

# TYPE VSA VARISTORS TRANSIENT / SURGE ABSORBER

## APPLICATIONS

Transistor, diode, IC, thyristor and triac semiconductor protection.

Surge protection in consumer electronics.

Surge protection in industrial electronics.

Surge protection in communication, measuring and controller electronics.

Surge protection in electronic home appliances and gas and petroleum appliances.

Electrostatic discharge and noise spike suppression.

Relay and electromagnetic valve surge absorption.

## FEATURES

Fast response to the rapidly rising surge voltage.

High performance clamping voltage characteristics.

Broad products range.

Varistor voltage: 18v to 1.2 kv.

Withstanding surge current: 50A to 6,500A

(8 x 20  $\mu$ sec., 1 time).

Mallory VSAs are zinc oxide nonlinear resistors whose resistance changes as a function of the applied voltage. The VSA has a bilateral and symmetrical V-I characteristic curve and can therefore be used in circuits in place of back-to-back zener diodes. This gives your circuit clamping protection in either direction. The VSA thus provides a highly reliable and economical way to protect against repeated high voltage transients and surges such as those produced by lightning, switching surges and noise spikes.

The VSA utilizes a ceramic element composed of zinc oxide and several kinds of metal oxide additives that have been sintered at relatively high temperatures. Ohmic electrodes are connected to each end of the element by firing. The specific characteristics of each VSA are determined by the properties of the ceramics used.

**MALLORY**

**EMHART MALLORY**

## ORDERING INFORMATION

|             |       |         |   |              |        |      |           |  |  |        |
|-------------|-------|---------|---|--------------|--------|------|-----------|--|--|--------|
| V           | S     | A       | C |              |        |      |           |  |  |        |
| Common Code |       |         |   | Element Dia. |        | Type | Tolerance | Varistor Voltage   |  | Suffix |
| 05          | φ 5mm | (.197") |   | D            | Type D | J    | ± 5%      | The first two digits are significant figures and the third one denotes the number of zeros following. Decimal point is expressed by R. |  |        |
| 07          | φ 7mm | (.276") |   |              |        | K    | ±10%      |  |  |        |
| 10          | φ10mm | (.394") |   |              |        | S    | Special   |  |  |        |
| 14          | φ14mm | (.551") |   |              |        |      |           |  |  |        |
| 20          | φ20mm | (.787") |   |              |        |      |           |  |  |        |

## TYPE VSA STANDARD RATINGS

| Part No.  | Maximum Allowable Voltage |       | Varistor* Voltage (V) | Max. Clamping Voltage @ Test Current (8 x 20 μsec.) |       | Energy (2ms.) (J) | Withstanding Surge Current (8 x 20 μsec. 1 time) (A) | Typical Capacitance @ 1kHz(pF) |
|---|---------------------------|-------|-----------------------|---|-------|-------------------|--|--------------------------------|
|   | ACrms(V)                  | DC(V) |                       | Vc(V)   | Ip(A) |                   |  |                                |
| VSAC05DK180<br>VSAC07DK180<br>VSAC10DK180<br>VSAC14DK180<br>VSAC20DK180 | 11                        | 14    | 18 ( 16 ~ 20)         | 40  | 1     | 0.3               | 100  | 1600                           |
| 36  |                           |       |                       | 2.5   | 0.8   | 250               | 3500   |                                |
| 36  |                           |       |                       | 5   | 1.5   | 500               | 7500   |                                |
| 36  |                           |       |                       | 10  | 3.5   | 1000              | 18000  |                                |
| 36  |                           |       |                       | 20  | 10    | 2000              | 37000  |                                |
| VSAC05DK220<br>VSAC07DK220<br>VSAC10DK220<br>VSAC14DK220<br>VSAC20DK220 | 14                        | 18    | 22 ( 20 ~ 24)         | 48  | 1     | 0.4               | 100  | 1300                           |
| 43  |                           |       |                       | 2.5   | 0.9   | 250               | 2800   |                                |
| 43  |                           |       |                       | 5   | 2.0   | 500               | 6000   |                                |
| 43  |                           |       |                       | 10  | 4.0   | 1000              | 15000  |                                |
| 43  |                           |       |                       | 20  | 13    | 2000              | 30000  |                                |
| VSAC05DK270<br>VSAC07DK270<br>VSAC10DK270<br>VSAC14DK270<br>VSAC20DK270 | 17                        | 22    | 27 ( 24 ~ 30)         | 60  | 1     | 0.5               | 100  | 1050                           |
| 53  |                           |       |                       | 2.5   | 1.0   | 250               | 2000   |                                |
| 53  |                           |       |                       | 5   | 2.5   | 500               | 4000   |                                |
| 53  |                           |       |                       | 10  | 5.0   | 1000              | 10000  |                                |
| 53  |                           |       |                       | 20  | 15    | 2000              | 22000  |                                |
| VSAC05DK330<br>VSAC07DK330<br>VSAC10DK330<br>VSAC14DK330<br>VSAC20DK330 | 20                        | 26    | 33 ( 30 ~ 36)         | 73  | 1     | 0.6               | 100  | 900                            |
| 65  |                           |       |                       | 2.5   | 1.2   | 250               | 1500   |                                |
| 65  |                           |       |                       | 5   | 3.0   | 500               | 3000   |                                |
| 65  |                           |       |                       | 10  | 6.0   | 1000              | 7500   |                                |
| 65  |                           |       |                       | 20  | 20    | 2000              | 17000  |                                |
| VSAC05DK390<br>VSAC07DK390<br>VSAC10DK390<br>VSAC14DK390<br>VSAC20DK390 | 25                        | 31    | 39 ( 35 ~ 43)         | 86  | 1     | 0.8               | 100  | 500                            |
| 77  |                           |       |                       | 2.5   | 1.5   | 250               | 1350   |                                |
| 77  |                           |       |                       | 5   | 3.5   | 500               | 2600   |                                |
| 77  |                           |       |                       | 10  | 7.0   | 1000              | 6500   |                                |
| 77  |                           |       |                       | 20  | 24    | 2000              | 15000  |                                |
| VSAC05DK470<br>VSAC07DK470<br>VSAC10DK470<br>VSAC14DK470<br>VSAC20DK470 | 30                        | 38    | 47 ( 42 ~ 52)         | 104   | 1     | 1.0               | 100  | 450                            |
| 93  |                           |       |                       | 2.5   | 1.8   | 250               | 1150   |                                |
| 93  |                           |       |                       | 5   | 4.5   | 500               | 2200   |                                |
| 93  |                           |       |                       | 10  | 8.5   | 1000              | 5500   |                                |
| 93  |                           |       |                       | 20  | 30    | 2000              | 13000  |                                |
| VSAC05DK560<br>VSAC07DK560<br>VSAC10DK560<br>VSAC14DK560<br>VSAC20DK560 | 35                        | 45    | 56 ( 50 ~ 62)         | 123   | 1     | 1.0               | 100  | 400                            |
| 110   |                           |       |                       | 2.5   | 2.2   | 250               | 950  |                                |
| 110   |                           |       |                       | 5   | 5.5   | 500               | 1800   |                                |
| 110   |                           |       |                       | 10  | 10.0  | 1000              | 4500   |                                |
| 110   |                           |       |                       | 20  | 35    | 2000              | 11000  |                                |
| VSAC05DK680<br>VSAC07DK680<br>VSAC10DK680<br>VSAC14DK680<br>VSAC20DK680 | 40                        | 56    | 68 ( 61 ~ 75)         | 150   | 1     | 1.2               | 100  | 350                            |
| 135   |                           |       |                       | 2.5   | 2.5   | 250               | 700  |                                |
| 135   |                           |       |                       | 5   | 6.5   | 500               | 1300   |                                |
| 135   |                           |       |                       | 10  | 12.0  | 1000              | 3300   |                                |
| 135   |                           |       |                       | 20  | 40    | 2000              | 7000   |                                |

