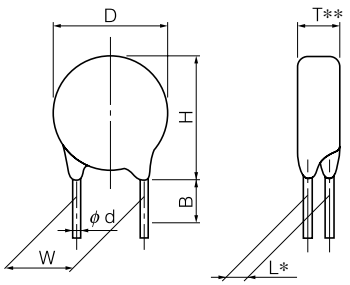
Straight Leads Cut Type (Bulk Type)

■ Ratings and Characteristics

✻ Refer to bulk standard type part no. (P20-P34).

■ Dimensions in mm (not to scale)



notes ✻ Dimension "L": Conforms to each individual specification.
✻✻ Dimension "T": Conforms to each individual specification.

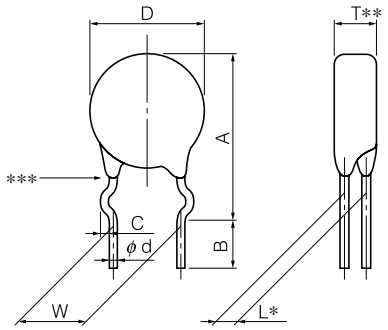
Series / Varistor Voltage / Symbol	5 Series	7 Series	9 Series	10 Series			14 Series		
	180 to 471	180 to 511	180 to 511	180 to 511	621 to 751	821 to 112	180 to 511	621 to 751	821 to 112
D	7.0 max.	8.5 max.	11.5 max.	11.5 max.	12.5 max.	12.5 max.	15.5 max.	16.0 max.	16.0 max.
H	10.0 max.	11.5 max.	14.0 max.	14.5 max.	15.5 max.	15.5 max.	18.5 max.	19.0 max.	19.0 max.
W	5.0±1.0	5.0±1.0	5.0±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0
ϕd	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$
B	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.5	4.0±1.0	4.0±1.0	4.0±1.5
Standard Products Part No.	ERZV05D□□□CS	ERZV07D□□□CS	ERZV09D□□□CS	ERZV10D□□□CS	ERZV10D□□□CS	ERZV10D□□□C1	ERZV14D□□□CS	ERZV14D□□□CS	ERZV14D□□□C1

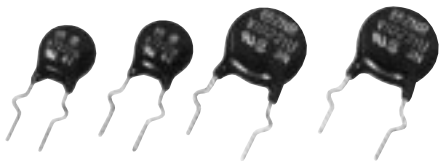
Crimped Leads Cut Type (Bulk Type)

■ Ratings and Characteristics

✻ Refer to bulk standard type part no. (P20-P34).

■ Dimensions in mm (not to scale)





notes ✻ Dimension "L": Conforms to each individual specification.
✻✻ Dimension "T": Conforms to each individual specification.
✻✻✻ Resin extenyions : No resin brlow center of the hook.

Series / Varistor Voltage / Symbol	5 Series	7 Series	9 Series	10 Series			14 Series		
	180 to 471	180 to 511	180 to 511	180 to 511	621 to 751	821 to 112	180 to 511	621 to 751	821 to 112
A	13.0 max.	14.5 max.	17.5 max.	17.5 max.	19.0 max.	20.0 max.	21.0 max.	22.0 max.	23.5 max.
D	7.0 max.	8.5 max.	11.5 max.	11.5 max.	12.5 max.	12.5 max.	15.5 max.	16.0 max.	16.0 max.
C	1.2±0.4	1.2±0.4	1.2±0.4	1.4±0.4	1.4±0.4	1.4±0.4	1.4±0.4	1.4±0.4	1.4±0.4
W	5.0±1.0	5.0±1.0	5.0±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0	7.5±1.0
ϕd	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$
B	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.0	4.0±1.5	4.0±1.0	4.0±1.0	4.0±1.5
Standard Products Part No.	ERZV05V□□□CS	ERZV07V□□□CS	ERZV09V□□□CS	ERZV10V□□□CS	ERZV10V□□□CS	ERZV10V□□□C1	ERZV14V□□□CS	ERZV14V□□□CS	ERZV14V□□□C1

