

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

TransFeed Automotive Series

AVX Multilayer Ceramic Transient Voltage Suppressors TVS Protection and EMI Attenuation in a Single Chip

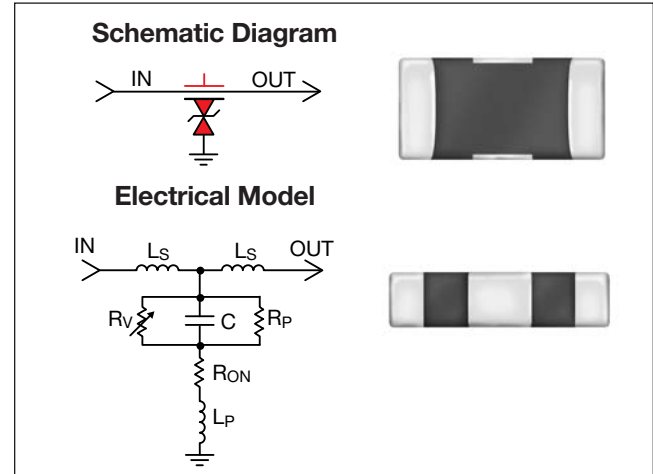


GENERAL DESCRIPTION

AVX has combined the best electrical characteristics of its TransGuard® Transient Voltage Suppressors (TVS) and its Feedthru Capacitors into a single chip for state-of-the-art overvoltage circuit protection and EMI reduction over a broad range of frequencies. This unique combination of multilayer ceramic construction in a feedthru configuration gives the circuit designer a single 0805 chip that responds to transient events faster than any TVS device on the market today, and provides significant EMI attenuation when in the off-state.

Automotive TransFeeds are designed for automotive applications and are AEC-Q 200 qualified.

The reduction in parallel inductance, typical of the feedthru chip construction when compared to the construction of standard TVS or ceramic capacitor chips, gives the TransFeed product two very important electrical advantages: (1) faster “turn-on” time. Calculated response times of <200 pSec are not unusual with this device, and measured response times range from 200 – 250 pSec. The TransFeed “turn-on” characteristic is less than half that of an equivalent TransGuard® part — and TransGuards® clamp transient voltages faster than any other bipolar TVS solution such as diodes; (2) the second electrical advantage of lower parallel inductance, coupled with optimal series



inductance, is the enhanced attenuation characteristics of the TransFeed product. Not only is there significantly greater attenuation at a higher self-resonance frequency, but the roll-off characteristic becomes much flatter, resulting in EMI filtering over a much broader frequency spectrum. Typical applications include filtering/protection on Microcontroller I/O Lines, Interface I/O Lines, Power Line Conditioning and Power Regulation.

TYPICAL APPLICATIONS

- Drive by Wire
- Dimming Mirror Circuit
- Filtering/protection on Microcontroller I/O lines
- Filtering/protection on Interface I/O lines
- Power Line Conditioning
- Power Regulation
- LCD Dashboard driver

Where designers are concerned with both transient voltage protection and EMI attenuation, either due to the electrical performance of their circuits or due to required compliance to specific EMC regulations, the TransFeed product is an ideal choice.

GENERAL CHARACTERISTICS

- Operating Temperature: -55°C to +125°C
- Working Voltage: 5.6Vdc - 18 Vdc
- Case Size: 0805, 0612 4xArray
- Energy Rating: 0.05 - 0.3J
- Current: 15 - 120A
- Max Feedthru Current: 0.2 - 1A