(continued)

## TYPE VSA STANDARD RATINGS

| Part No.     | Maximum Allowable Voltage |       | Varistor* Voltage (V) | Max. Clamping Voltage @ Test Current (8 x 20 $\mu$ .sec.) |       | Energy (2ms.) (J) | Withstanding Surge Current (8 x 20 $\mu$ .sec. 1 time) (A) | Typical Capacitance @ 1kHz(pF) |
|--------------|---------------------------|-------|-----------------------|---|-------|-------------------|--|--------------------------------|
|              | ACrms(V)                  | DC(V) |                       | Vc(V)   | Ip(A) |                   |  |                                |
| VSAC05DK820  | 50                        | 65    | 82 ( 74 ~ 90)         | 145   | 5     | 1.7               | 400  | 250                            |
| VSAC07DK820  |                           |       |                       | 135   | 10    | 3.5               | 1200   | 550                            |
| VSAC10DK820  |                           |       |                       | 135   | 25    | 8                 | 2500   | 1800                           |
| VSAC14DK820  |                           |       |                       | 135   | 50    | 14                | 4500   | 2900                           |
| VSAC20DK820  |                           |       |                       | 135   | 100   | 27                | 6500   | 5500                           |
| VSAC05DK101  | 60                        | 85    | 100 ( 90 ~ 110)       | 175   | 5     | 2.0               | 400  | 200                            |
| VSAC07DK101  |                           |       |                       | 165   | 10    | 4                 | 1200   | 500                            |
| VSAC10DK101  |                           |       |                       | 165   | 25    | 10                | 2500   | 1400                           |
| VSAC14DK101  |                           |       |                       | 165   | 50    | 18                | 4500   | 2400                           |
| VSAC20DK101  |                           |       |                       | 165   | 100   | 30                | 6500   | 4800                           |
| VSAC05DK121  | 75                        | 100   | 120 (108 ~ 132)       | 210   | 5     | 2.5               | 400  | 170                            |
| VSAC07DK121  |                           |       |                       | 200   | 10    | 5                 | 1200   | 450                            |
| VSAC10DK121  |                           |       |                       | 200   | 25    | 12                | 2500   | 1100                           |
| VSAC14DK121  |                           |       |                       | 200   | 50    | 20                | 4500   | 1900                           |
| VSAC20DK121  |                           |       |                       | 200   | 100   | 40                | 6500   | 3800                           |
| VSAC05DK151  | 95                        | 125   | 150 (135 ~ 165)       | 260   | 5     | 3.0               | 400  | 140                            |
| VSAC07DK151  |                           |       |                       | 250   | 10    | 6                 | 1200   | 350                            |
| VSAC10DK151  |                           |       |                       | 250   | 25    | 16                | 2500   | 900                            |
| VSAC14DK151  |                           |       |                       | 250   | 50    | 25                | 4500   | 1500                           |
| VSAC20DK151  |                           |       |                       | 250   | 100   | 50                | 6500   | 3000                           |
| †VSAC05DK201 | 130                       | 170   | 200 (185 ~ 225)       | 355   | 5     | 4.0               | 400  | 80                             |
| †VSAC07DK201 |                           |       |                       | 340   | 10    | 10                | 1200   | 250                            |
| †VSAC10DK201 |                           |       |                       | 340   | 25    | 20                | 2500   | 500                            |
| †VSAC14DK201 |                           |       |                       | 340   | 50    | 35                | 4500   | 1000                           |
| †VSAC20DK201 |                           |       |                       | 340   | 100   | 70                | 6500   | 2000                           |
| †VSAC05DK221 | 140                       | 180   | 220 (198 ~ 242)       | 380   | 5     | 4.5               | 400  | 70                             |
| †VSAC07DK221 |                           |       |                       | 360   | 10    | 10                | 1200   | 250                            |
| †VSAC10DK221 |                           |       |                       | 360   | 25    | 23                | 2500   | 450                            |
| †VSAC14DK221 |                           |       |                       | 360   | 50    | 40                | 4500   | 1000                           |
| †VSAC20DK221 |                           |       |                       | 360   | 100   | 75                | 6500   | 2000                           |
| †VSAC05DK241 | 150                       | 200   | 240 (216 ~ 264)       | 415   | 5     | 5.0               | 400  | 70                             |
| †VSAC07DK241 |                           |       |                       | 395   | 10    | 10                | 1200   | 200                            |
| †VSAC10DK241 |                           |       |                       | 395   | 25    | 25                | 2500   | 400                            |
| †VSAC14DK241 |                           |       |                       | 395   | 50    | 40                | 4500   | 900                            |
| †VSAC20DK241 |                           |       |                       | 395   | 100   | 80                | 6500   | 1800                           |
| †VSAC05DK271 | 175                       | 225   | 270 (247 ~ 303)       | 475   | 5     | 6.0               | 400  | 65                             |
| †VSAC07DK271 |                           |       |                       | 455   | 10    | 12                | 1200   | 170                            |
| †VSAC10DK271 |                           |       |                       | 455   | 25    | 30                | 2500   | 350                            |
| †VSAC14DK271 |                           |       |                       | 455   | 50    | 50                | 4500   | 750                            |
| †VSAC20DK271 |                           |       |                       | 455   | 100   | 90                | 6500   | 1600                           |
| †VSAC05DK361 | 230                       | 300   | 360 (324 ~ 396)       | 620   | 5     | 7.5               | 400  | 50                             |
| †VSAC07DK361 |                           |       |                       | 595   | 10    | 15                | 1200   | 130                            |
| †VSAC10DK361 |                           |       |                       | 595   | 25    | 35                | 2500   | 300                            |
| †VSAC14DK361 |                           |       |                       | 595   | 50    | 65                | 4500   | 550                            |
| †VSAC20DK361 |                           |       |                       | 595   | 100   | 120               | 6500   | 1200                           |
| †VSAC05DK391 | 250                       | 320   | 390 (351 ~ 429)       | 675   | 5     | 8.0               | 400  | 50                             |
| †VSAC07DK391 |                           |       |                       | 650   | 10    | 17                | 1200   | 130                            |
| †VSAC10DK391 |                           |       |                       | 650   | 25    | 40                | 2500   | 270                            |
| †VSAC14DK391 |                           |       |                       | 650   | 50    | 70                | 4500   | 500                            |
| †VSAC20DK391 |                           |       |                       | 650   | 100   | 130               | 6500   | 1000                           |
| †VSAC05DK431 | 275                       | 350   | 430 (387 ~ 473)       | 745   | 5     | 9.0               | 400  | 45                             |
| †VSAC07DK431 |                           |       |                       | 710   | 10    | 20                | 1200   | 110                            |
| †VSAC10DK431 |                           |       |                       | 710   | 25    | 45                | 2500   | 250                            |
| †VSAC14DK431 |                           |       |                       | 710   | 50    | 75                | 4500   | 450                            |
| †VSAC20DK431 |                           |       |                       | 710   | 100   | 140               | 6500   | 900                            |
| †VSAC05DK471 | 300                       | 385   | 470 (423 ~ 517)       | 810   | 5     | 10.0              | 400  | 40                             |
| †VSAC07DK471 |                           |       |                       | 775   | 10    | 20                | 1200   | 100                            |
| †VSAC10DK471 |                           |       |                       | 775   | 25    | 45                | 2500   | 230                            |
| †VSAC14DK471 |                           |       |                       | 775   | 50    | 80                | 4500   | 400                            |
| †VSAC20DK471 |                           |       |                       | 775   | 100   | 150               | 6500   | 900                            |
| †VSAC10DK621 | 385                       | 505   | 620 (558 ~ 682)       | 1025  | 25    | 45                | 2500   | 130                            |
| †VSAC14DK621 |                           |       |                       | 1025  | 50    | 85                | 4500   | 250                            |
| †VSAC20DK621 |                           |       |                       | 1025  | 100   | 150               | 6500   | 500                            |
| †VSAC10DK681 | 420                       | 560   | 680 (612 ~ 748)       | 1120  | 25    | 45                | 2500   | 130                            |
| †VSAC14DK681 |                           |       |                       | 1120  | 50    | 90                | 4500   | 250                            |
| †VSAC20DK681 |                           |       |                       | 1120  | 100   | 160               | 6500   | 460                            |
| †VSAC10DK751 | 460                       | 615   | 750 (675 ~ 825)       | 1240  | 25    | 50                | 2500   | 120                            |
| †VSAC14DK751 |                           |       |                       | 1240  | 50    | 100               | 4500   | 230                            |
| †VSAC20DK751 |                           |       |                       | 1240  | 100   | 175               | 6500   | 420                            |

