

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)

*For Current Ratings Above 75A contact NIC

RoHS Compliant
includes all homogeneous materials



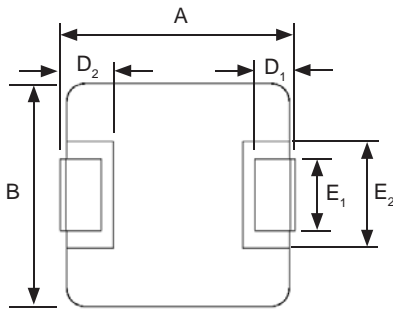
*See Part Number System for Details

CHARACTERISTICS

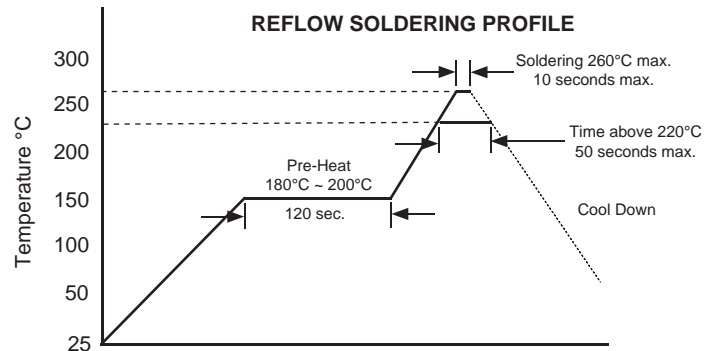
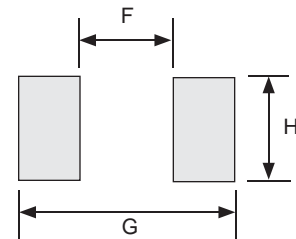
| Case Code | 42 | 53 | 72 | 73 | 74 | 103 | 104 | 143 | 145 |
|--|-----------------------------|------------|-----------|-----------|----------|------------|-----------|------------|----------|
| Inductance Range (µF) | 0.1 ~ 2.2 | 0.68 ~ 3.3 | 0.1 ~ 4.7 | 0.1 ~ 4.7 | 0.1 ~ 10 | 0.36 ~ 8.2 | 0.22 ~ 10 | 0.56 ~ 2.2 | 0.36~6.8 |
| 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% (-30% for some values) | | | | | | | | |
| Inductance Tolerance | ±20% | | | | | | | | |
| Resistance to Solder Heat | 260°C ±5°C for 10 seconds | | | | | | | | |

DIMENSIONS (mm)

| Series | A | B | C | D ₁ | D ₂ | E ₁ | E ₂ | t | F | G | H |
|----------|---|-----------|-----------|----------------|----------------|----------------|----------------|-----------|-----|-----|-----|
| NPIM42C | 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 | 2.2 | 5.2 | 2.5 |
| NPIM53C | 4.85 ± 0.35 | 4.7 ± 0.2 | 2.8 ± 0.2 | 1.0 ± 0.3 | 1.5 ± 0.1 | 1.5 ± 0.3 | 2.2 ± 0.2 | 0 ~ +0.15 | 3.0 | 7.0 | 2.5 |
| NPIM72C | 7.05 ± 0.35 | 6.6 ± 0.2 | 1.6 ± 0.2 | 1.6 ± 0.2 | 2.0 ± 0.1 | 3.0 ± 0.3 | 3.6 ± 0.2 | 0 ~ +0.15 | 3.7 | 8.4 | 3.5 |
| NPIM73C | 6.95 ± 0.35 | 6.6 ± 0.2 | 2.2 ± 0.2 | 1.6 ± 0.3 | 2.0 ± 0.1 | 3.0 ± 0.3 | 3.6 ± 0.2 | 0 ~ +0.15 | 3.7 | 8.4 | 3.5 |
| NPIM74C | 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 | 3.7 | 8.4 | 3.5 |
| NPIM103C | See Individual Case Sizes Tables for These Case Sizes | | | | | | | | | | |
| NPIM104C | | | | | | | | | | | |
| NPIM143C | | | | | | | | | | | |
| NPIM145C | | | | | | | | | | | |

