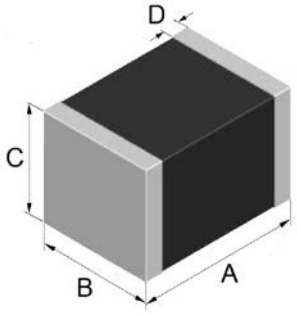
# SMD Transient Voltage Suppressors TVSM1210SHPF-Series-A

## 1. Dimension




| Series | Current | A(mm) | B(mm) | C(mm) | D(mm) |
|---|---|---|---|---|---|
| 1210 | 102A | 3.20+0.60/-0.20 | 2.50+0.40/-0.20 | 2.60 max. | 0.50±0.25 |
| | 122A | 3.20±0.30 | 2.50±0.20 | 2.00±0.30 | 0.50±0.25 |

## 2. Part Numbering

TVSM 1210 SHP F 750 - 102 A □

A B C D E F G H

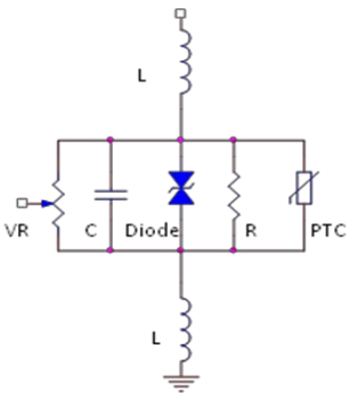
A: Series — Multilayer Varistor
B: Dimension
C: Category Code — High Performance Surge Protection with PoE
D: Product Grade — General Grade
E: Voltage Code — 750=Breakdown Voltage 75V
F: Characteristic Code — 102=Peak Current 1000A
G: Characteristic Unit Code — A＝Amp
H: Inner Code

## 3. Features

1. RoHS compliant
2. SMD type body size 1210
3. Meet IEC61000-4-5 / K21 and UL1449 standards
4. Bidirectional and symmetrical V/I characteristics
5. Large withstanding surge current capability
6. Operating temperature range : -55~+125℃
7. Multi-Layers construction provides higher power dissipation

### Equivalent Circuit

| | |
|---|---|
| **L** | **Body Inductance** |
| **C** | **Device Capacitance** |
| **VR** | **Voltage Variable Resistor** |
| **R** | **Insulation Resistor** |
| **Diode** | **Voltage Clamped** |
| **PTC** | **for Low Leakage Current** |



# 4. Technology Data

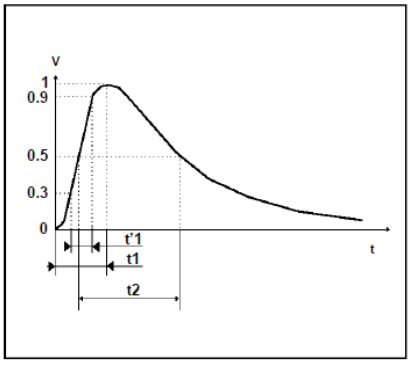
| TAI-TECH Part Number | Maximum allowable continuous AC voltage @ 50-60Hz $V_{RMS}$ (V) | Maximum allowable continuous DC voltage $V_{DC}$ (V) | Breakdown voltage $V_B$ (V) | Maximum allowable clamping voltage $V_C$ (V) | Maximum peak current (8/20μs) (1 time) $I_{Peak}$ (A) | Maximum peak current (8/20μs) (15 time) $I_{Peak}$ (A) |
|---|---|---|---|---|---|---|
| TVSM1210SHPF750-102A | 48 | 60 | 75(±10%) | 100 | 1000 | 500 |
| TVSM1210SHPF750-122A | 48 | 60 | 75(0%~±10%) | 100 | 1200 | 500 |

Notes:
1. The breakdown voltage was measured at 1mA current.
2. The clamping voltage was measured at 8/20μs standard current, 1210(2.5A).

| 4-1. Reference Data | | | |
|---|---|---|---|
| ITEM | Symbol | Unit | Value |
| Typical capacitance value measured at 1KHz | C | pF | 930 |
| Response time | $T_{RISE}$ | ns | < 1 |
| Non-linear coefficient | α | | >15 |
| Leakage current at $V_B$ x 80% (at initial state) | $I_{VB}$ | μA | < 50 |
| Leakage current at $V_B$ x 80% (after surge test) | $I_{VBA}$ | μA | < 200 |
| Operation ambient temperature | $T_{OPT}$ | ℃ | -55~+125 |
| Storage temperature range | $T_{STG}$ | ℃ | -55~+150 |
| **4-2. Other Data** | | | |
| Body | | | Nano special ceramic |
| End termination | | | Ag/Ni/Sn |
| Packaging | | | Reel |
| Complies with standards | | | IEC61000-4-5, ITU-T K20, K21<br>UL 1449, File No. E334409-VZCA2 |
| Complies with RoHs standard | | | Yes |
| Lead content | | | < 1000 ppm |
| Marking | | | None |

Notes:
1. The capacitance value only for customer reference, it's not formal specification.

# 5. Surge Wave Form




### IEC61000-4-5 Standards

| SEVERITY LEVEL | t1 (=1.67t'1) | t2 |
|---|---|---|
| 1 | 8μs | 20μs |
| 2 | 10μs | 1000μs |

**8/20μs and 10/1000μs waveform current**