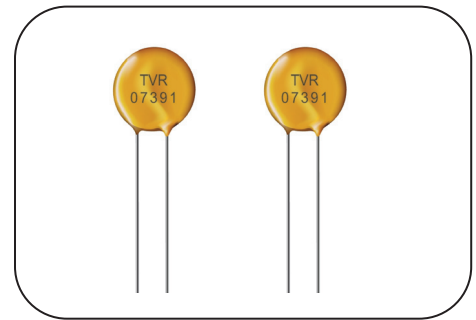


Metal Oxide Varistor : TVR Series

Disc Type Varistor for Surge Protection

■ Features

1. RoHS compliant
2. Halogen-free series are available
3. Body size: $\Phi 5 \sim \Phi 20\text{mm}$
4. Wide operating voltage range: 11Vac ~ 1000 Vac
5. Operating temperature range: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Storage temperature range: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
6. Agency recognition: UL 1449 3rd/UL 1414/cUL/VDE/CSA/CQC
7. TVR14181~14112 and TVR20181~20112 meet IEC 60950-1:2013 Annex Q requirement
8. TVR20 series for UL 1449 3rd SPD Type 2 application is available



■ Recommended Applications

1. Power supply
2. Home appliance
3. Industrial equipment
4. Telecommunication or telephone system
5. Smart meter
6. PLC (Power line communication)
7. Lighting products
8. Photovoltaic industry

■ Part Number Code

T	V	R	0	5	1	8	0	K	S						Y
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Product Type		Body Size		Varistor Voltage ($V_{1\text{mA}}$)			Tolerance of $V_{1\text{mA}}$		Packaging				Optional Suffix		
TVR	Varistor TVR Series		05	$\Phi 5\text{mm}$	180	$18 \times 10^0\text{V} = 18\text{V}$	K $\pm 10\%$		AR	Tape & reel packing (hole pitch: 12.7mm)			Y	RoHS Compliant	
			07	$\Phi 7\text{mm}$	241	$24 \times 10^1\text{V} = 240\text{V}$			ER	Tape & reel packing (hole pitch: 15.0mm)			F	RoHS Compliant & Halogen-Free	
			10	$\Phi 10\text{mm}$	102	$10 \times 10^2\text{V} = 1000\text{V}$			AB	Tape & ammo box packing (hole pitch: 12.7mm)			R	For UL 1449 3 rd SPD Type 2 Application (TVR20 only)	
			14	$\Phi 14\text{mm}$					EB	Tape & ammo box packing (hole pitch: 15.0mm)					
			20	$\Phi 20\text{mm}$					C	Bulk & cut lead (followed by the codes of 2 lead length)			Internal Control Code		
									Blank	Bulk			01~ZZ		
				Appearance											
				S			Straight lead, epoxy coating								
				F			Y kink lead, epoxy coating								
				T			L kink lead, epoxy coating								

Note: Optional suffix will be the 11th digit if packaging and internal control codes are not coded.

Metal Oxide Varistor : TVR Series

Disc Type Varistor for Surge Protection

■ Packaging

● Taping Specification

S Type (Straight Lead)

