



Model No. ZM Low Voltage High Energy Type

Model No. ZM (radial type)

Model No. ZM MNR varistor made it available to have lower varistor voltage.

Conventionally lowest varistor voltage was 18V, Model No. ZM realized it as low as 8V, by means of researching of material composition and process improvement.

This Model No. ZM can protect low operating voltage semiconductors like memories and logic IC's from low level abnormal voltages.

Compared with Model No. ZR, high energy endurance is available to absorb the load damp surge of automobiles.

1.Features

- Low varistor voltage (8V~47V)
5V or lower source voltage circuit be protected
- 2to5 times higher energy capability than ZR type.
- Sharp nonlinearity to maintain low limiting voltage.
- Symmetry V-I characteristics to be applicable for +/- surge.
- Stable for repetitive surge.
- Quick response
- No residual current.
- Low temperature coefficient.
- High reliability.

2.Application

- Protection of semiconductors from instantaneous surge voltage.
- Protection of circuit and lines from lightning surge.
- Protection from inductive ON/OFF surge like relay.
- Absorption of automobile load damp surge.
- Over voltage protection for automobile electronics and semiconductors.



Low Voltage, High Energy Type

Disk Type 05D

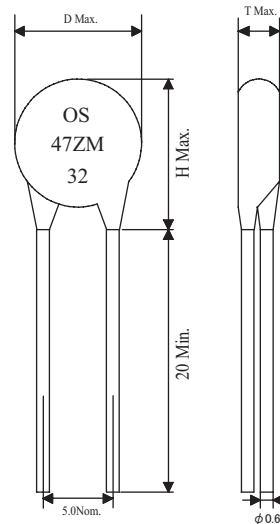
Rating

Model No.	Part No.	Rated Voltage		Energy (*1)	Rated Power	Rated Peak Current (8×20 μs)		Varistor Voltage V0.1mA DC		Max. Clamping Voltage (8×20 μs)		Typical Capacitance (Reference) (1kHz)	Short Time Allowable Voltage (5minutes)
		AC	DC			1time	2times	V	±%	V	Ip(A)		
		Vrms	V	J	W							A	A
ZM	8ZM05D	4	5.5	0.2	0.01	50	25	8	25	24	1	2300	—
	12ZM05D	6	8	0.3				12	32	1900			
	22ZM05D	12	16	2.5		100	50	22	10	48		1250	24
	27ZM05D	15	19					27	60	1100		29	
	33ZM05D	18	24					33	73	950		36	
	39ZM05D	22	28					39	86	850		42	
	47ZM05D	26	34					47	104	750		50	

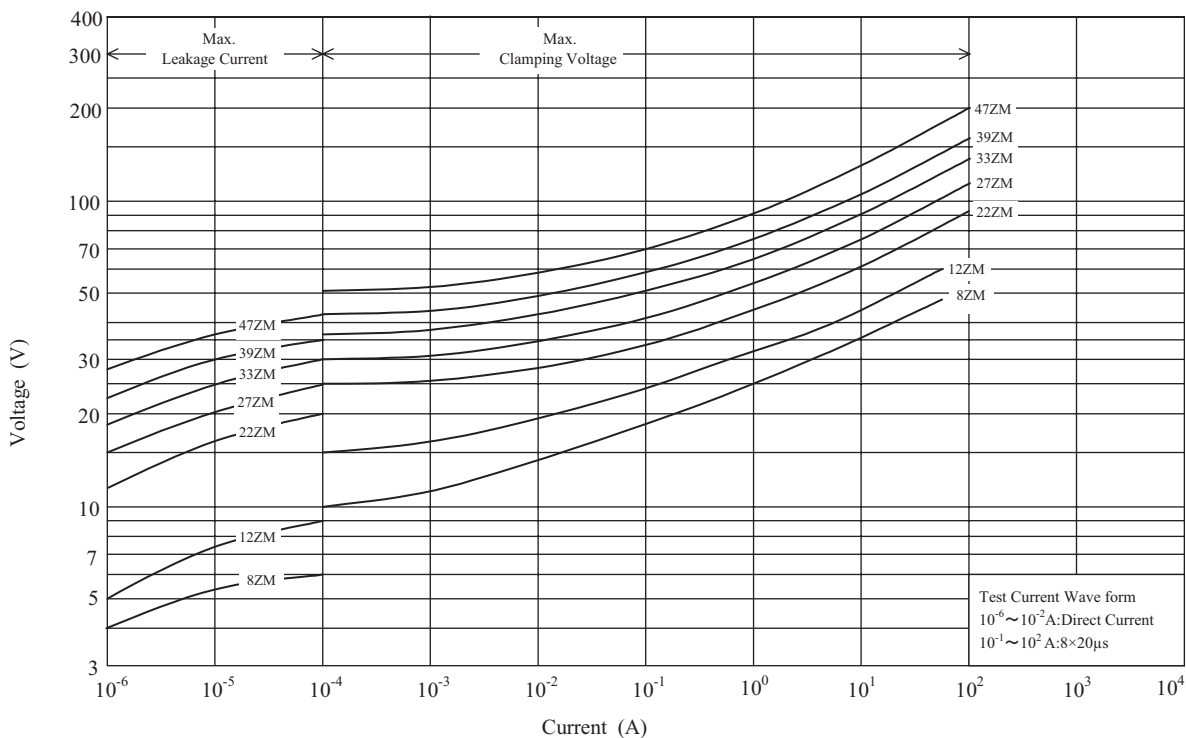
*1: Energy 8,12ZM; 2ms square 22~47ZM; 20ms square