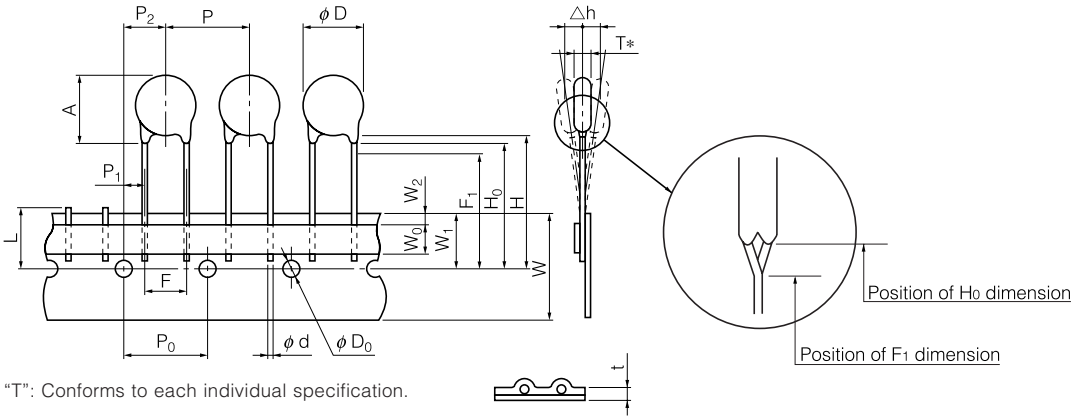
Taping Specifications for Automated Assembly (Straight Leads and Taping)

■ Ratings and Characteristics

✻ Refer to bulk standard type part no. (P20-P34).

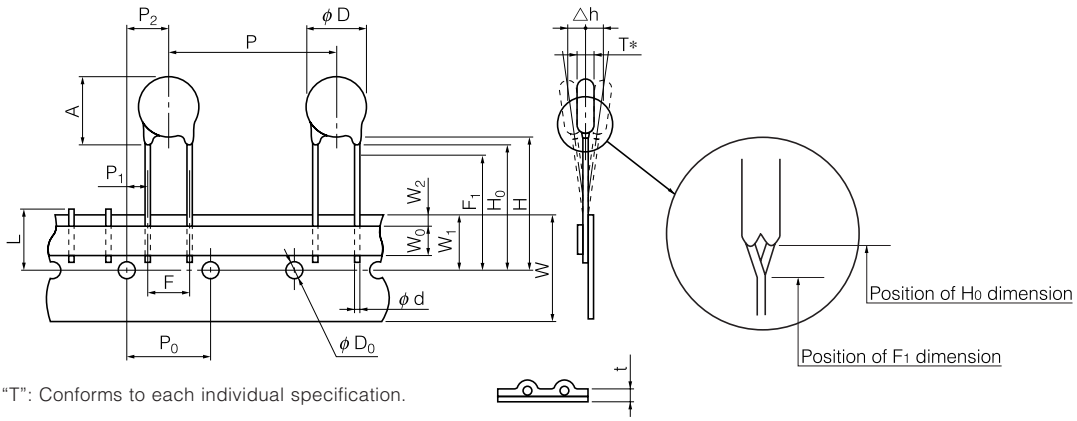
■ Taping Dimensions in mm (not to scale)

Type I·II



✻ Dimension "T": Conforms to each individual specification.

Type III·IV



✻ Dimension "T": Conforms to each individual specification.

