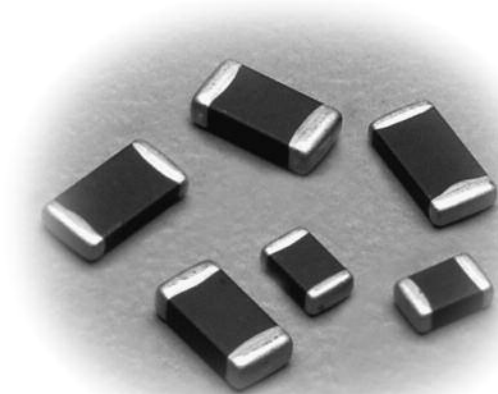
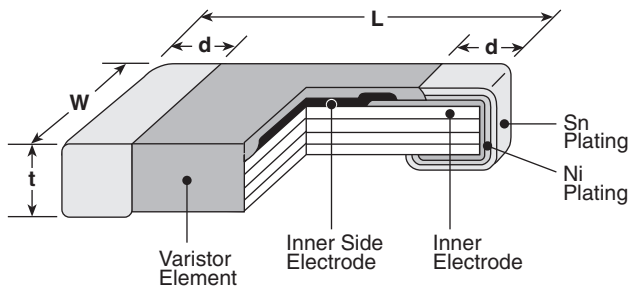




### features

- SMD type metal oxide varistors
- Ideal for countermeasures against ESD (Conforming to IEC61000-4-2)
- High maximum energy type
- Low leakage current
- High resistance to cyclic temperature stress
- Marking: Black body color
- Suitable for both flow and reflow soldering
- Products with lead-free terminations meet EU RoHS requirements. Pb located in glass material, electrode and varistor element is exempt per Annex 1, exemption 5 of EU directive 2005/95/EC
- AEC-Q200 Qualified

### dimensions and construction



| Type<br>(Inch Size Code) | Dimensions inches (mm)  |                         |                          |                         |
|--------------------------|-------------------------|-------------------------|--------------------------|-------------------------|
|                          | L                       | W                       | t                        | d                       |
| <b>1J<br/>(0603)</b>     | .063±.006<br>(1.6±0.15) | .031±.006<br>(0.8±0.15) | .039 max.<br>(1.0 max.)  | .016±.006<br>(0.4±0.15) |
| <b>2A<br/>(0805)</b>     | .079±.010<br>(2.0±0.25) | .049±.008<br>(1.25±0.2) | .051 max.<br>(1.30 max.) | .020±.010<br>(0.5±0.25) |
| <b>2B<br/>(1206)</b>     | .126±.012<br>(3.2±0.3)  | .063±.012<br>(1.6±0.3)  | .057 max.<br>(1.45 max.) | .022±.012<br>(0.55±0.3) |

### ordering information

| New Part # | NV73 | DL          | 2A                                               | T                    | TE                   | 27               |
|------------|------|-------------|--------------------------------------------------|----------------------|----------------------|------------------|
|            | Type | Energy Code | Size                                             | Termination Material | Packaging            | Varistor Voltage |
|            |      |             | 1J: 1.6 x 0.15<br>2A: 2.0 x 1.2<br>2B: 3.2 x 1.6 | T: Sn                | TE: Embossed plastic |                  |

