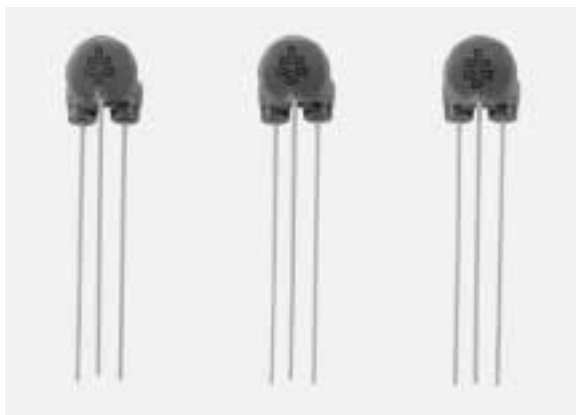


# EMI LEADED FILTERS EMI SUPPRESSION FILTERS VARISTOR-CAPACITOR



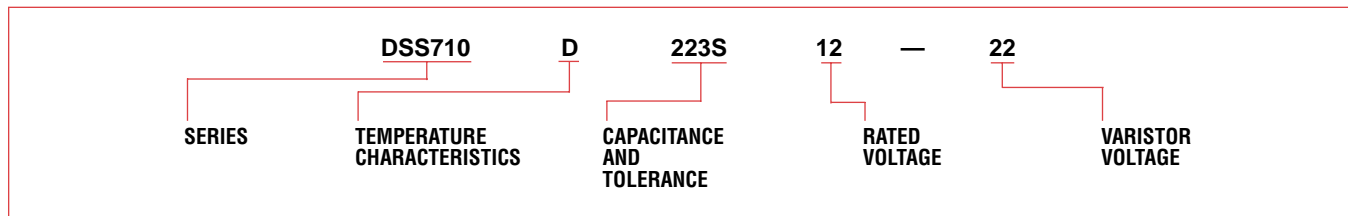
The DSS710 uses a capacitor element which provides the varistor function. This varistor-capacitor not only works as a bypass capacitor but also lets high-voltage surges flow to ground.

The varistor-capacitor used in the DSS710 has a 3-lead structure, so that its high frequency functions are substantially better than those of conventional capacitors. Furthermore, it is combined with ferrite bead to form a T-shaped filter circuit that most effectively suppresses EMI.

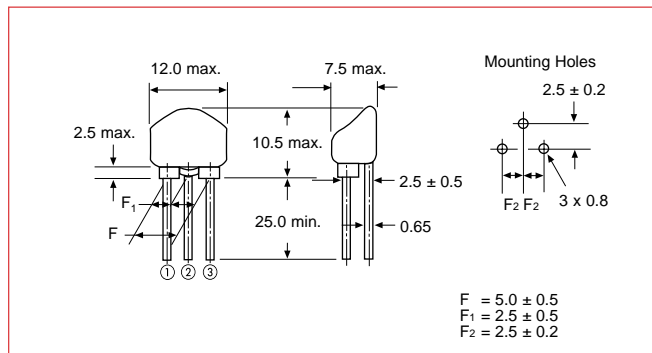
The DSS710 efficiently removes fast-rising transients and high-frequency EMI above 50 or 60 MHz which conventional capacitors and varistor-capacitors are incapable of removing.

Varistor-capacitors are used even where conventional EMI-filters fail. They are self-healing and effective in circuits having 500-600V impulses.

### PART NUMBERING SYSTEM

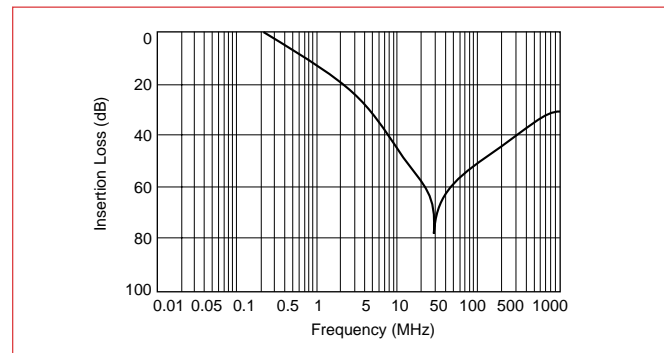


### DIMENSIONS: mm



Note: Footprint for Bulk and Tape & Reel are different. Consult your local Murata Electronics Sales Office.