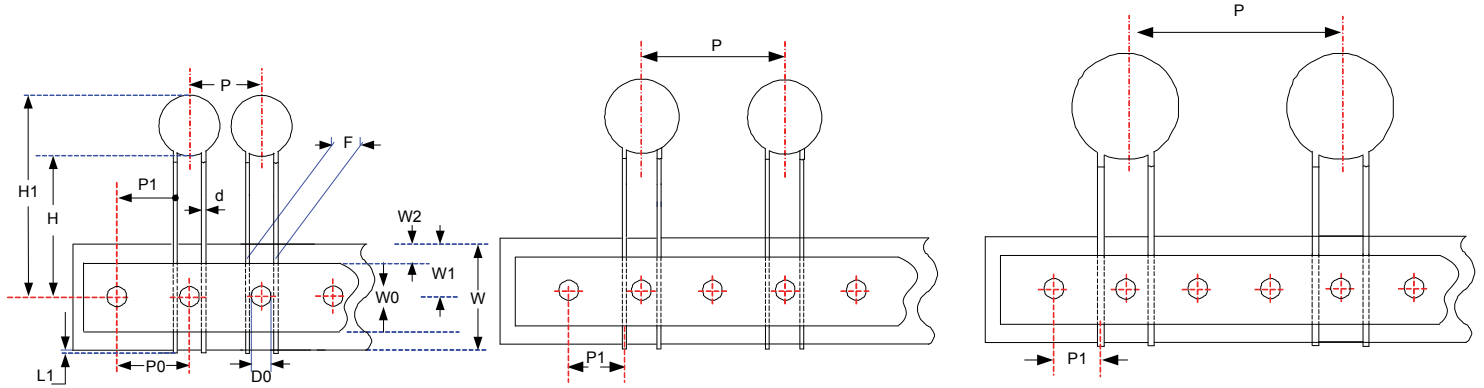


Figure A

Figure B

Figure C

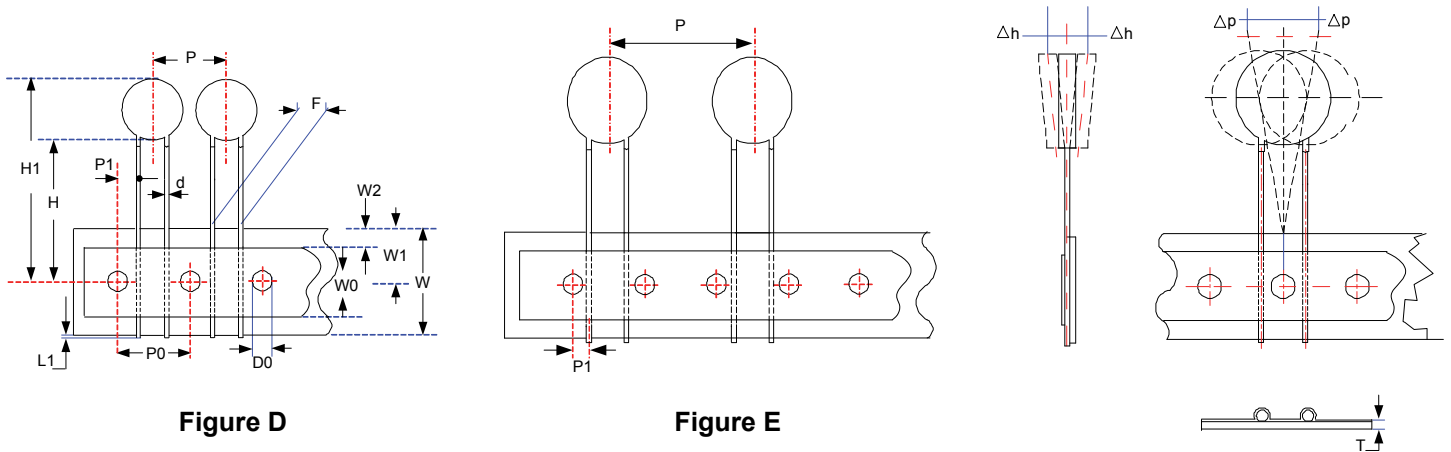


Figure D

Figure E

(Unit: mm)

Taping Code	Body Size	P ₀	F	P	P ₁	H	H ₁	d	W ₀	W ₁	W ₂	W	ΔP	Δh	L ₁	D ₀	T	Figure
		±0.3	±1	±1	±0.7	+2/-0	Max.	±0.02	±1	+0.75/-0.5	Max	+1/-0.5	Max.	Max.	Max.	±0.2	±0.2	
A (P ₀ :12.7)	05	12.7	5.0	12.7	3.85	18	28.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	07	12.7	5.0	12.7	3.85	18	30.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	10	12.7	7.5	12.7	8.95	18	33.5	0.8	12	9	3	18	1	2	0.5	4	0.6	A
	14	12.7	7.5	25.4	8.95	18	38.0	0.8	12	9	3	18	1	2	0.5	4	0.6	B
	20	12.7	7.5	25.4	8.95	18	40.5	0.8	12	9	3	18	1	2	0.5	4	0.6	B
	20	12.7	10	38.1	7.70	18	40.5	1.0	12	9	3	18	1	2	0.5	4	0.6	C
E (P ₀ :15.0)	05	15	5.0	15.0	5.00	18	28.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	07	15	5.0	15.0	5.00	18	30.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	10	15	7.5	15.0	3.75	18	33.5	0.8	12	9	3	18	1	2	0.5	4	0.6	D
	14	15	7.5	30.0	3.75	18	38.0	0.8	12	9	3	18	1	2	0.5	4	0.6	E
	20	15	7.5	30.0	3.75	18	40.5	0.8	12	9	3	18	1	2	0.5	4	0.6	E