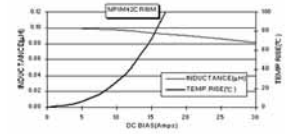


LAND PATTERN



| Part Number | STANDARD VALUES - CASE SIZE 42 (4.15 X 4.0 X 1.8mm) | | | | |
|----------------|--|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| 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 | |
| NPIM42C1R5MTRF | 1.5 | 46 | 4.0 | 6.0* | |
| NPIM42C2R2MTRF | 2.2 | 58 | 3.0 | 5.0* | |

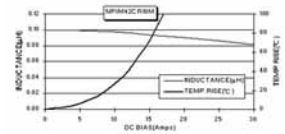
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat} (*-30%)



[Link to NPIM42 Performance Curves](#)

| Part Number | STANDARD VALUES - CASE SIZE 53 (4.85 X 4.7 X 2.8mm) | | | | |
|----------------|---|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM53CR68MTRF | 0.68 | 12 | 8.5 | 14 | 100KHz |
| NPIM53C1R0MTRF | 1.0 | 14 | 7 | 11 | |
| NPIM53C1R2MTRF | 1.2 | 16 | 6.5 | 11 | |
| NPIM53C1R5MTRF | 1.5 | 20 | 6.0 | 10 | |
| NPIM53C2R2MTRF | 2.2 | 35 | 5.5 | 9.0 | |
| NPIM53C3R3MTRF | 3.3 | 38 | 5.0 | 7.0 | |

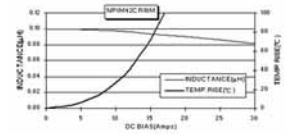
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat}.



[Link to NPIM53 Performance Curves](#)

| Part Number | STANDARD VALUES - CASE SIZE 72 (7.05 X 6.6 X 1.6mm) | | | | |
|----------------|---|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM72CR10MTRF | 0.1 | 2.5 | 18 | 45 | 100KHz |
| NPIM72CR33MTRF | 0.33 | 6.8 | 12 | 22 | |
| NPIM72CR47MTRF | 0.47 | 8.4 | 11 | 18 | |
| NPIM72CR68MTRF | 0.68 | 12.7 | 9.0 | 17 | |
| NPIM72C1R0MTRF | 1.0 | 17 | 7.0 | 14 | |
| NPIM72C2R0MTRF | 2.0 | 32 | 6.0 | 13 | |
| NPIM72C2R2MTRF | 2.2 | 35 | 6.0 | 13 | |
| NPIM72C4R7MTRF | 4.7 | 70 | 3.5 | 5.0 | |

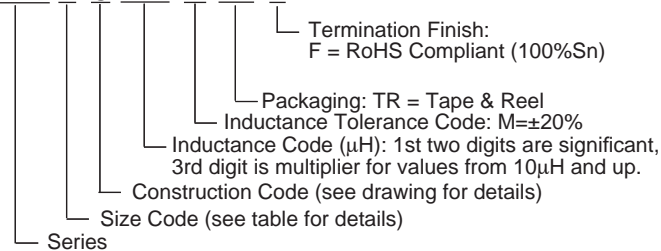
Maximum +40°C temperature rise at I_{rms}. Typical -30% inductance change at I_{sat}.



[Link to NPIM72 Performance Curves](#)

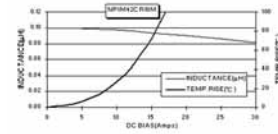
PART NUMBER SYSTEM

NPIM -- C 5R6 M TR E



| Part Number | STANDARD VALUES - CASE SIZE 73 (6.95 X 6.6 X 2.2mm) | | | | |
|----------------|---|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM73CR10MTRF | 0.1 | 1.7 | 30 | 70 | 100KHz |
| NPIM73CR20MTRF | 0.20 | 2.8 | 25 | 50 | |
| NPIM73CR47MTRF | 0.47 | 5.5 | 15 | 22 | |
| NPIM73C1R0MTRF | 1.0 | 13.5 | 9.0 | 16 | |
| NPIM73C2R2MTRF | 2.2 | 28 | 7.0 | 14 | |
| NPIM73C3R3MTRF | 3.3 | 39 | 5.5 | 13 | |
| NPIM73C4R7MTRF | 4.7 | 50 | 5.0 | 10 | |

