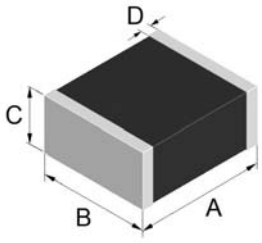
SMD Transient Voltage Suppressors TVSM2220LHXV-Series

1. Dimension



Series	A(mm)	B(mm)	C(mm)	D(mm)
2220	6.00+0.70/-0.30	5.30+0.50/-0.30	3.60 max	0.50+0.35/-0.10

2. Part Numbering

TVSM 2220 LHX V 240 - 250 J □

A B C D E F G H

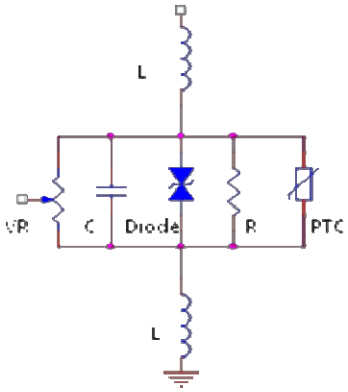
A: Series — Multilayer Varistor
B: Dimension
C: Category Code — High Performance Surge Protection
D: Product Grade — Vehicle Grade
E: Voltage Code — 240=Breakdown Voltage 24V
F: Characteristic Code — 250=Load Dump Energy 25J
G: Characteristic Unit Code — J=Joule
H: Inner Code

3. Features

1. RoHS compliant
2. SMD type
3. Qualified based on AEC-Q200
4. Bidirectional and symmetrical V/I characteristics
5. Large withstanding surge current capability
6. Large load dump withstanding capability
7. Operating temperature range : -55~+125℃
8. 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 DC voltage (V)	Breakdown voltage (V)	Maximum allowable clamping voltage (V)	Maximum peak current (8/20μs) (A)	Jump start voltage (5min) (V)	Load dump energy (J)
TVSM2220LHXV240-250J	16	24(±10%)	40	3000 (for +/- 1 time)	24.5	25 (for 10 times)
TVSM2220LHXV240-500J	16	24(±10%)	40	5000 (for +/- 1 time)	24.5	50 (for 10 times)

Notes :

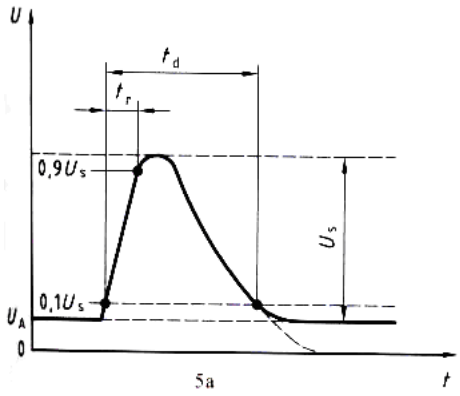
1. The breakdown voltage was measured at 1mA.
2. The clamping voltage was measured at 8/20μs standard current, 2220(10A).

4-1. Reference Data			
ITEM	Symbol	Unit	Value
Typical capacitance value @ 1MHz	C	pF	@TVSM2220LHXV240-250J : 7000 @TVSM2220LHXV240-500J : 18000
Response time	Trise	ns	< 1
Non-linear coefficient	α		> 20
Leakage current at V_{DC} (at initial state)	I_{LDC}	μA	< 10
Leakage current at V_{DC} (after surge test)	I_{LDCA}	μA	< 50
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 standard	IEC61000-4-5 ISO7637-2		
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.

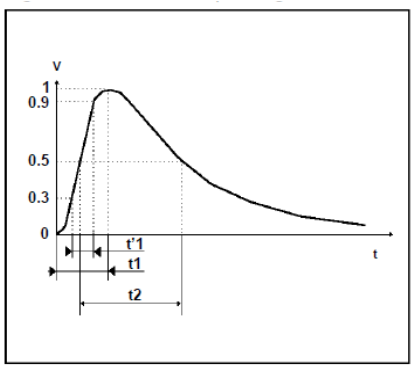
5. Load Dump and Surge Wave Forms



Load dump test waveform

ISO7637-2:2004 pulse 5A

Parameters	12V System
Us	65~87V
Ri	0.5~4Ω
td	40~400ms
tr	5~10ms



8/20μs waveform current

IEC61000-4-5 standard

SEVERITY LEVEL	t1 (=1.67t'1)	t2
1	8μs	20μs