Series / Varistor Voltage / Type / Symbol	5 Series	7 Series	9 Series	10 Series			14 Series		
	180 to 471	180 to 511	180 to 511	180 to 331	361 to 511	621 to 112	180 to 331	361 to 511	621 to 112
	Type I	Type I	Type I	Type I	Type II	Type II	Type III	Type IV	Type IV
P	12.7±1.0	12.7±1.0	12.7±1.0	15.0±1.0	15.0±1.0	15.0±1.0	30.0±1.0	30.0±1.0	30.0±1.0
P_0	12.7±0.3	12.7±0.3	12.7±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3
P_1	3.85±0.70	3.85±0.70	3.85±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70
P_2	6.35±1.30	6.35±1.30	6.35±1.30	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3
φ d	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$
F	5.0±0.5	5.0±0.5	5.0±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5
Δ h	0±2	0±2	0±2	0±2	0±2	0±2	0±2	0±2	0±2
W	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$
W_0	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.
W_1	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W_2	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.
H	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22
H_0	17.0±0.5	17.0±0.5	17.0±0.5	$18.0^{+2.0}_{-0}$	—	—	$18.0^{+2.0}_{-0}$	—	—
F_1	—	—	—	—	$16.00^{+0.75}_{-0.5}$	$16.00^{+0.75}_{-0.5}$	—	$16.00^{+0.75}_{-0.5}$	$16.00^{+0.75}_{-0.5}$
φ D	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2	φ 4.0±0.2
t	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3
L	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.
φ D	7.0 max.	8.5 max.	11.5 max.	11.5 max.	11.5 max.	12.5 max.	15.5 max.	15.5 max.	16.0 max.
A	10.0 max.	11.5 max.	14.0 max.	14.5 max.	14.5 max.	15.5 max.	18.5 max.	18.5 max.	19.0 max.
Standard Products Part No.	ERZVA5D□□□	ERZVA7D□□□	ERZVA9D□□□	ERZVGAD□□□	ERZVGAD□□□	ERZVGAD□□□	ERZVGED□□□	ERZVGED□□□	ERZVGED□□□

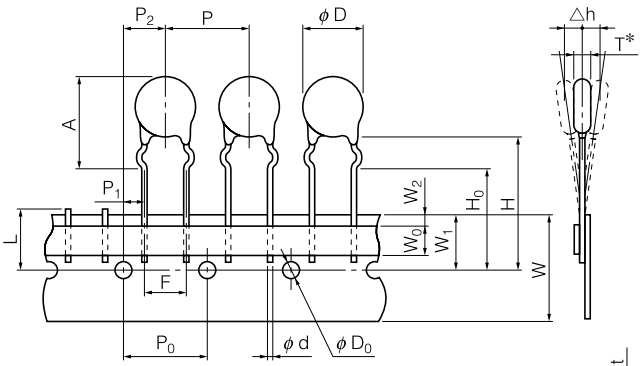
Taping Specifications for Automated Assembly (Crimped Leads and Taping)

■ Ratings and Characteristics

✻ Refer to bulk standard type part no. (P20-P34).

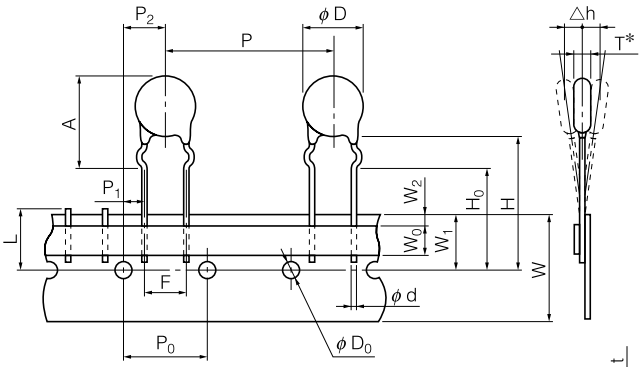
■ Taping Dimensions in mm (not to scale)

Type I



✻ Dimension "T": Conforms to each individual specification.

Type II



✻ Dimension "T": Conforms to each individual specification.

