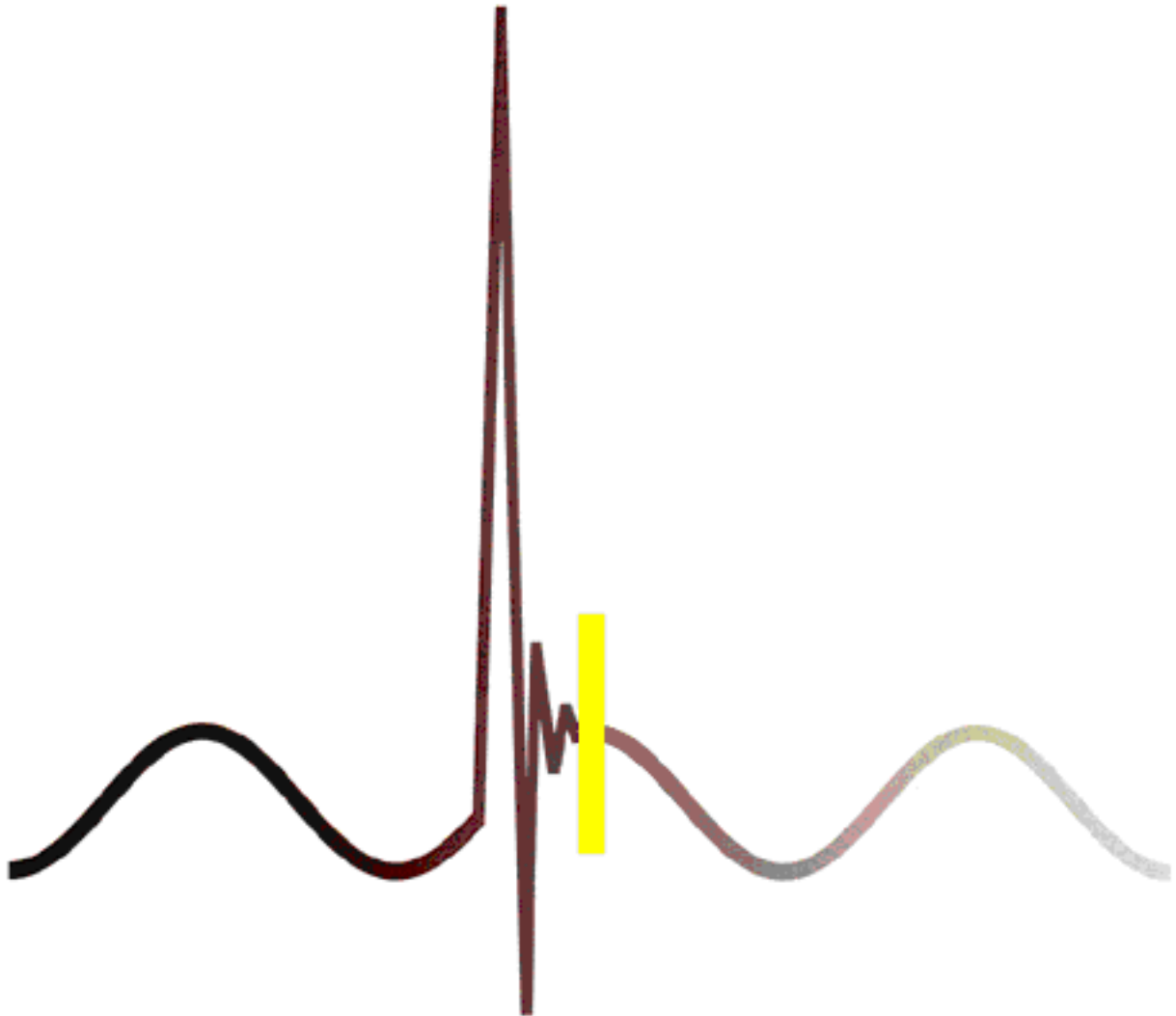


W O R L D P R O D U C T S

SILICON VARISTORS



Protection Products Group



WORLD PRODUCTS INC.

