



ZR Series (Radial type)

Disk type general use ZR type (Low voltage) is for protection of electronics and control equipments from surge and noise.

1. Features

- Superior nonlinearity of voltage to maintain low limiting voltage.
- Symmetry V-I characteristics to be applicable for +/- surge and AC circuit.
- Small in size, high in surge endurance to be stable for repetitive surges.
- Quicker response and sharper cut-off compared with discharge type protector.
- Low temperature coefficient.
- Wide applicable voltage range.
- High reliability.

2. Application

- Protection of semiconductors from surge voltage.
- Protection of circuit and lines from induced lightning surge.
- Protection from relay noise.
- Voltage stabilization.

3. Qualification

MNR disk type is qualified for UL1414, 1449 and CSA C22.2, to be available for exporting. Also international standard, ISO-9001 qualification is obtained.



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ZR Series General Type

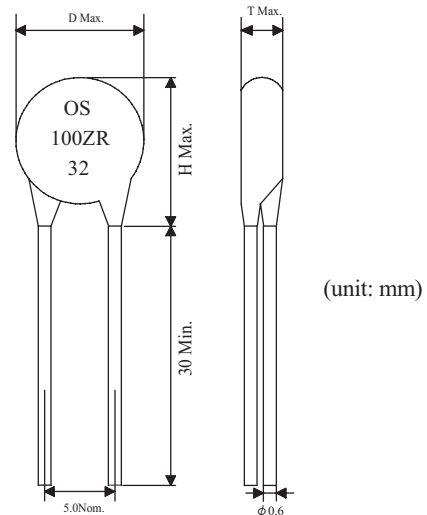
Disk Type 05D

Rating

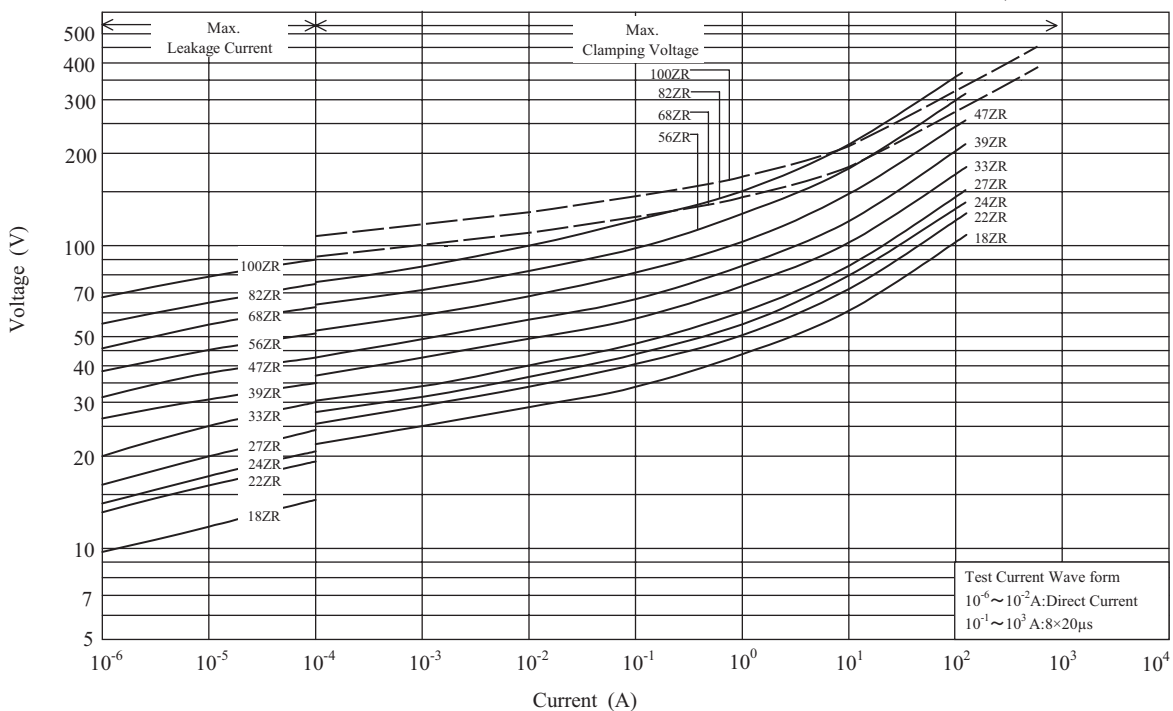
Series	Part No.	Rated Voltage		Energy (2ms)	Rated Power	Rated Peak Current(8×20μs)		Varistor Voltage		Max. Clamping Voltage		Typical Capacitance (Reference) (1kHz)	UL
		AC	DC			I _{time}	I _{2times}	V _{0.1mA} DC		Voltage (8×20μs)			
		V _{rms}	V	J	W			A	A	V	±%	V	I _p (A)
ZR	18ZR-05D	10	13	0.4	0.01	100	50	18	20	43	1.0	1370	UL-1449
	22ZR-05D	13	17	0.5				22	15	51		1200	
	24ZR-05D	14	18	0.5				24		55		1130	
	27ZR-05D	17	22	0.6				27	10	60		1050	
	33ZR-05D	20	26	0.7				33		73		920	
	39ZR-05D	25	31	0.8				39		86		820	
	47ZR-05D	30	38	1.1				47		104		720	
	56ZR-05D	35	45	1.3				56		123		640	
	68ZR-05D	40	56	1.6	68		150	570					
	82ZR-05D	50	65	2.0	0.10	400	200	82		160	5.0	270	
	100ZR-05D	60	85	2.0				100		190		250	