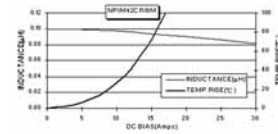
Maximum +40°C temperature rise at I_{rms}. Typical -30% inductance change at I_{sat}.



[Link to NPIM73 Performance Curves](#)

| Part Number | STANDARD VALUES - CASE SIZE 74 (6.95 X 6.6 X 2.8mm) | | | | |
|----------------|---|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM74CR10MTRF | 0.1 | 1.7 | 32.5 | 60 | 100KHz |
| NPIM74CR20MTRF | 0.2 | 3.0 | 24 | 41 | |
| NPIM74CR22MTRF | 0.22 | 2.8 | 23 | 40 | |
| NPIM74CR33MTRF | 0.33 | 3.9 | 20 | 30 | |
| NPIM74CR47MTRF | 0.47 | 4.2 | 17.5 | 26 | |
| NPIM74CR68MTRF | 0.68 | 5.5 | 15.5 | 25 | |
| NPIM74CR82MTRF | 0.82 | 8.0 | 13 | 24 | |
| NPIM74C1R0MTRF | 1.0 | 10 | 11 | 22 | |
| NPIM74C1R2MTRF | 1.2 | 12 | 10 | 20 | |
| NPIM74C1R5MTRF | 1.5 | 15 | 9.0 | 18 | |
| NPIM74C2R2MTRF | 2.2 | 20 | 8.0 | 14 | |
| NPIM74C3R3MTRF | 3.3 | 30 | 6.0 | 13.5 | |
| NPIM74C4R7MTRF | 4.7 | 40 | 5.5 | 10 | |
| NPIM74C6R8MTRF | 6.8 | 60 | 4.5 | 8.0 | |
| NPIM74C8R2MTRF | 8.2 | 60 | 4.5 | 6.0* | |
| NPIM74C100MTRF | 10 | 68 | 4.0 | 5.5* | |

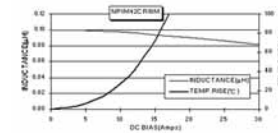
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat} (*-30%)



[Link to NPIM74 Performance Curves](#)

| Part Number | STANDARD VALUES - CASE SIZE 103 | | | | |
|-----------------|---------------------------------|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM103CR36MTRF | 0.36 | 1.6 | 23 | 28 | 100KHz |
| NPIM103CR47MTRF | 0.47 | 2.5 | 20 | 26 | |
| NPIM103C1R0MTRF | 1.0 | 3.0 | 20 | 27 | |
| NPIM103C8R2MTRF | 8.2 | 45 | 5.0 | 8.5 | |

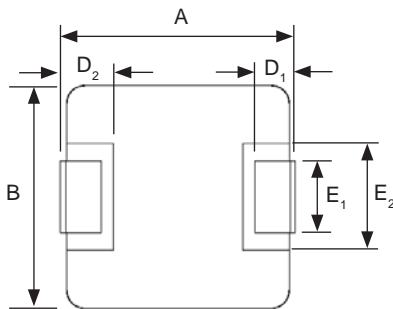
Maximum +40°C temperature rise at I_{rms}. Typical -30% inductance change at I_{sat}.



