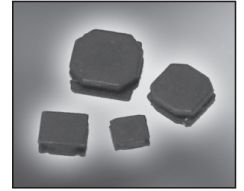


### FEATURES

- SHIELDED POWER INDUCTOR
- AUTOMATIC ASSEMBLY
- ROBUST CONSTRUCTION
- HIGH EFFICIENCY
- HIGHER CURRENT RATINGS COMPARED TO NPIS\_Lx
- ULTRA LOW PROFILE (1.0 ~ 1.2mm HEIGHTS)
- SURFACE MOUNTABLE CONSTRUCTION
- TAPED AND REELED FOR AUTOMATIC INSERTION

**RoHS  
Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



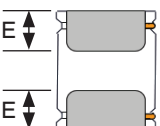
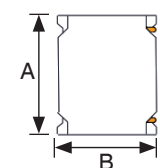
### CHARACTERISTICS

| Case Size                             | NPIM26L                                                  | NPIM20L     | NPIM21L     | NPIM31L     |
|---------------------------------------|----------------------------------------------------------|-------------|-------------|-------------|
| Inductance Range                      | 0.24 ~ 10μH                                              | 0.24 ~ 33μH | 0.24 ~ 10μH | 0.47 ~ 10μH |
| Case Size                             | NPIM32L                                                  | NPIM40L     | NPIM41L     |             |
| Inductance Range                      | 0.33 ~ 10μH                                              | 0.33 ~ 10μH | 0.33 ~ 10μH |             |
| Ambient Operating Temperature Range   | -40°C ~ +125°C (including self-heating)                  |             |             |             |
| Temperature Rise at I <sub>rms</sub>  | Maximum +40°C Temperature Rise                           |             |             |             |
| Inductance Change at I <sub>sat</sub> | Maximum -30% Inductance Drop From Initial Measured Value |             |             |             |
| Inductance Tolerance                  | ±20% (M)                                                 |             |             |             |
| Resistance to Solder Heat             | +260°C for 10 seconds                                    |             |             |             |

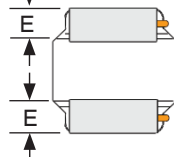
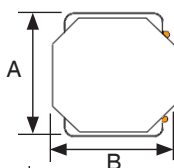
### DIMENSIONS (mm)

| Series  | Component Dimensions |           |           |            | Land Pattern Dimensions |     |     |     |     |
|---------|----------------------|-----------|-----------|------------|-------------------------|-----|-----|-----|-----|
|         | A                    | B         | C         | E          | F                       | G   | g'  | H   | I   |
| NPIM26L | 2.0 ± 0.3            | 1.6 ± 0.3 | 1.0 ± 0.1 | 0.60 ± 0.2 | 0.6                     | 2.3 | /   | 1.7 | /   |
| NPIM20L | 2.5 ± 0.3            | 2.0 ± 0.3 | 1.0 ± 0.1 | 0.85 ± 0.2 | 0.8                     | 2.6 | /   | 2.1 | /   |
| NPIM21L | 2.5 ± 0.3            | 2.0 ± 0.3 | 1.2 ± 0.1 | 0.85 ± 0.2 | 0.8                     | 2.6 | /   | 2.1 | /   |
| NPIM31L | 3.0 ± 0.2            | 3.0 ± 0.2 | 1.0 ± 0.1 | 0.90 ± 0.2 | /                       | /   | 3.0 | 2.7 | 0.8 |
| NPIM32L | 3.0 ± 0.2            | 3.0 ± 0.2 | 1.2 ± 0.1 | 0.90 ± 0.2 | /                       | /   | 3.0 | 2.7 | 0.8 |
| NPIM40L | 4.0 ± 0.2            | 4.0 ± 0.2 | 1.0 ± 0.1 | 1.10 ± 0.2 | /                       | /   | 4.0 | 3.7 | 1.2 |
| NPIM41L | 4.0 ± 0.2            | 4.0 ± 0.2 | 1.2 ± 0.1 | 1.10 ± 0.2 | /                       | /   | 4.0 | 3.7 | 1.2 |

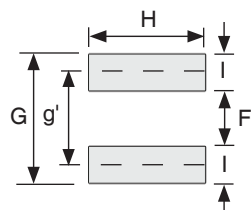
NPIM26L, NPIM20L  
NPIM21L



NPIM31L, NPIM32L  
NPIM40L, NPIM41L



All Sizes



REFLOW SOLDERING  
LAND PATTERN (ALL SIZES)

### PART NUMBER SYSTEM

NPIM 21 L 4R7 M TR F

RoHS Compliant

Packaging: TR = Tape & Reel

Inductance Tolerance Code: M=±20%

Inductance Code (μH): 1st two digits are significant, 3rd digit is multiplier.