### applications and ratings

| Part Designation | Varistor Voltage (V) | Maximum Allowable Voltage  |         | Maximum Clamping Voltage (V) |                 | Maximum Energy (J) | Maximum Peak Current 8/20μs (A) 1 time | Short-Time Applied Voltage (5 min) (V <sub>DC</sub> ) |
|------------------|----------------------|----------------------------|---------|------------------------------|-----------------|--------------------|----------------------------------------|-------------------------------------------------------|
|                  | V <sub>1mA</sub>     | A.C.(V <sub>r.m.s.</sub> ) | D.C.(V) | V <sub>1A</sub>              | V <sub>2A</sub> |                    |                                        |                                                       |
| NV73DL1JTTE12    | 10~14.4              | 6.1                        | 8.6     | 24                           | —               | 0.1                | 80                                     | 10                                                    |
| NV73DL1JTTE22    | 22~27                | 14                         | 16      | 42                           | —               | 0.2                | 100                                    | 24.5                                                  |
| NV73DL1JTTE27    | 24~32                | 17                         | 22      | 50                           | —               | 0.2                | 100                                    | 24.5                                                  |
| NV73DL1JTTE33    | 33~39                | 20                         | 26      | 60                           | —               | 0.3                | 100                                    | 24.5                                                  |
| NV73DL1JTTE47    | 40~54                | 30                         | 34      | 81                           | —               | 0.3                | 100                                    | 42                                                    |
| NV73DL2ATTE12    | 10~14.4              | 6.1                        | 8.6     | 24                           | —               | 0.1                | 120                                    | 10                                                    |
| NV73DL2ATTE22    | 22~27                | 14                         | 16      | 42                           | —               | 0.3                | 160                                    | 24.5                                                  |
| NV73DL2ATTE27    | 24~32                | 17                         | 22      | 50                           | —               | 0.3                | 160                                    | 24.5                                                  |
| NV73DL2ATTE33    | 33~39                | 20                         | 26      | 60                           | —               | 0.3                | 160                                    | 24.5                                                  |
| NV73DL2ATTE47    | 40~54                | 30                         | 34      | 81                           | —               | 0.3                | 160                                    | 42                                                    |
| NV73DL2ATTE68    | 62~72                | 45                         | 56      | 108                          | —               | 0.3                | 160                                    | 64                                                    |
| NV73DL2ATTE82    | 74~90                | 50                         | 65      | 135                          | —               | 0.3                | 160                                    | 75                                                    |

For further information on packaging, please refer to Appendix A.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

1/05/11

### applications and ratings (continued)

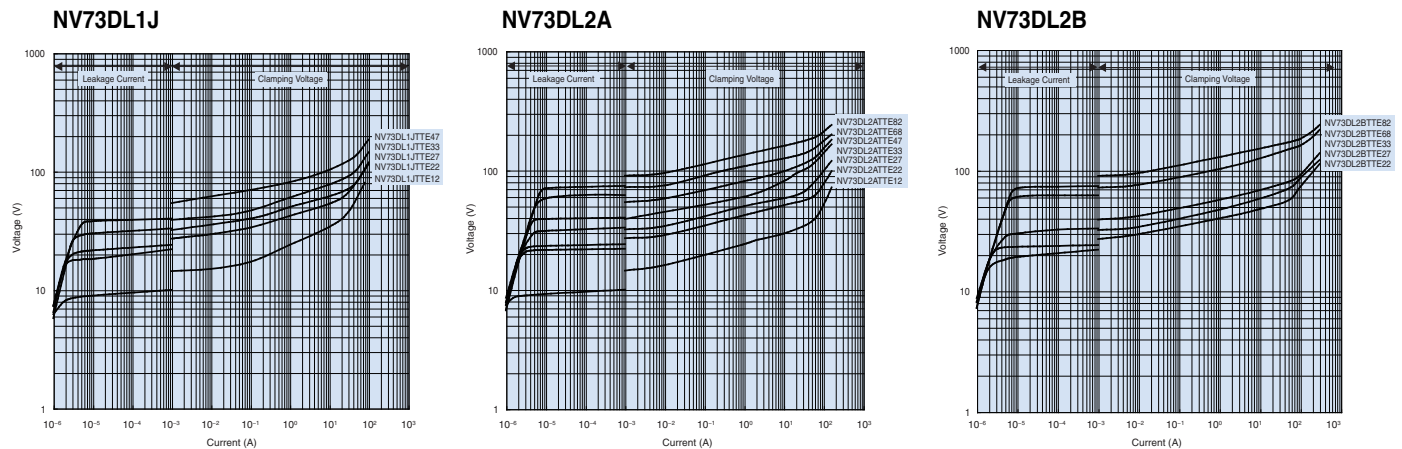
| Part Designation | Varistor Voltage (V) | Maximum Allowable Voltage   |          | Maximum Clamping Voltage (V) |                 | Maximum Energy (J) | Maximum Peak Current 8/20 $\mu$ s (A) 1 time | Short-Time Applied Voltage (5 min) (V <sub>DC</sub> ) |
|------------------|----------------------|-----------------------------|----------|------------------------------|-----------------|--------------------|----------------------------------------------|-------------------------------------------------------|
|                  | V <sub>1mA</sub>     | A.C. (V <sub>r.m.s.</sub> ) | D.C. (V) | V <sub>1A</sub>              | V <sub>2A</sub> |                    |                                              |                                                       |
| NV73DL2BTTE22    | 22~27                | 14                          | 16       | —                            | 42              | 1                  | 300                                          | 24.5                                                  |
| NV73DL2BTTE27    | 24~32                | 17                          | 22       | —                            | 50              | 1                  | 300                                          | 24.5                                                  |
| NV73DL2BTTE33    | 33~39                | 20                          | 26       | —                            | 60              | 1                  | 300                                          | 24.5                                                  |
| NV73DL2BTTE68    | 62~72                | 45                          | 56       | —                            | 108             | 1.5                | 300                                          | 64                                                    |
| NV73DL2BTTE82    | 74~90                | 50                          | 65       | —                            | 135             | 1.5                | 300                                          | 75                                                    |