Series / Varistor Voltage / Symbol \ Type	5 Series	7 Series	9 Series	10 Series			14 Series		
	180 to 471	180 to 511	180 to 511	180 to 331	361 to 511	621 to 112	180 to 331	361 to 511	621 to 112
	Type I	Type I	Type I	Type I	Type I	Type I	Type II	Type II	Type II
P	12.7±1.0	12.7±1.0	12.7±1.0	15.0±1.0	15.0±1.0	15.0±1.0	30.0±1.0	30.0±1.0	30.0±1.0
P_0	12.7±0.3	12.7±0.3	12.7±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3	15.0±0.3
P_1	3.85±0.70	3.85±0.70	3.85±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70	3.75±0.70
P_2	6.35±1.30	6.35±1.30	6.35±1.30	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3	7.5±1.3
φ d	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$	$0.80^{+0.08}_{-0.05}$
F	5.0±0.5	5.0±0.5	5.0±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5	7.5±0.5
Δ h	0±2	0±2	0±2	0±2	0±2	0±2	0±2	0±2	0±2
W	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$
W_0	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.	5.0 min.
W_1	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W_2	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.	3 max.
H	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22	Approx. 22
H_0	17.0±0.5	17.0±0.5	17.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
φ D	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2	φ4.0±0.2
t	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3
L	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.	11 max.
φ D	7.0 max.	8.5 max.	11.5 max.	11.5 max.	11.5 max.	12.5 max.	15.5 max.	15.5 max.	16.0 max.
A	13.0 max.	14.5 max.	17.5 max.	17.5 max.	17.5 max.	✻(refer)	21.0 max.	21.0 max.	✻(refer)
Standard Products Part No.	ERZVA5V□□□	ERZVA7V□□□	ERZVA9V□□□	ERZVEAV□□□	ERZVEAV□□□	ERZVEAV□□□	ERZVEEV□□□	ERZVEEV□□□	ERZVEEV□□□

✻ Dimension "A"

	10 Series	14 Series
ERZV○○V621	19.0 max.	22.0 max.
ERZV○○V681	19.0 max.	22.0 max.
ERZV○○V751	19.0 max.	22.0 max.
ERZV○○V821	20.0 max.	23.5 max.

	10 Series	14 Series
ERZV○○V911	20.0 max.	23.5 max.
ERZV○○V102	20.0 max.	23.5 max.
ERZV○○V112	20.0 max.	23.5 max.

Application Note for UL, CSA and VDE Recognized Components

Note: Register " Standard Registration No." when registering as the safe standard part, because it isn't registered in "Panasonic Part No."
Please contact us about VDE certification

■ Related Standards

Standard No. (Applicasion Standard)	Category	Title	File No.	Varistor Voltage Range
UL1414	FOWX2	Across-The-Line, Antenna Coupling, and Line-By-Pass Capacitors for Radio and Television-Type Appliances	E62674 Vol.5, 10	5 Series 200 to 470 7 Series 200 to 510 9 Series 200 to 510 10 Series 200 to 1800 14 Series 200 to 1800 20 Series 200 to 1800
UL1449	XUHT2	Transient Voltage Surge Suppressors	E86821 Vol.1	5 Series 82 to 470 7 Series 82 to 510 9 Series 82 to 510 10 Series 82 to 1800 14 Series 82 to 1800 20 Series 82 to 1800
CSA C22.2 No.1 Class 2221 01	——	Accessories and Parts for Electronic Products ● Varistor for Across-The-Line use as transient protection on 120 Vac nominal system	LR-92226	5 Series 200 to 470 7 Series 200 to 510 9 Series 200 to 510 10 Series 200 to 1800 14 Series 200 to 1800 20 Series 200 to 1800

Note: For UL497B recognized ZNRs, contact our sales office or factory.

■ Standard Registration No.* and Standard Part No.
Please contact us about VDE certification

