

### FEATURES

- Ultra Low ESR and High Ripple Current Ratings
- Values from 3.3 $\mu$ F to 1,000 $\mu$ F
- Suitable for Reflow Soldering
- Available in A, B2, B, C, V and D Case Sizes

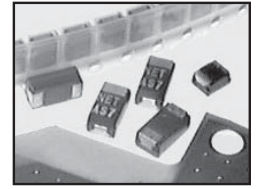
### CHARACTERISTICS

|                                                               |                                                                                                         |                 |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------|
| Capacitance Range                                             | 3.3 $\mu$ F to 1000 $\mu$ F                                                                             |                 |
| Capacitance Tolerance                                         | $\pm$ 20% (M)                                                                                           |                 |
| Rated Voltage Range @ 85°C (Vdc)                              | 2.5Vdc ~ 25Vdc*                                                                                         |                 |
| Operating Temperature Range                                   | -55°C ~ +105°C (voltage derating above +85°C, see table below)                                          |                 |
| Dissipation Factor                                            | See Specifications Table                                                                                |                 |
| Leakage Current @ +25°C<br>(After 5 Minutes at Rated Voltage) | Not More Than 0.1CV or 3 $\mu$ A, whichever is greater                                                  |                 |
| Capacitance Change<br>With Temperature                        | -55°C                                                                                                   | +105°C          |
|                                                               | $\Delta$ C - 20%                                                                                        | $\Delta$ C +50% |
| Resistance to Soldering Heat<br>(+240°C for 5 ~ 10 Seconds)   | $\Delta$ C $\pm$ 20% Max, LC = Less than initial specification<br>DF = 130% of initial measured value   |                 |
| Moisture Resistance<br>(500 hours; 90-95% RH @ 40°C)          | $\Delta$ C +30% ~ -20% Max, LC = Less than initial specification<br>DF = 130% of initial measured value |                 |
| Load Life at Rated Voltage<br>(1,000 hours @ 85°C)            | $\Delta$ C +30% Max, LC = Less than initial specification<br>DF = 150% of initial measured value        |                 |
| Base Failure Rate                                             | 1%/1000 hours at +85°C and rated voltage                                                                |                 |

\* It is recommended that the applied voltage be less than 80% of the rated voltage

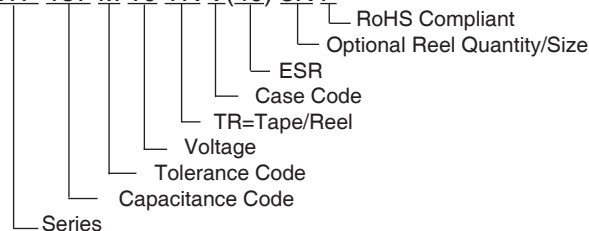
### STANDARD VALUES AND CASE SIZES

|                         |      |           |            |             |           |           |           |
|-------------------------|------|-----------|------------|-------------|-----------|-----------|-----------|
| Rated Voltage @ +85°C   | 2.5  | 4.0       | 6.3        | 10          | 16        | 20        | 25        |
| Surge Voltage @ +85°C   | 3.3  | 5.2       | 8.0        | 13          | 20        | 23        | 29        |
| Derated Voltage @ 105°C | 2.0  | 3.3       | 5.0        | 8.0         | 12.8      | 16        | 20        |
| Capacitance ( $\mu$ F)  | Code | Case Size | Case Size  | Case Size   | Case Size | Case Size | Case Size |
| 3.3                     | 335  | -         | -          | -           | A         | -         | -         |
| 4.7                     | 475  | -         | -          | -           | A         | B         | -         |
| 6.8                     | 685  | -         | -          | -           | -         | -         | B         |
| 10                      | 106  | -         | -          | A           | A, B      | B         | -         |
| 15                      | 156  | -         | -          | -           | -         | -         | V         |
| 22                      | 226  | -         | -          | B2          | B2, B, C  | -         | V         |
| 33                      | 336  | -         | A          | A, B2, B    | A, B2, B  | V         | -         |
| 47                      | 476  | -         | A, B2      | A, B2, B, C | B2, B, C  | V, D      | -         |
| 68                      | 686  | -         | A          | B, C        | C, V, D   | -         | -         |
| 100                     | 107  | -         | A, B2, B   | A, B, C, V  | C, V, D   | -         | -         |
| 150                     | 157  | -         | B, C       | B, C, V, D  | C, V, D   | -         | -         |
| 220                     | 227  | A, B      | B, C, V, D | B, V, D     | D         | -         | -         |
| 330                     | 337  | B, C, V   | C, V, D    | V, D        | -         | -         | -         |
| 470                     | 477  | V         | D          | -           | -         | -         | -         |
| 680                     | 687  | D         | D          | -           | -         | -         | -         |
| 1000                    | 108  | D         | -          | -           | -         | -         | -         |