FEATURES

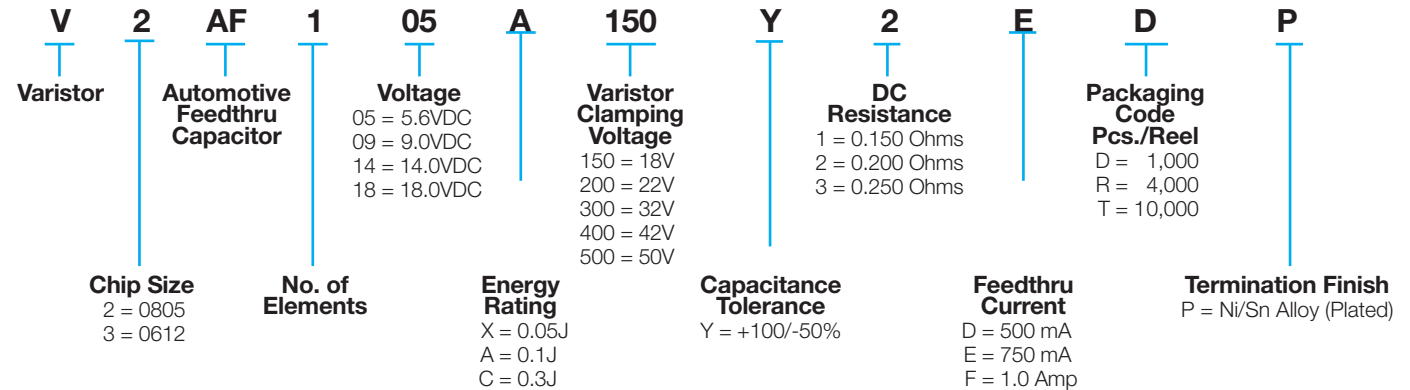
- Bi-directional TVS
- Narrow band, high attenuation filter
- EMI Filtering over broader frequency range
- Fastest Response Time to ESD Strikes
- AEC-Q 200 Qualified

TransFeed Automotive Series

AVX Multilayer Ceramic Transient Voltage Suppressors TVS Protection and EMI Attenuation in a Single Chip



HOW TO ORDER



TRANSFEED ELECTRICAL SPECIFICATIONS

| AVX Part Number | Working Voltage (DC) | Working Voltage (AC) | Breakdown Voltage | Clamping Voltage | Maximum Leakage Current | Transient Energy Rating | Peak Current Rating | Typical Cap | DC Resistance | Maximum Feedthru Current | Jump Start Voltage |
|------------------|----------------------|----------------------|-------------------|------------------|-------------------------|-------------------------|---------------------|-------------|---------------|--------------------------|--------------------|
| V2AF105A150Y2E__ | 5.6 | 4.0 | 8.5±20% | 18 | 35 | 0.10 | 30 | 800 | 0.200 | 0.75 | - |
| V2AF105C150Y1F__ | 5.6 | 4.0 | 8.5±20% | 18 | 35 | 0.30 | 120 | 2500 | 0.150 | 1.00 | - |
| V2AF109A200Y2E__ | 9.0 | 6.4 | 12.7±15% | 22 | 25 | 0.10 | 30 | 575 | 0.200 | 0.75 | - |
| V2AF109C200Y1F__ | 9.0 | 6.4 | 12.7±15% | 22 | 25 | 0.30 | 120 | 1800 | 0.150 | 1.00 | - |
| V2AF114A300Y2E__ | 14.0 | 10.0 | 18.5±12% | 32 | 15 | 0.10 | 30 | 300 | 0.200 | 0.75 | 27.5 |
| V2AF114C300Y1F__ | 14.0 | 10.0 | 18.5±12% | 32 | 15 | 0.30 | 120 | 900 | 0.150 | 1.00 | 27.5 |
| V2AF118A400Y2E__ | 18.0 | 13.0 | 25.5±10% | 42 | 10 | 0.10 | 30 | 200 | 0.200 | 0.75 | 27.5 |
| V2AF118C400Y1F__ | 18.0 | 13.0 | 25.5±10% | 42 | 10 | 0.30 | 120 | 500 | 0.150 | 1.00 | 27.5 |
| V2AF118X500Y3D__ | 18.0 | 13.0 | 25.5±10% | 50 | 10 | 0.05 | 20 | 75 | 0.250 | 0.50 | 27.5 |
| V3AF418A400Y3G__ | 18.0 | 13.0 | 25.5±10% | 42 | 10 | 0.10 | 20 | 150 | 0.200 | 0.30 | 27.5 |
| V3AF418X500Y3G__ | 18.0 | 13.0 | 25.5±10% | 50 | 10 | 0.05 | 15 | 65 | 0.250 | 0.20 | 27.5 |

