

# MLCC for use in Modems

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## Introduction

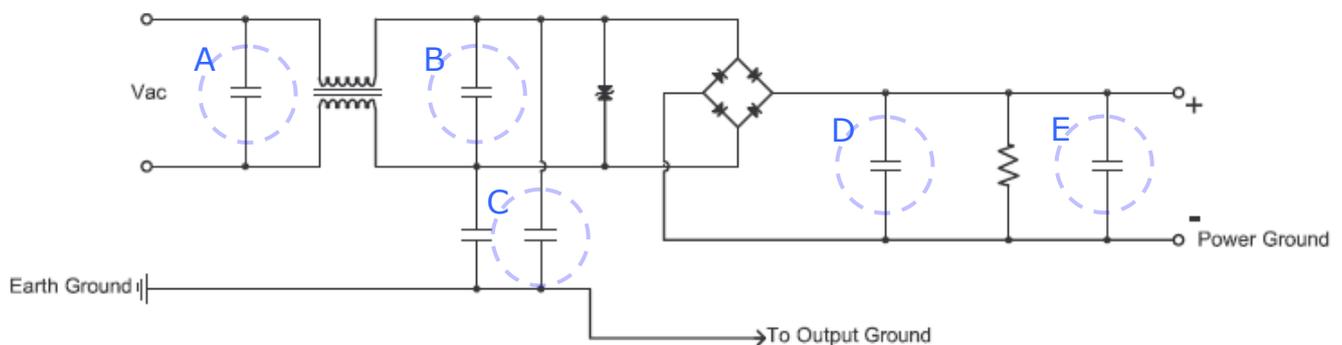
Syfer Technology Limited is a premier global source for application specific multilayer ceramic capacitors and EMI suppression filters. Our comprehensive product range includes many application-specific capacitors, including FlexiCap™, as well as standard voltages and capacitance values. All our products are available in small, medium and large volumes. We specialise in high voltage MLCC including a comprehensive surge and safety range of products but also have a standard range from 0402 to 8060 in case size and 10V to 6000V in voltage rating. MLCC exhibit low ESR characteristics which makes them ideal in mid frequency applications.

The following example is intended as a guide to where and how Syfer's capacitors can be used. Exact capacitance values and required voltage ratings are to be determined by the user.

MLCC are utilised in modems for the AC/DC converter in the power supply, isolation circuit and for filtering of the telephone line itself.

Power Supply:

### AC to DC Converter:



AC side

**A and B:** Component 1808JA250102KXTSP, this component is a Y3/X2 rated safety capacitor certified by UL and TUV for use across the line in mains voltage applications.

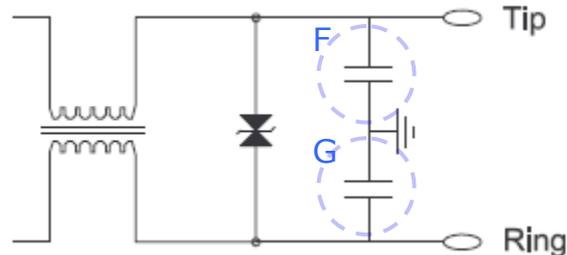
**C:** Component 2220JA250472KXTB16, this component is a Y2/X1 rated safety capacitor certified by UL and TUV for use between live and ground in mains voltage applications.

DC side

**D:** Tank capacitor, usually a high capacitance value for smoothing, low voltage low frequency devices would use an electrolytic capacitor but at higher voltage and higher frequencies where charge/discharge rates are important and lower ESR is required an MLCC would be suitable, Syfer can offer an 1812 1kV 100nF MLCC in X7R dielectric, these can be coupled in parallel to provide the required capacitance value.

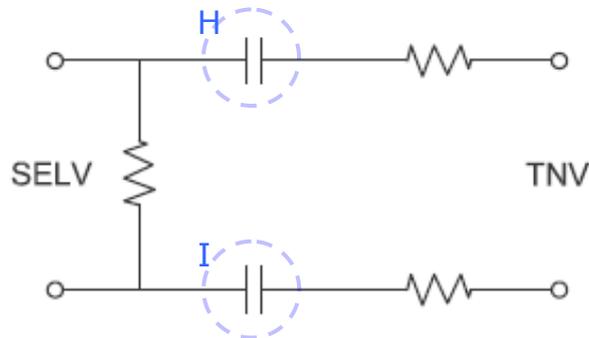
**E:** Filtering, lower capacitance values.

## Line Filtering:



**F and G:** Filtering, lower capacitance values. Syfer offer an extensive range of capacitors in both X7R and C0G dielectrics from 10V to 6kV which are suitable for output filtering depending on frequency. Where a safety certified component is required to protect against surges and lightning strikes Syfer's SP, SY and B16/17 ranges are applicable.

## Isolation:



**H and I:** Isolation capacitors; safety certified capacitors are used to provide isolation between the TNV (Telecom Network Voltage) circuit and the SELV (Safety Extra Low Voltage) circuit.

## Relevant Syfer Ranges:

Surge and Safety Range – 1808 to 2220 Y2/X1, Y3/X2, X2.  
Available capacitance 4.7pF to 10nF dependant on case size and specification. Full details available [HERE](#)

All C0G and X7R surface mount capacitors are available in FlexiCap™, Syfer's industry leading flexible termination designed to reduce the occurrence of failure due to "Mechanical" or "Board Flex" cracking.

For further information or technical assistance please contact our Sales Department on +44 1603 723310 or by Email at [sales@syfer.co.uk](mailto:sales@syfer.co.uk)