### PART NUMBER SYSTEM

NTP 157 M 10 TR V(40) 3K F



### MAX. ESR (mΩ) @ 20°C/100KHz AND RIPPLE CURRENT (mArms) @ 20°C/100KHz

| NIC Part Number    | Capacitance Value (μF) | Working Voltage (Vdc) | Dissipation Factor @ +20°C/120Hz | ESR (mΩ) @ +20°C/100KHz | Ripple Current Rating (mA) @ +20°C/100KHz |
|--------------------|------------------------|-----------------------|----------------------------------|-------------------------|-------------------------------------------|
| NTP227M2.5TRA(45)F | 220                    | 2.5                   | 0.08                             | 45                      | 1291                                      |
| NTP227M2.5TRA(35)F | 220                    |                       | 0.08                             | 35                      | 1464                                      |
| NTP227M2.5TRA(25)F | 220                    |                       | 0.08                             | 25                      | 1732                                      |
| NTP227M2.5TRB(45)F | 220                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP227M2.5TRB(35)F | 220                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP227M2.5TRB(25)F | 220                    |                       | 0.08                             | 25                      | 1844                                      |
| NTP227M2.5TRB(21)F | 220                    |                       | 0.08                             | 21                      | 2011                                      |
| NTP227M2.5TRB(15)F | 220                    |                       | 0.08                             | 15                      | 2380                                      |
| NTP337M2.5TRB(45)F | 330                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP337M2.5TRB(35)F | 330                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP337M2.5TRB(21)F | 330                    |                       | 0.08                             | 21                      | 2011                                      |
| NTP337M2.5TRB(15)F | 330                    |                       | 0.08                             | 15                      | 2380                                      |
| NTP337M2.5TRC(55)F | 330                    |                       | 0.08                             | 55                      | 1414                                      |
| NTP337M2.5TRC(45)F | 330                    |                       | 0.10                             | 45                      | 1563                                      |
| NTP337M2.5TRC(25)F | 330                    |                       | 0.10                             | 25                      | 2345                                      |
| NTP337M2.5TRC(18)F | 330                    |                       | 0.10                             | 18                      | 2472                                      |
| NTP337M2.5TRV(25)F | 330                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP337M2.5TRV(15)F | 330                    |                       | 0.10                             | 15                      | 2887                                      |
| NTP337M2.5TRV(12)F | 330                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP337M2.5TRV(9)F  | 330                    |                       | 0.10                             | 9                       | 3726                                      |
| NTP477M2.5TRV(15)F | 470                    |                       | 0.10                             | 15                      | 2887                                      |
| NTP477M2.5TRV(12)F | 470                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP477M2.5TRV(7)F  | 470                    |                       | 0.10                             | 7                       | 5300                                      |
| NTP477M2.5TRV(6)F  | 470                    |                       | 0.10                             | 6                       | 4546                                      |
| NTP687M2.5TRD(25)F | 680                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP687M2.5TRD(15)F | 680                    |                       | 0.10                             | 15                      | 3162                                      |
| NTP108M2.5TRD(25)F | 1000                   |                       | 0.10                             | 25                      | 2449                                      |
| NTP108M2.5TRD(15)F | 1000                   |                       | 0.10                             | 15                      | 3162                                      |
| NTP336M4TRA(180)F  | 33                     | 4.0                   | 0.06                             | 180                     | 645                                       |
| NTP336M4TRA(70)F   | 33                     |                       | 0.08                             | 70                      | 1300                                      |
| NTP476M4TRA(180)F  | 47                     |                       | 0.06                             | 180                     | 645                                       |
| NTP476M4TRA(80)F   | 47                     |                       | 0.08                             | 80                      | 1200                                      |
| NTP476M4TRB2(70)F  | 47                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP686M4TRA(180)F  | 68                     |                       | 0.06                             | 180                     | 645                                       |
| NTP107M4TRA(100)F  | 100                    |                       | 0.06                             | 100                     | 866                                       |
| NTP107M4TRA(45)F   | 100                    |                       | 0.08                             | 45                      | 1291                                      |
| NTP107M4TRA(35)F   | 100                    |                       | 0.08                             | 35                      | 1464                                      |
| NTP107M4TRB2(70)F  | 100                    |                       | 0.08                             | 70                      | 1035                                      |
| NTP107M4TRB(70)F   | 100                    |                       | 0.08                             | 70                      | 1102                                      |
| NTP107M4TRB(45)F   | 100                    |                       | 0.08                             | 100                     | 1374                                      |
| NTP107M4TRB(35)F   | 100                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP157M4TRB(45)F   | 150                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP157M4TRB(35)F   | 150                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP157M4TRB(25)F   | 150                    |                       | 0.08                             | 25                      | 1844                                      |
| NTP157M4TRC(100)F  | 150                    |                       | 0.09                             | 100                     | 1049                                      |
| NTP227M4TRB(45)F   | 220                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP227M4TRB(35)F   | 220                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP227M4TRB(25)F   | 220                    |                       | 0.08                             | 25                      | 1844                                      |
| NTP227M4TRB(15)F   | 220                    |                       | 0.08                             | 15                      | 2380                                      |
| NTP227M4TRC(55)F   | 220                    |                       | 0.09                             | 55                      | 1414                                      |
| NTP227M4TRC(45)F   | 220                    |                       | 0.09                             | 45                      | 1563                                      |
| NTP227M4TRC(25)F   | 220                    |                       | 0.09                             | 25                      | 2098                                      |
| NTP227M4TRC(18)F   | 220                    |                       | 0.09                             | 18                      | 2472                                      |
| NTP227M4TRV(45)F   | 220                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP227M4TRV(25)F   | 220                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP227M4TRV(18)F   | 220                    |                       | 0.10                             | 18                      | 2635                                      |
| NTP227M4TRV(15)F   | 220                    |                       | 0.10                             | 15                      | 2887                                      |
| NTP227M4TRV(12)F   | 220                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP227M4TRD(55)F   | 220                    |                       | 0.10                             | 55                      | 1561                                      |
| NTP227M4TRD(40)F   | 220                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP227M4TRD(25)F   | 220                    |                       | 0.10                             | 25                      | 2449                                      |