(continued)

†: UL approved model available with your indication of suffix "U".

## TYPE VSA STANDARD RATINGS

| Part No.                                     | Maximum Allowable Voltage |       | Varistor* Voltage (V) | Max. Clamping Voltage @ Test Current (8 x 20 $\mu$ .sec.) |       | Energy (2ms.) (J) | Withstanding Surge Current (8 x 20 $\mu$ .sec. 1 time) (A) | Typical Capacitance @ 1kHz(pF) |
|--|---------------------------|-------|-----------------------|---|-------|-------------------|--|--------------------------------|
|  | ACrms(V)                  | DC(V) |                       | Vc(V)   | Ip(A) |                   |  |                                |
| †VSAC10DK781<br>†VSAC14DK781<br>†VSAC20DK781 | 485                       | 640   | 780 (702 ~ 858)       | 1290  | 25    | 50                | 2500   | 120                            |
| 1290   |                           |       |                       | 50  | 105   | 4500              | 230  |                                |
| 1290   |                           |       |                       | 100   | 180   | 6500              | 420  |                                |
| †VSAC10DK821<br>†VSAC14DK821<br>†VSAC20DK821 | 510                       | 670   | 820 (738 ~ 902)       | 1355  | 25    | 55                | 2500   | 110                            |
| 1355   |                           |       |                       | 50  | 110   | 4500              | 200  |                                |
| 1355   |                           |       |                       | 100   | 190   | 6500              | 400  |                                |
| †VSAC10DK911<br>†VSAC14DK911<br>†VSAC20DK911 | 550                       | 745   | 910 (819 ~ 1001)      | 1500  | 25    | 60                | 2500   | 100                            |
| 1500   |                           |       |                       | 50  | 120   | 4500              | 180  |                                |
| 1500   |                           |       |                       | 100   | 215   | 6500              | 350  |                                |
| †VSAC10DK102<br>†VSAC14DK102<br>†VSAC20DK102 | 625                       | 825   | 1000 (900 ~ 1100)     | 1650  | 25    | 65                | 2500   | 90                             |
| 1650   |                           |       |                       | 50  | 130   | 4500              | 150  |                                |
| 1650   |                           |       |                       | 100   | 230   | 6500              | 320  |                                |
| †VSAC10DK112<br>†VSAC14DK112<br>†VSAC20DK112 | 680                       | 895   | 1100 (990 ~ 1210)     | 1815  | 25    | 70                | 2500   | 80                             |
| 1815   |                           |       |                       | 50  | 140   | 4500              | 150  |                                |
| 1815   |                           |       |                       | 100   | 250   | 6500              | 300  |                                |

Notes: 1. \*Varistor Voltage: 5 Series — V0.1mA  
7, 10, 14, 20 Series — V1mA

2. Rated Wattage:

| Part No.          | Rated Wattage (W) | Part No.          | Rated Wattage (W) |
|-------------------|-------------------|-------------------|-------------------|
| VSAC05DK180 ~ 680 | 0.01              | VSAC05DK820 ~ 471 | 0.1               |
| VSAC07DK180 ~ 680 | 0.02              | VSAC07DK820 ~ 471 | 0.25              |
| VSAC10DK180 ~ 680 | 0.05              | VSAC10DK820 ~ 112 | 0.4               |
| VSAC14DK180 ~ 680 | 0.1               | VSAC14DK820 ~ 182 | 0.6               |
| VSAC20DK180 ~ 680 | 0.2               | VSAC20DK820 ~ 182 | 1.0               |

3. Operating temperature range: -40 to 85°C (-40 to 185°F)

4. Storage temperature range: -40 to 125°C (-40 to 257°F)

5. Maximum clamping voltage as a function of surge current is obtainable from the respective V-I characteristic curves.

6. Maximum leakage current: refer to the V-I curves.

7. † : UL approved model available with your indication of suffix "U". File No. E6274 Across the line varistor.

File No. F86821 Transient Voltage surge suppressor.

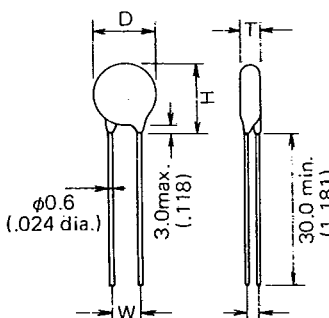
## OUTLINE DIMENSIONS

### 5 Series

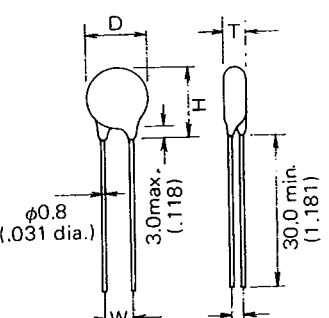
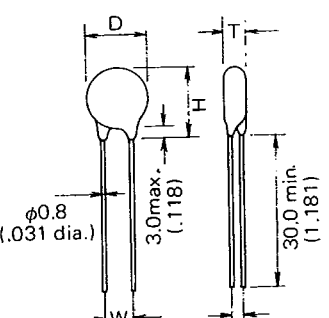
| Part No.      | Dmax.         | T $\pm$ 1.0(.039) | W $\pm$ 1.0(.039) | Hmax.          | L $\pm$ 1.0(.039) | Dimensions mm(in.) |
|---------------|---------------|-------------------|-------------------|----------------|-------------------|--------------------|
| VSAC 05DK180  | 7.5<br>(.295) | 3.5(.138)         | 5.0<br>(.197)     | 10.0<br>(.394) | 1.5(.059)         |                    |
| VSAC 05DK220  |               |                   |                   |                |                   |                    |
| VSAC 05DK270  |               |                   |                   |                |                   |                    |
| VSAC 05DK330  |               |                   |                   |                |                   |                    |
| VSAC 05DK390  |               |                   |                   |                |                   |                    |
| VSAC 05DK470  |               |                   |                   |                |                   |                    |
| VSAC 05DK560  |               |                   |                   |                |                   |                    |
| VSAC 05DK680  |               |                   |                   |                |                   |                    |
| VSAC 05DK820  |               |                   |                   |                |                   |                    |
| VSAC 05DK101  | 7.0<br>(.276) | 3.7(.146)         | 5.0<br>(.197)     | 10.0<br>(.394) | 1.6(.063)         |                    |
| VSAC 05DK121  |               |                   |                   |                |                   |                    |
| VSAC 05DK151  |               |                   |                   |                |                   |                    |
| †VSAC 05DK201 |               |                   |                   |                |                   |                    |
| †VSAC 05DK221 |               |                   |                   |                |                   |                    |
| †VSAC 05DK241 |               |                   |                   |                |                   |                    |
| †VSAC 05DK271 |               |                   |                   |                |                   |                    |
| †VSAC 05DK361 |               |                   |                   |                |                   |                    |
| †VSAC 05DK391 |               |                   |                   |                |                   |                    |
| †VSAC 05DK431 |               |                   |                   |                |                   |                    |
| †VSAC 05DK471 |               |                   |                   |                |                   |                    |