Dimensions (unit:mm)

Model No.	Part No.	D	H	T	
ZM	8ZM05D	7.5	11.0	4.5	
	12ZM05D			5.0	
	22ZM05D				
	27ZM05D				
	33ZM05D				5.5
	39ZM05D				6.0
	47ZM05D			6.5	



V-I Characteristics





Low Voltage, High Energy Type

Disk Type 07D

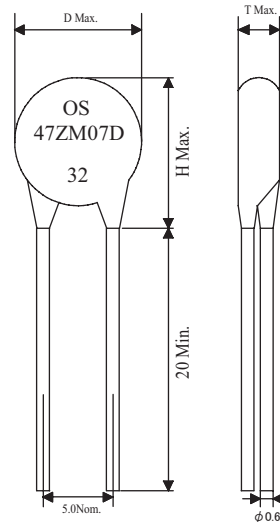
Rating

Model No.	Part No.	Rated Voltage		Energy (*1)	Rated Power	Rated Peak Current (8×20 μs)		Varistor Voltage V1mA DC		Max. Clamping Voltage (8×20 μs)		Typical Capacitance (Reference) (1kHz)	Short Time Allowable Voltage (5minutes)
		AC	DC			1time	2times	V	±%	V	Ip(A)		
		Vrms	V	J	W	A	A	V	±%	V	Ip(A)	pF	DC(V)
ZM	8ZM07D	4	5.5	0.4	0.02	125	60	8	25	22	2.5	5000	—
	12ZM07D	6	8	0.6				12	30	3800		—	
	22ZM07D	12	16	5.0		250	125	22	10	43		2750	24
	27ZM07D	15	19					27	53	2250		29	
	33ZM07D	18	24					33	65	2000		36	
	39ZM07D	22	28					39	77	1700		42	
	47ZM07D	26	34					47	93	1500		50	