### MAX. ESR (mΩ) @ 20°C/100KHz AND RIPPLE CURRENT (mArms) @ 20°C/100KHz

| NIC Part Number     | Capacitance Value (μF) | Working Voltage (Vdc) | Dissipation Factor @ +20°C/120Hz | ESR (mΩ) @ +20°C/100KHz | Ripple Current Rating (mA) @ +20°C/100KHz |
|---------------------|------------------------|-----------------------|----------------------------------|-------------------------|-------------------------------------------|
| NTP227M4TRD(15)F    | 220                    | 4.0                   | 0.10                             | 15                      | 3162                                      |
| NTP227M4TRD(12)F    | 220                    |                       | 0.10                             | 12                      | 3536                                      |
| NTP337M4TRC(55)F    | 330                    |                       | 0.10                             | 55                      | 1414                                      |
| NTP337M4TRC(45)F    | 330                    |                       | 0.08                             | 45                      | 1900                                      |
| NTP337M4TRV(45)F    | 330                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP337M4TRV(25)F    | 330                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP337M4TRV(12)F    | 330                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP337M4TRD(40)F    | 330                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP337M4TRD(25)F    | 330                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP337M4TRD(15)F    | 330                    |                       | 0.10                             | 15                      | 3162                                      |
| NTP477M4TRD(25)F    | 470                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP477M4TRD(18)F    | 470                    |                       | 0.10                             | 18                      | 2887                                      |
| NTP477M4TRD(15)F    | 470                    |                       | 0.10                             | 15                      | 3162                                      |
| NTP477M4TRD(12)F    | 470                    |                       | 0.10                             | 12                      | 3536                                      |
| NTP477M4TRD(10)F    | 470                    |                       | 0.10                             | 10                      | 3873                                      |
| NTP687M4TRD(25)F    | 680                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP687M4TRD(15)F    | 680                    |                       | 0.10                             | 15                      | 3162                                      |
| NTP687M4TRD(12)F    | 680                    |                       | 0.10                             | 12                      | 3536                                      |
| NTP106M6.3TRA(200)F | 10                     | 6.3                   | 0.06                             | 200                     | 612                                       |
| NTP226M6.3TRB2(70)F | 22                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP336M6.3TRA(180)F | 33                     |                       | 0.06                             | 180                     | 645                                       |
| NTP336M6.3TRA(120)F | 33                     |                       | 0.08                             | 120                     | 1000                                      |
| NTP336M6.3TRB2(70)F | 33                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP336M6.3TRB(150)F | 33                     |                       | 0.08                             | 150                     | 753                                       |
| NTP336M6.3TRB(70)F  | 33                     |                       | 0.08                             | 70                      | 1300                                      |
| NTP336M6.3TRB(40)F  | 33                     |                       | 0.08                             | 40                      | 1800                                      |
| NTP476M6.3TRA(180)F | 47                     |                       | 0.06                             | 180                     | 645                                       |
| NTP476M6.3TRB2(70)F | 47                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP476M6.3TRB2(55)F | 47                     |                       | 0.08                             | 55                      | 1168                                      |
| NTP476M6.3TRB(150)F | 47                     |                       | 0.08                             | 150                     | 753                                       |