## OUTLINE DIMENSIONS

## 7 Series

| Part No.      | Dmax.         | T ± 1.0(.039) | W ± 1.0(.039) | Hmax.          | L ± 1.0(.039) | Dimensions mm(in.)  |
|---------------|---------------|---------------|---------------|----------------|---------------|---|
| VSAC 07DK180  | 9.0<br>(.354) | 3.5(.138)     | 5.0<br>(.197) | 12.0<br>(.472) | 1.3(.051)     |  |
| VSAC 07DK220  |               | 3.6(.142)     |               |                | 1.4(.055)     |   |
| VSAC 07DK270  |               | 3.7(.146)     |               |                | 1.5(.059)     |   |
| VSAC 07DK330  |               | 3.9(.154)     |               |                | 1.7(.067)     |   |
| VSAC 07DK390  |               | 3.8(.150)     |               |                | 1.7(.067)     |   |
| VSAC 07DK470  |               | 3.9(.154)     |               |                | 1.8(.071)     |   |
| VSAC 07DK560  |               | 4.0(.157)     |               |                | 1.9(.075)     |   |
| VSAC 07DK680  |               | 4.2(.165)     |               |                | 2.1(.083)     |   |
| VSAC 07DK820  |               | 3.6(.142)     |               |                | 1.6(.063)     |   |
| VSAC 07DK101  |               | 3.7(.146)     |               |                | 1.6(.063)     |   |
| VSAC 07DK121  |               | 3.8(.150)     |               |                | 1.8(.071)     |   |
| VSAC 07DK151  |               | 4.0(.157)     |               |                | 2.0(.079)     |   |
| †VSAC 07DK201 |               | 4.2(.165)     |               |                | 2.0(.079)     |   |
| †VSAC 07DK221 |               | 4.3(.169)     |               |                | 2.1(.083)     |   |
| †VSAC 07DK241 |               | 4.4(.173)     |               |                | 2.2(.087)     |   |
| †VSAC 07DK271 |               | 4.6(.181)     |               |                | 2.4(.094)     |   |
| †VSAC 07DK361 |               | 5.2(.205)     |               |                | 3.0(.118)     |   |
| †VSAC 07DK391 |               | 5.4(.213)     |               |                | 3.2(.126)     |   |
| †VSAC 07DK431 |               | 5.7(.224)     |               |                | 3.5(.138)     |   |
| †VSAC 07DK471 |               | 6.0(.236)     |               |                | 3.8(.150)     |   |

## 10 Series

| Part No.      | Dmax.          | T ± 1.0(.039) | W ± 1.0(.039) | Hmax.          | L ± 1.0(.039) | Dimensions mm(in.)  |
|---------------|----------------|---------------|---------------|----------------|---------------|---|
| VSAC 10DK180  | 13.5<br>(.531) | 3.6(.142)     | 7.5<br>(.295) | 16.5<br>(.650) | 1.3(.051)     |  |
| VSAC 10DK220  |                | 3.7(.146)     |               |                | 1.4(.055)     |   |
| VSAC 10DK270  |                | 3.8(.150)     |               |                | 1.5(.059)     |   |
| VSAC 10DK330  |                | 4.0(.157)     |               |                | 1.7(.067)     |   |
| VSAC 10DK390  |                | 4.1(.161)     |               |                | 1.8(.071)     |   |
| VSAC 10DK470  |                | 4.0(.157)     |               |                | 1.7(.067)     |   |
| VSAC 10DK560  |                | 4.1(.161)     |               |                | 1.9(.075)     |   |
| VSAC 10DK680  |                | 4.3(.169)     |               |                | 2.2(.087)     |   |
| VSAC 10DK820  |                | 4.0(.157)     |               |                | 1.6(.063)     |   |
| VSAC 10DK101  |                | 4.1(.161)     |               |                | 1.8(.071)     |   |
| VSAC 10DK121  |                | 4.2(.165)     |               |                | 2.0(.079)     |   |
| VSAC 10DK151  |                | 4.5(.177)     |               |                | 2.2(.087)     |   |
| †VSAC 10DK201 |                | 4.6(.181)     |               |                | 2.2(.087)     |   |
| †VSAC 10DK221 |                | 4.7(.185)     |               |                | 2.3(.091)     |   |
| †VSAC 10DK241 | 4.8(.181)      | 2.4(.094)     |               |                |               |   |
| †VSAC 10DK271 | 5.1(.201)      | 2.6(.102)     |               |                |               |   |
| †VSAC 10DK361 | 14.0<br>(.551) | 5.7(.224)     | 7.5<br>(.295) | 17.0<br>(.669) | 3.2(.126)     |  |
| †VSAC 10DK391 |                | 5.8(.228)     |               |                | 3.4(.134)     |   |
| †VSAC 10DK431 |                | 6.2(.244)     |               |                | 3.7(.146)     |   |
| †VSAC 10DK471 |                | 6.5(.256)     |               |                | 4.0(.157)     |   |
| †VSAC 10DK621 |                | 6.2(.244)     |               |                | 3.8(.150)     |   |
| †VSAC 10DK681 |                | 6.5(.256)     |               |                | 4.1(.161)     |   |
| †VSAC 10DK751 |                | 6.8(.268)     |               |                | 4.4(.173)     |   |
| †VSAC 10DK781 |                | 6.9(.272)     |               |                | 4.5(.177)     |   |
| †VSAC 10DK821 |                | 7.1(.280)     |               |                | 4.7(.185)     |   |
| †VSAC 10DK911 |                | 7.6(.299)     |               |                | 5.2(.205)     |   |
| †VSAC 10DK102 | 8.0(.315)      | 5.6(.220)     |               |                |               |   |
| †VSAC 10DK112 | 8.5(.335)      | 6.1(.240)     |               |                |               |   |