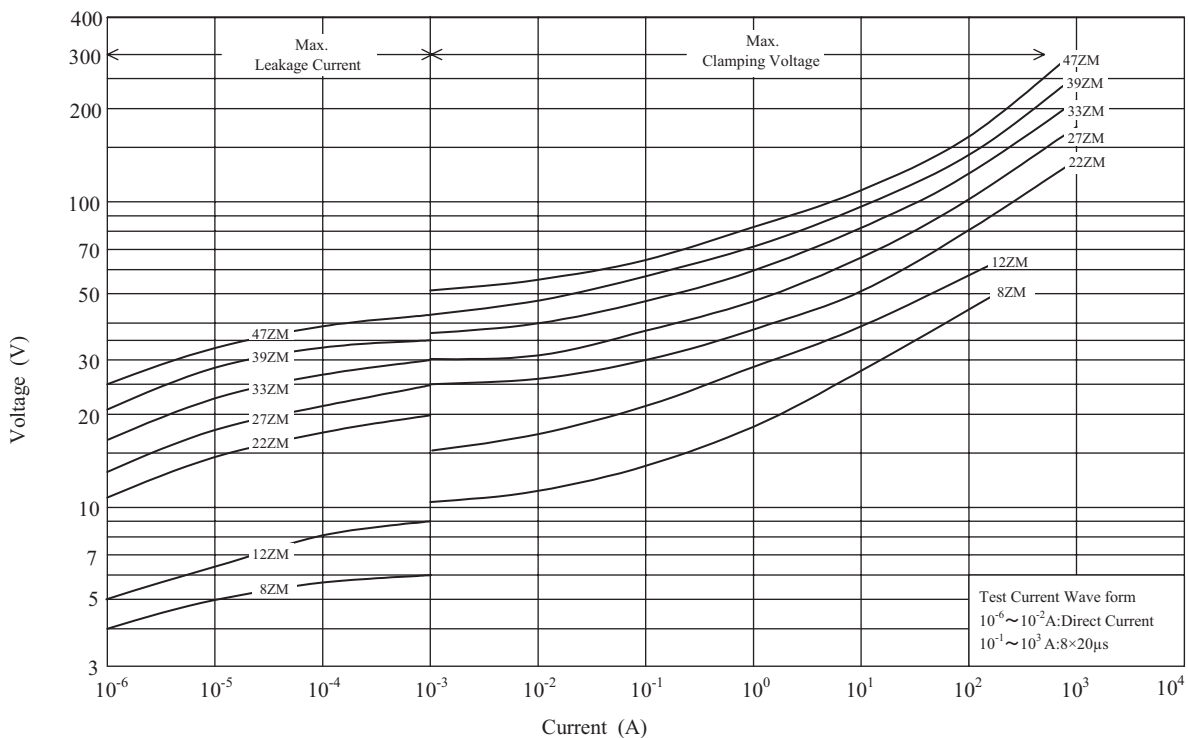
*1: Energy 8,12ZM; 2ms square 22~47ZM; 20ms square

Dimensions

Model No.	Part No.	D	H	T
ZM	8ZM07D	8.5	12.5	4.5
	12ZM07D			5.0
	22ZM07D			
	27ZM07D			5.5
	33ZM07D			
	39ZM07D			
	47ZM07D			6.5



V-I Characteristics





Low Voltage, High Energy Type

Disk Type 10D

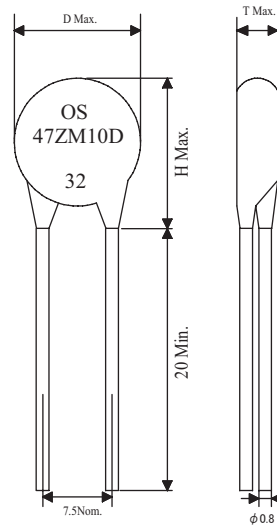
Rating

Model No.	Part No.	Rated Voltage		Energy (*1)	Rated Power	Rated Peak Current (8×20 μs)		Varistor Voltage V1mA DC		Max. Clamping Voltage (8×20 μs)		Typical Capacitance (Reference) (1kHz)	Short Time Allowable Voltage (5minutes)
		AC	DC			1time	2times	V	±%	V	Ip(A)		
		Vrms	V	J	W							A	A
ZM	8ZM10D	4	5.5	0.8	0.05	250	125	8	25	22	5	14000	—
	12ZM10D	6	8	1.2				12	30	10000		—	
	22ZM10D	12	16	10		500	250	22	10	43		5700	24
	27ZM10D	15	19					27	53	5100		29	
	33ZM10D	18	24					33	65	4500		36	
	39ZM10D	22	28					39	77	4000		42	
	47ZM10D	26	34					47	93	3700		50	