Metal Oxide Varistor : TVR Series

Disc Type Varistor for Surge Protection

F Type (Y Kink Lead)

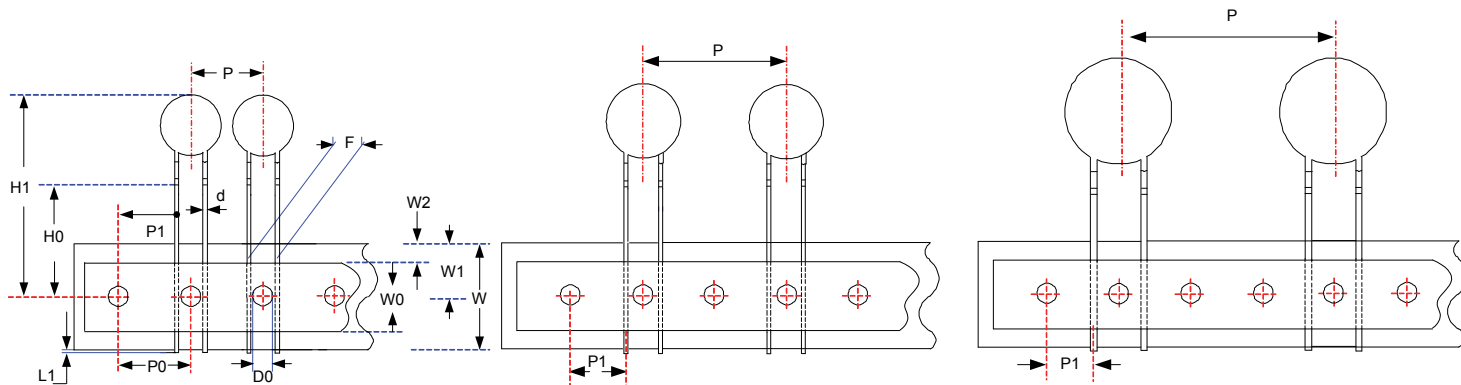


Figure A

Figure B

Figure C

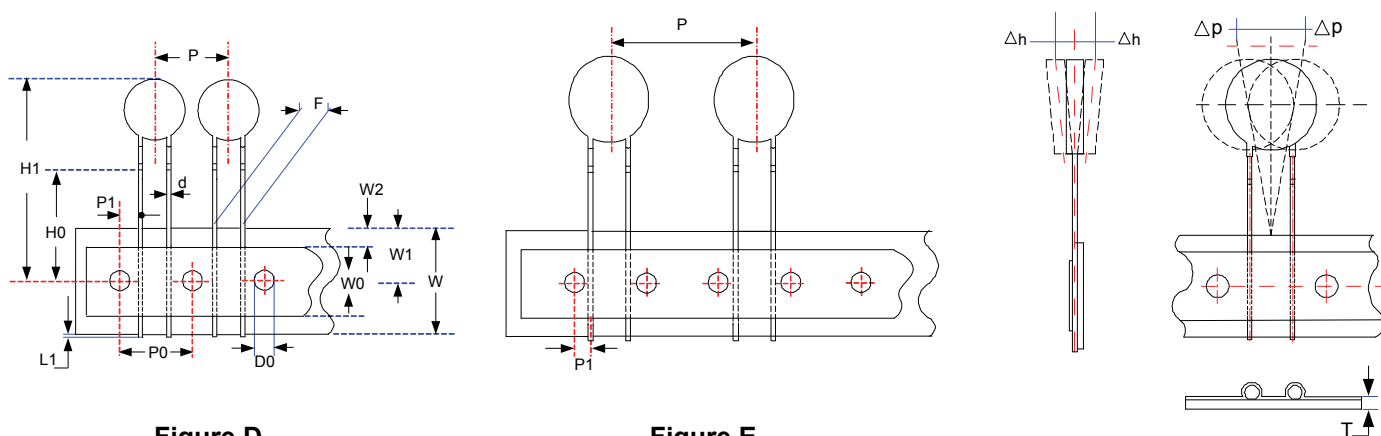


Figure D

Figure E

(Unit: mm)