Standard Registration No.*	Panasonic Part No.				
V✻820U	ERZV□□D820	ERZV□□V820	ERZV○○D820	ERZV○○V820	(5,7,9,10,14,20 Series)
V✻101U	ERZV□□D101	ERZV□□V101	ERZV○○D101	ERZV○○V101	(5,7,9,10,14,20 Series)
V✻121U	ERZV□□D121	ERZV□□V121	ERZV○○D121	ERZV○○V121	(5,7,9,10,14,20 Series)
V✻151U	ERZV□□D151	ERZV□□V151	ERZV○○D151	ERZV○○V151	(5,7,9,10,14,20 Series)
V✻201U	ERZV□□D201	ERZV□□V201	ERZV○○D201	ERZV○○V201	(5,7,9,10,14,20 Series)
V✻221U	ERZV□□D221	ERZV□□V221	ERZV○○D221	ERZV○○V221	(5,7,9,10,14,20 Series)
V✻241U	ERZV□□D241	ERZV□□V241	ERZV○○D241	ERZV○○V241	(5,7,9,10,14,20 Series)
V✻271U	ERZV□□D271	ERZV□□V271	ERZV○○D271	ERZV○○V271	(5,7,9,10,14,20 Series)
V✻331U	ERZV□□D331	ERZV□□V331	ERZV○○D331	ERZV○○V331	(5,7,9,10,14,20 Series)
V✻361U	ERZV□□D361	ERZV□□V361	ERZV○○D361	ERZV○○V361	(5,7,9,10,14,20 Series)
V✻391U	ERZV□□D391	ERZV□□V391	ERZV○○D391	ERZV○○V391	(5,7,9,10,14,20 Series)
V✻431U	ERZV□□D431	ERZV□□V431	ERZV○○D431	ERZV○○V431	(5,7,9,10,14,20 Series)
V✻471U	ERZV□□D471	ERZV□□V471	ERZV○○D471	ERZV○○V471	(5,7,9,10,14,20 Series)
V✻511U	ERZV□□D511	ERZV□□V511	ERZV○○D511	ERZV○○V511	(7,9,10,14,20 Series)
V✻621U	ERZV□□D621	ERZV□□V621	ERZV○○D621	ERZV○○V621	(10,14,20 Series)
V✻681U	ERZV□□D681	ERZV□□V681	ERZV○○D681	ERZV○○V681	(10,14,20 Series)
V✻751U	ERZV□□D751	ERZV□□V751	ERZV○○D751	ERZV○○V751	(10,14,20 Series)
V✻821U	ERZV□□D821	ERZV□□V821	ERZV○○D821	ERZV○○V821	(10,14,20 Series)
V✻911U	ERZV□□D911	ERZV□□V911	ERZV○○D911	ERZV○○V911	(10,14,20 Series)
V✻102U	ERZV□□D102	ERZV□□V102	ERZV○○D102	ERZV○○V102	(10,14,20 Series)
V✻112U	ERZV□□D112	ERZV□□V112	ERZV○○D112	ERZV○○V112	(10,14,20 Series)
V✻182U	ERZV10D182CS	ERZV14D182CS	ERZV20D182		

✻ UL : Type Designation
CSA : Part Number

✻ :5series is blank, 7series is 7, 9series is 9, 10series is 10, 14series is 14, 20series is 20
□□:Code for Element Size
○○:Code for Taping/Packing and Symbol of Element Size
For the product Part No. except the above, contact our sales office or factory.

■ The AC Rated Voltage and Maximum Allowable Voltage

Stadard Registration No.*	Maximum Allowable Voltage		Rated Voltage (Vrms)			
	ACrms (V)	DC (V)	UL1414	UL1449	CSA C22.2 No.1 (Class 2221 01)	VDE CECC 42 201
V✻820U	50	65	(Not application)	45	(Not application)	
V✻101U	60	85	(Not application)	55	(Not application)	
V✻121U	75	100	(Not application)	68	(Not application)	
V✻151U	95	125	(Not application)	86	(Not application)	
V✻201U	130	170	125	118	118	
V✻221U	140	180	125	127	127	
V✻241U	150	200	125	136	136	
V✻271U	175	225	125	159	159	
V✻331U	210	270	125	189	189	
V✻361U	230	300	125	209	209	✻It is the same with the Maximum Allowable Voltage.
V✻391U	250	320	250	227	227	
V✻431U	275	350	250	250	250	
V✻471U	300	385	250	272	272	
V✻511U	315	410	250	291	291	
V✻621U	385	505	250	350	350	
V✻681U	420	560	250	381	381	
V✻751U	460	615	250	418	418	
V✻821U	510	670	250	463	463	
V✻911U	550	745	250	500	500	
V✻102U	625	825	250	568	568	
V✻112U	680	895	250	600	618	
V✻182U	1000	1465	250	600	909	

✻ UL : Type Designation ✻:5Series is blank, 7series is 7, 9series is 9, 10series is 10, 14series is 14, 20series is 20
CSA : Part Number
VDE : Please contact us

■ Application Notes

1) CSA regulate "Maximum Rating of Fuse" for using ZNR to "Audio, Video and Similer Electronic Equipment" as below

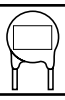
Maximum Peak Current 8/20 μs, 1 time (A)	Maximum Rating of Fuse (A)
500 and under	3
Over 500 to 2000 and under	5
Over 2000 to 6000 and under	10
Over 6000	Not Specified

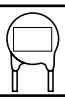
2) "Rated Voltages" are specified for UL/CSA recognized components besides Maximum Allowable Voltage because of conforming to the Standby Current specified in safety standards.
In case of making an application to UL/CSA approval for equipment with ZNR, the maximum AC operating voltage of equipment shall be lower than the ZNR Rated Voltage.