Silicon Varistors

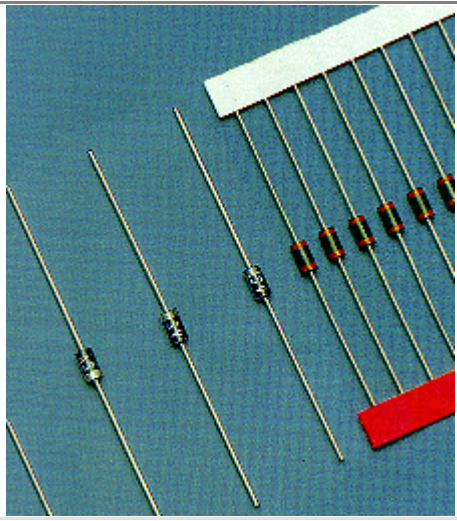
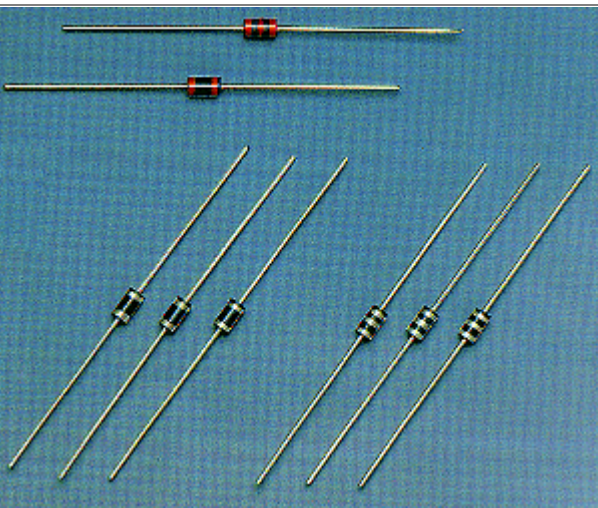
The Protection Products Group of World Products Inc., specializing in protection products for AC and DC circuits, is proud to feature WPI's full line of Silicon Varistors.

Varistors are a key point in the construction of electronic products.

Silicon varistors, which incorporate reliable semiconductor technology, will increase the quality of your product.

At World Products Inc., we keep our promises. It's just that simple. You will see for yourself when you buy a Silicon Varistor that you have not only purchased a fine component, but that we will also provide the finest customer service in today's marketplace.

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Quick Guide to Silicon Varistors

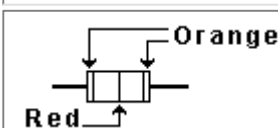
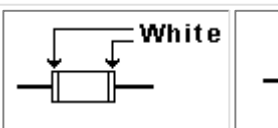
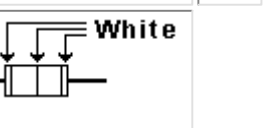
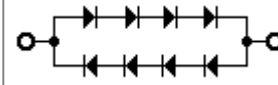
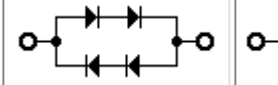
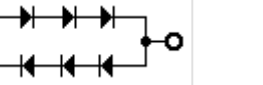
Series	Model	DC Forward Current I_F (mA)	Peak Forward Surge Current I_{FSM} (A)*	Forward Voltage V_F (V)	Reverse Current I_R (μ A)		
SV	S Y M M E T R I C A L	SV-2SS	150	---	F O R W A R D C U R R E N T I_F (μ A)	Less Than 4 $V_F = 100$ mA	Less Than 50 $V_F = 1.2$ V
		SV-3SS	250	---		Less Than 2 $V_F = 100$ mA	Less Than 50 $V_F = 0.6$ V
		SV-4SS	150	---		1.8 ± 0.2 $V_F = 1$ mA	---
VR 60SS 61SS	T Y P E	VR-60SS	400	---		Less Than 1.5 $V_F = 1$ A	Less Than 20 $V_F = 0.2$ V
		VR-61SS	150	---		2.3 ± 0.25 $V_F = 1$ mA	---
SVO	U N S Y M M E T R I C A L T Y P E	SVO2YS	200	30		1.2 ± 0.2 $V_F = 1$ mA	10 $V_R = 100$ V
		SVO3YS	150	27		1.8 ± 0.2 $V_F = 1$ mA	10 $V_R = 100$ V
		SVO4YS	100	25		2.35 ± 0.25 $V_F = 1$ mA	10 $V_R = 100$ V
		SVO5YS	80	22		3.0 ± 0.3 $V_F = 1$ mA	10 $V_R = 100$ V
		SVO6YS	70	20		3.5 ± 0.35 $V_F = 1$ mA	10 $V_R = 100$ V

* The values are measured at 50Hz half sine wave.

