

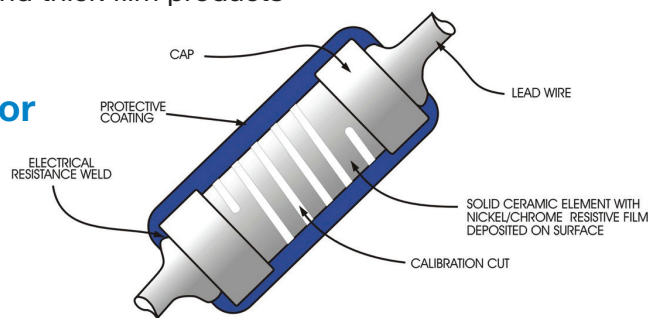


DID YOU KNOW? VARIOUS OPTIONS IN LEADED FIXED FILM COMPONENTS

Leaded fixed film resistors are used in multiple commercial, industrial, and high reliability / military / space level applications. They offer the following advantages:

- 1. Space efficient**—High resistance values beyond leaded wirewound resistors can be achieved in a small package
- 2. Reliable**—No solder joint issues; perform well in shock and vibration environments; hermetically sealed film resistors can also be used in high moisture and corrosive environments
- 3. Low TCR**—Compared to WW and thick film products

A typical film resistor construction



Vishay Dale offers multiple series of axial leaded film components to serve various customer application and design needs. These include commercial, industrial, non-established, and established reliability-grade components. The commercial and industrial series products are offered in tin-lead (Pb) and RoHS-compliant lead-(Pb)-free versions. The military products are only offered in tin-lead (Pb) configurations. Vishay Dale also offers fully RoHS-compliant industrial versions of all military resistors for high reliability industrial applications.

Axial Lead Product Series:

- CCF Series: commercial ([CCF50/CCF60](#); [CCF02](#))
- [CPF](#) Series: industrial; high power; precision
- [CMF](#) Series: industrial, precision, non-magnetic, pulse withstanding; fusible; flame retardant

Non-Established Reliability:

- [RN](#) (Mil-R-10509 qualified, precision) / [RL](#) (Mil-PRF-22684 qualified)

Established Reliability:

- Mil-PRF-55182 qualified, precision, type [RNC](#), characteristics J,H,K (industrial: ERC-500)
- Mil-PRF-55182 qualified, hermetically sealed, precision, type [RNR](#), characteristics E and C (industrial: GSR)
- Mil-PRF-39017 qualified, type [RLR](#), characteristics J,H,K (industrial: ERL-500)

The film resistors are typically used in applications that include:

- Current limiting
- Short term pulse handling
- Hermetic sealed product is used in corrosive and high moisture environments