## 14 Series

## OUTLINE DIMENSIONS

| Part No.      | Dmax.          | T ± 1.0(.039) | W ± 1.0(.039)  | Hmax.          | L ± 1.0(.039) | Dimensions mm(in.) |           |
|---------------|----------------|---------------|----------------|----------------|---------------|--------------------|-----------|
| VSAC 14DK180  | 17.0<br>(.669) | 3.6(.142)     | 7.5<br>(.295)  | 20.0<br>(.787) | 1.3(.051)     |                    |           |
| VSAC 14DK220  |                | 3.7(.146)     |                |                |               |                    | 1.4(.055) |
| VSAC 14DK270  |                | 3.8(.150)     |                |                |               |                    | 1.5(.059) |
| VSAC 14DK330  |                | 4.0(.157)     |                |                |               |                    | 1.7(.067) |
| VSAC 14DK390  |                | 4.1(.161)     |                |                |               |                    | 1.8(.071) |
| VSAC 14DK470  |                | 4.0(.157)     |                |                |               |                    | 1.7(.067) |
| VSAC 14DK560  |                | 4.1(.161)     |                |                |               |                    | 1.9(.075) |
| VSAC 14DK680  |                | 4.3(.169)     |                |                |               |                    | 2.2(.087) |
| VSAC 14DK820  |                | 4.0(.157)     |                |                |               |                    | 1.6(.063) |
| VSAC 14DK101  |                | 4.1(.161)     |                |                |               |                    | 1.8(.071) |
| VSAC 14DK121  |                | 4.2(.165)     |                |                |               |                    | 2.0(.079) |
| VSAC 14DK151  |                | 4.5(.177)     |                |                |               |                    | 2.2(.087) |
| †VSAC 14DK201 |                | 4.6(.181)     |                |                |               |                    | 2.2(.087) |
| †VSAC 14DK221 |                | 4.7(.185)     |                |                |               |                    | 2.3(.091) |
| †VSAC 14DK241 | 4.8(.189)      | 2.4(.094)     |                |                |               |                    |           |
| †VSAC 14DK271 | 5.1(.201)      | 2.6(.102)     |                |                |               |                    |           |
| †VSAC 14DK361 | 17.5<br>(.689) | 5.7(.224)     | 20.5<br>(.807) | 3.2(.126)      | 3.4(.134)     |                    |           |
| †VSAC 14DK391 |                | 5.8(.228)     |                |                |               |                    | 3.7(.146) |
| †VSAC 14DK431 |                | 6.2(.244)     |                |                |               |                    | 4.0(.157) |
| †VSAC 14DK471 |                | 6.5(.256)     |                |                |               |                    | 4.1(.161) |
| †VSAC 14DK621 |                | 6.2(.244)     |                |                |               |                    | 4.4(.173) |
| †VSAC 14DK681 |                | 6.5(.256)     |                |                |               |                    | 4.5(.177) |
| †VSAC 14DK751 |                | 6.8(.268)     |                |                |               |                    | 4.7(.185) |
| †VSAC 14DK781 |                | 6.9(.272)     |                |                |               |                    | 5.2(.205) |
| †VSAC 14DK821 |                | 7.1(.280)     |                |                |               |                    | 5.6(.220) |
| †VSAC 14DK911 |                | 7.6(.299)     |                |                |               |                    | 6.1(.240) |
| †VSAC 14DK102 |                | 8.0(.315)     |                |                |               |                    |           |
| †VSAC 14DK112 |                | 8.5(.335)     |                |                |               |                    |           |

## 20 Series

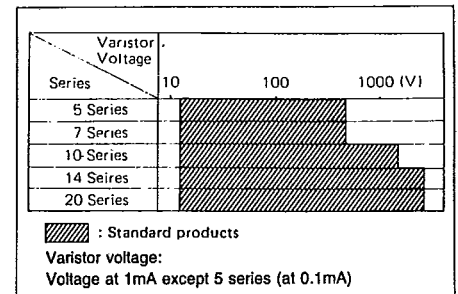
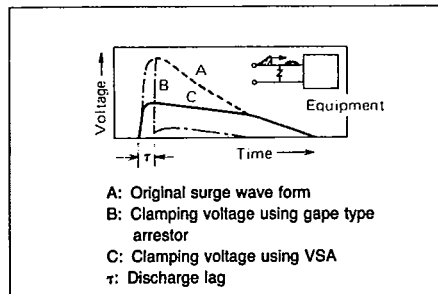
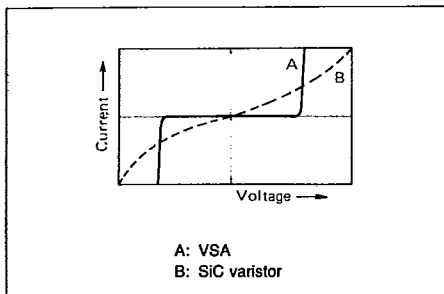
| Part No.      | Dmax.          | T ± 1.0(.039) | W ± 1.0(.039)   | Hmax.           | L ± 1.0(.039) | Dimensions mm(in.) |           |
|---------------|----------------|---------------|-----------------|-----------------|---------------|--------------------|-----------|
| VSAC 20DK180  | 23.0<br>(.906) | 4.1(.161)     | 10.0<br>(.394)  | 27.0<br>(1.063) | 1.5(.059)     |                    |           |
| VSAC 20DK220  |                | 4.2(.165)     |                 |                 |               |                    | 1.6(.063) |
| VSAC 20DK270  |                | 4.3(.169)     |                 |                 |               |                    | 1.7(.067) |
| VSAC 20DK330  |                | 4.5(.177)     |                 |                 |               |                    | 1.9(.075) |
| VSAC 20DK390  |                | 4.5(.177)     |                 |                 |               |                    | 1.9(.075) |
| VSAC 20DK470  |                | 4.6(.181)     |                 |                 |               |                    | 1.9(.075) |
| VSAC 20DK560  |                | 4.7(.185)     |                 |                 |               |                    | 2.1(.083) |
| VSAC 20DK680  |                | 4.8(.189)     |                 |                 |               |                    | 2.4(.094) |
| VSAC 20DK820  |                | 4.5(.177)     |                 |                 |               |                    | 1.8(.071) |
| VSAC 20DK101  |                | 4.6(.181)     |                 |                 |               |                    | 2.0(.079) |
| VSAC 20DK121  |                | 4.7(.185)     |                 |                 |               |                    | 2.2(.087) |
| VSAC 20DK151  |                | 4.9(.193)     |                 |                 |               |                    | 2.4(.094) |
| †VSAC 20DK201 |                | 5.0(.197)     |                 |                 |               |                    | 2.4(.094) |
| †VSAC 20DK221 |                | 5.2(.205)     |                 |                 |               |                    | 2.6(.102) |
| †VSAC 20DK241 | 5.3(.209)      | 2.7(.106)     |                 |                 |               |                    |           |
| †VSAC 20DK271 | 5.5(.217)      | 2.9(.114)     |                 |                 |               |                    |           |
| †VSAC 20DK361 | 24.0<br>(.945) | 6.2(.244)     | 28.0<br>(1.102) | 3.5(.138)       | 3.7(.146)     |                    |           |
| †VSAC 20DK391 |                | 6.4(.252)     |                 |                 |               |                    | 4.0(.157) |
| †VSAC 20DK431 |                | 6.7(.264)     |                 |                 |               |                    | 4.3(.169) |
| †VSAC 20DK471 |                | 7.0(.276)     |                 |                 |               |                    | 4.1(.161) |
| †VSAC 20DK621 |                | 6.6(.260)     |                 |                 |               |                    | 4.4(.173) |
| †VSAC 20DK681 |                | 6.9(.272)     |                 |                 |               |                    | 4.8(.189) |
| †VSAC 20DK751 |                | 7.3(.287)     |                 |                 |               |                    | 4.9(.193) |
| †VSAC 20DK781 |                | 7.4(.291)     |                 |                 |               |                    | 5.1(.201) |
| †VSAC 20DK821 |                | 7.6(.299)     |                 |                 |               |                    | 5.6(.220) |
| †VSAC 20DK911 |                | 8.1(.319)     |                 |                 |               |                    | 6.0(.236) |
| †VSAC 20DK102 |                | 8.5(.335)     |                 |                 |               |                    | 6.5(.256) |
| †VSAC 20DK112 |                | 9.0(.354)     |                 |                 |               |                    |           |

## FEATURES

Excellent clamping voltage characteristic and fast response time (< 50nsec.) when subjected to impulse surges. Eliminates the discharge lag that is inductive of gap-type arrestors.