Termination Finish Code
Packaging Code

- | | | | |
|------------|---|------------|---|
| V_w (DC) | DC Working Voltage (V) | E_T | Transient Energy Rating (J, 10x1000µS) |
| V_w (AC) | AC Working Voltage (V) | I_p | Peak Current Rating (A, 8x20µS) |
| V_B | Typical Breakdown Voltage (V @ 1mA _{DC}) | Cap | Typical Capacitance (pF) @ 1MHz and 0.5 V |
| V_B Tol | V_B Tolerance is ± from Typical Value | DCR | DC Resistance (Ohms) |
| V_C | Clamping Voltage (V @ 1A 8x20µS) | I_{FT} | Maximum Feedthru Current (A) |
| I_L | Maximum Leakage Current at the Working Voltage (µA) | V_{JUMP} | Jump Start Voltage (V, 5 min) |



TransFeed Automotive Series

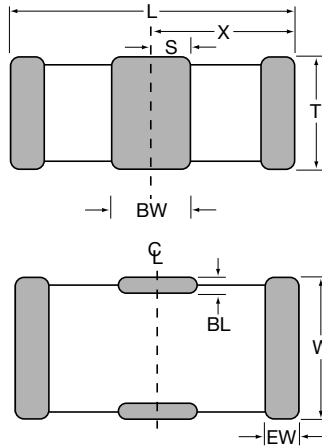
AVX Multilayer Ceramic Transient Voltage Suppressors

TVS Protection and EMI Attenuation in a Single Chip



DIMENSIONS

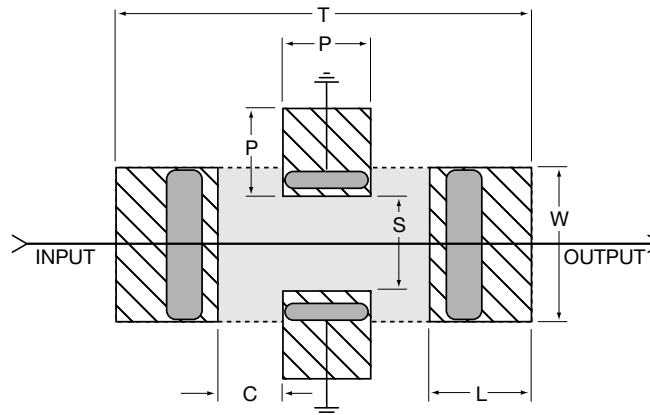
| | L | W | T | BW | BL | EW | X | S | mm (inches) |
|------|--------------------------------|--------------------------------|----------------------------|--------------------------------|---|--------------------------------|--------------------------------|--------------------------------|-------------|
| 0805 | 2.01 ± 0.20 (0.079 ± 0.008) | 1.25 ± 0.20 (0.049 ± 0.008) | 1.143 Max. (0.045 Max.) | 0.46 ± 0.10 (0.018 ± 0.004) | 0.18 + 0.25 - 0.08 (0.007 + 0.010 - 0.003) | 0.25 ± 0.13 (0.010 ± 0.005) | 1.02 ± 0.10 (0.040 ± 0.004) | 0.23 ± 0.05 (0.009 ± 0.002) | |



RECOMMENDED SOLDER PAD LAYOUT (Typical Dimensions)

| | T | P | S | W | L | C | mm (inches) |
|------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| 0805 | 3.45 (0.136) | 0.51 (0.020) | 0.76 (0.030) | 1.27 (0.050) | 1.02 (0.040) | 0.46 (0.018) | |

