

### FEATURES

- SHIELDED POWER INDUCTOR
- MOLDED METAL COMPOSITE CONSTRUCTION
- HIGH SATURATION CURRENT CHARACTERISTICS (~ 110A)
- HIGH EFFICIENCY (2X IMPROVEMENT OVER FERRITE CORE INDUCTORS)
- LOW PROFILE (1.8mm ~ 5.2mm)

**RoHS Compliant**  
includes all homogeneous materials



\*See Part Number System for Details

### CHARACTERISTICS

| Case Code  | 42C                       | 74C       | 104C       | 143C       | 145C     |
|--|---------------------------|-----------|------------|------------|----------|
| Inductance Range (μH)                                  | 0.1 ~ 1.0                 | 0.1 ~ 6.8 | 0.22 ~ 2.2 | 0.22 ~ 4.7 | 0.15~6.8 |
| Ambient Operating Temperature Range                    | -55°C ~ +85°C             |           |            |            |          |
| Maximum Component Temperature (Ambient + Self-Heating) | +125°C                    |           |            |            |          |
| Temperature Rise at Irms                               | +40°C                     |           |            |            |          |
| Inductance Change at Isat                              | -20%                      |           |            |            |          |
| Inductance Tolerance                                   | ±20%                      |           |            |            |          |
| Resistance to Solder Heat                              | 260°C ±5°C for 10 seconds |           |            |            |          |

### DIMENSIONS (mm)

| Series   | Value     | A            | B          | C         | D <sub>1</sub> | D <sub>2</sub> | E <sub>1</sub> | E <sub>2</sub> | t         |
|----------|-----------|--------------|------------|-----------|----------------|----------------|----------------|----------------|-----------|
| NPIM42C  | All       | 4.15 ± 0.35  | 4.0 ± 0.3  | 1.8 ± 0.2 | 0.8 ± 0.3      | 1.0 ± 0.1      | 1.5 ± 0.3      | 2.2 ± 0.2      | 0 ~ +0.15 |
| NPIM74C  | All       | 6.95 ± 0.35  | 6.6 ± 0.2  | 2.8 ± 0.2 | 1.6 ± 0.3      | 2.0 ± 0.1      | 3.0 ± 0.3      | 3.6 ± 0.2      | 0 ~ +0.15 |
| NPIM104C | R15 ~ 1R5 | 11.15 ± 0.35 | 10.0 ± 0.3 | 3.8 ± 0.2 | 2.0 ± 0.5      | 2.5 ± 0.1      | 3.0 ± 0.5      | 5.0 ± 0.2      | 0 ~ +0.15 |
|          | 2R2 ~ 4R7 | 10.85 ± 0.35 |            |           |                |                |                |                |           |
| NPIM143C | R22 ~ R68 | 13.45 ± 0.35 | 12.6 ± 0.2 | 3.3 ± 0.2 | 2.0 ± 0.5      | 2.5 ± 0.1      | 4.0 ± 0.5      | 6.0 ± 0.2      | 0 ~ +0.15 |
|          | 1R0 ~ 3R3 | 13.45 ± 0.35 |            |           |                |                | 3.0 ± 0.5      |                |           |
| NPIM145C | R36       | 13.65 ± 0.35 | 12.6 ± 0.2 | 5.0 ± 0.2 | 2.0 ± 0.5      | 2.5 ± 0.1      | 4.0 ± 0.5      | 6.0 ± 0.2      | 0 ~ +0.15 |
|          | R15 ~ 1R5 | 13.45 ± 0.35 |            | 4.8 ± 0.2 |                |                | 4.0 ± 0.5      |                |           |
|          | 2R2 ~ 6R8 |              |            |           |                |                | 3.0 ± 0.5      |                |           |



### PART NUMBER SYSTEM

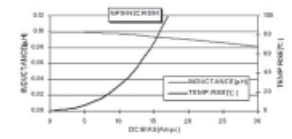
NPIM -- C 4R7 M TR E

- Series
- Size Code (see table for details)
- Construction Code (see drawing for details)
- Inductance Code (μH): 1st two digits are significant, 3rd digit is multiplier for values from 10μH and up.
- Inductance Tolerance Code: M=±20%
- Packaging: TR = Tape & Reel
- RoHS Compliant



| Part Number    | STANDARD VALUES - CASE SIZE 42C ( 4.15 X 4.0 X 1.8mm) |                    |                                    |                                    | Test Frequency |
|----------------|---|--------------------|------------------------------------|------------------------------------|----------------|
|                | Inductance Value (μH)                                 | DC Resistance (mΩ) | DC Current I <sub>rms</sub> (Amps) | DC Current I <sub>sat</sub> (Amps) |                |
| NPIM42CR10MTRF | 0.1   | 5.0                | 11                                 | 30                                 | 100KHz         |
| NPIM42CR22MTRF | 0.22  | 8.0                | 9                                  | 17                                 |                |
| NPIM42CR47MTRF | 0.47  | 15.5               | 6                                  | 11.5                               |                |
| NPIM42C1R0MTRF | 1.0   | 36                 | 3.8                                | 8.5                                |                |

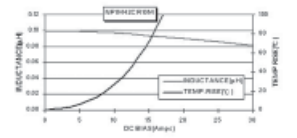
Maximum +40°C temperature rise at I<sub>rms</sub>. Typical -20% inductance change at I<sub>sat</sub>.