Bilateral and symmetrical V-I characteristic curve. The VSA can, therefore, be used both in AC and DC circuits, for protection of either positive or negative transients.

■ Broad varistor voltage from 18 to 1800V.



## ELECTRICAL RATINGS

| Item                                     | Test Condition/Description  | Requirement                   |
|--|---|-------------------------------|
| Varistor Voltage                         | The voltage between two terminals with the specified measuring current $C_m$ A DC applied is called $V_c$ . The measurement shall be made as fast as possible to avoid heat affection.  |                               |
| Maximum Allowable voltage                | The recommended maximum sine wave voltage (rms) or the maximum DC voltage that can be applied continuously.   |                               |
| Maximum Clamping voltage                 | The maximum voltage between two terminals with the specified standard impulse current ( $8 \times 20 \mu\text{sec.}$ ) illustrated below applied.   | To meet the specified value.  |
|  |   |                               |
| Rated Wattage                            | The maximum power that can be applied within the specified ambient temperature.   |                               |
| Energy                                   | The maximum energy within the varistor voltage change of $\pm 10\%$ when one impulse of 2msec. is applied.<br>The maximum energy which is figured out as follows.<br>$E = V_m \cdot I_m \cdot T$<br>E: Energy<br>$I_m$ : Maximum allowable single surge current of 2ms. (rectangular wave form)<br>$V_m$ : Maximum clamping voltage at $I_m$<br>T: Duration of surge current (2ms.) |                               |
| Withstanding Surge Current               | The maximum current within the varistor voltage change of $\pm 10\%$ with the standard impulse current ( $8 \times 20 \mu\text{sec.}$ ) applied one time.   |                               |
| Varistor voltage Temperature Coefficient | $\frac{V_c \text{ at } 20^\circ\text{C}(68^\circ\text{F}) - V_c \text{ at } 70^\circ\text{C}(158^\circ\text{F})}{V_c \text{ at } 20^\circ\text{C}(68^\circ\text{F})} \times \frac{1}{50} \times 100(\%/^\circ\text{C})$   | $-0.05\%/^\circ\text{C max.}$ |

## CROSS REFERENCE SELECTOR GUIDE

### MALLORY VSA VARISTOR

| MALLORY     | PANASONIC    | GE      | SIEMENS | MARCON       |
|-------------|--------------|---------|---------|--------------|
| —           | —            | V8ZA05  | —       | —            |
| —           | ERZ-C07DM8R2 | V8ZA1   | —       | —            |
| —           | ERZ-C10DM8R2 | V8ZA2   | —       | —            |
| —           | —            | V12ZA05 | —       | —            |
| —           | ERZ-C07DM120 | V12ZA1  | —       | —            |
| —           | ERZ-C10DM120 | V12ZA2  | —       | —            |
| VSAC05DK180 | ERZ-C05DK180 | V18ZA05 | S05K11  | TNR-9G180KM  |
| VSAC07DK180 | ERZ-C07DK180 | V18ZA1  | S07K11  |              |
| VSAC10DK180 | ERZ-C10DK180 | V18ZA2  | S10K11  |              |
| VSAC14DK180 | ERZ-C14DK180 | V18ZA3  | S14K11  |              |
| VSAC20DK180 | ERZ-C20DK180 | V18ZA40 | S20K11  |              |
| VSAC05DK220 | ERZ-C05DK220 | V22ZA05 | S05K14  | TNR-15G220KM |
| VSAC07DK220 | ERZ-C07DK220 | V22ZA1  | S07K14  |              |
| VSAC10DK220 | ERZ-C10DK220 | V22ZA2  | S10K14  |              |
| VSAC14DK220 | ERZ-C14DK220 | V22ZA3  | S14K14  |              |
| VSAC20DK220 | ERZ-C20DK220 | V24ZA50 | S20K14  |              |
| VSAC05DK270 | ERZ-C05DK270 | V27ZA05 | S05K17  | TNR-9G270KM  |
| VSAC07DK270 | ERZ-C07DK270 | V27ZA1  | S07K17  |              |
| VSAC10DK270 | ERZ-C10DK270 | V27ZA2  | S10K17  |              |
| VSAC14DK270 | ERZ-C14DK270 | V27ZA4  | S14K17  |              |
| VSAC20DK270 | ERZ-C20DK270 | V27ZA60 | S20K17  |              |
| VSAC05DK330 | ERZ-C05DK330 | V33ZA05 | S05K20  | TNR-9G330KM  |
| VSAC07DK330 | ERZ-C07DK330 | V33ZA1  | S07K20  |              |
| VSAC10DK330 | ERZ-C10DK330 | V33ZA2  | S10K20  |              |
| VSAC14DK330 | ERZ-C14DK330 | V33ZA5  | S14K20  |              |
| VSAC20DK330 | ERZ-C20DK330 | V33ZA70 | S20K20  |              |
| VSAC05DK390 | ERZ-C05DK390 | V39ZA05 | S05K25  | TNR-9G390KM  |
| VSAC07DK390 | ERZ-C07DK390 | V39ZA1  | S07K25  |              |
| VSAC10DK390 | ERZ-C10DK390 | V39ZA3  | S10K25  |              |
| VSAC14DK390 | ERZ-C14DK390 | V39ZA6  | S14K25  |              |
| VSAC20DK390 | ERZ-C20DK390 | V36ZA80 | S20K25  |              |
| VSAC05DK470 | ERZ-C05DK470 | V47ZA05 | S05K30  | TNR-9G470KM  |
| VSAC07DK470 | ERZ-C07DK470 | V47ZA1  | S07K30  |              |
| VSAC10DK470 | ERZ-C10DK470 | V47ZA3  | S10K30  |              |
| VSAC14DK470 | ERZ-C14DK470 | V47ZA7  | S14K30  |              |
| VSAC20DK470 | ERZ-C20DK470 | —       | S20K30  |              |
| VSAC05DK560 | ERZ-C05DK560 | V56ZA05 | S05K35  | TNR-9G560KM  |
| VSAC07DK560 | ERZ-C07DK560 | V56ZA2  | S07K35  |              |
| VSAC10DK560 | ERZ-C10DK560 | V56ZA3  | S10K35  |              |
| VSAC14DK560 | ERZ-C14DK560 | V56ZA8  | S14K35  |              |
| VSAC20DK560 | ERZ-C20DK560 | —       | S20K35  |              |
| VSAC05DK680 | ERZ-C05DK680 | V68ZA05 | S05K40  | TNR-9G680KM  |
| VSAC07DK680 | ERZ-C07DK680 | V68ZA2  | S07K40  |              |
| VSAC10DK680 | ERZ-C10DK680 | V68ZA3  | S10K40  |              |
| VSAC14DK680 | ERZ-C14DK680 | V68ZA10 | S14K40  |              |
| VSAC20DK680 | ERZ-C20DK680 | —       | S20K40  |              |
| VSAC05DK820 | ERZ-C05DK820 | V82ZA05 | S05K50  | TNR-9G820KM  |
| VSAC07DK820 | ERZ-C07DK820 | V82ZA2  | S07K50  |              |
| VSAC10DK820 | ERZ-C10DK820 | V82ZA4  | S10K50  |              |
| VSAC14DK820 | ERZ-C14DK820 | V82ZA12 | S14K50  |              |
| VSAC20DK820 | ERZ-C20DK820 | —       | S20K50  |              |