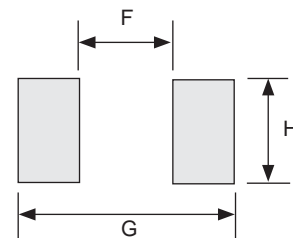
[Link to NPIM103 Performance Curves](#)

NPIM103S CASE AND LAND PATTERN DIMENSIONS

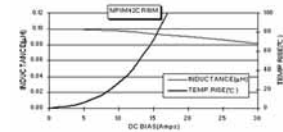
| Series | Value | A | B | C | D ₁ | D ₂ | E ₁ | E ₂ | t | F | G | H |
|----------|----------|--------------|------------|-----------|----------------|----------------|----------------|----------------|-----------|-----|------|-----|
| NPIM103C | R36, R47 | 11.15 ± 0.35 | 10.0 ± 0.3 | 2.8 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 5.0 ± 0.2 | 0 ~ +0.15 | 5.4 | 13.6 | 4.1 |
| | 1R0 | 11.15 ± 0.35 | 10.0 ± 0.3 | 3.3 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 5.0 ± 0.2 | 0 ~ +0.15 | 5.4 | 13.6 | 4.1 |
| | 8R2 | 10.85 ± 0.35 | 10.0 ± 0.3 | 2.8 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 5.0 ± 0.2 | 0 ~ +0.15 | 5.4 | 13.6 | 4.1 |



LAND PATTERN



| Part Number | STANDARD VALUES - CASE SIZE 104 | | | | Test Frequency |
|-----------------|---------------------------------|-----------------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μ H) | DC Resistance ($m\Omega$) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | |
| NPIM104CR22MTRF | 0.22 | 1.0 | 35 | 60 | 100KHz |
| NPIM104CR36MTRF | 0.36 | 1.2 | 30 | 50* | |
| NPIM104CR56MTRF | 0.56 | 1.8 | 25 | 33* | |
| NPIM104CR68MTRF | 0.68 | 2.7 | 22 | 39 | |
| NPIM104CR88MTRF | 0.88 | 3.0 | 20 | 38 | |
| NPIM104C1R0MTRF | 1.0 | 3.3 | 18 | 28* | |
| NPIM104C1R5MTRF | 1.5 | 4.2 | 16 | 33 | |
| NPIM104C2R2MTRF | 2.2 | 7.0 | 12 | 27 | |
| NPIM104C3R3MTRF | 3.3 | 11.8 | 10 | 16* | |
| NPIM104C4R7MTRF | 4.7 | 15 | 10 | 13* | |
| NPIM104C6R8MTRF | 6.8 | 24 | 7.5 | 9.5* | |
| NPIM104C100MTRF | 10 | 30 | 6.0 | 6.0* | |

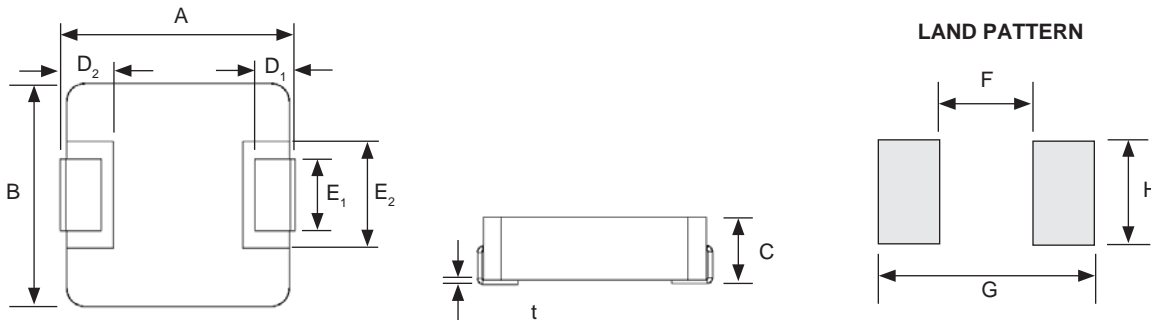


[Link to NPIM104 Performance Curves](#)

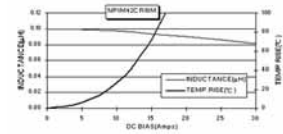
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat} (*-30%)