Construction Code (see drawing for details)

Size Code (see table for details)

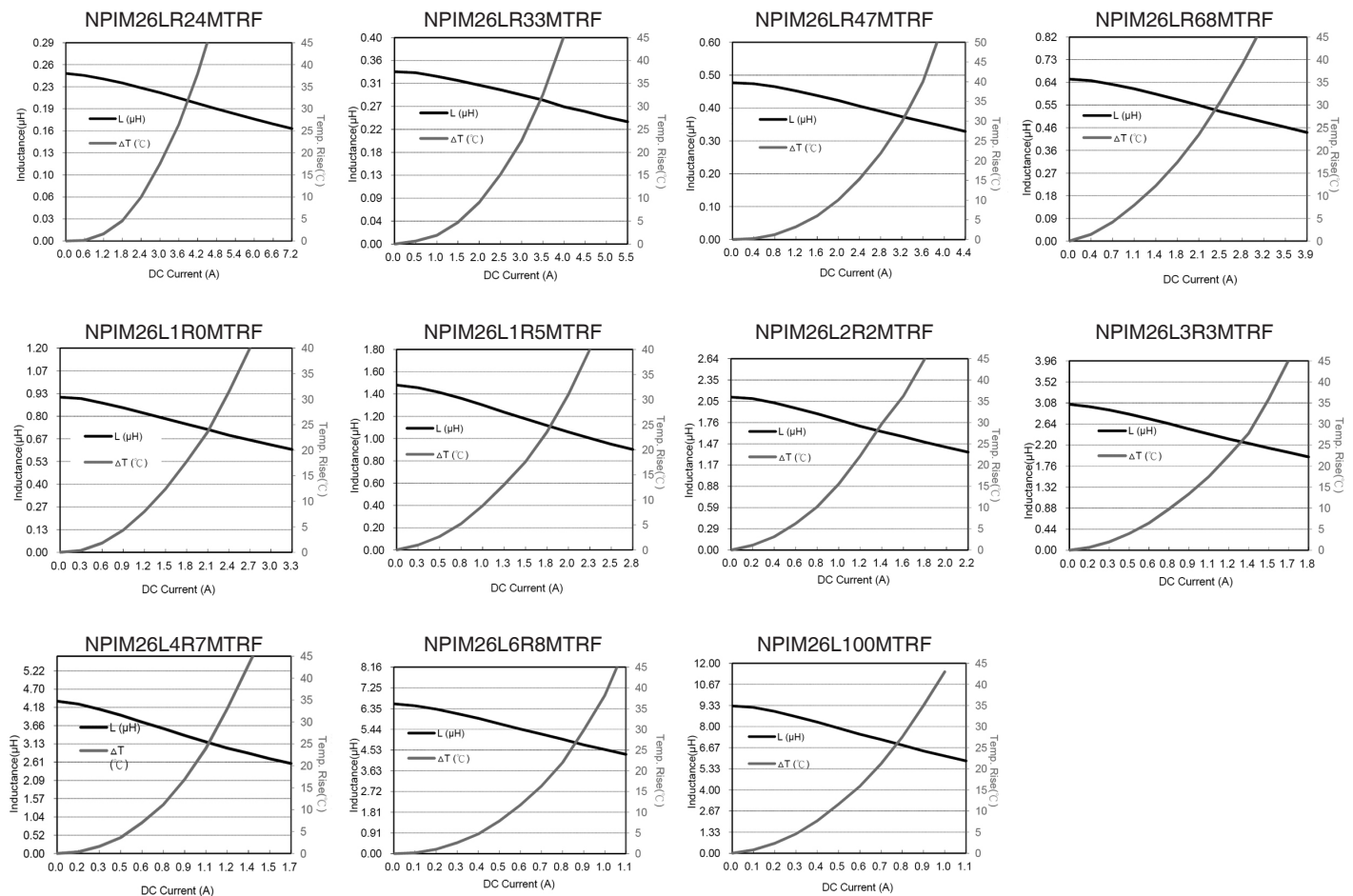
Series



## NPIM26L Size

| Series         | Inductance<br>( $\mu\text{H}$ ) | Test Conditions | Standard Values - Case Size 26 (2.0x1.6x1.0mm) |       |                |      |               |      |
|----------------|---------------------------------|-----------------|------------------------------------------------|-------|----------------|------|---------------|------|
|                |                                 |                 | DCR<br>( $\Omega$ )                            |       | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                                 |                 | Max.                                           | Typ.  | Max.           | Typ. | Max.          | Typ. |
| NPIM26LR24MTRF | $0.24 \pm 20\%$                 | 1MHz, 1V        | 0.034                                          | 0.028 | 5.60           | 6.60 | 4.00          | 4.50 |
| NPIM26LR33MTRF | $0.33 \pm 20\%$                 |                 | 0.040                                          | 0.033 | 4.80           | 5.70 | 3.50          | 3.80 |
| NPIM26LR47MTRF | $0.47 \pm 20\%$                 |                 | 0.048                                          | 0.040 | 3.60           | 4.30 | 3.40          | 3.60 |