SV Symmetrical Type Silicon Varistors

Applications

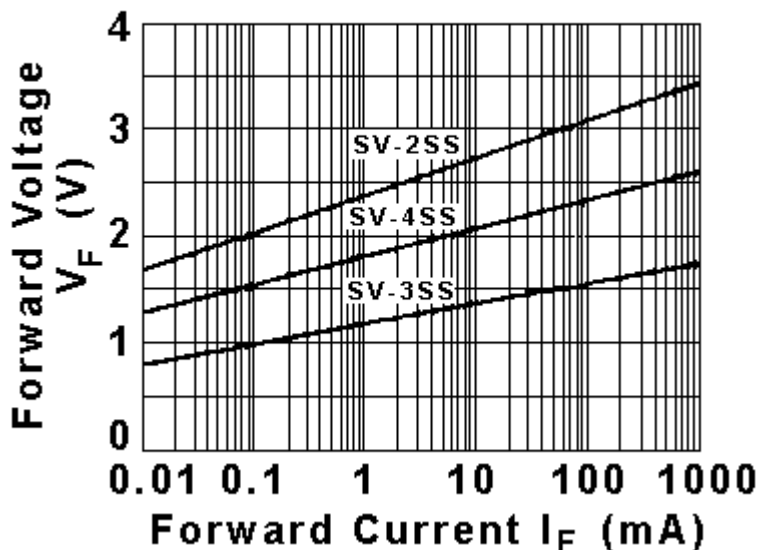
- Switchboard (specification 3491)
- Divided voltage stabilization circuit
- Signal control circuit
- Temperature detection circuit
- Zener voltage stabilization circuit
- Meter protection circuit

Maximum Ratings $T_a = 25^\circ\text{C}$					
Item	Symbol	SV-2SS	SV-3SS	SV-4SS	Unit
DC Forward Current	I_F	150	250	150	mA
Junction Temperature	T_j	-40 ~ +100			$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100			$^\circ\text{C}$
Color Indication					
Internal Junction					

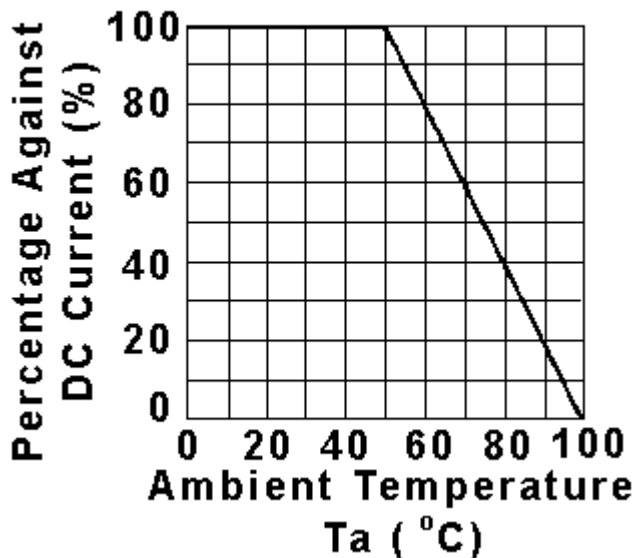
DC Characteristics Both Directions, $T_a = 25^\circ\text{C}$						
Item	Symbol	Condition	SV-2SS	SV-3SS	SV-4SS	Unit
Forward Voltage	V_F	$I_F = 100\text{mA}$	4 max	2 max	---	V
		$I_F = 1\text{mA}$	---	---	1.80 ± 0.20	
		$I_F = 10\text{mA}$	---	---	2.15 ± 0.20	
		$I_F = 30\text{mA}$	---	---	2.40 ± 0.25	
Forward Current	I_F	$V_F = 1.2\text{V}$	50 max	---	---	μA
		$V_F = 0.6\text{V}$	---	50 max	---	
		$V_F = 0.9\text{V}$	---	---	50 max	

SV Symmetrical Type Silicon Varistors - (continued)