Contact NIC for NPIM42C Performance Curves

| Part Number    | STANDARD VALUES - CASE SIZE 74 ( 6.95 X 6.6 X 2.8mm) |                    |                                    |                                    | Test Frequency |
|----------------|--|--------------------|------------------------------------|------------------------------------|----------------|
|                | Inductance Value (μH)                                | DC Resistance (mΩ) | DC Current I <sub>rms</sub> (Amps) | DC Current I <sub>sat</sub> (Amps) |                |
| NPIM74CR10MTRF | 0.1  | 1.7                | 32.5                               | 60                                 | 100KHz         |
| NPIM74CR20MTRF | 0.2  | 3                  | 24                                 | 41                                 |                |
| NPIM74CR22MTRF | 0.22   | 2.8                | 23                                 | 40                                 |                |
| NPIM74CR25MTRF | 0.25   | 3.5                | 21                                 | 39                                 |                |
| NPIM74CR33MTRF | 0.33   | 3.9                | 20                                 | 30                                 |                |
| NPIM74CR47MTRF | 0.47   | 4.2                | 17.5                               | 26                                 |                |
| NPIM74CR56MTRF | 0.56   | 5                  | 16.5                               | 25.5                               |                |
| NPIM74CR68MTRF | 0.68   | 5.5                | 15.5                               | 25                                 |                |
| NPIM74CR75MTRF | 0.75   | 6.2                | 14                                 | 24.5                               |                |
| NPIM74CR82MTRF | 0.82   | 8                  | 13                                 | 24                                 |                |
| NPIM74CR90MTRF | 0.9  | 10                 | 11                                 | 22                                 |                |
| NPIM74C1R0MTRF | 1.0  | 10                 | 11                                 | 22                                 |                |
| NPIM74C1R2MTRF | 1.2  | 12                 | 10                                 | 20                                 |                |
| NPIM74C1R5MTRF | 1.5  | 15                 | 9                                  | 18                                 |                |
| NPIM74C2R0MTRF | 2.0  | 18                 | 8.2                                | 14                                 |                |
| NPIM74C2R2MTRF | 2.2  | 20                 | 8                                  | 14                                 |                |
| NPIM74C2R5MTRF | 2.5  | 22                 | 7                                  | 14                                 |                |
| NPIM74C3R3MTRF | 3.3  | 30                 | 6                                  | 13.5                               |                |
| NPIM74C4R7MTRF | 4.7  | 40                 | 5.5                                | 10                                 |                |
| NPIM74C6R8MTRF | 6.8  | 60                 | 4.5                                | 8                                  |                |

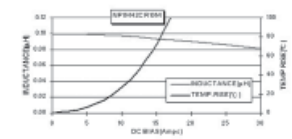
Maximum +40°C temperature rise at I<sub>rms</sub>. Typical -20% inductance change at I<sub>sat</sub>.



Contact NIC for NPIM74C Performance Curves

| Part Number     | STANDARD VALUES - CASE SIZE 104C |                    |                                    |                                    | Test Frequency |
|-----------------|----------------------------------|--------------------|------------------------------------|------------------------------------|----------------|
|                 | Inductance Value (μH)            | DC Resistance (mΩ) | DC Current I <sub>rms</sub> (Amps) | DC Current I <sub>sat</sub> (Amps) |                |
| NPIM104CR19MTRF | 0.19                             | 0.8                | 38                                 | 60                                 | 100KHz         |
| NPIM104CR68MTRF | 0.68                             | 2.7                | 22                                 | 39                                 |                |
| NPIM104CR88MTRF | 0.88                             | 3.0                | 20                                 | 38                                 |                |
| NPIM104C1R5MTRF | 1.5                              | 4.2                | 16                                 | 33                                 |                |
| NPIM104C2R2MTRF | 2.2                              | 7.0                | 12                                 | 27                                 |                |

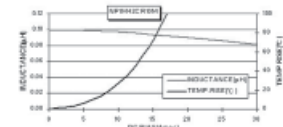
Maximum +40°C temperature rise at I<sub>rms</sub>. Typical -20% inductance change at I<sub>sat</sub>.