Operating temperature range: -40°C to +125°C

Storage temperature range: -40°C to +150°C

### environmental applications

#### Voltage Current Curves (Ta = +25°C)



### Performance Characteristics

| Parameter                                       | Requirement $\Delta V_{1mA} \pm \%$                | Test Method                                                                                                                 |
|-------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Varistor Voltage                                | Within specified tolerance                         | Voltage between terminals when 1mA and 10mA are flowed                                                                      |
| Solderability                                   | 95% coverage minimum (Ag-Pd: 75% coverage min.)    | 230°C $\pm$ 5°C, 5 seconds $\pm$ 0.5 second                                                                                 |
| Resistance to Solder Heat                       | $\pm 10\%$                                         | 260°C $\pm$ 5°C, 10 seconds $\pm$ 0.5 second                                                                                |
| Rapid Change of Temperature                     | $\pm 10\%$                                         | -40°C (30 minutes)/ +125°C (30 minutes), 1000 cycles                                                                        |
| Short-Time Applied Voltage                      | $\pm 10\%$                                         | Maximum value of D.C. voltage that can be applied for a short period of time (5 min.) (NV73DL2A 12: 1 min.)                 |
| Maximum Peak Current                            | $\pm 10\%$                                         | A single standard impulse current of 8/20 $\mu$ seconds is applied                                                          |
| Maximum Energy                                  | $\pm 10\%$                                         | A single standard impulse of 2m second, once                                                                                |
| Electrostatic Discharge                         | $\pm 10\%$                                         | 25kV (Non contact) (NV73DL1J12, NV73DL2A12: 15kV (Non contact))                                                             |
| Vibration Resistance                            | No visible damage. No remarkable mechanical damage | Vibration frequency: 10Hz~2000Hz; Full amplitude: 1.5mm, 10Hz~2000Hz~10Hz 20 min. XYZ direction 4 hrs for each total 12 hrs |
| High Temperature Life with d.c. Bias            | $\pm 10\%$                                         | 125°C $\pm$ 2°C, 1000h, Applied voltage: Varistor voltage (V <sub>1mA</sub> ) x 0.85                                        |
| High Temperature & High Humidity Life with Bias | $\pm 10\%$                                         | 85°C $\pm$ 2°C, 85% RH, 1000h, Applied voltage: Varistor voltage (V <sub>1mA</sub> ) x 0.85                                 |
| Thermal Shock                                   | $\pm 10\%$                                         | -55°C (15 min.)/ +125°C (15 min.) 300 cycles                                                                                |
| Shock                                           | $\pm 10\%$                                         | Half sine wave, Applied time: 1m second, Applied cycle: 500m/s <sup>2</sup> , 5 cycles                                      |
| High Temperature Storage                        | $\pm 10\%$                                         | 150°C, 1000h                                                                                                                |
| Low Temperature Storage                         | $\pm 10\%$                                         | -40°C, 1000h                                                                                                                |

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11/23/14