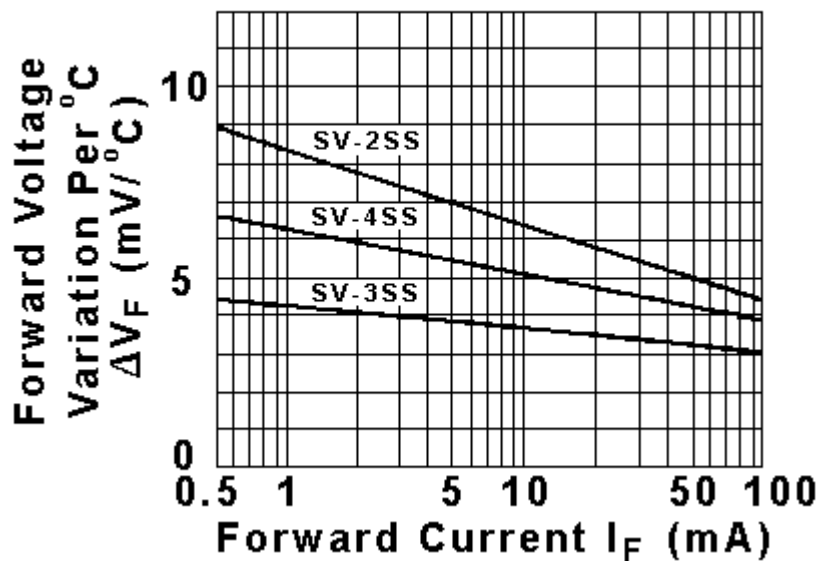
$V_F - I_F$ Characteristics



I_F (%) - T_a Characteristics

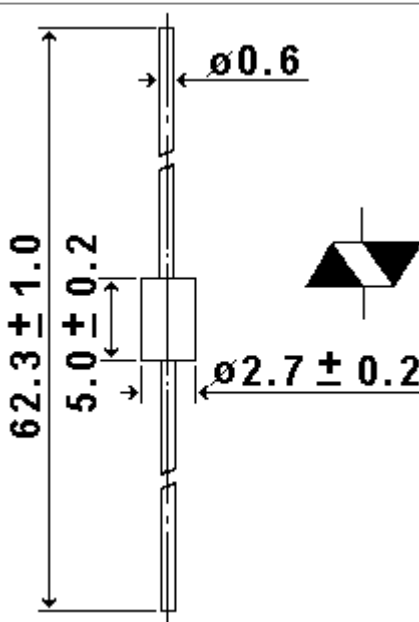


$\Delta V_F - I_F$ Characteristics



Outline Drawing Unit: mm

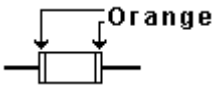
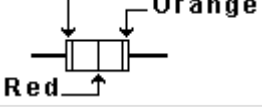


Resin Molded Type
 Nonflammability: UL94V-O or equivalent
 Weight: Approx. 0.3g



VR -60SS/-61SS Symmetrical Type

Applications

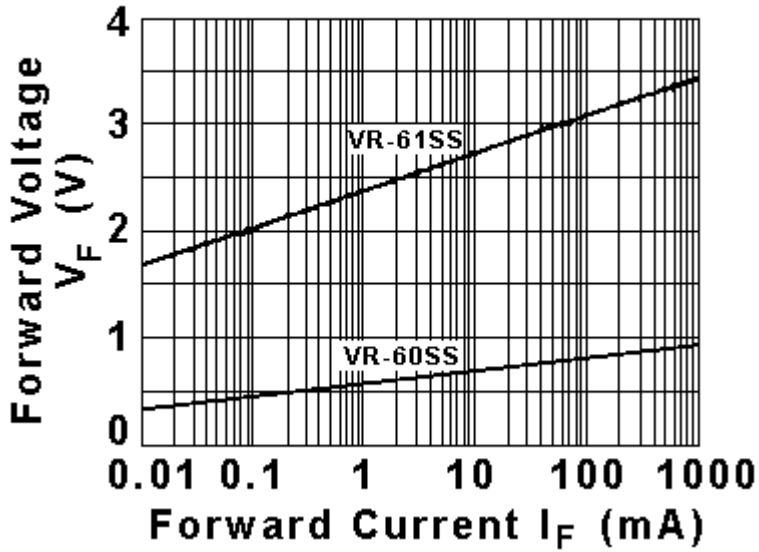
- 600 type telephone set (specification 3491)
- Divided voltage stabilization circuit
- Signal control circuit
- Temperature detection circuit
- Zener voltage stabilization circuit
- Meter protection circuit

Maximum Ratings $T_a = 25^\circ\text{C}$				
Item	Symbol	VR-60SS	VR-61SS	Unit
DC Forward Current	I_F	400	150	mA
Junction Temperature	T_j	-40 ~ +100		$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100		$^\circ\text{C}$
Color Indication				
Internal Junction				