continued



## CROSS REFERENCE SELECTOR GUIDE

### MALLORY VSA VARISTOR

| MALLORY      | PANASONIC     | GE                 | SIEMENS | MARCON                |
|--------------|---------------|--------------------|---------|-----------------------|
| VSAC05DK101  | ERZ-C05DK101  | V100ZA05           | S05K60  | TNR-9G101KM           |
| VSAC07DK101  | ERZ-C07DK101  | V100ZA3            | S07K60  |                       |
| VSAC10DK101  | ERZ-C10DK101  | V100ZA4            | S10K60  |                       |
| VSAC14DK101  | ERZ-C14DK101  | V100ZA15           | S14K60  |                       |
| VSAC20DK101  | ERZ-C20DK101  | —                  | S20K60  |                       |
| VSAC05DK121  | ERZ-C05DK121  | V120ZA05           | S05K75  | TNR-9G121KM           |
| VSAC07DK121  | ERZ-C07DK121  | V120ZA1            | S07K75  |                       |
| VSAC10DK121  | ERZ-C10DK121  | V120ZA4            | S10K75  |                       |
| VSAC14DK121  | ERZ-C14DK121  | V120ZA6            | S14K75  |                       |
| VSAC20DK121  | ERZ-C20DK121  | —                  | S20K75  |                       |
| VSAC05DK151  | ERZ-C05DK151  | V150ZA05           | S05K95  | TNR-9G151KM           |
| VSAC07DK151  | ERZ-C07DK151  | V150ZA1            | S07K95  |                       |
| VSAC10DK151  | ERZ-C10DK151  | V150ZA4            | S10K95  |                       |
| VSAC14DK151  | ERZ-C14DK151  | V150ZA8            | S14K95  |                       |
| VSAC20DK151  | ERZ-C20DK151  | —                  | S20K95  |                       |
| †VSAC05DK201 | ERZ-C05DK201U | V180ZA05           | S05K130 | TNR-9G181KM/TNR-9G211 |
| †VSAC07DK201 | ERZ-C07DK201U | V180ZA1/V130LA1,2  | S07K130 |                       |
| †VSAC10DK201 | ERZ-C10DK201U | V180ZA5/V130LA5    | S10K130 |                       |
| †VSAC14DK201 | ERZ-C14DK201U | V180ZA10/V130LA10A | S14K130 |                       |
| †VSAC20DK201 | ERZ-C20DK201U | V130LA20A,20B      | S20K130 |                       |
| †VSAC05DK221 | ERZ-C05DK221U | V220ZA05           | S05K140 |                       |
| †VSAC07DK221 | ERZ-C07DK221U | V140LA2            | S07K140 |                       |
| †VSAC10DK221 | ERZ-C10DK221U | V140LA5            | S10K140 |                       |
| †VSAC14DK221 | ERZ-C14DK221U | V140ZA10A          | S14K140 |                       |
| †VSAC20DK221 | ERZ-C20DK221U | —                  | S20K140 |                       |
| †VSAC05DK241 | ERZ-C05DK241U | —                  | S05K150 | TNR-9G241KM           |
| †VSAC07DK241 | ERZ-C07DK241U | V150LA1,2          | S07K150 |                       |
| †VSAC10DK241 | ERZ-C10DK241U | V150LA5            | S10K150 |                       |
| †VSAC14DK241 | ERZ-C14DK241U | V150LA10A          | S14K150 |                       |
| †VSAC20DK241 | ERZ-C20DK241U | V150LA20A,20B      | S20K150 |                       |
| †VSAC05DK271 | ERZ-C05DK271  | V270ZA05           | S05K175 |                       |
| †VSAC07DK271 | ERZ-C07DK271  | V175LA2            | S07K175 |                       |
| †VSAC10DK271 | ERZ-C10DK271  | —                  | S10K175 |                       |
| †VSAC14DK271 | ERZ-C14DK271  | V175LA10A          | S14K175 |                       |
| †VSAC20DK271 | ERZ-C20DK271  | —                  | S20K175 |                       |
| †VSAC05DK361 | ERZ-C05DK361  | V330ZA05           | S05K230 |                       |
| †VSAC07DK361 | ERZ-C07DK361  | V230LA4            | S07K230 |                       |
| †VSAC10DK361 | ERZ-C10DK361  | V230LA10           | S10K230 |                       |
| †VSAC14DK361 | ERZ-C14DK361  | V230LA20A          | S14K230 |                       |
| †VSAC20DK361 | ERZ-C20DK361  | —                  | S20K230 |                       |
| †VSAC05DK391 | ERZ-C05DK391  | V390ZA05           | S05K250 | TNR-15G391KM          |
| †VSAC07DK391 | ERZ-C07DK391  | V250LA2,4          | S07K250 |                       |
| †VSAC10DK391 | ERZ-C10DK391  | V250LA10           | S10K250 |                       |
| †VSAC14DK391 | ERZ-C14DK391  | V250LA20A          | S14K250 |                       |
| †VSAC20DK391 | ERZ-C20DK391  | V250LA40A,40B      | S20K250 |                       |
| †VSAC05DK431 | ERZ-C05DK431  | V430ZA05           | S05K275 | TNR-9G431KM           |
| †VSAC07DK431 | ERZ-C07DK431  | V275LA2,4          | S07K275 |                       |
| †VSAC10DK431 | ERZ-C10DK431  | V275LA10           | S10K275 |                       |
| †VSAC14DK431 | ERZ-C14DK431  | V275LA20A          | S14K275 |                       |
| †VSAC20DK431 | ERZ-C20DK431  | V275LA40A,40B      | S20K275 |                       |

† UL Approved. Model available with your indication of suffix "U".