| NPIM26LR68MTRF | $0.68 \pm 20\%$                 |                 | 0.056                                          | 0.047 | 3.00           | 3.60 | 2.60          | 2.85 |
| NPIM26L1R0MTRF | $1.0 \pm 20\%$                  |                 | 0.075                                          | 0.063 | 2.40           | 3.00 | 2.50          | 2.70 |
| NPIM26L1R5MTRF | $1.5 \pm 20\%$                  |                 | 0.120                                          | 0.100 | 1.80           | 2.15 | 2.15          | 2.25 |
| NPIM26L2R2MTRF | $2.2 \pm 20\%$                  |                 | 0.160                                          | 0.135 | 1.55           | 1.85 | 1.60          | 1.75 |
| NPIM26L3R3MTRF | $3.3 \pm 20\%$                  |                 | 0.230                                          | 0.193 | 1.25           | 1.50 | 1.50          | 1.70 |
| NPIM26L4R7MTRF | $4.7 \pm 20\%$                  |                 | 0.340                                          | 0.280 | 1.00           | 1.20 | 1.25          | 1.30 |
| NPIM26L6R8MTRF | $6.8 \pm 20\%$                  |                 | 0.540                                          | 0.450 | 0.84           | 1.00 | 0.97          | 1.02 |
| NPIM26L100MTRF | $10 \pm 20\%$                   |                 | 0.685                                          | 0.570 | 0.75           | 0.90 | 0.90          | 0.95 |

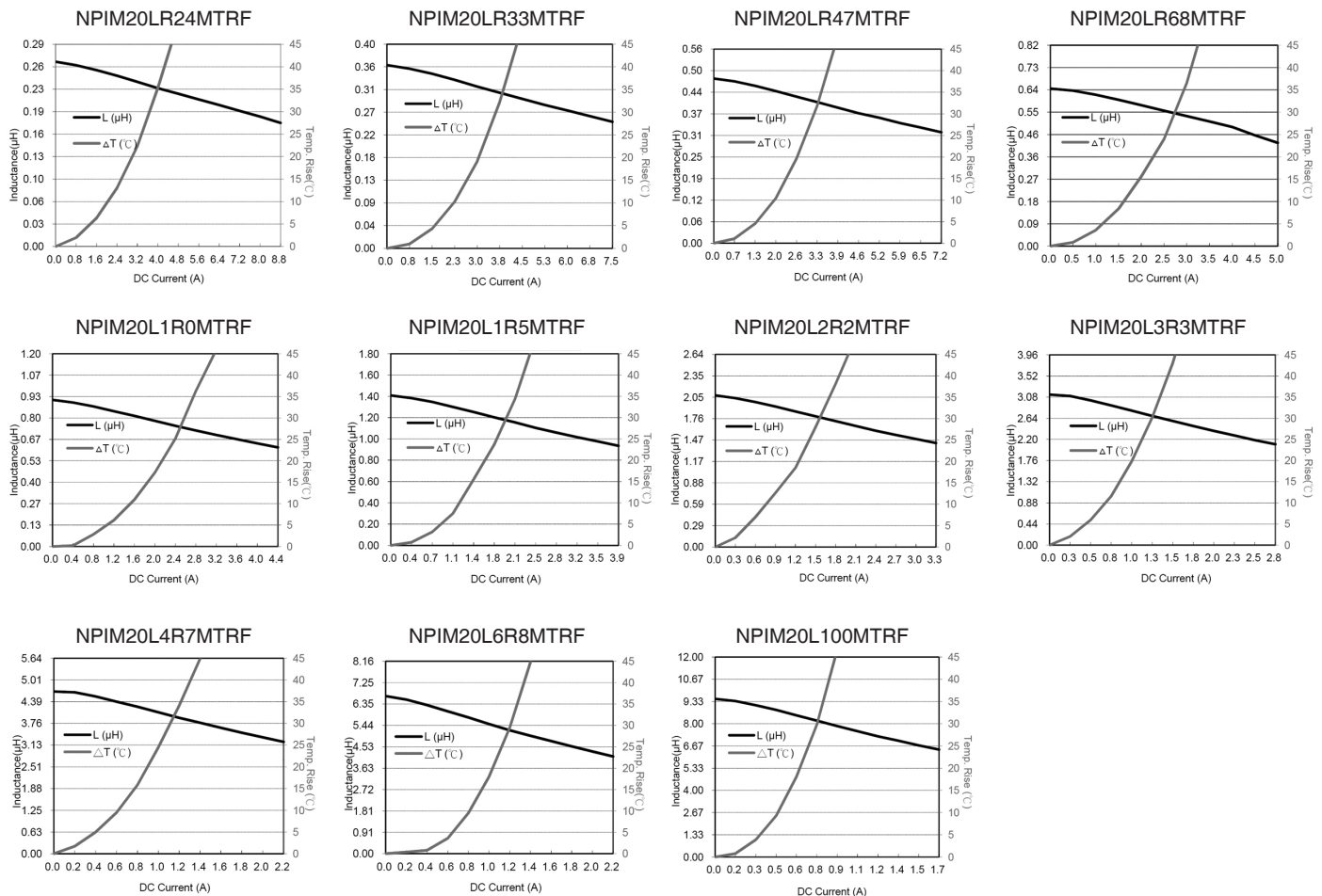
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