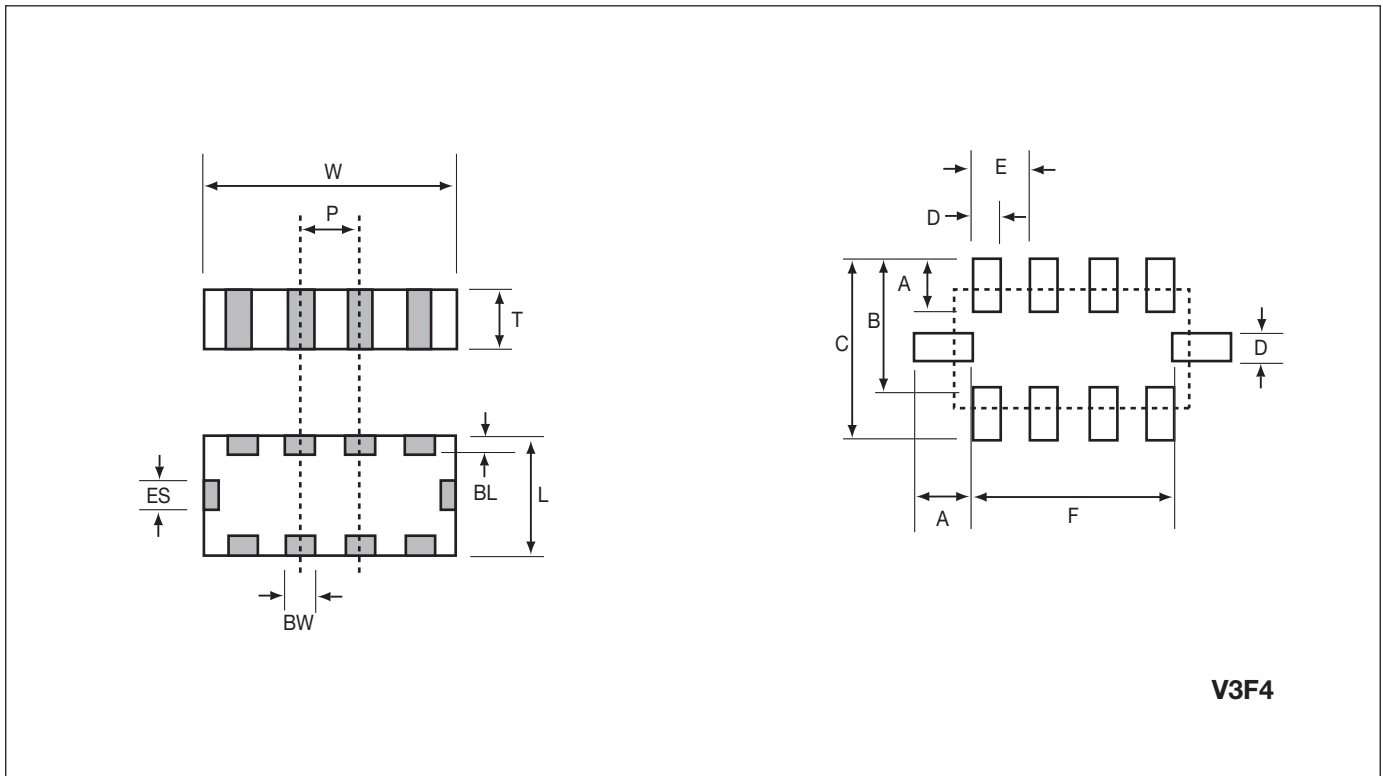
4 Pad Layout



TransFeed Automotive Series



TVS Protection and EMI Attenuation in a 4-Element Array



V3F4

DIMENSIONS

mm (inches)

| L | W | T | BW | BL | ES | P |
|--------------------------------|--------------------------------|---------------------------|--------------------------------|---|--------------------------------|-------------------------|
| 1.60 ± 0.20 (0.063 ± 0.008) | 3.25 ± 0.15 (0.128 ± 0.006) | 1.22 Max. (0.048 Max.) | 0.41 ± 0.10 (0.016 ± 0.004) | 0.18 +0.25 -0.08 (0.007 +0.010 -0.003) | 0.41 ± 0.10 (0.016 ± 0.004) | 0.76 REF (0.030 REF) |

mm (inches)

| A | B | C | D | E | F |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 0.60 (0.024) | 1.60 (0.064) | 2.20 (0.088) | 0.35 (0.014) | 0.76 (0.030) | 2.60 (0.104) |

