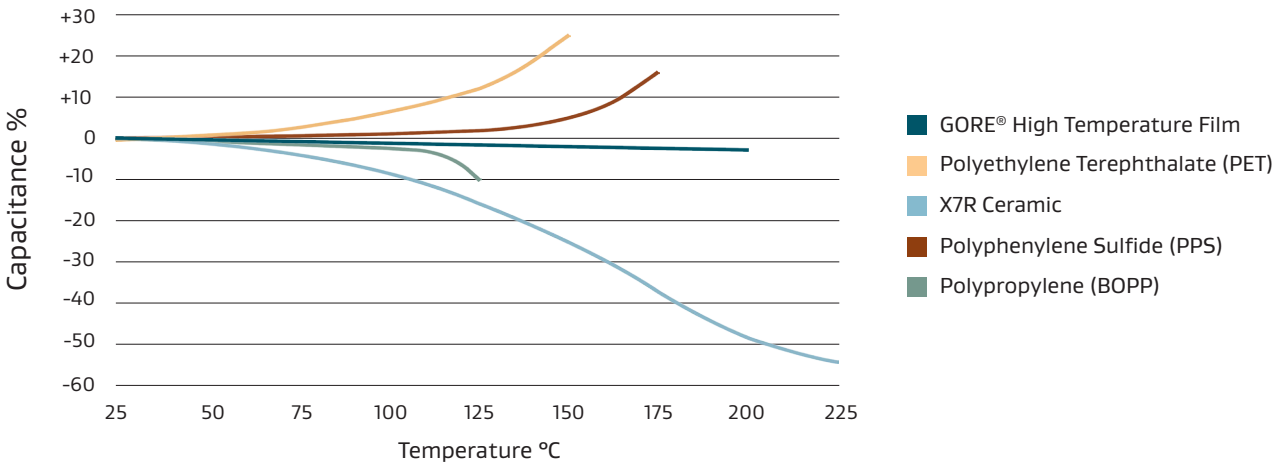
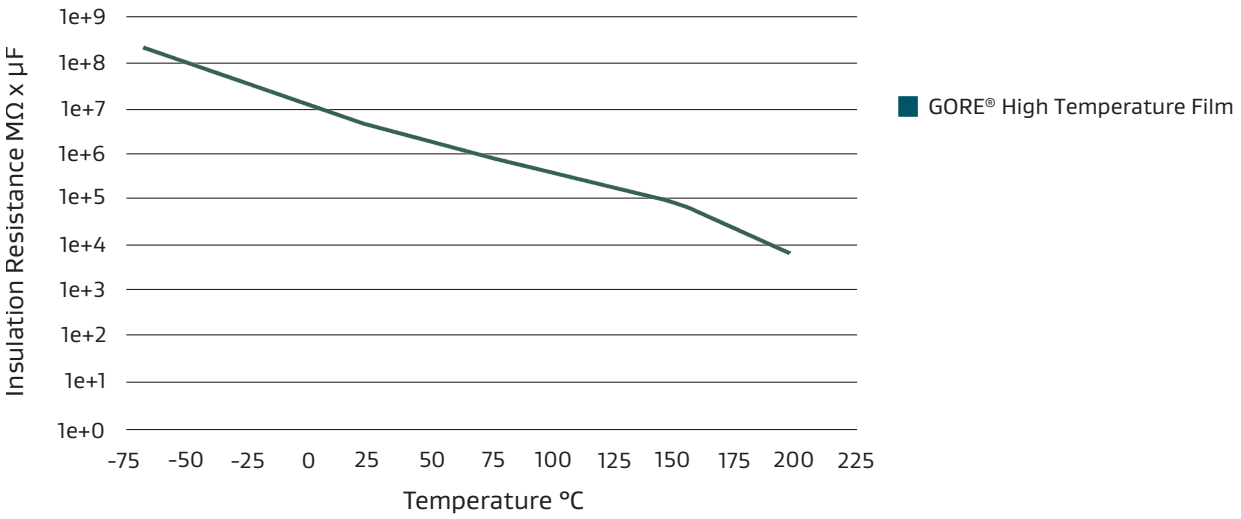
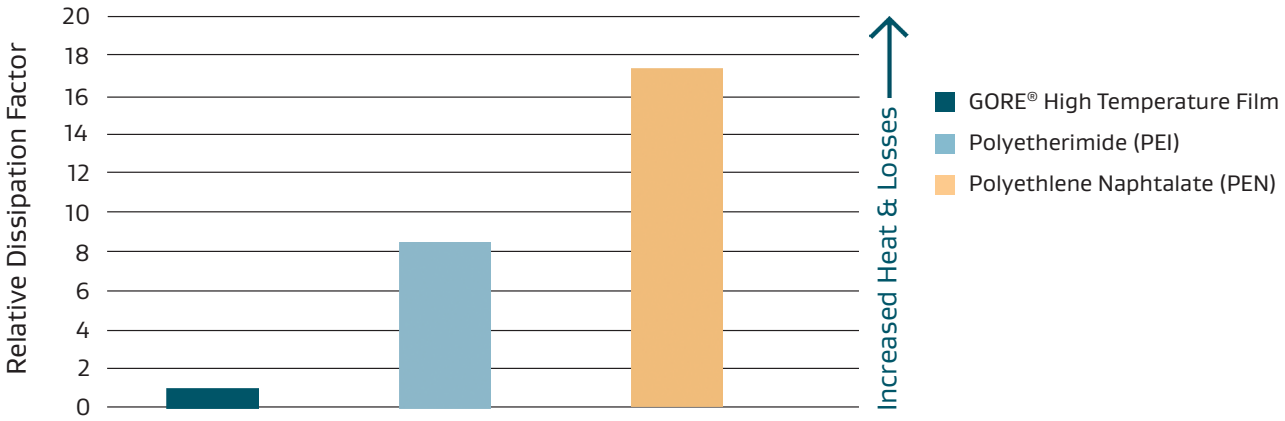


Figure 3: Insulation Resistance across Temperatures[a] of GORE® High Temperature Film



a. Gore's 4-µm film tested at 300 V.

Figure 4: Dissipation Factor (Dielectric Loss) Comparison



Ordering Information

Gore has partnered with leading manufacturers to supply high-performance capacitors featuring GORE® High Temperature Film for aerospace and defense power electronics.

For more information about our innovative film technology and to place an order for finished capacitors through these manufacturers, contact a Gore representative.

W. L. Gore & Associates
gore.com

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