Taping Code	Body Size	P ₀	F	P	P ₁	H ₀	H ₁	d	W ₀	W ₁	W ₂	W	ΔP	Δh	L ₁	D ₀	T	Figure
		±0.3	±1	±1	±0.7	±0.5	Max.	±0.02	±1	+0.75/ -0.5	Max	+1/ -0.5	Max.	Max.	Max.	±0.2	±0.2	
A (P ₀ :12.7)	05	12.7	5.0	12.7	3.85	16	28.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	07	12.7	5.0	12.7	3.85	16	30.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	10	12.7	7.5	12.7	8.95	16	33.5	0.8	12	9	3	18	1	2	0.5	4	0.6	A
	14	12.7	7.5	25.4	8.95	16	38.0	0.8	12	9	3	18	1	2	0.5	4	0.6	B
	20	12.7	7.5	25.4	8.95	16	40.5	0.8	12	9	3	18	1	2	0.5	4	0.6	B
	20	12.7	10	38.1	7.70	16	40.5	1.0	12	9	3	18	1	2	0.5	4	0.6	C
E (P ₀ :15.0)	05	15	5.0	15.0	5.00	16	28.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	07	15	5.0	15.0	5.00	16	30.0	0.6	12	9	3	18	1	2	0.5	4	0.6	D
	10	15	7.5	15.0	3.75	16	33.5	0.8	12	9	3	18	1	2	0.5	4	0.6	D
	14	15	7.5	30.0	3.75	16	38.0	0.8	12	9	3	18	1	2	0.5	4	0.6	E
	20	15	7.5	30.0	3.75	16	40.5	0.8	12	9	3	18	1	2	0.5	4	0.6	E

Metal Oxide Varistor : TVR Series

Disc Type Varistor for Surge Protection

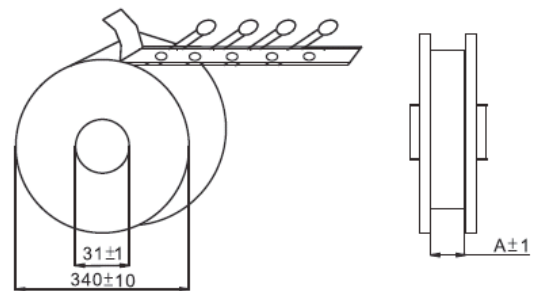
■ Quantity

● Bulk Packing

Series	Straight Lead Type Quantity (pcs/bag)	Cut Lead Type Quantity (pcs/bag)	Kink Type Quantity (pcs/bag)
TVR05	250	250	---
TVR07	250	250	200
TVR10	200	200	200
TVR14	100	100	100
TVR20	50	50	50

● Reel Packing

Series	A (mm)	Quantity (pcs/reel)
TVR05(180~391)	46	1,500
TVR05(431~751)		1,000
TVR07(180~391)		1,500
TVR07(431~821)		1,000
TVR10(180~911)		1,000
TVR10(102~112)		750
TVR10(122~182)		500
TVR14(180~470)		1,000
TVR14(560~391)		750
TVR14(431~182)		500
TVR20(180~681)	55	500
TVR20(751~182)		250



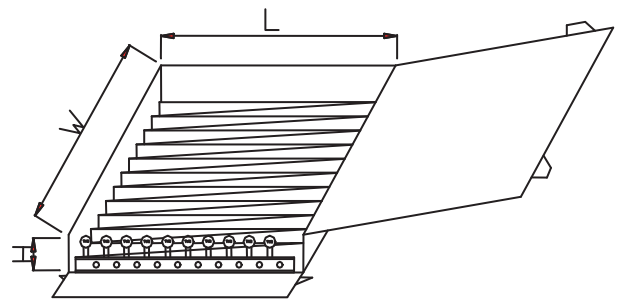
(Unit: mm)

Metal Oxide Varistor : TVR Series

Disc Type Varistor for Surge Protection

● Ammo Packing

Series	Quantity (pcs/box)
TVR05(180~391)	1,000
TVR05(431~471)	1,200
TVR05(511~751)	1,000
TVR07(180~821)	1,000
TVR10(180~361)	750
TVR10(391~621)	500
TVR10(681~112)	400
TVR10(122~182)	200
TVR14(180~271)	500
TVR14(301~112)	250
TVR14(122~182)	200
TVR20(180~112)	250
TVR20(122~182)	200



(Unit: mm)

Series	W±5	L±5	H±5
TVR05	348	185	60
~ TVR20	348	275	60

■ Warehouse Storage Conditions of Products

- Storage Conditions:
 1. Storage Temperature: -10°C ~ +40°C
 2. Relative Humidity: ≤ 75%RH
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year