| NTP476M6.3TRB(70)F  | 47                     |                       | 0.08                             | 70                      | 1102                                      |
| NTP686M6.3TRB(70)F  | 68                     |                       | 0.08                             | 70                      | 1102                                      |
| NTP686M6.3TRB(55)F  | 68                     |                       | 0.08                             | 55                      | 1243                                      |
| NTP686M6.3TRB(40)F  | 68                     |                       | 0.08                             | 40                      | 1800                                      |
| NTP686M6.3TRC(100)F | 68                     |                       | 0.09                             | 100                     | 1049                                      |
| NTP107M6.3TRA(35)F  | 100                    |                       | 0.08                             | 35                      | 1500                                      |
| NTP107M6.3TRA(70)F  | 100                    |                       | 0.08                             | 70                      | 1035                                      |
| NTP107M6.3TRB(70)F  | 100                    |                       | 0.08                             | 70                      | 1102                                      |
| NTP107M6.3TRB(45)F  | 100                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP107M6.3TRB(35)F  | 100                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP107M6.3TRB(25)F  | 100                    |                       | 0.08                             | 25                      | 1844                                      |
| NTP107M6.3TRC(100)F | 100                    |                       | 0.09                             | 100                     | 1049                                      |
| NTP107M6.3TRC(55)F  | 100                    |                       | 0.09                             | 55                      | 1414                                      |
| NTP107M6.3TRC(45)F  | 100                    |                       | 0.08                             | 45                      | 1900                                      |
| NTP107M6.3TRV(15)F  | 100                    |                       | 0.10                             | 15                      | 2886                                      |
| NTP157M6.3TRB(45)F  | 150                    |                       | 0.08                             | 45                      | 1374                                      |
| NTP157M6.3TRB(35)F  | 150                    |                       | 0.08                             | 35                      | 1558                                      |
| NTP157M6.3TRB(25)F  | 150                    |                       | 0.08                             | 25                      | 1844                                      |
| NTP157M6.3TRC(100)F | 150                    |                       | 0.09                             | 100                     | 1049                                      |
| NTP157M6.3TRC(55)F  | 150                    |                       | 0.09                             | 55                      | 1414                                      |
| NTP157M6.3TRC(45)F  | 150                    |                       | 0.09                             | 45                      | 1563                                      |
| NTP157M6.3TRC(25)F  | 150                    |                       | 0.09                             | 25                      | 2098                                      |
| NTP157M6.3TRV(45)F  | 150                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP157M6.3TRV(25)F  | 150                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP157M6.3TRV(18)F  | 150                    |                       | 0.10                             | 18                      | 2635                                      |
| NTP157M6.3TRV(15)F  | 150                    |                       | 0.10                             | 15                      | 2886                                      |
| NTP157M6.3TRV(12)F  | 150                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP157M6.3TRD(55)F  | 150                    |                       | 0.10                             | 55                      | 1651                                      |
| NTP157M6.3TRD(40)F  | 150                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP157M6.3TRD(25)F  | 150                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP227M6.3TRB(35)F  | 220                    |                       | 0.08                             | 35                      | 1558                                      |