Contact NIC for NPIM104C Performance Curves

| Part Number     | STANDARD VALUES - CASE SIZE 143C |                    |                                    |                                    | Test Frequency |
|-----------------|----------------------------------|--------------------|------------------------------------|------------------------------------|----------------|
|                 | Inductance Value (μH)            | DC Resistance (mΩ) | DC Current I <sub>rms</sub> (Amps) | DC Current I <sub>sat</sub> (Amps) |                |
| NPIM143CR22MTRF | 0.22                             | 1.3                | 38                                 | 65                                 | 100KHz         |
| NPIM143CR33MTRF | 0.33                             | 1.5                | 36.5                               | 62                                 |                |
| NPIM143CR39MTRF | 0.39                             | 1.3                | 38                                 | 65                                 |                |
| NPIM143CR47MTRF | 0.47                             | 2.0                | 32                                 | 55                                 |                |
| NPIM143CR56MTRF | 0.56                             | 2.2                | 29                                 | 51                                 |                |
| NPIM143CR60MTRF | 0.60                             | 2.2                | 29                                 | 51                                 |                |
| NPIM143CR62MTRF | 0.62                             | 2.2                | 29                                 | 51                                 |                |
| NPIM143CR68MTRF | 0.68                             | 2.5                | 28                                 | 49                                 |                |
| NPIM143CR82MTRF | 0.82                             | 3.0                | 25                                 | 44                                 |                |
| NPIM143C1R0MTRF | 1.0                              | 3.5                | 24                                 | 40                                 |                |
| NPIM143C1R5MTRF | 1.5                              | 5.5                | 19                                 | 35                                 |                |
| NPIM143C2R2MTRF | 2.2                              | 8.0                | 16                                 | 29                                 |                |
| NPIM143C3R3MTRF | 3.3                              | 12                 | 12                                 | 27                                 |                |
| NPIM143C4R7MTRF | 4.7                              | 18                 | 9                                  | 22                                 |                |

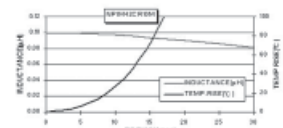
Maximum +40°C temperature rise at I<sub>rms</sub>. Typical -20% inductance change at I<sub>sat</sub>.



Contact NIC for NPIM143C Performance Curves

| Part Number     | STANDARD VALUES - CASE SIZE 145C |                         |                                    |                                    | Test Frequency |
|-----------------|----------------------------------|-------------------------|------------------------------------|------------------------------------|----------------|
|                 | Inductance Value (μH)            | DC Resistance max. (mΩ) | DC Current I <sub>rms</sub> (Amps) | DC Current I <sub>sat</sub> (Amps) |                |
| NPIM145CR15MTRF | 0.15                             | 0.7                     | 45                                 | 110                                | 100KHz         |
| NPIM145CR36MTRF | 0.36                             | 1.1                     | 41                                 | 75                                 |                |
| NPIM145CR47MTRF | 0.47                             | 1.3                     | 38                                 | 65                                 |                |
| NPIM145CR50MTRF | 0.5                              | 1.5                     | 36                                 | 55                                 |                |
| NPIM145CR56MTRF | 0.56                             | 1.5                     | 36                                 | 55                                 |                |
| NPIM145CR62MTRF | 0.62                             | 1.7                     | 34                                 | 54                                 |                |
| NPIM145CR68MTRF | 0.68                             | 1.7                     | 34                                 | 54                                 |                |
| NPIM145CR82MTRF | 0.82                             | 2.1                     | 31                                 | 53                                 |                |
| NPIM145C1R0MTRF | 1.0                              | 2.5                     | 29                                 | 50                                 |                |
| NPIM145C1R2MTRF | 1.2                              | 3.0                     | 25                                 | 49                                 |                |
| NPIM145C1R5MTRF | 1.5                              | 4.1                     | 23                                 | 48                                 |                |
| NPIM145C2R2MTRF | 2.2                              | 5.5                     | 20                                 | 32                                 |                |
| NPIM145C3R3MTRF | 3.3                              | 9.2                     | 15                                 | 32                                 |                |
| NPIM145C4R7MTRF | 4.7                              | 15                      | 12                                 | 27                                 |                |
| NPIM145C6R3MTRF | 6.3                              | 18.5                    | 11                                 | 21                                 |                |
| NPIM145C6R8MTRF | 6.8                              | 18.5                    | 11                                 | 21                                 |                |