### TYPICAL INSERTION LOSS CHARACTERISTICS

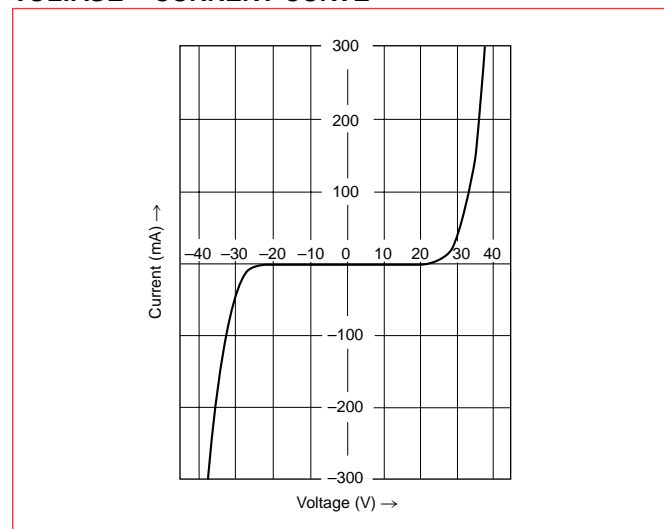


### SPECIFICATIONS

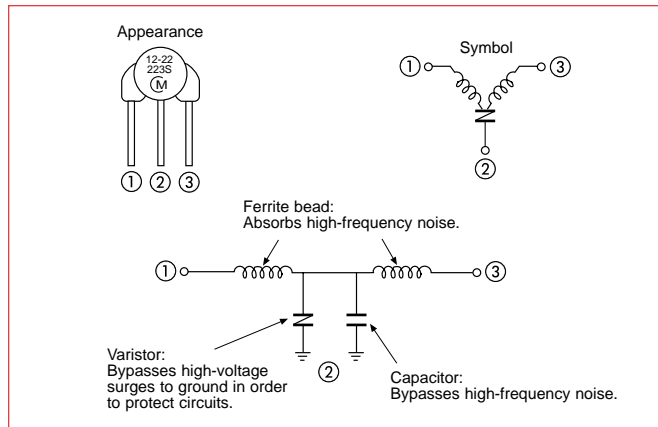
Part Number	★DSS710 D223 S 12-22
Capacitance	22000pF $\pm_{-20}^{+50}$ %
DF	5.0% max.
Insulation Resistance	1M Ohms min.
Ic (max.)	7 A
Rated Voltage	12VDC
Varistor Voltage	22VDC $\pm$ 20% (V1mA)
Voltage Nonlinear Factor	1.25 max. (V10mA/V1mA)
Temperature Characteristics	$\pm_{-30}^{+20}$ % (-25°C to +85°C)
Operating Temperature Range	-40°C to +100°C
Inductance	0.8 $\mu$ H x 2 (1kHz)

\*Available as standard through authorized Murata Electronics Distributors.

### VOLTAGE – CURRENT CURVE

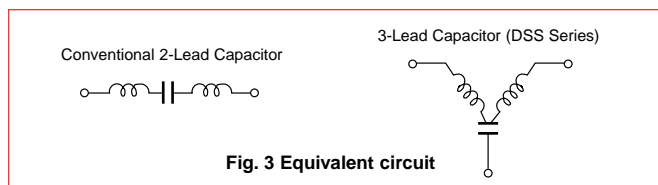


**3-TERMINAL STRUCTURE**



**The reason the 3-terminal structure provides excellent high frequency characteristics.**

Bypass capacitors should logically be able to remove more noise as frequency increases. In actual fact, the electrodes and lead wires of the capacitor have series inductance as shown in Fig. 3, and this causes an LC resonance when the frequency is between 1MHz and 50MHz. As a result, when the frequency is higher than the self-resonance frequency, the noise suppression capability of the bypass capacitor is drastically reduced because the capacitor functions as inductor. To solve this problem, the DSS series has one side of the capacitor electrodes connected to two lead wires. This eliminates the series inductance to the capacitor. Furthermore, a ferrite bead is attached to each lead wire to form a T-shaped filter, thus providing efficient noise suppression.



**NOISE ABSORPTION EFFECT OF VARISTOR-CAPACITOR**

SCALE:  
200V/Div.  
10NS/Div.

Waveform when a Varistor-Capacitor is not used (surge from a noise simulator).

Varistor-Capacitor is used to suppress the surge shown below

Waveform after the noise passes through a Varistor-Capacitor. Protection of circuitry is achieved.

The Varistor-Capacitor is capable of removing even 1200V surges and will withstand 2000V impulses.

**APPLICATIONS**

Systems	Lines to be connected to	Effects
Engine Controllers	Power lines, I/O for low-frequency current	Protection of systems from excessive voltage. Prevents ignition noise, lightning surges, etc. from causing malfunctions.
Automobile Audio Equipment	Power lines, audio output lines	Protection of system from excessive voltage. Prevents ignition noise from influencing audio current.
Computers	Power lines, I/O lines for low-frequency current	Protection of systems from excessive voltage. Prevents radiation and conduction noise.
DC Motors	Power lines	Prevention of brush noise.