### MAX. ESR (mΩ) @ 20°C/100KHz AND RIPPLE CURRENT (mArms) @20°C/100KHz

| NIC Part Number    | Capacitance Value (μF) | Working Voltage (Vdc) | Dissipation Factor @ +20°C/120Hz | ESR (mΩ) @ +20°C/100KHz | Ripple Current Rating (mA) @ +20°C/100KHz |
|--------------------|------------------------|-----------------------|----------------------------------|-------------------------|-------------------------------------------|
| NTP227M6.3TRB(25)F | 220                    | 6.3                   | 0.08                             | 25                      | 1844                                      |
| NTP227M6.3TRV(45)F | 220                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP227M6.3TRV(25)F | 220                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP227M6.3TRV(15)F | 220                    |                       | 0.10                             | 15                      | 2887                                      |
| NTP227M6.3TRV(12)F | 220                    |                       | 0.10                             | 12                      | 3227                                      |
| NTP227M6.3TRD(55)F | 220                    |                       | 0.10                             | 55                      | 1651                                      |
| NTP227M6.3TRD(40)F | 220                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP337M6.3TRV(45)F | 330                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP337M6.3TRV(25)F | 330                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP337M6.3TRD(40)F | 330                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP337M6.3TRD(25)F | 330                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP337M6.3TRD(18)F | 330                    |                       | 0.10                             | 18                      | 2887                                      |
| NTP335M10TRA(300)F | 3.3                    | 10                    | 0.06                             | 300                     | 500                                       |
| NTP475M10TRA(300)F | 4.7                    |                       | 0.06                             | 300                     | 500                                       |
| NTP106M10TRA(200)F | 10                     |                       | 0.06                             | 200                     | 612                                       |
| NTP106M10TRA(80)F  | 10                     |                       | 0.08                             | 80                      | 1200                                      |
| NTP106M10TRB(200)F | 10                     |                       | 0.08                             | 200                     | 652                                       |
| NTP156M10TRA(180)F | 15                     |                       | 0.06                             | 180                     | 645                                       |
| NTP156M10TRA(80)F  | 15                     |                       | 0.08                             | 80                      | 1200                                      |
| NTP226M10TRB2(70)F | 22                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP226M10TRB(150)F | 22                     |                       | 0.08                             | 150                     | 753                                       |
| NTP336M10TRA(200)F | 33                     |                       | 0.06                             | 200                     | 612                                       |
| NTP336M10TRA(70)F  |                        |                       |                                  |                         |                                           |
| NTP336M10TRB2(70)F | 33                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP336M10TRB(150)F | 33                     |                       | 0.08                             | 150                     | 753                                       |
| NTP476M10TRB2(70)F | 47                     |                       | 0.08                             | 70                      | 1035                                      |
| NTP476M10TRB(70)F  | 47                     |                       | 0.08                             | 70                      | 1102                                      |
| NTP476M10TRC(100)F | 47                     |                       | 0.09                             | 100                     | 1049                                      |
| NTP686M10TRC(100)F | 68                     |                       | 0.09                             | 100                     | 1049                                      |
| NTP686M10TRC(55)F  | 69                     |                       | 0.09                             | 55                      | 1414                                      |
| NTP686M10TRC(45)F  | 68                     |                       | 0.08                             | 45                      | 1900                                      |
| NTP686M10TRV(60)F  | 68                     |                       | 0.10                             | 60                      | 1443                                      |
| NTP686M10TRD(100)F | 68                     |                       | 0.10                             | 100                     | 1225                                      |
| NTP107M10TRV(45)F  | 100                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP107M10TRV(25)F  | 100                    |                       | 0.10                             | 25                      | 2236                                      |
| NTP107M10TRC(100)F | 100                    |                       | 0.09                             | 100                     | 1049                                      |
| NTP107M10TRC(55)F  | 100                    |                       | 0.09                             | 55                      | 1414                                      |
| NTP107M10TRC(45)F  | 100                    |                       | 0.08                             | 45                      | 1900                                      |
| NTP107M10TRC(25)F  | 100                    |                       | 0.08                             | 25                      | 2600                                      |
| NTP107M10TRD(55)F  | 100                    |                       | 0.10                             | 55                      | 1651                                      |
| NTP157M10TRC(55)F  | 150                    |                       | 0.09                             | 55                      | 1414                                      |
| NTP157M10TRV(40)F  | 150                    |                       | 0.10                             | 40                      | 1768                                      |
| NTP157M10TRV(45)F  | 150                    |                       | 0.10                             | 45                      | 1667                                      |
| NTP157M10TRD(55)F  | 150                    |                       | 0.10                             | 55                      | 1651                                      |
| NTP157M10TRD(40)F  | 150                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP227M10TRD(55)F  | 220                    |                       | 0.10                             | 55                      | 1651                                      |
| NTP227M10TRD(40)F  | 220                    |                       | 0.10                             | 40                      | 1936                                      |
| NTP227M10TRD(25)F  | 220                    |                       | 0.10                             | 25                      | 2449                                      |
| NTP475M16TRB(200)F | 4.7                    | 16                    | 0.08                             | 200                     | 652                                       |
| NTP106M16TRB(100)F | 10                     |                       | 0.08                             | 100                     | 922                                       |
| NTP336M16TRV(70)F  | 33                     |                       | 0.10                             | 70                      | 1336                                      |
| NTP476M16TRV(70)F  | 47                     |                       | 0.10                             | 70                      | 1336                                      |
| NTP476M16TRV(45)F  | 47                     |                       | 0.01                             | 45                      | 2000                                      |
| NTP476M16TRD(70)F  | 47                     |                       | 0.10                             | 70                      | 1464                                      |
| NTP686M16TRD(55)F  | 68                     |                       | 0.10                             | 55                      | 1651                                      |
| NTP686M16TRD(50)F  | 68                     |                       | 0.10                             | 50                      | 2100                                      |
| NTP226M20TRV(90)F  | 22                     | 20                    | 0.10                             | 90                      | 1179                                      |
| NTP685M25TRB(100)F | 6.8                    | 25                    | 0.08                             | 100                     | 922                                       |
| NTP156M25TRV(90)F  | 15                     |                       | 0.10                             | 90                      | 1179                                      |