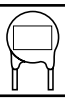
Marking Contents and Packaging Specifications

✻ Please contact us about VDE certification

■ Marking Contents

Standard Part No.	ERZV05D180 to ERZV05D680	ERZV07D180 to ERZV07D680	ERZV09D180 to ERZV09D680	ERZV10D180 to ERZV10D680	ERZV14D180 to ERZV14D680	ERZV20D180 to ERZV20D680
	Ⓜ V□□□ ○◆◇	Ⓜ V7□□□ ○◆◇	Ⓜ V9□□□ ○◆◇	Ⓜ ZNR V10□□□ ○◆◇	Ⓜ ZNR V14□□□ ○◆◇	Ⓜ ZNR V20□□□ ○◆◇

Standard Part No.	ERZV05D820 to ERZV05D151	ERZV07D820 to ERZV07D151	ERZV09D820 to ERZV09D151	ERZV10D820 to ERZV10D151	ERZV14D820 to ERZV14D151	ERZV20D820 to ERZV20D151
	Ⓜ V□□□U ᖰ○◆◇	Ⓜ V7□□□U ᖰ○◆◇	Ⓜ V9□□□U ᖰ○◆◇	Ⓜ ZNR V10□□□U ᖰ○◆◇	Ⓜ ZNR V14□□□U ᖰ○◆◇	Ⓜ ZNR V20□□□U ᖰ○◆◇

Standard Part No.	ERZV05D201 to ERZV05D471	ERZV07D201 to ERZV07D511	ERZV09D201 to ERZV09D511	ERZV10D201 to ERZV10D182CS	ERZV14D201 to ERZV14D182CS	ERZV20D201 to ERZV20D182
	Ⓜ Ⓢ V□□□U ᖰ○◆◇	Ⓜ Ⓢ V7□□□U ᖰ○◆◇	Ⓜ Ⓢ V9□□□U ᖰ○◆◇	Ⓜ ZNR V10□□□U ᖰ Ⓢ○◆◇	Ⓜ ZNR V14□□□U ᖰ Ⓢ○◆◇	Ⓜ ZNR V20□□□U ᖰ Ⓢ○◆◇

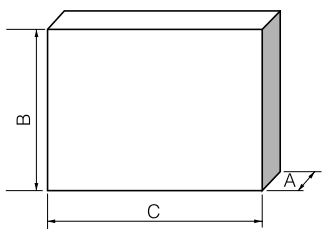
■ Explanation of the contents

Ⓜ	V ✻ □□□	V ✻ □□□U	ᖰ	Ⓢ	○	◆ ◇
Trade Mark	Abbreviation of Part No. □□□···Nominal Varistor Voltage	Registration No. Type Designation Part Number	UL Recognized Components Mark	CSA Monogram	Factory Identification Marking None···Japan S ···Japan G···Singapore	Year Code and Monthly Code of the production ◆ ···<Y>1999:9,2000:0,2001:A 2002:B,2003:C,2004:D ◇ ···<M>Jan:1to Sep:9, Oct:O,Nov:N,Dec:D

✻ : 5 series is blank, 7 series is 7, 9 series is 9, 10 series is 10, 14 series is 14, 20 series is 20