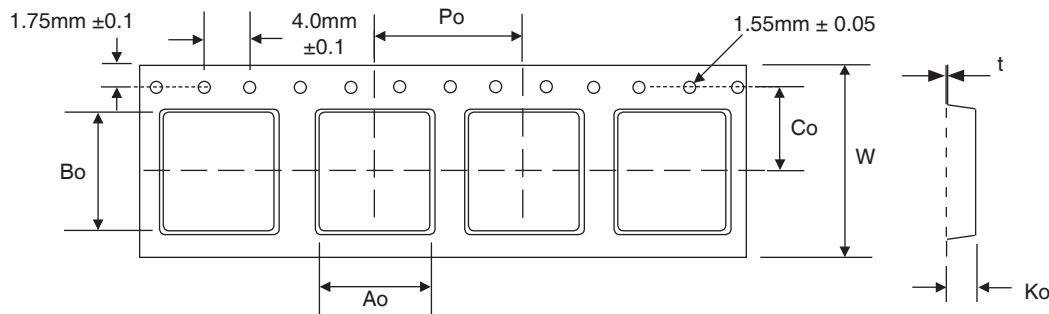
Maximum +40°C temperature rise at I<sub>rms</sub>. Typical -20% inductance change at I<sub>sat</sub>.



Contact NIC for NPIM145C Performance Curves

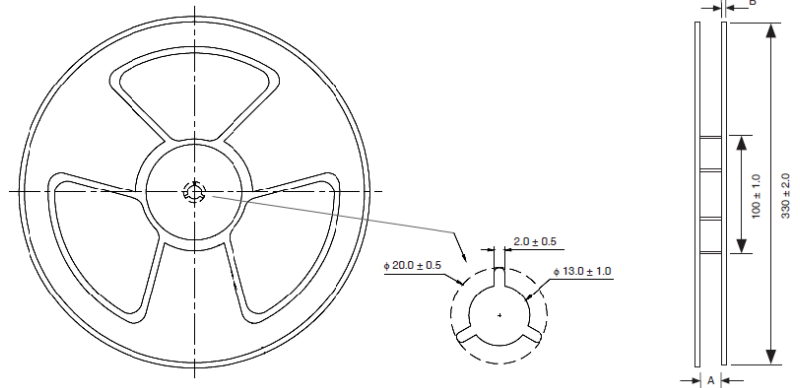
### CARRIER TAPE DIMENSIONS (mm)

| Series   | Part Thickness | Ao          | Bo          | Co          | Po          | Ko         | t           | W           |
|----------|----------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|
| NPIM42C  | All            | 4.2 ± 0.10  | 4.5 ± 0.10  | 5.5 ± 0.10  | 8.0 ± 0.10  | 2.5 ± 0.15 | 1.55 ± 0.05 | 12.0 ± 0.30 |
| NPIM74C  | All            | 7.2 ± 0.10  | 7.5 ± 0.10  | 7.5 ± 0.10  | 12.0 ± 0.10 | 3.6 ± 0.15 | 0.30 ± 0.10 | 16.0 ± 0.30 |
| NPIM104C | All            | 10.7 ± 0.10 | 12.0 ± 0.10 | 11.5 ± 0.10 | 16.0 ± 0.10 | 4.0 ± 0.10 | 0.35 ± 0.05 | 24.0 ± 0.30 |
| NPIM143C | All            | 13.4 ± 0.10 | 14.1 ± 0.10 | 11.5 ± 0.10 | 16.0 ± 0.1  | 3.7 ± 0.15 | 0.35 ± 0.05 | 24.0 ± 0.30 |
| NPIM145C | All            | 13.4 ± 0.10 | 14.1 ± 0.10 | 11.5 ± 0.10 | 16.0 ± 0.1  | 5.1 ± 0.10 | 0.35 ± 0.05 | 24.0 ± 0.30 |



### REEL DIMENSIONS (mm)

| Series   | A          | B         | Qty/Reel |
|----------|------------|-----------|----------|
| NPIM42C  | 12.5 ± 0.5 | 2.0 ± 0.2 | 2,000    |
| NPIM74C  | 16.0 ± 0.5 | 2.0 ± 0.2 | 1,000    |
| NPIM104C | 24.5 ± 0.5 | 2.0 ± 0.2 | 500      |
| NPIM143C | 24.5 ± 0.5 | 2.0 ± 0.2 | 500      |
| NPIM145C | 24.5 ± 0.5 | 2.0 ± 0.2 | 500      |



### Land Patterns (mm)

| Series   | F   | G    | H   |
|----------|-----|------|-----|
| NPIM42C  | 2.2 | 5.2  | 2.5 |
| NPIM74C  | 3.7 | 8.4  | 3.5 |
| NPIM104C | 5.4 | 13.6 | 4.1 |
| NPIM143C | 8.0 | 14.5 | 5.0 |
| NPIM145C | 8.0 | 14.5 | 5.0 |