continued

## CROSS REFERENCE SELECTOR GUIDE MALLORY VSA VARISTOR

| MALLORY      | PANASONIC    | GE          | SIEMENS  | MARCON       |
|--------------|--------------|-------------|----------|--------------|
| †VSAC05DK471 | ERZ-C05DK471 | —           | S05K300  |              |
| †VSAC07DK471 | ERZ-C07DK471 | V300LA2,4   | S07K300  |              |
| †VSAC10DK471 | ERZ-C10DK471 | —           | S10K300  |              |
| †VSAC14DK471 | ERZ-C14DK471 | V320LA20A   | S14K300  |              |
| †VSAC20DK471 | ERZ-C20DK471 | V320LA40B   | S20K300  |              |
| †VSAC10DK621 | ERZ-C10DK621 | V385LA10    | S10K385  |              |
| †VSAC14DK621 | ERZ-C14DK621 | V385LA20A   | S14K385  |              |
| †VSAC20DK621 | ERZ-C20DK621 | V385LA40B   | S20K385  |              |
| †VSAC10DK681 | ERZ-C10DK681 | V420LA10    | S10K420  | TNR-15G681KM |
| †VSAC14DK681 | ERZ-C14DK681 | V420LA20A   | S14K420  | TNR-28G651KM |
| †VSAC20DK681 | ERZ-C20DK681 | V420LA40B   | S20K420  |              |
| †VSAC10DK751 | ERZ-C10DK751 | V460LA10    | S10K460  | TNR-15G751KM |
| †VSAC14DK751 | ERZ-C14DK751 | V460LA20A   | S14K460  |              |
| †VSAC20DK751 | ERZ-C20DK751 | V460LA40B   | S20K460  |              |
| †VSAC10DK781 | ERZ-C10DK781 | —           | S10K485  | TNR-15G751KM |
| †VSAC14DK781 | ERZ-C14DK781 | V480LA40A   | S14K485  |              |
| †VSAC20DK781 | ERZ-C20DK781 | V480LA80B   | S20K485  |              |
| †VSAC10DK821 | ERZ-C10DK821 | —           | S10K510  | TNR-15G821KM |
| †VSAC14DK821 | ERZ-C14DK821 | V510LA40A   | S14K510  |              |
| †VSAC20DK821 | ERZ-C20DK821 | V510LA80B   | S20K510  |              |
| †VSAC10DK911 | ERZ-C10DK911 | —           | S10K550  |              |
| †VSAC14DK911 | ERZ-C14DK911 | V575LA40A   | S14K550  |              |
| †VSAC20DK911 | ERZ-C20DK911 | V575LA80B   | S20K550  |              |
| †VSAC10DK102 | ERZ-C10DK102 | —           | S10K625  |              |
| †VSAC14DK102 | ERZ-C14DK102 | V660LA50A   | S14K625  |              |
| †VSAC20DK102 | ERZ-C20DK102 | V660LA100B  | S20K625  |              |
| †VSAC10DK112 | ERZ-C10DK112 | —           | S10K680  |              |
| †VSAC14DK112 | ERZ-C14DK112 | V660LA50A   | S14K680  |              |
| †VSAC20DK112 | ERZ-C20DK112 | V660LA100B  | S20K680  |              |
| —            | ERZ-C14DK182 | V1000LA80A  | S14K1000 |              |
| —            | ERZ-C20DK182 | V1000LA160B | S20K1000 |              |

† UL Approved. Model available with your indication of suffix "U".



# Type VSA • Varistors: Transient/Surge Absorbers

| Part No.  | Maximum Allowable Voltage |       | Varistor* Voltage (V) | Max. Clamping Voltage @ Test Current (6 x 20µsec.) |       | Energy (2ms.) (J) | Withstanding Surge Current (6 x 20µsec. 1 time) (A) | Typical Capacitance @ 1kHz(pF) |
|---|---------------------------|-------|-----------------------|--|-------|-------------------|---|--------------------------------|
|   | ACrms(V)                  | DC(V) |                       | Vc(V)  | Ip(A) |                   |   |                                |
| * VSAC10DK781<br>* VSAC14DK781<br>* VSAC20DK781 | 485                       | 640   | 780 (702 ~ 858)       | 1290   | 25    | 50                | 2500  | 120                            |
| 1290  |                           |       |                       | 50   | 105   | 4500              | 230   |                                |
| 1290  |                           |       |                       | 100  | 180   | 6500              | 420   |                                |
| * VSAC10DK821<br>* VSAC14DK821<br>* VSAC20DK821 | 510                       | 670   | 820 (738 ~ 902)       | 1355   | 25    | 55                | 2500  | 110                            |
| 1355  |                           |       |                       | 50   | 110   | 4500              | 200   |                                |
| 1355  |                           |       |                       | 100  | 190   | 6500              | 400   |                                |
| * VSAC10DK911<br>* VSAC14DK911<br>* VSAC20DK911 | 550                       | 745   | 910 (819 ~ 1001)      | 1500   | 25    | 60                | 2500  | 100                            |
| 1500  |                           |       |                       | 50   | 120   | 4500              | 180   |                                |
| 1500  |                           |       |                       | 100  | 215   | 6500              | 350   |                                |
| * VSAC10DK102<br>* VSAC14DK102<br>* VSAC20DK102 | 625                       | 825   | 1000 (900 ~ 1100)     | 1650   | 25    | 65                | 2500  | 90                             |
| 1650  |                           |       |                       | 50   | 130   | 4500              | 150   |                                |
| 1650  |                           |       |                       | 100  | 230   | 6500              | 320   |                                |
| * VSAC10DK112<br>* VSAC14DK112<br>* VSAC20DK112 | 680                       | 895   | 1100 (990 ~ 1210)     | 1815   | 25    | 70                | 2500  | 80                             |
| 1815  |                           |       |                       | 50   | 140   | 4500              | 150   |                                |
| 1815  |                           |       |                       | 100  | 250   | 6500              | 300   |                                |

Notes: 1. \*Varistor Voltage: 5 Series - V01mA  
7, 10, 14, 20 Series - V1mA

2. Rated Wattage:

| Part No.          | Rated Wattage (W) | Part No.          | Rated Wattage (W) |
|-------------------|-------------------|-------------------|-------------------|
| VSAC05DK180 ~ 680 | 0.01              | VSAC05DK820 ~ 471 | 0.1               |
| VSAC07DK180 ~ 680 | 0.02              | VSAC07DK820 ~ 471 | 0.25              |
| VSAC10DK180 ~ 680 | 0.05              | VSAC10DK820 ~ 112 | 0.4               |
| VSAC14DK180 ~ 680 | 0.1               | VSAC14DK820 ~ 182 | 0.6               |
| VSAC20DK180 ~ 680 | 0.2               | VSAC20DK820 ~ 182 | 1.0               |

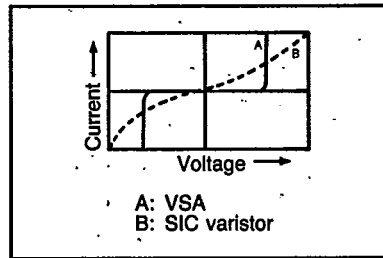
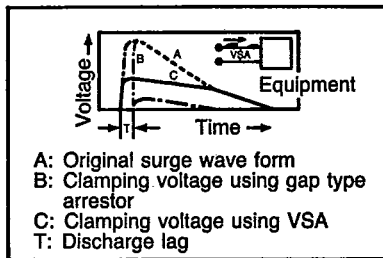
- Operating temperature range: -40 to 85°C (-40 to 185°F)
- Storage temperature range: -40 to 125°C (-40 to 257°F)
- Maximum clamping voltage as a function of surge current is obtainable from the respective V-I characteristic curves.
- Maximum leakage current: refer to the V-I curves.
- \*: UL approved model available with your indication of suffix "U".

File No. E62674 Across the line varistor.  
File No. E86821 Transient Voltage surge suppressor.

### Features

\* Excellent clamping voltage characteristic and fast response time (<50nsec.) when subjected to impulse surges. Eliminates the discharge lag that is inductive of gap-type arrestors.

\* Bilateral and symmetrical V-I characteristic curve. The VSA can, therefore, be used both in AC and DC circuits, for protection of either positive or negative transient.



### Part Number Code

|             |    |    |    |              |              |              |              |                  |              |          |                                |  |
|-------------|----|----|----|--------------|--------------|--------------|--------------|------------------|--------------|----------|--------------------------------|--|
| V           | S  | A  | C  |              |              |              |              |                  |              |          |                                |  |
| Common Code |    |    |    | Element Dia. |              | Type         | Tolerance    | Varistor Voltage |              | Suffix   |                                |  |
| 05          | 07 | 10 | 14 | 20           | 05mm (.197") | 07mm (.276") | 10mm (.394") | 14mm (.551")     | 20mm (.787") | D Type D | J ± 5%<br>K ± 10%<br>S Special | The first two digits are significant figures and the third one denotes the number of zeros following. Decimal point is expressed by R. |

VARISTORS