NPIM104S CASE AND LAND PATTERN DIMENSIONS

| Series | Value | A | B | C | D ₁ | D ₂ | E ₁ | E ₂ | t | F | G | H |
|----------|-----------------------------------|--------------|------------|-----------|----------------|----------------|----------------|----------------|-----------|-----|------|-----|
| NPIM104C | R22, R36, R56, R68, R88, R10, 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 | 5.4 | 13.6 | 4.1 |
| | 2R2, 3R3, 100 | 10.85 ± 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 | 5.4 | 13.6 | 4.1 |
| | 4R7, 6R8 | 10.85 ± 0.35 | 10.0 ± 0.3 | 4.3 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 5.0 ± 0.2 | 0 ~ +0.15 | 5.4 | 13.6 | 4.1 |



| Part Number | STANDARD VALUES - CASE SIZE 143 | | | | |
|-----------------|---------------------------------|--------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM143CR56MTRF | 0.56 | 2.20 | 29 | 51 | 100KHz |
| NPIM143CR68MTRF | 0.68 | 2.50 | 28 | 49 | |
| NPIM143C1R0MTRF | 1.0 | 3.50 | 24 | 40 | |
| NPIM143C2R2MTRF | 2.2 | 8.00 | 16 | 29 | |

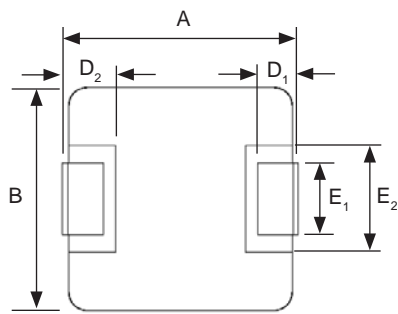


[Link to NPIM143 Performance Curves](#)

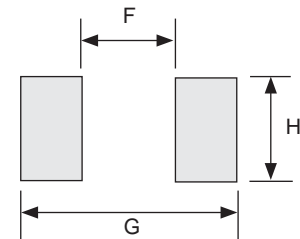
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat}.

NPIM143S CASE AND LAND PATTERN DIMENSIONS

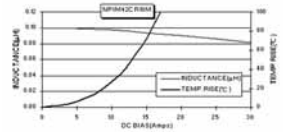
| Series | Value | A | B | C | D ₁ | D ₂ | E ₁ | E ₂ | t | F | G | H |
|----------|-----------|--------------|------------|-----------|----------------|----------------|----------------|----------------|-----------|-----|------|-----|
| NPIM143C | R56 ~ R68 | 13.45 ± 0.35 | 12.6 ± 0.2 | 3.3 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 4.0 ± 0.5 | 6.0 ± 0.2 | 0 ~ +0.15 | 8.0 | 14.5 | 5.0 |
| | 1R0 ~ 2R2 | 13.45 ± 0.35 | 12.6 ± 0.2 | 3.3 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 6.0 ± 0.2 | 0 ~ +0.15 | 8.0 | 14.5 | 5.0 |



LAND PATTERN



| Part Number | STANDARD VALUES - CASE SIZE 145 | | | | |
|-----------------|---------------------------------|-------------------------|------------------------------------|------------------------------------|----------------|
| | Inductance Value (μH) | DC Resistance max. (mΩ) | DC Current I _{rms} (Amps) | DC Current I _{sat} (Amps) | Test Frequency |
| NPIM145CR36MTRF | 0.36 | 1.10 | 41 | 75 | 100KHz |
| NPIM145CR47MTRF | 0.47 | 1.30 | 38 | 65 | |
| NPIM145CR50MTRF | 0.50 | 1.50 | 36 | 55 | |
| NPIM145CR56MTRF | 0.56 | 1.50 | 36 | 55 | |
| NPIM145CR62MTRF | 0.62 | 1.70 | 34 | 54 | |
| NPIM145CR68MTRF | 0.68 | 1.70 | 34 | 54 | |
| NPIM145C1R0MTRF | 1.0 | 2.50 | 29 | 50 | |
| NPIM145C1R5MTRF | 1.5 | 4.10 | 23 | 48 | |
| NPIM145C2R2MTRF | 2.2 | 5.50 | 20 | 32 | |
| NPIM145C3R3MTRF | 3.3 | 9.20 | 15 | 32 | |
| NPIM145C4R7MTRF | 4.7 | 15.0 | 12 | 27 | |
| NPIM145C6R8MTRF | 6.8 | 18.5 | 11 | 21 | |