TransFeed Automotive Series

AVX Multilayer Ceramic Transient Voltage Suppressors TVS Protection and EMI Attenuation in a Single Chip



PERFORMANCE CHARACTERISTICS

FEEDTHRU VARISTORS

AVX Multilayer Feedthru Varistors (MLVF) are an ideal choice for system designers with transient strike and broadband EMI/RFI concerns.

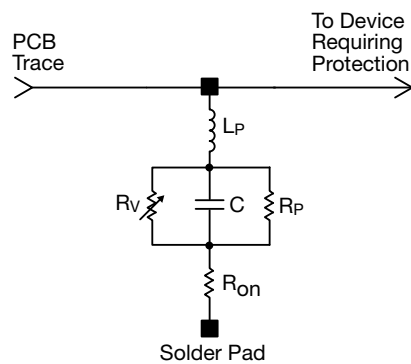
Feedthru Varistors utilize a ZnO varistor material and the electrode pattern of a feedthru capacitor. This combination allows the package advantage of the feedthru and material advantages of the ZnO dielectric to be optimized.

ZnO MLV Feedthrus exhibit electrical and physical advantages over standard ZnO MLVs. Among them are:

1. Faster Turn on Time
2. Broadband EMI attenuation
3. Small size (relative to discrete MLV and EMI filter schemes)

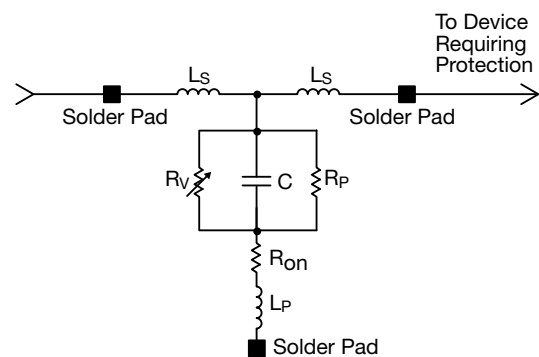
The electrical model for a ZnO MLV and a ZnO Feedthru MLV are shown below. The key difference in the model for the Feedthru is a transformation in parallel to series inductance. The added series inductance helps lower the injected transient peak current (by $2\pi fL$) resulting in an additional benefit of a lower clamping voltage. The lowered parallel inductance decreases the turn on time for the varistor to <250ps.

Discrete MLV Model



Where: R_v = Voltage Variable resistance (per VI curve)
 $R_p \geq 10^{12} \Omega$
 C = defined by voltage rating and energy level
 R_{on} = turn on resistance
 L_p = parallel body inductance

Discrete MLVF Model



Where: R_v = Voltage Variable resistance (per VI curve)
 R_p = Body IR
 C = defined by voltage rating and energy level
 R_{on} = turn on resistance
 L_p = minimized parallel body inductance
 L_s = series body inductance

TransFeed Automotive Series

AVX Multilayer Ceramic Transient Voltage Suppressors TVS Protection and EMI Attenuation in a Single Chip



PERFORMANCE CHARACTERISTICS

APPLICATIONS

- EMI Suppression
- Broadband I/O Filtering
- Vcc Line Conditioning

FEATURES

- Small Size
- Low ESR
- Ultra-fast Response Time
- Broad S21 Characteristics

MARKET SEGMENTS

- Computers
- Automotive
- Power Supplies
- Multimedia Add-On Cards
- Bar Code Scanners
- Remote Terminals
- Medical Instrumentation
- Test Equipment
- Transceivers
- Cellular Phones / Pagers

TYPICAL CIRCUITS REQUIRING TRANSIENT VOLTAGE PROTECTION AND EMI FILTERING

The following applications and schematic diagrams show where TransFeed TVS/ EMI filtering devices might be used:

