

## DV Series Chip type

### Features

- ◆ Chip type ,Low impedance
- ◆ Chip type with load life of 2000 hours at +105°C
- ◆ Designed for surface mounting on high density PC board
- ◆ Applicable to automatic mounting machine using carrier tape
- ◆ Complied to the RoHS directive
- ◆ For detail specifications, please refer to Engineering Bulletin NO. E173

ZV **Low Impedance** → DV



SMD

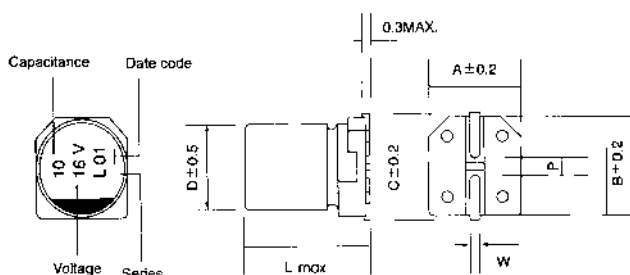
### Specifications

| Item   | Performance Characteristics  |
|--|--|
| Operating Temperature Range                              | -55~ +105°C  |
| Rated Voltage Range                                      | 6.3~50 VDC   |
| Capacitance Range  | 1 to 1500 μF   |
| Capacitance Tolerance                                    | ±20%(120Hz,+20°C)  |
| Leakage Current (+20°C,max.)                             | $I \leq 0.01 CV$ or $3 (\mu A)$ After 2 minutes whichever is greater measured with rated working voltage applied.  |
| Dissipation Factor<br>( $\tan \delta$ , at 20°C , 120Hz) | Working voltage(VDC) 6.3 10 16 25 35 50  |
|  | D.F. (%) max. 24 19 16 14 14 12  |
| Low Temperature Characteristics<br>(at 120Hz)            | Impedance ratio max  |
|  | Working voltage(VDC) 6.3 10 16 25 35 50  |
|  | Z-25°C / Z+20°C 2 2 2 2 2 2  |
| Z-55°C / Z+20°C 8 6 4 4 3 3                              |  |
| Load Life  | Test conditions<br>Duration time :2000 Hrs<br>Ambient temperature :+105°C<br>Applied voltage :Rated DC working voltage   |
|  | After test requirement at +20°C :<br>Capacitance change :Within ±30% of initial value<br>Dissipation factor :Less than 300% of specified value<br>Leakage current :Less than specified value |
| Shelf Life   | Test conditions<br>Duration time :1000 Hrs<br>Ambient temperature :+105°C<br>Applied voltage :None   |
|  | After test requirement at +20°C : Same limits as Load life.<br>Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.                     |
| Resistance to soldering heat                             | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them at 250°C for 30 seconds.  |
|  | Leakage current Less than specified value  |
|  | Capacitance change Within ±10% of initial value  |
|  | $\tan \delta$ Less than specified value  |

### Multiplier for Ripple Current vs. Frequency

| CAP(μF)\Frequency(Hz) | 60(50) | 120  | 400  | 1K   | 10K  | 50K-100K |
|-----------------------|--------|------|------|------|------|----------|
| CAP ≤ 10              | 0.47   | 0.59 | 0.76 | 0.85 | 0.97 | 1.0      |
| 10 < CAP ≤ 100        | 0.52   | 0.65 | 0.80 | 0.89 | 0.97 | 1.0      |

### Diagram of Dimensions:(unit:mm)



| φD  | L    | A    | B    | C    | W       | P   |
|-----|------|------|------|------|---------|-----|
| 4   | 5.5  | 4.3  | 4.3  | 4.9  | 0.5~0.8 | 1.0 |
| 5   | 5.5  | 5.3  | 5.3  | 5.9  | 0.5~0.8 | 1.4 |
| 6.3 | 5.5  | 6.6  | 6.6  | 7.2  | 0.5~0.8 | 2.2 |
| 6.3 | 7.7  | 6.6  | 6.6  | 7.2  | 0.5~0.8 | 2.2 |
| 8   | 6.5  | 8.3  | 8.3  | 9.0  | 0.5~0.8 | 2.3 |
| 8   | 10.5 | 8.3  | 8.3  | 9.0  | 0.7~1.1 | 3.1 |
| 10  | 10.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |

## Case Size

φ DxL(mm)