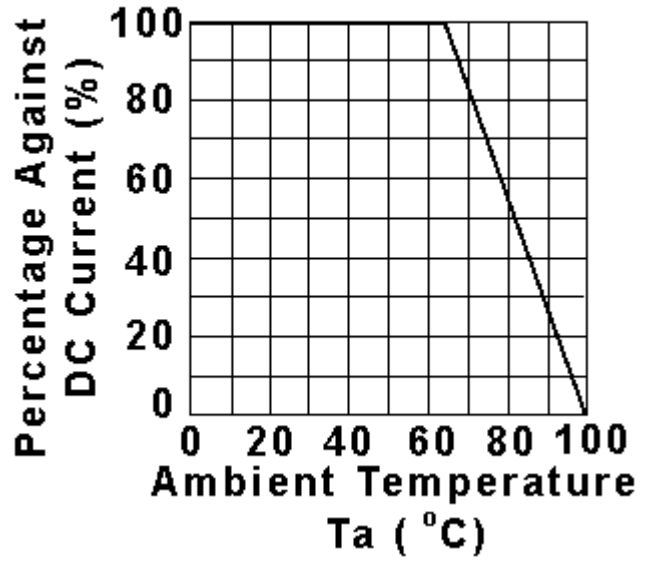
DC Characteristics Both Directions, $T_a = 25^\circ\text{C}$					
Item	Symbol	Condition	VR-60SS	VR-61SS	Unit
Forward Voltage	V_F	$I_F = 1\text{A} *$	1.5 max	---	V
		$I_F = 1\text{mA}$	---	2.30 ± 0.25	
		$I_F = 10\text{mA}$	---	2.75 ± 0.25	
		$I_F = 70\text{mA}$	---	3.10 ± 0.25	
Forward Current	I_F	$V_F = 0.2\text{V}$	20 max	---	μA
* - Value obtained within 3 sec.					

VR -60SS/-61SS Symmetrical Type - (continued)