[Link to NPIM145 Performance Curves](#)

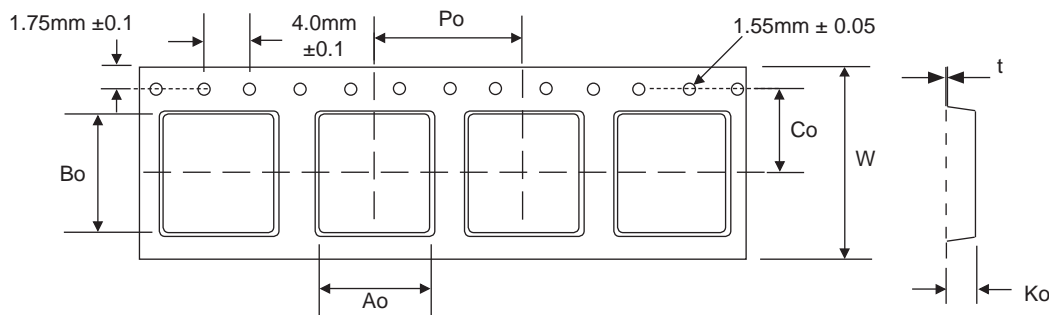
Maximum +40°C temperature rise at I_{rms}. Typical -20% inductance change at I_{sat}.

NPIM145C CASE AND LAND PATTERN DIMENSIONS

| Series | Value | A | B | C | D ₁ | D ₂ | E ₁ | E ₂ | t | F | G | H |
|----------|-----------------------------------|--------------|------------|-----------|----------------|----------------|----------------|----------------|-----------|-----|------|-----|
| 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 | 8.0 | 14.5 | 5.0 |
| | R47, R50, R56, R62, R68, 1R0, 1R5 | 13.45 ± 0.35 | 12.6 ± 0.2 | 4.8 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 4.0 ± 0.5 | 6.0 ± 0.2 | 0 ~ +0.15 | 8.0 | 14.5 | 5.0 |
| | 2R2, 3R3, 4R7, 6R8 | 13.45 ± 0.35 | 12.6 ± 0.2 | 4.8 ± 0.2 | 2.0 ± 0.5 | 2.5 ± 0.1 | 3.0 ± 0.5 | 6.0 ± 0.2 | 0 ~ +0.15 | 8.0 | 14.5 | 5.0 |

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 |
| NPIM53C | All | 5.4 ± 0.10 | 5.2 ± 0.10 | 7.5 ± 0.10 | 12.0 ± 0.10 | 3.6 ± 0.15 | 0.35 ± 0.05 | 16.0 ± 0.30 |
| NPIM72C | All | 7.2 ± 0.10 | 7.5 ± 0.10 | 7.5 ± 0.10 | 12.0 ± 0.10 | 2.3 ± 0.10 | 0.30 ± 0.10 | 16.0 ± 0.30 |
| NPIM73C | 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 |
| 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 |
| NPIM103C | 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 |
| NPIM104C | 3.8mm | 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 |
| | 4.3mm | | | | | 4.5 ± 0.10 | | |
| 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 | 1,000 |
| NPIM53C | 16.0 ± 0.5 | 2.0 ± 0.2 | 1,000 |
| NPIM72C | 16.0 ± 0.5 | 2.0 ± 0.2 | 1,000 |
| NPIM73C | 16.0 ± 0.5 | 2.0 ± 0.2 | 1,000 |
| NPIM74C | 16.0 ± 0.5 | 2.0 ± 0.2 | 1,000 |
| NPIM103C | 24.5 ± 0.5 | 2.0 ± 0.2 | 500 |
| 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 |

