

# Surge Absorbers

## Varistors

### [Features]

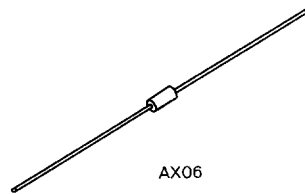
1. Bidirectional surge absorption is possible.
2. Low junction capacitance
3. SMD is available. (VR-61F, VRYA6, 15)

### [Applications]

1. Telephone set surge absorption
2. Digital communications circuit surge absorption
3. ISDN terminal surge absorption



1Y



AX06



1F

| Type No.  | Color Code | Absolute Maximum Ratings |                  |                  |                | Electrical Characteristics (Ta=25℃) |                 |                 |                 |                 |                 | Outline |      |
|-----------|------------|--------------------------|------------------|------------------|----------------|-------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|
|           |            | I <sub>o</sub>           | I <sub>FSM</sub> | T <sub>stg</sub> | T <sub>j</sub> | V <sub>F1</sub>                     | I <sub>F1</sub> | V <sub>F2</sub> | I <sub>F2</sub> | V <sub>F3</sub> | I <sub>F3</sub> |         |      |
|           |            | [mA]                     | [A]              | [℃]              | [℃]            | [V]                                 | [mA]            | [V]             | [mA]            | [V]             | [mA]            | Package | Fig. |
| VR-60B(A) | Orange     | 500                      | 16               | -30~125          | 125            | 1.5                                 | 1000            | —               | —               | 0.2             | 0.02            | AX06    | 3    |
| -60BP(A)  | Orange     | 500                      | 16               |                  |                |                                     |                 | 0.58±0.03       | 1               |                 |                 |         |      |
| -51B(A)   | *1         | 150                      | 7.5              |                  |                |                                     |                 | 2.1±0.25        | 10              |                 |                 |         |      |
| -61B(A)   | *2         | 150                      | 7.5              | 2.3±0.25         |                | 2.75±0.25                           | 3.1±0.25        |                 |                 |                 |                 |         |      |
| ☆ -61F1*1 | —          | 370                      | 7.5              | -55~150          | 150            | 2.3±0.25                            | 1               | 2.75±0.25       | 10              | 3.1±0.25        | 70              | 1F      | 72   |
| VRYA6*2   | —          | 310                      | 8                | -30~125          | 125            | 2.3±0.25                            | 1               | 2.75±0.25       | 10              | 3.1±0.25        | 70              | 1Y      | 30-2 |
| 15*2      | —          | 140                      | 6.5              |                  |                | 5.75±0.62                           |                 | 6.875±0.625     |                 | 7.75±0.62       |                 |         |      |

☆ : New products

\*1 : On alumina substrate

\*2 : On alumina substrate, 1 element operation

\*1 : Silver—Silver

\*2 : Orange—Red

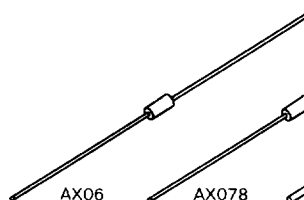
## Trankillers

### [Features]

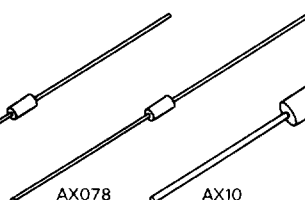
1. High speed response
2. Absorption energy tolerance capacity
3. Narrow clamping voltage width

### [Applications]

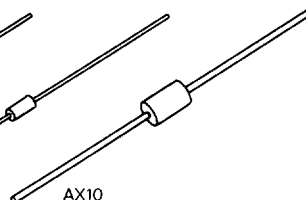
1. IC protection for electronic telephones
2. IC protection against abnormal voltage



AX06



AX078



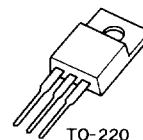
AX10



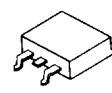
1F



2F



TO-220



STO-220

| Type No.   | Color Code | Absolute Maximum Ratings |         |      | Electrical Characteristics |           |            |          |            |          |            |            | Outline |      |
|------------|------------|--------------------------|---------|------|----------------------------|-----------|------------|----------|------------|----------|------------|------------|---------|------|
|            |            | PRSM                     | Tstg    | Tj   | VRM (max)                  | VBR (std) | Conditions | IR (max) | Conditions | rZ (max) | VCL1 (max) | Conditions |         |      |
|            |            | [W]                      | [°C]    | [°C] | [V]                        | [V]       | IR [mA]    | [μA]     | VR [V]     | [%/°C]   | [V]        | IPP [A]    | Package | Fig. |
| ST04-16    | Silver     | 400                      | -40~150 | 150  | 13.6                       | 16        | I          | 5        | 13.6       | 0.09     | 23         | 15         | AX06    | 2    |
| -27        |            |                          |         |      | 23                         | 27        |            |          | 23         |          | 37         | 10         |         |      |
| ★ST03-58F1 | —          | 300                      | -40~150 | 150  | 45                         | 58        | I          | 5        | 45         | —        | 80         | 4          | 1F      | 72   |
| ST04-16F1  | —          | 400                      | -40~175 | 175  | 13.6                       | 16        | I          | 5        | 13.6       | 0.09     | 23         | 15         | 1F      | 72   |
| -27F1      |            |                          |         |      | 23                         | 27        |            |          | 23         |          | 37         | 10         |         |      |
| ★ST20-47F2 | —          | 2000                     | -40~150 | 150  | 38                         | 47        | I          | 5        | 38         | —        | 67         | 50         | 2F      | 73   |
| ST50D-27   | —          | 5000                     | -40~150 | 150  | 23                         | 27        | I          | 5        | 23         | 0.09     | 38         | 130        | TO-220  | 82-5 |
| ☆ST50V-27F | —          | 5000                     | -40~150 | 150  | 23                         | 27        | I          | 5        | 23         | 0.09     | 40         | 130        | STO-220 | 76-4 |
| ST70-27F   | —          | 7000                     | -40~150 | 150  | 23                         | 27        | I          | 5        | 23         | 0.09     | 40         | 180        | STO-220 | 76-4 |
| ★ST02D-82  | Silver     | 200                      | -40~150 | 150  | 67                         | 82        | I          | 5        | 67         | —        | 118        | 1.7        | AX078   | 5    |
| ★ST03D-82  | Silver     | 300                      | -40~150 | 150  | 67                         | 82        | I          | 5        | 67         | —        | 118        | 2.5        | AX10    | 6    |
| ☆DL04-18   | —          | 400                      | -40~150 | 150  | 13                         | 18        | I          | 5        | 13         | 0.09     | 27         | 15         | 1F      | 72   |
| ★DL03-58   | —          | 300                      | -40~150 | 150  | 45                         | 58        | I          | 5        | 45         | —        | 80         | 4          | 1F      | 72   |

★ : Under development

☆ : New products