Dimensions (Unit:mm)

Series	Part No.	D	H	T
ZR	18ZR-05D	7.0	11.0	4.5
	22ZR-05D			
	24ZR-05D			
	27ZR-05D			
	33ZR-05D			
	39ZR-05D	7.5		5.5
	47ZR-05D			5.0
	56ZR-05D			
	68ZR-05D			
	82ZR-05D	5.5		
	100ZR-05D			



V-I Characteristics





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ZR Series General Type

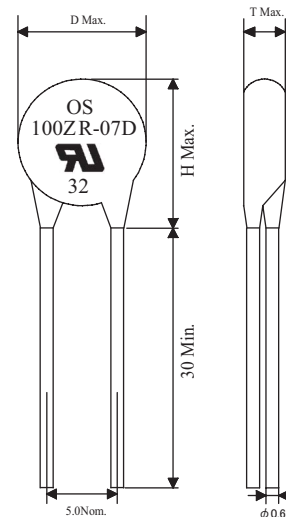
Disk Type 07D

Rating

Series	Part No.	Rated Voltage		Energy (2ms)	Rated Power	Rated Peak Current(8×20μs)		Varistor Voltage		Max. Clamping Voltage (8×20μs)		Typical Capacitance (Reference) (1kHz)	UL
		AC	DC			1time	2times	V1mA/DC		V	Ip(A)		
		Vrms	V	J	W			A	A			V	±%
ZR	18ZR-07D	10	13	0.8	0.02	250	125	18	20	39	2.5	2780	UL-1449
	22ZR-07D	13	17	1.0				22	15	46		2450	
	24ZR-07D	14	18	1.2				24	10	50		2320	
	27ZR-07D	17	22	1.3				27		53		2160	
	33ZR-07D	20	26	1.5				33		65		1910	
	39ZR-07D	25	31	1.7				39		77		1720	
	47ZR-07D	30	38	2.3				47		93		1530	
	56ZR-07D	35	45	2.7				56		110		1330	
	68ZR-07D	40	56	3.2				68		135		1220	
	82ZR-07D	50	65	4.0				0.25		1200		600	
100ZR-07D	60	85	6.0	100	175	550							