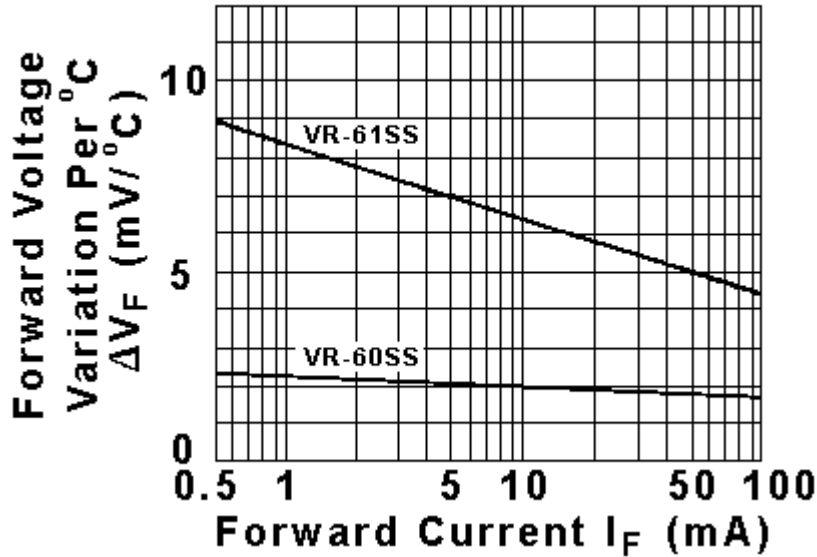
$V_F - I_F$ Characteristics



I_F (%) - T_a Characteristics

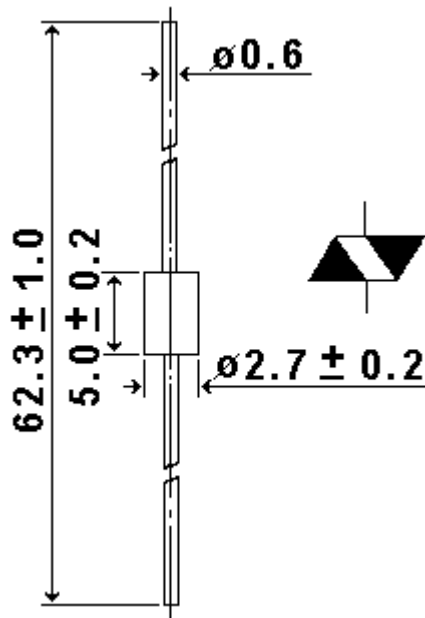


$\Delta V_F - I_F$ Characteristics



Outline Drawing Unit: mm






Resin Molded Type
 Nonflammability: UL94V-O or equivalent
 Weight: Approx. 0.3g



SVO Unsymmetrical Type

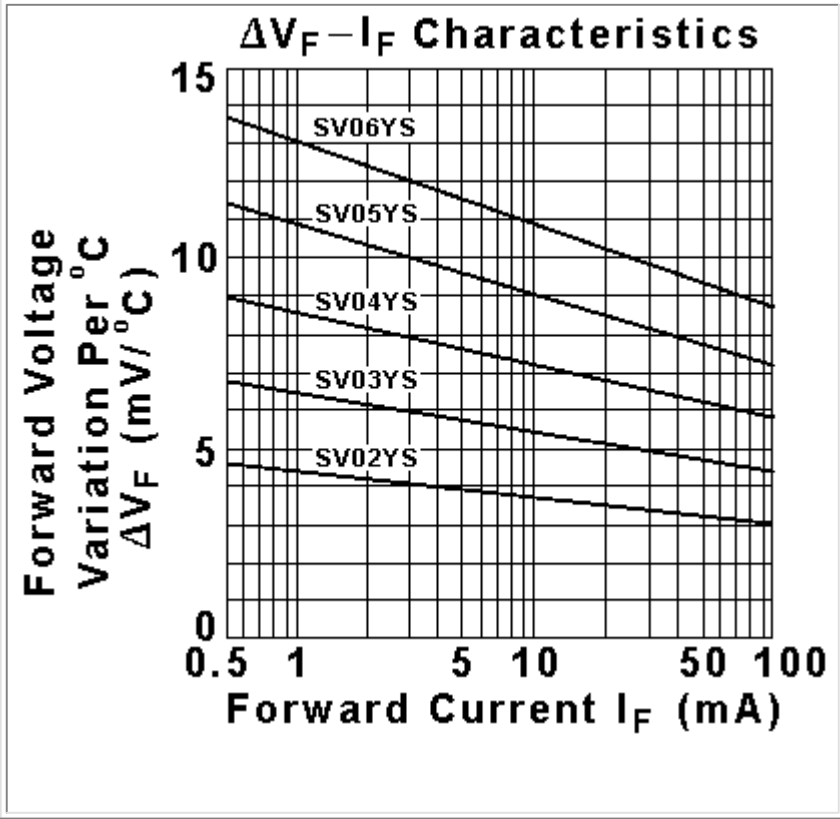
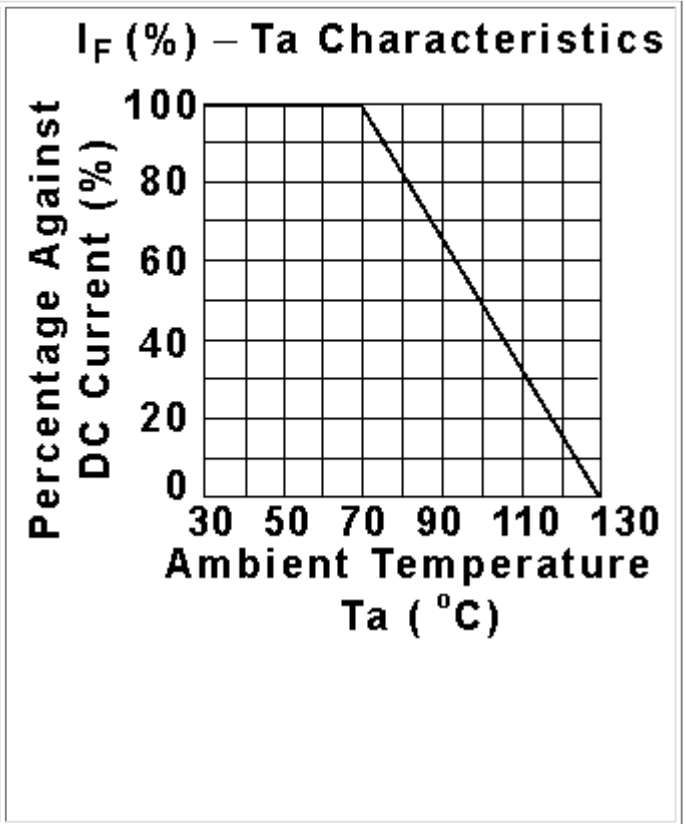
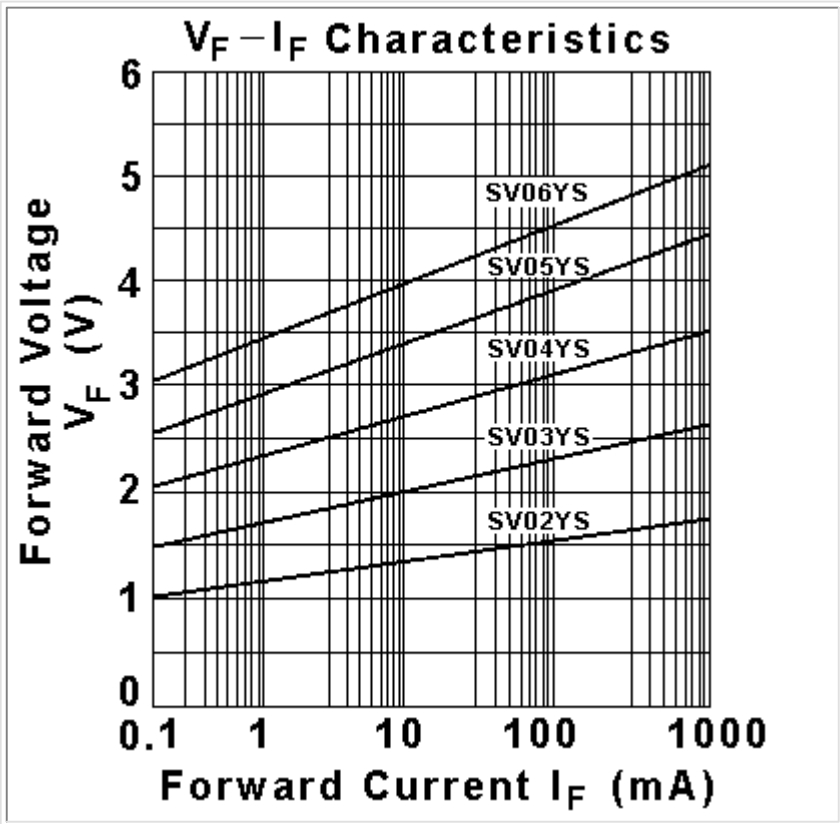
Applications