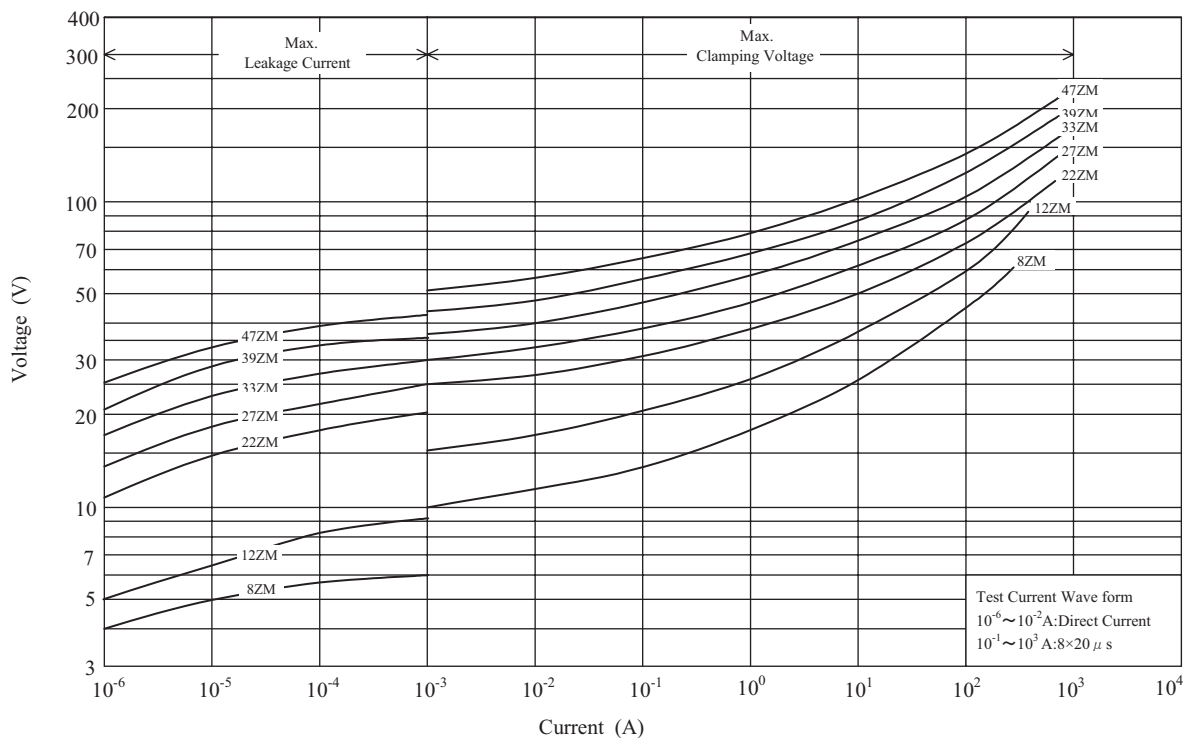
*1: Energy 8,12ZM; 2ms square 22~47ZM; 20ms square

Dimensions (unit:mm)

Model No.	Part No.	D	H	T
ZM	8ZM10D	12.5	16.0	5.0
	12ZM10D			5.5
	22ZM10D			
	27ZM10D	13.0		6.0
	33ZM10D			6.5
	39ZM10D			7.0
	47ZM10D			



V-I Characteristics





Low Voltage, High Energy Type

Disk Type 14D

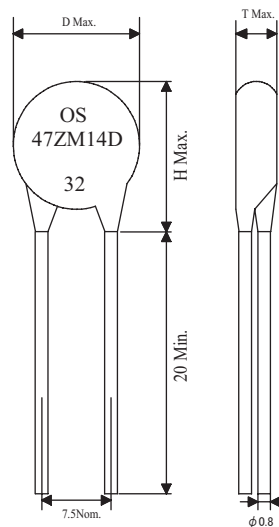
Rating

Model No.	Part No.	Rated Voltage		Energy (*1)	Rated Power	Rated Peak Current (8×20 μs)		Varistor Voltage V1mA DC		Max. Clamping Voltage (8×20 μs)		Typical Capacitance (Reference) (1kHz)	Short Time Allowable Voltage (5minutes)
		AC	DC			1time	2times	V	±%	V	Ip(A)		
		Vrms	V	J	W							A	A
ZM	22ZM14D	12	16	20	0.10	1000	500	22	10	43	10	11000	24
	27ZM14D	15	19					27		53		10000	29
	33ZM14D	18	24					33		65		9500	36
	39ZM14D	22	28					39		77		9000	42
	47ZM14D	26	34					47		93		8600	50