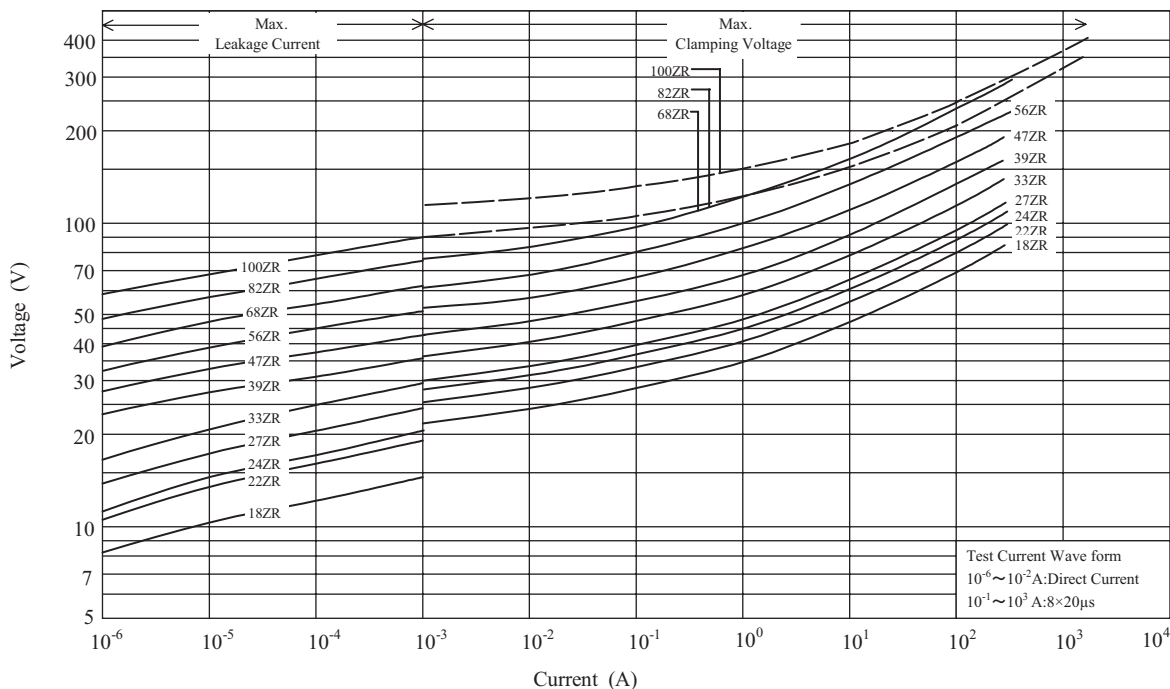
Dimensions (unit: mm)

Series	Part No.	D	H	T
ZR	18ZR-07D	8.5	12.5	4.5
	22ZR-07D			
	24ZR-07D			
	27ZR-07D			
	33ZR-07D			
	39ZR-07D	9.0	5.5	
	47ZR-07D		5.0	
	56ZR-07D		5.5	
	68ZR-07D		5.5	
	82ZR-07D		5.5	
100ZR-07D				



(unit: mm)

V-I Characteristics





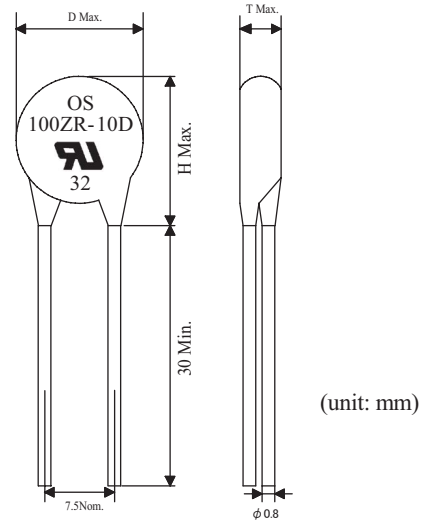
Disk Type 10D

Rating

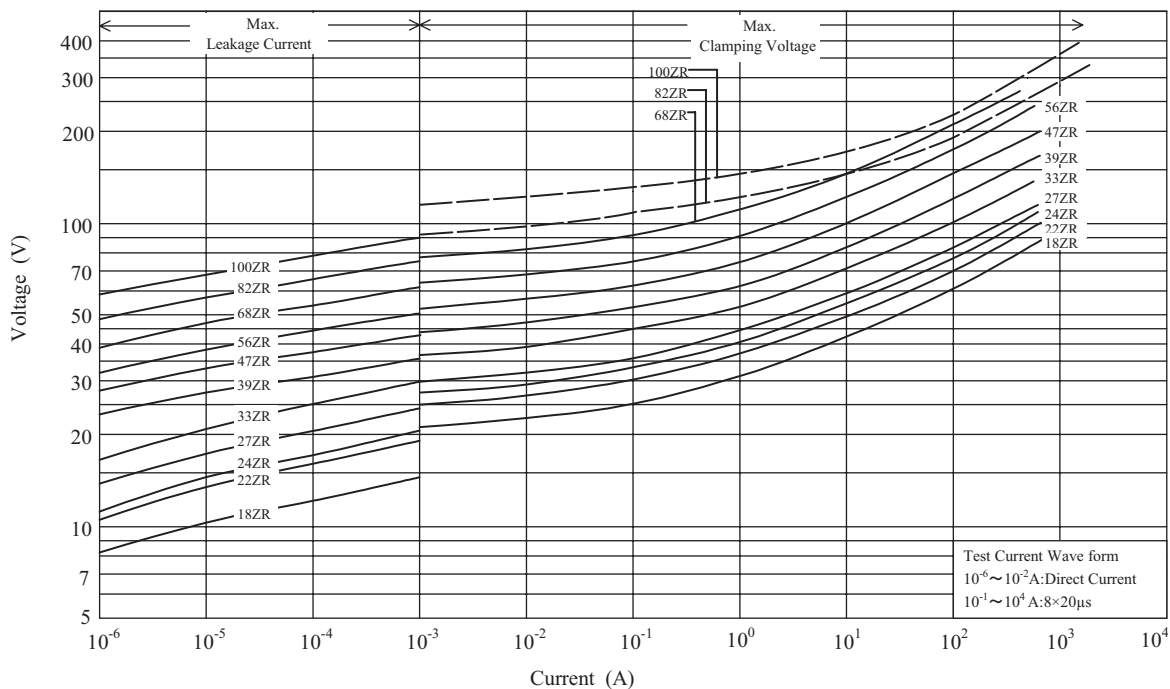
Series	Part No.	Rated Voltage		Energy (2ms)	Rated Power	Rated Peak Current(8×20μs)		Varistor Voltage		Max. Clamping Voltage		Typical Capacitance (Reference) (1kHz)	UL
		AC	DC			1time	2times	V1mA DC		(8×20μs)			
		Vrms	V	J	W			A	A	V	±%	V	I p(A)
ZR	18ZR-10D	10	13	1.6	0.05	500	250	18	20	39	5	6560	UL-1449
	22ZR-10D	13	17	2.0				22	15	46		5590	
	24ZR-10D	14	18	2.0				24	10	50		5210	
	27ZR-10D	17	22	2.5				27		4740			
	33ZR-10D	20	26	3.0				33		65		4040	
	39ZR-10D	25	31	3.5				39		77		3540	
	47ZR-10D	30	38	4.5				47		93		3050	
	56ZR-10D	35	45	5.5				56		110		2650	
	68ZR-10D	40	56	6.5				68		135		2270	
	82ZR-10D	50	65	9.0				82		150		1260	
100ZR-10D	60	85	13.0	100	175	1070							