- Noise Limiter
- Gauge Protection
- Current Blocking
- Voltage Limiter
- Temperature Compensation

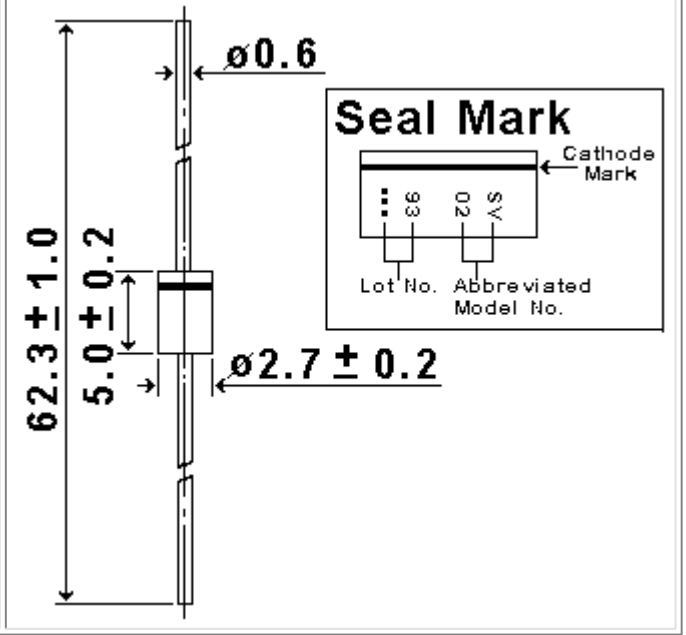
Maximum Ratings $T_a = 25^\circ\text{C}$							
Item	Symbol	SVO2YS	SVO3YS	SVO4YS	SVO5YS	SVO6YS	Unit
DC Forward Current	I_F	200	150	100	80	70	mA
Peak Forward Surge Current	I_{FSM}	30	16	12	10	8	A
		(50Hz half sine wave)					
Junction Temperature	T_j	-40 ~ +130					$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +130					$^\circ\text{C}$
Internal Junction							

Electrical Characteristics Both Directions, $T_a = 25^\circ\text{C}$								
Item	Symbol	Condition	SVO2YS	SVO3YS	SVO4YS	SVO5YS	SVO6YS	Unit
Forward Voltage	V_F	$I_F = 1\text{mA}$	1.2 ± 0.20	1.80 ± 0.20	2.35 ± 0.25	3.00 ± 0.3	3.5 ± 0.35	V
		$I_F = 70\text{mA}$	1.5 ± 0.25	2.30 ± 0.25	3.00 ± 0.30	3.80 ± 0.4	4.5 ± 0.45	
Reverse Current	I_R	$V_R = 100\text{V}$	10					μA