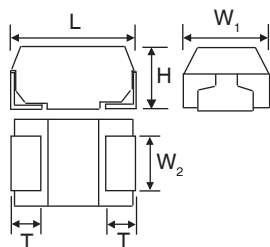
## CASE DIMENSIONS (mm)

| Case Size | EIA Code | L         | H         | W <sub>1</sub> | W <sub>2</sub> | T         |
|-----------|----------|-----------|-----------|----------------|----------------|-----------|
| A         | 3216     | 3.2 ± 0.2 | 1.6 ± 0.2 | 1.6 ± 0.2      | 1.2 ± 0.1      | 0.8 ± 0.3 |
| B2        | 3528L    | 3.5 ± 0.2 | 1.1 ± 0.1 | 2.8 ± 0.2      | 2.2 ± 0.1      | 0.8 ± 0.3 |
| B         | 3528     | 3.5 ± 0.2 | 1.9 ± 0.2 | 2.8 ± 0.2      | 2.2 ± 0.1      | 0.8 ± 0.3 |
| C         | 6032     | 6.0 ± 0.3 | 2.5 ± 0.3 | 3.2 ± 0.3      | 2.2 ± 0.1      | 1.3 ± 0.3 |
| V         | 7343     | 7.3 ± 0.3 | 1.9 ± 0.1 | 4.3 ± 0.3      | 2.4 ± 0.1      | 1.3 ± 0.3 |
| D         | 7343     | 7.3 ± 0.3 | 2.8 ± 0.3 | 4.3 ± 0.3      | 2.4 ± 0.1      | 1.3 ± 0.3 |

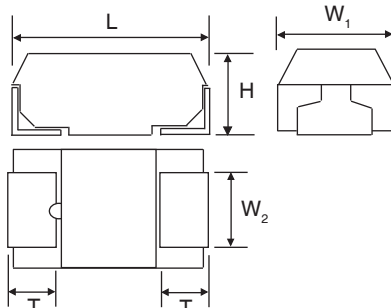
## RIPPLE CURRENT TEMPERATURE DERATING

| 20°C | 85°C | 105°C |
|------|------|-------|
| 1.0  | 0.9  | 0.6   |

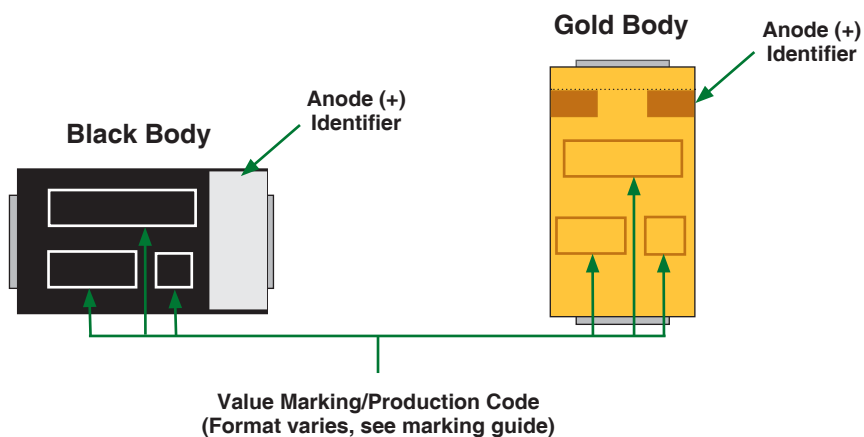
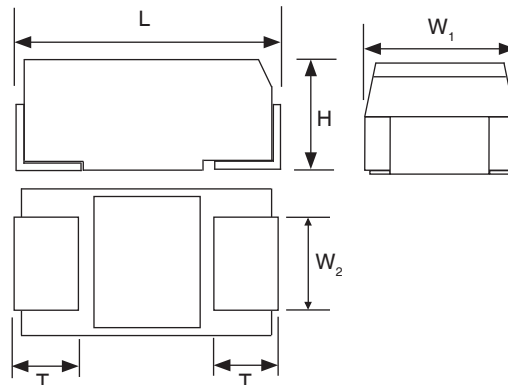
"A" Case Size



