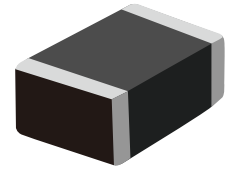


## FEATURES

- | Fast response, instantly clamping the transient over voltage.
- | High surge current handling capability.
- | High energy absorption capability.
- | Low clamping voltages, providing better surge protection.
- | Low capacitance values, providing digital switching circuitry protection.



## APPLICATIONS

- | Universal Serial Bus (USB).
- | Mobile communication.
- | Computer/DSP product.
- | Video and audio ports.
- | Portable/Hand-Held Products.
- | Data, Diagnostic I/O ports.

## APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Unit
Maximum allowable continuous AC voltage *1	$V_{RMS}$	300.0	V
Maximum allowable continuous DC voltage	$V_{DC}$	385.0	V
Varistor voltage Measured *2	$V_B$	470(10%)	V
Typical capacitance value measured *3	C	<500	pF
Typical capacitance value tolerance		±40	%
Maximum clamping voltage measured *4	$V_C$	775	V
Maximum peak current (8/20μs) *5	$I_P$	2000	A
Maximum Energy Absorption 10/1000μs	E	8.7	J
Response time	$T_{rise}$	<20	ns
Leakage current at $V_{DC}$ (At initial state)	$I_L$	<50	μA
Leakage current at $V_{DC}$ (After reliability Test)	$I_{LA}$	<100	μA
Operating ambient temperature		-40~+125	°C
Storage temperature		-40~+150	°C
Reflow temperature profile(Recommend)		260	°C

\*1 AC voltage at 50~60Hz

\*2 Varistor voltage

\*3 Capacitance

\*4 Maximum clamping voltage

\*5 Rated peak single pulse transient current

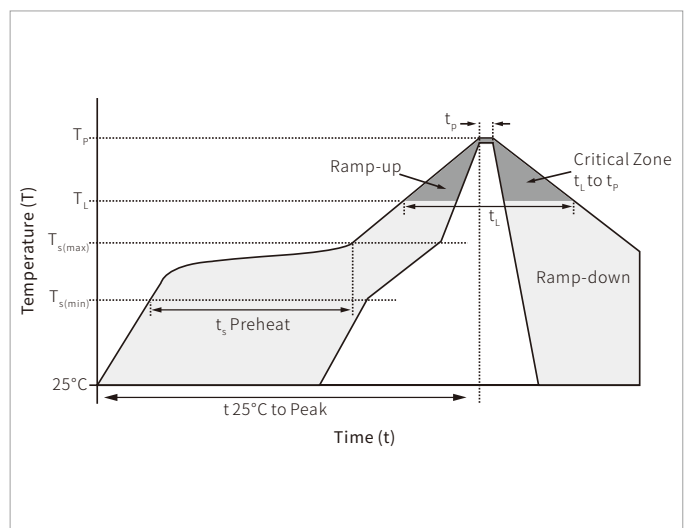
Measured at 1mA DC  
 Measured at f=1MHz,  $V_{rms}$ =0.5V  
 Measured at 1A by 8/20μs Pulse  
 Measured by 8/20μs Pulse  
 Measured at 1mA DC

## ENVIROMENTAL RELIABILITY TEST

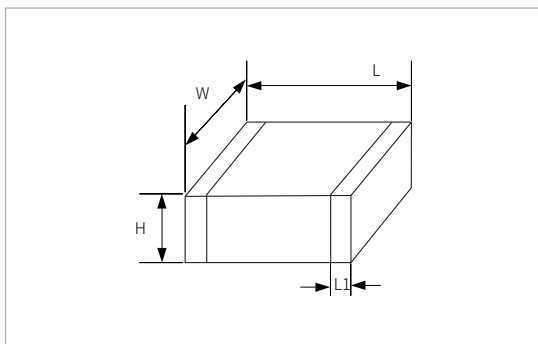
Characteristic	Test method and description			
High Temperature Storage	The specimen shall be subjected to 125°C for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. The change of varistor voltage shall be within 10%			
Temperature Cycle	The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and humidity for one two hours. The change of varistor voltage shall be within 10% and mechanical damage shall be examined.	Step	Temperature	Period
		1	-40±3°C	30min±3
		2	Room Temperature	1~2hours
		3	125±2°C	30min±3
High Temperature Load	After being continuously applied the maximum allowable voltage at 85°C for 1000hours, the specimen shall be stored at room temperature and humidity for one or hours, the change of varistor voltage shall be within 10%	4	Room Temperature	1~2hours
Damp Heat Load/ Humidity Load	The specimen should be subjected to 40°C, 90 to 95%RH environment, and the maximum allowable voltage applied for 1000 hours, then stored at room temperature and humidity for one or two hours. The change of varistor voltage shall be within 10%			
Low Temperature Storage	The specimen should be subjected to -40°C, without load for 1000 hours and then stored at room temperature for one two hours. The change of varistor voltage shall be within 10%.			

## SOLDERING RECOMMENDATIONS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ( $T_{s(min)}$ )	150°C
	Temperature Max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Time (min to max) ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260°C



## DIMENSION SPECIFICATION



Size	L(mm)	W(mm)	H(mm)	L1(mm)
2220	$6.00 \pm 0.50$	$5.30 \pm 0.50$	3.60(Max)	$0.70 \pm 0.30$

## DRDERING INF ORMATION

Part Number	Package&Size	QTY/Reel	Reel Size
SMV2220B471H	2220 (6.0 x 5.3 mm)	500PCS	7"

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