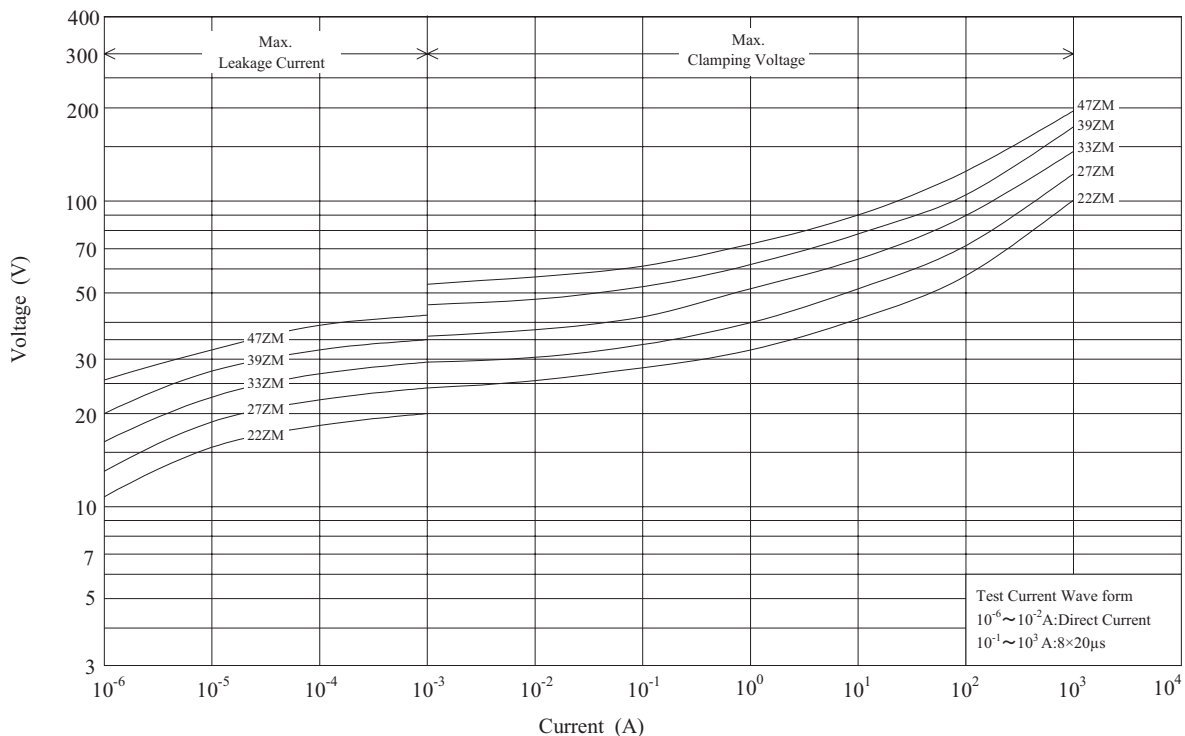
*1: Energy 22~47ZM; 20ms square

Dimensions (unit:mm)

Model No.	Part No.	D	H	T
ZM	22ZM14D	16.5	20.0	5.5
	27ZM14D			
	33ZM14D	17.0	21.0	6.0
	39ZM14D			6.5
	47ZM14D			7.0



V-I Characteristics





Low Voltage, High Energy Type

Disk Type 20D

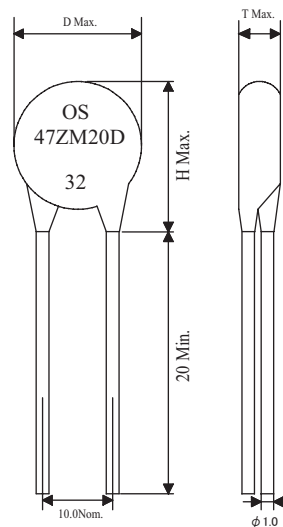
Rating

Model No.	Part No.	Rated Voltage		Energy (*1)	Rated Power	Rated Peak Current (8×20 μs)		Varistor Voltage V1mADC		Max. Clamping Voltage (8×20 μs)		Typical Capacitance (Reference) (1kHz)	Short Time Allowable Voltage (5minutes)
		AC	DC			1time	2times	V	±%	V	Ip(A)		
		Vrms	V	J	W							A	A
ZM	22ZM20D	12	16	40	0.20	2000	1000	22	10	43	20	23000	24
	27ZM20D	15	19					27		53		19500	29
	33ZM20D	18	24					33		65		16000	36
	39ZM20D	22	28					39		77		13500	42
	47ZM20D	26	34					47		93		11000	50

*1: Energy 22~47ZM; 20ms square

Dimensions

Model No.	Part No.	D	H	T
ZM	22ZM20D	23.0	26.0	6.0
	27ZM20D			
	33ZM20D	23.5	27.0	6.5
	39ZM20D			7.0
	47ZM20D			7.5



V-I Characteristics