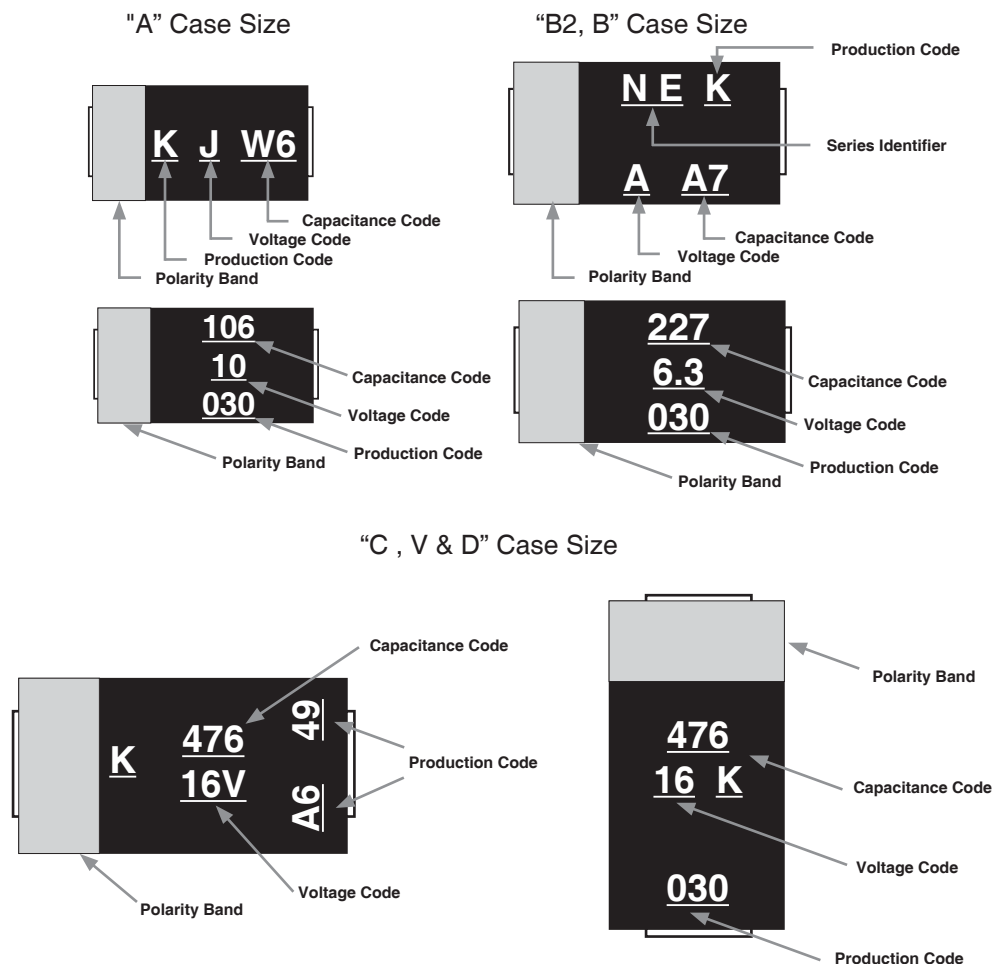
"B2, B" Case Size



"C, V, D" Case Size

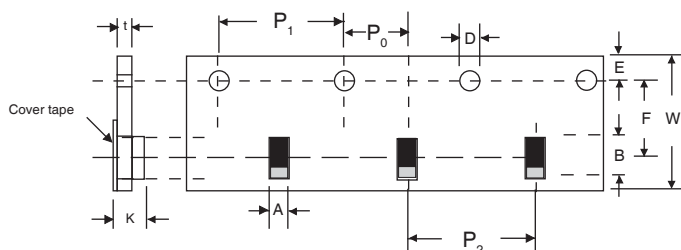


## COMPONENT MARKING



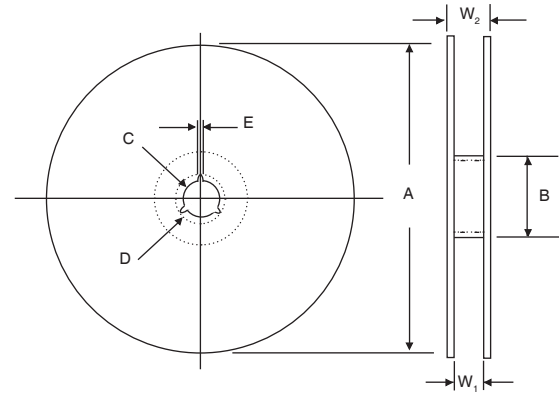
## TAPE SPECIFICATIONS (mm)