Dimensions (unit:mm)

Series	Part No.	D	H	T
ZR	18ZR-10D	12.5	16.0	5.0
	22ZR-10D			
	24ZR-10D			
	27ZR-10D			
	33ZR-10D			
	39ZR-10D	13.0		5.5
	47ZR-10D			6.0
	56ZR-10D			5.5
	68ZR-10D			6.0
	82ZR-10D			
100ZR-10D				



V-I Characteristics





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ZR Series General Type

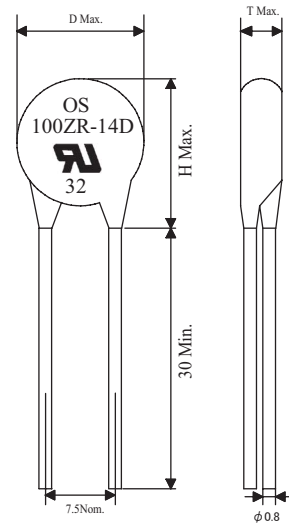
Disk Type 14D

Rating

Series	Part No.	Rated Voltage		Energy (2ms) J	Rated Power W	Rated Peak Current(8×20μs)		Varistor Voltage V1mA DC		Max. Clamping Voltage (8×20μs)		Typical Capacitance (Reference) (1kHz) pF	UL
		AC	DC			1time	2times	V	±%	V	I _p (A)		
		V _{rms}	V	A	A	V		V					
ZR	18ZR-14D	10	13	3.5	0.1	1000	500	18	20	39	10	11410	UL-1449
	22ZR-14D	13	17	4.0				22	15	46		10140	
	24ZR-14D	14	18	4.0				24		50		9630	
	27ZR-14D	17	22	5.0				27	10	53		8980	
	33ZR-14D	20	26	6.0				33		65		7980	
	39ZR-14D	25	31	7.0				39		77		7230	
	47ZR-14D	30	38	8.5				47		93		6480	
	56ZR-14D	35	45	10.0				56		110		5480	
	68ZR-14D	40	56	13.0	68		135	5210					
	82ZR-14D	50	65	14.0	82	4500	2500	150	50	2930			
	100ZR-14D	60	85	19.0	100			175		2450			

Dimensions (unit:mm)

Series	Part No.	D	H	T
ZR	18ZR-14D	16.5	20.0	5.0
	22ZR-14D			
	24ZR-14D			
	27ZR-14D			
	33ZR-14D			
	39ZR-14D	17.0	5.5	
	47ZR-14D			
	56ZR-14D			6.0
	68ZR-14D			5.5
	82ZR-14D			6.0
	100ZR-14D			



(unit: mm)

V-I Characteristics