■ Packaging Specifications

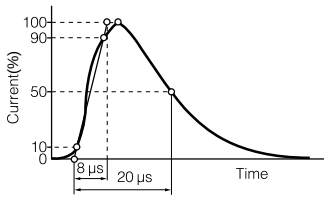
Standard Part No. and Taping Specification	Packing Quantity	Dimensions in mm (Packing Case)
ERZVA5D□□□ ERZVA7D□□□ ERZVA9D□□□ (Straight Leads and Taped)	1000 pcs./Box	A 55 max. B 330 max. C 340 max.
ERZVA5V□□□ ERZVA7V□□□ ERZVA9V□□□ (Crimped Leads and Taped)	1000 pcs./Box	
ERZVGAD180 to 621 ERZVGAD681 to 112 (Straight Leads and Taped)	1000 pcs./Box 500 pcs./Box	A 65 max. B 360 max. C 340 max.
ERZVEAV180 to 621 ERZVEAV681 to 112 (Crimped Leads and Taped)	1000 pcs./Box 500 pcs./Box	
ERZVGED180 to 621 ERZVGED681 to 112 (Straight Leads and Taped)	500 pcs./Box 250 pcs./Box	
ERZVEEV180 to 621 ERZVEEV681 to 112 (Crimped Leads and Taped)	500 pcs./Box 250 pcs./Box	



■ Note

● Missing components on tape in succession shall be 3 pcs max. and total packing quantity shall be same as indications on the box.

■ Performance Characteristics

	Characteristics		Test Methods/Description	Specifications
Electrical	Standard Test Condition		Electrical measurements (initial/after tests) shall be conducted at temperature of 5 to 35 °C, relative humidity of maximum 85 %	———
	Varistor Voltage		The voltage betwen two terminals with the specified measuring current C_{mA} DC applied is called V_C or V_{CmA}. The measurement shall be made as fast as possible to avoid heat affection.	To meet the specified value.
	Maximum Allowable Voltage		The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously.	
	Clamping Voltage		The maximum voltage between two terminals with the specified standard impulse current (8/20 µs) illustrated below applied. 	
	Rated Power		The power that can be applied in the specified ambient temperature.	
	Maximum Energy		The maximum energy within the varistor voltage change of ±10 % when a single impulse current of 2 ms or 10/1000 µs is applied.	
	Maximum Peak Current (Withstanding Surge Current)	2 times	The maximum current within the varistor voltage change of ±10 % when a standard impulse current of 8/20 µs is applied two times with an interval of 5 minutes.	
		1 time	The maximum current within the varistor voltage change of ±10 % with a single standard impulse current of 8/20 µs is applied.	
	Temperature Coefficient of Varistor Voltage		$\frac{V_{CmA} \text{ at } 85\,^\circ\text{C} - V_{CmA} \text{ at } 25\,^\circ\text{C}}{V_{CmA} \text{ at } 25\,^\circ\text{C}} \times \frac{1}{60} \times 100\ (\%/^\circ\text{C})$	0 to -0.05 %/°C max.
	Capacitance		Capacitance shall be measured at 1 kHz ±10 %, 1 Vrms max. (1 MHz ±10 % below 100 pF), 0 V bias and 20±2 °C.	To meet the specified value
	Withstanding Voltage (Body Insulation)		The specified voltage shall be applied between both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute.	No breakdown
	Impulse Life		The change of V_C shall be measured after the impulse current listed below is applied 10000 or 100000 times continuously with the interval of 10 seconds at room temperature.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 10$ %

Classification (Nominal varistor voltage)	Test Voltage (AC)
$V_{0.1\,mA}$, $V_{1\,mA} \leqq 330$ V	1000 Vrms
$V_{0.1\,mA}$, $V_{1\,mA} > 330$ V	1500 Vrms

Part No. \ Item / Times / Current	Impulse Life (I) ×10^4 Times	Impulse Life (II) ×10^5 Times
	Impulse Current	
ERZV05D180 to ERZV05D680	8 A (8/20 µs)	5 A (8/20 µs)
ERZV07D180 to ERZV07D680	25 A (8/20 µs)	15 A (8/20 µs)
ERZV09D180 to ERZV09D680	50 A (8/20 µs)	35 A (8/20 µs)
ERZV10D180 to ERZV10D680	50 A (8/20 µs)	35 A (8/20 µs)
ERZV14D180 to ERZV14D680	90 A (8/20 µs)	50 A (8/20 µs)
ERZV20D180 to ERZV20D680	130 A (8/20 µs)	65 A (8/20 µs)
ERZV05D820 to ERZV05D471	40 A (8/20 µs)	25 A (8/20 µs)
ERZV07D820 to ERZV07D511	100 A (8/20 µs)	60 A (8/20 µs)
ERZV09D820 to ERZV09D511	150 A (8/20 µs)	85 A (8/20 µs)
ERZV10D820 to ERZV10D112	150 A (8/20 µs)	85 A (8/20 µs)
ERZV10D182CS	120 A (8/20 µs)	75 A (8/20 µs)
ERZV14D820 to ERZV14D112	200 A (8/20 µs)	110 A (8/20 µs)
ERZV14D182CS	150 A (8/20 µs)	90 A (8/20 µs)
ERZV20D820 to ERZV20D112	250 A (8/20 µs)	120 A (8/20 µs)
ERZV20D182	200 A (8/20 µs)	100 A (8/20 µs)