| WV<br>(SV)<br>Cap<br>(μF) | 6.3<br>(8) |        |           | 10<br>(13) |        |           | 16<br>(20) |        |           | 25<br>(32) |        |           | 35<br>(44) |        |           | 50<br>(63) |        |           |
|---------------------------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|------------|--------|-----------|
|                           | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance | Size       | Ripple | Impedance |
| 1.0                       |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           | 4X5.5      | 55     | 4.5       |
| 2.2                       |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           | 4X5.5      | 55     | 4.5       |
| 3.3                       |            |        |           |            |        |           |            |        |           |            |        |           | 4X5.5      | 80     | 2.8       | 4X5.5      | 55     | 4.5       |
| 4.7                       |            |        |           |            |        |           |            |        |           |            |        |           | 4X5.5      | 85     | 2.3       | 4X5.5      | 55     | 4.5       |
| 6.8                       |            |        |           |            |        |           |            |        |           | 4X5.5      | 70     | 2.8       | 4X5.5      | 88     | 2.2       | 5X5.5      | 75     | 3.8       |
| 10                        |            |        |           |            |        |           | 4X5.5      | 80     | 2.2       | 4X5.5      | 85     | 2.1       | 4X5.5      | 90     | 2.0       | 5X5.5      | 95     | 2.8       |
| 15                        |            |        |           |            |        |           | 4X5.5      | 85     | 2.0       | 5X5.5      | 125    | 1.9       | 5X5.5      | 140    | 1.2       | 6.3X5.5    | 140    | 1.6       |
| 22                        | 4X5.5      | 75     | 2.2       | 4X5.5      | 80     | 2.2       | 4X5.5      | 90     | 1.98      | 5X5.5      | 145    | 1.2       | 5X5.5      | 155    | 1.1       | 6.3X5.5    | 150    | 1.3       |
| 27                        | 4X5.5      | 79     | 1.98      | 5X5.5      | 125    | 1.9       | 5X5.5      | 170    | 0.74      | 6.3X5.5    | 200    | 0.62      | 6.3X5.5    | 210    | 0.6       | 6.3X7.7    | 180    | 1.2       |
| 33                        | 4X5.5      | 82     | 1.9       | 4X5.5      | 90     | 1.85      | 6.3X5.5    | 185    | 0.6       | 5X5.5      | 160    | 1.05      | 6.3X5.5    | 230    | 0.54      | 6.3X7.7    | 190    | 0.71      |
|                           | 5X5.5      | 130    | 1.3       | 5X5.5      | 150    | 1.2       | 6.3X5.5    | 220    | 0.58      | 6.3X5.5    | 220    | 0.58      | 8X6.5      | 260    | 0.51      | 8X6.5      | 200    | 0.7       |
| 47                        | 4X5.5      | 86     | 1.88      | 5X5.5      | 165    | 1.1       | 5X5.5      | 195    | 1.05      | 6.3X5.5    | 220    | 0.56      | 6.3X5.5    | 240    | 0.53      | 6.3X7.7    | 230    | 0.7       |
|                           | 5X5.5      | 150    | 1.1       | 6.3X5.5    | 180    | 0.59      | 6.3X5.5    | 210    | 0.58      | 6.3X7.7    | 230    | 0.54      | 8X6.5      | 250    | 0.49      | 8X6.5      | 240    | 0.69      |
| 56                        | 5X5.5      | 150    | 1.10      | 6.3X5.5    | 210    | 0.57      | 6.3X5.5    | 220    | 0.56      | 6.3X5.5    | 230    | 0.54      | 6.3X7.7    | 250    | 0.49      | 8X10.5     | 300    | 0.52      |
| 68                        | 5X5.5      | 160    | 0.9       | 6.3X5.5    | 220    | 0.55      | 6.3X5.5    | 230    | 0.54      | 6.3X5.5    | 240    | 0.48      | 6.3X7.7    | 265    | 0.4       | 8X10.5     | 320    | 0.5       |
|                           | 6.3X5.5    | 220    | 0.55      |            |        |           | 8X6.5      | 240    | 0.50      | 8X6.5      | 260    | 0.45      |            |        |           |            |        |           |
| 100                       | 5X5.5      | 170    | 0.8       | 6.3X5.5    | 240    | 0.53      | 6.3X5.5    | 255    | 0.52      | 6.3X7.7    | 290    | 0.38      | 6.3X7.7    | 300    | 0.38      | 8X10.5     | 350    | 0.46      |
|                           | 6.3X5.5    | 230    | 0.53      |            |        |           |            |        |           | 8X6.5      | 300    | 0.36      | 8X10.5     | 420    | 0.28      |            |        |           |
| 150                       | 6.3X5.5    | 235    | 0.51      | 6.3X5.5    | 250    | 0.49      | 6.3X7.7    | 265    | 0.45      | 8X10.5     | 480    | 0.25      | 8X10.5     | 510    | 0.24      | 10X10.5    | 600    | 0.25      |
|                           | 8X6.5      | 250    | 0.48      | 8X6.5      | 260    | 0.47      | 8X6.5      | 270    | 0.44      |            |        |           |            |        |           |            |        |           |
| 220                       | 6.3X5.5    | 240    | 0.48      | 6.3X7.7    | 270    | 0.44      | 6.3X7.7    | 275    | 0.43      | 8X10.5     | 530    | 0.22      | 8X10.5     | 570    | 0.21      | 10X10.5    | 650    | 0.23      |
|                           | 6.3X7.7    | 260    | 0.45      | 8X6.5      | 285    | 0.40      | 8X6.5      | 285    | 0.41      |            |        |           |            |        |           |            |        |           |
| 330                       | 6.3X7.7    | 275    | 0.36      | 8X10.5     | 500    | 0.25      | 8X10.5     | 550    | 0.25      | 8X10.5     | 570    | 0.2       | 10X10.5    | 650    | 0.15      |            |        |           |
|                           | 8X6.5      | 290    | 0.34      |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           |
| 470                       | 8X10.5     | 450    | 0.28      | 8X10.5     | 550    | 0.25      | 8X10.5     | 590    | 0.22      | 10X10.5    | 650    | 0.15      |            |        |           |            |        |           |
| 680                       | 8X10.5     | 500    | 0.25      | 10X10.5    | 680    | 0.2       | 10X10.5    | 720    | 0.16      |            |        |           |            |        |           |            |        |           |
| 1000                      | 8X10.5     | 530    | 0.20      | 10X10.5    | 740    | 0.15      |            |        |           |            |        |           |            |        |           |            |        |           |
|                           | 10X10.5    | 570    | 0.17      |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           |
| 1200                      | 10X10.5    | 600    | 0.16      |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           |
| 1500                      | 10X10.5    | 650    | 0.13      |            |        |           |            |        |           |            |        |           |            |        |           |            |        |           |

Ripple Current ( mA, rms ) at 105°C 100KHz  
Max Impedance ( Ω ) at 20°C 100 KHz

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