- System Board Level Interfaces: (Fig. 1)
Digital to RF
Analog to Digital
Digital to Analog
- Voltage Regulation (Fig. 2)
- Power Conversion Circuits (Fig. 3)
- GaAs FET Protection (Fig. 4)

Fig. 1 – System Interface

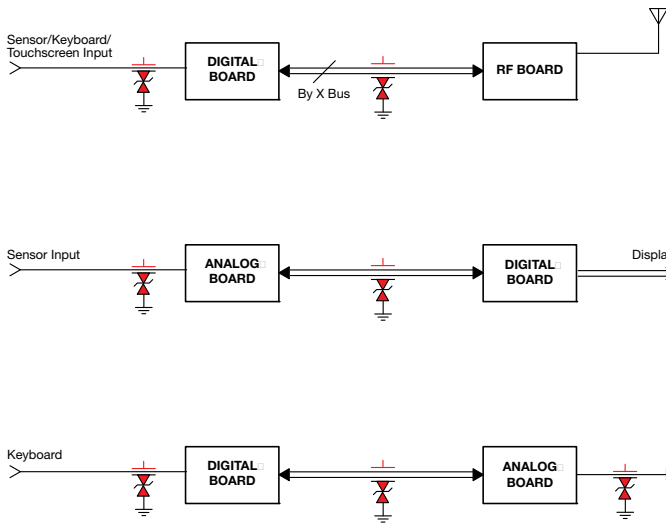


Fig. 2 – Voltage Regulators

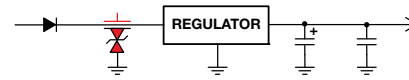


Fig. 3 – Power Conversion Circuits/Power Switching Circuits

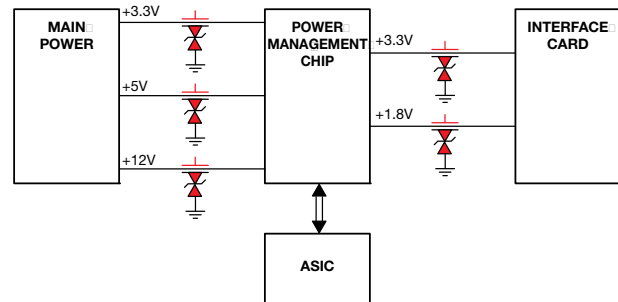


Fig. 4 – GaAs FET Protection

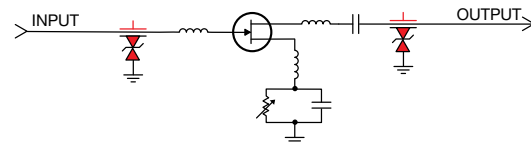
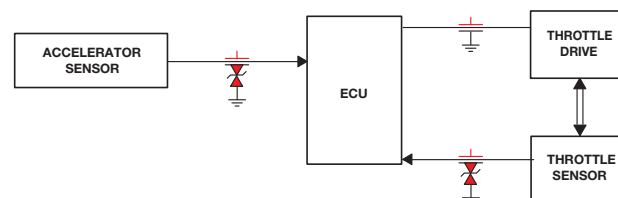


Fig. 5 – Automotive TransFeed - Throttle by Wire



SPECIFICATION COMPARISON

| MLVF 0805 | PARAMETER | MLV 0805 |
|-----------------------------------|--|--------------------------------|
| 5ph | L_s typical | N/A |
| <600nh | L_p typical | <1.5nh |
| <0.025 Ω | R_{on} typical | <0.1 Ω |
| 100pf to 2.5nf | C typical | 100pf to 5.5nf |
| see VI curves | R_v typical | see VI curves |
| >0.25 x 10 ¹² Ω | R_p typical | >1 x 10 ¹² Ω |
| <250ps | Typical turn on time Typical frequency response | <500ps |

A comparison table showing typical element parameters and resulting performance features for MLV and MLVF is shown above.