| Case Size | A<br>±0.2 | B<br>±0.2 | D<br>±0.1 | E<br>±0.1 | F<br>±0.1 | P <sub>1</sub><br>±0.05 | P <sub>1</sub><br>±0.1 | P <sub>2</sub><br>±0.1 | K<br>±0.2 | t<br>max. | W<br>±0.3 | Reel Qty          |                   |       |
|-----------|-----------|-----------|-----------|-----------|-----------|-------------------------|------------------------|------------------------|-----------|-----------|-----------|-------------------|-------------------|-------|
|           |           |           |           |           |           |                         |                        |                        |           |           |           | 180mm Reel (Std.) | 330mm Reel (Opt.) |       |
| A         | 1.9       | 3.5       | φ1.5      | 1.75      | 3.5       | 2.0                     | 4.0                    | 4.0                    | 1.9       | 0.2       | 8.0       | 2000              | 9,000             |       |
| B2        | 3.2       | 3.8       |           |           |           |                         |                        |                        | 1.4       |           |           | 3000              | 10,000            |       |
| B         | 3.3       |           |           |           |           |                         |                        |                        | 2.1       |           |           | 2000              | 5,000             |       |
| C         | 3.7       | 6.4       |           |           | 5.5       |                         |                        |                        | 3.0       | 0.3       |           | 12.0              | 500               | 2,500 |
| V         | 4.8       | 7.7       |           |           |           |                         |                        |                        | 2.1       | 0.4       |           |                   | 1000              | 3,000 |
| D         | 4.8       | 7.7       |           |           |           |                         |                        |                        | 3.3       | 0.3       |           |                   | 500               | 2,500 |



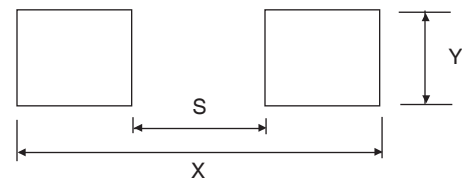
### REEL SPECIFICATIONS (mm)

| Tape Width | A ± 2.0 | B min. | C ± 0.5 | D ± 0.5 | E ± 0.5 | W <sub>1</sub> ± 1.0 | W <sub>2</sub> max. |
|------------|---------|--------|---------|---------|---------|----------------------|---------------------|
| 8mm        | φ180    | φ50    | φ13     | φ21     | 2.0     | 10                   | 14.5                |
| 12mm       |         |        |         |         |         | 14.5                 | 18.5                |
| 8mm        | φ330    | φ80    |         |         |         | 10                   | 14.5                |
| 12mm       |         |        |         |         |         | 14.5                 | 18.5                |



### RECOMMENDED LAND PATTERN (mm)

| Case Size | S max. | X min. | Y min. |
|-----------|--------|--------|--------|
| A2        | 1.1    | 3.8    | 1.5    |
| A         | 1.1    | 3.8    | 1.5    |
| B         | 1.4    | 4.1    | 2.7    |
| C         | 2.9    | 6.9    | 2.7    |
| D         | 4.1    | 8.2    | 2.9    |



### RECOMMENDED PEAK TEMPERATURE/TIME

| Maximum Time | Peak Soldering Temperature |
|--------------|----------------------------|
| 5 Seconds    | 260°C*                     |
| 10 Seconds   | 240°C                      |
| 20 Seconds   | 230°C                      |

\*Notes regarding peak reflow temperature:

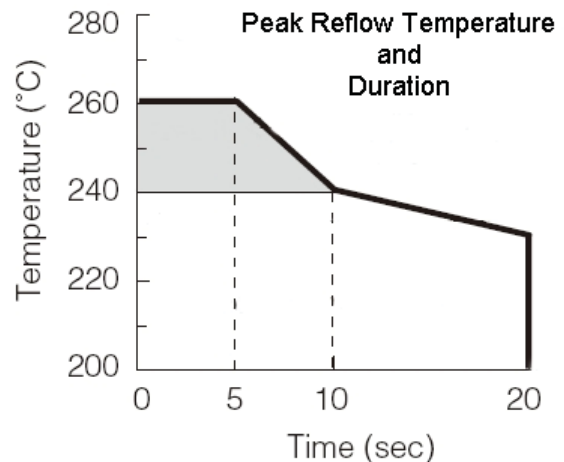
1. NTP parts are moisture sensitive (MSL 3) and are shipped in moisture control bags. After opening the bag capacitors should be stored at +30°C, relative humidity of 60% maximum and soldered within 168 hours.

2. The parts should be soldered using the minimum amount of heat required.

3. If the time after opening the bag exceeds 168 hours components should be baked using the following conditions:

Temperature.....50°C  
Time.....96 hours

4. If the above storage or baking conditions are not followed the peak soldering temperature should be limited to +240°C.



### PRECAUTIONS

Please review the notes on correct use, safety and precautions found on our website at [www.niccomp.com/tantpc](http://www.niccomp.com/tantpc)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