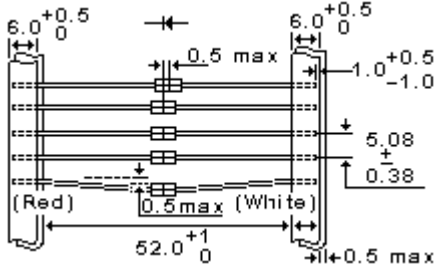
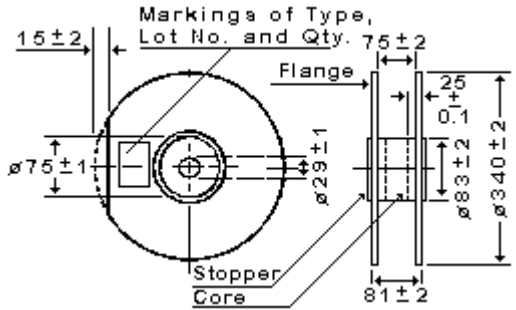
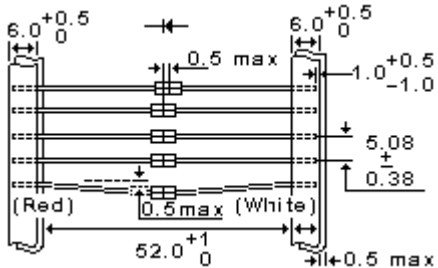
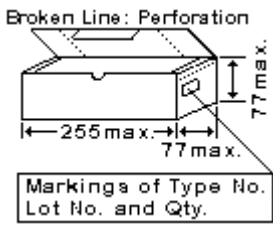
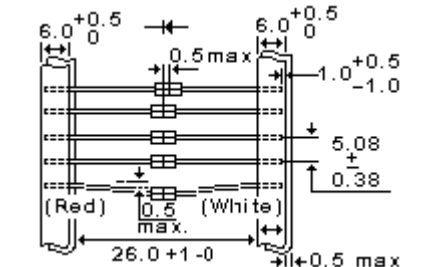
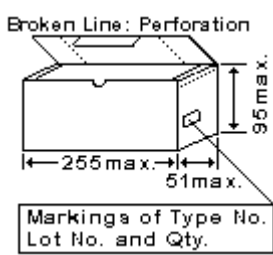
SVO Unsymmetrical Type - (continued)



Outline Drawing Unit: mm
 Resin Molded Type
 Nonflammability: UL94V-O or equivalent
 Weight: Approx. 0.3g



Silicon Varistors - Tape and Reel Specifications

Designation	Dimension (mm)	Packaging Dimension and Marking	Quantity
<p>V Suffix [V] is added to Type No.</p>	<p>Axial Taping</p> 	<p>Reel</p> 	<p>For 2.7ϕ body: 5,000 pcs per one reel.</p> <p>For 4.0ϕ body: 3,000 pcs per one reel.</p>
<p>V1 Suffix [V1] is added to Type No.</p>	<p>Axial Taping</p> 	<p>Ammunition Pack</p> 	<p>For 2.7ϕ body: 2,000 pcs per one box.</p> <p>For 4.0ϕ body: 1,000 pcs per one box.</p>
<p>V0 Suffix [V0] is added to Type No.</p>	<p>Axial Taping</p> 	<p>Ammunition Pack</p> 	<p>For 2.7ϕ and 2.4ϕ body: 2,000 pcs per one box.</p>

Silicon Varistors - Tape and Reel Specifications - (Continued)

Designation	Dimension (mm)	Packaging Dimension and Marking
<p style="text-align: center;">W Suffix [W] is added to Type No.</p>	<p style="text-align: center;">Radial Taping</p>	<p style="text-align: center;">Ammunition Pack</p> <p style="text-align: center;">Broken Line: Perforation</p> <p style="text-align: center;">Anode</p> <p style="text-align: center;">140 max</p> <p style="text-align: center;">340 max</p> <p style="text-align: center;">55 max</p> <p style="text-align: center;">Markings of Type No. Lot No. and Qty.</p> <p style="text-align: center;">* Cathode Marking</p>
<p>Quantity : For 2.7ϕ body and 0.6ϕ lead: 4,000 pcs per one box.</p>		