■ Performance Characterisitcs

Characteristics		Test Methods	Specifications
Mechanical	Robustness of Terminations (Tensile)	After gradually applying the force specified below and keeping the unit fixed for 10 seconds, the terminal shall be visually examined for any damage. Terminal diameter: Force ϕ0.6 mm, ϕ0.8 mm: 9.8 N ϕ1.0 mm: 19.6 N	No remarkable mechanical damage
	Robustness of Terminations (Bending)	The unit shall be secured with its terminal kept vertical and the force specified below shall be applied in the axial direction. The terminal shall gradually be bent by 90 ° in one direction, then 90 ° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined. Terminal diameter: Force ϕ0.6 mm, ϕ0.8 mm: 4.9 N ϕ1.0 mm: 9.8 N	
	Vibration	After repeadly applying a single harmonic vibration (amplitude: 0.75 mm, double amplitude: 1.5 mm) with 1 minute vibration frequency cycles (10 Hz to 55 Hz to 10 Hz) to each of three perpendicular directions for 2 hours. Thereafter, the unit shall be visually examined.	
	Solderability	After dipping the terminals to a depth of approximately 3 mm from the body in a soldering bath of 235±5 ˚C for 2±0.5 seconds, the terminal shall be visually examined.	Approximately 95 % of the termainals shall be covered with new solder uniformly.
	Resistance to Soldering Heat	After each lead shall be dipped into a solder bath having a temperature of 260±5 ˚C to a point 2.0 to 2.5 mm from the body of the unit, using shielding board (t=1.5 mm), be held there for 10±1 s (5 series: 5±1 s) and then be stored at room temperature and normal humidity for 1 to 2 hours. The change of V_{CmA} and mechanical damages shall be examined.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 5$ % No remarkable mechanical damage
Environmental	High Temperature Storage/ Dry Heat	The specimen shall be subjected to 125±2 ˚C for 1000 hours in a thermostatic bath without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{CmA} shall be measured.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 5$ %
	Humidity (Steady State)	The specimen shall be subjected to 40±2 ˚C, 90 to 95 % RH for 1000 hours without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{CmA} shall be measured.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 5$ %
	Temperature Cycle	The temperature cycle shown below shall be repeated five cycles and then stored at room temperature and normal humidity for 1 to 2 hours. The change of V_{CmA} and mechanical damage shall be examined. Step: Temperature (˚C): Period (minutes) 1: –40±3: 30±3 2: Room temperature: 15±3 3: 125±2: 30±3 4: Room temperature: 15±3	$\Delta V_{CmA}/V_{CmA} \leqq \pm 5$ % No remarkable mechanical damage
	High Temperature Load/ Dry Heat Load	After being continuously applied the Maximum Allowable Voltage at 85±2 ˚C for 1000 hours, the specimen shall be stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{CmA} shall be measured.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 10$ %
	Damp Heat Load/ Humidity Load	The specimen shall be subjected to 40±2 ˚C, 90 to 95 % RH and the Maximum Allowable Voltage for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{CmA} shall be measured.	$\Delta V_{CmA}/V_{CmA} \leqq \pm 10$ %
	Low Temperature Storage/Cold	The specimen shall be subjected to –40±2 ˚C without load for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{CmA} shall be measured.	$\Delta V_{CmA}/V_{CmA} < \pm 5$ %