## NPIM20L Size

| Series         | Inductance<br>( $\mu\text{H}$ ) | Test Conditions | Standard Values - Case Size 20 (2.5x2.0x1.0mm) |        |                |      |               |      |
|----------------|---------------------------------|-----------------|------------------------------------------------|--------|----------------|------|---------------|------|
|                |                                 |                 | DCR<br>( $\Omega$ )                            |        | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                                 |                 | Max.                                           | Typ.   | Max.           | Typ. | Max.          | Typ. |
| NPIM20LR24MTRF | $0.24 \pm 20\%$                 | 1MHz, 1V        | 0.0310                                         | 0.0265 | 6.80           | 8.10 | 4.10          | 4.30 |
| NPIM20LR33MTRF | $0.33 \pm 20\%$                 |                 | 0.0360                                         | 0.0300 | 6.10           | 7.30 | 3.60          | 4.10 |
| NPIM20LR47MTRF | $0.47 \pm 20\%$                 |                 | 0.0445                                         | 0.0370 | 5.50           | 6.60 | 3.10          | 3.60 |
| NPIM20LR68MTRF | $0.68 \pm 20\%$                 |                 | 0.0620                                         | 0.0520 | 4.05           | 4.40 | 2.70          | 3.10 |
| NPIM20L1R0MTRF | $1.0 \pm 20\%$                  |                 | 0.0800                                         | 0.0670 | 3.35           | 4.10 | 2.55          | 2.95 |
| NPIM20L1R5MTRF | $1.5 \pm 20\%$                  |                 | 0.1060                                         | 0.0880 | 2.85           | 3.45 | 1.95          | 2.25 |
| NPIM20L2R2MTRF | $2.2 \pm 20\%$                  |                 | 0.1500                                         | 0.1240 | 2.60           | 3.20 | 1.55          | 1.85 |
| NPIM20L3R3MTRF | $3.3 \pm 20\%$                  |                 | 0.2220                                         | 0.1850 | 2.10           | 2.50 | 1.25          | 1.45 |
| NPIM20L4R7MTRF | $4.7 \pm 20\%$                  |                 | 0.2900                                         | 0.2400 | 1.75           | 2.15 | 1.10          | 1.30 |
| NPIM20L6R8MTRF | $6.8 \pm 20\%$                  |                 | 0.4350                                         | 0.3600 | 1.40           | 1.70 | 0.96          | 1.15 |
| NPIM20L100MTRF | $10 \pm 20\%$                   |                 | 0.5300                                         | 0.4400 | 1.28           | 1.55 | 0.85          | 0.96 |

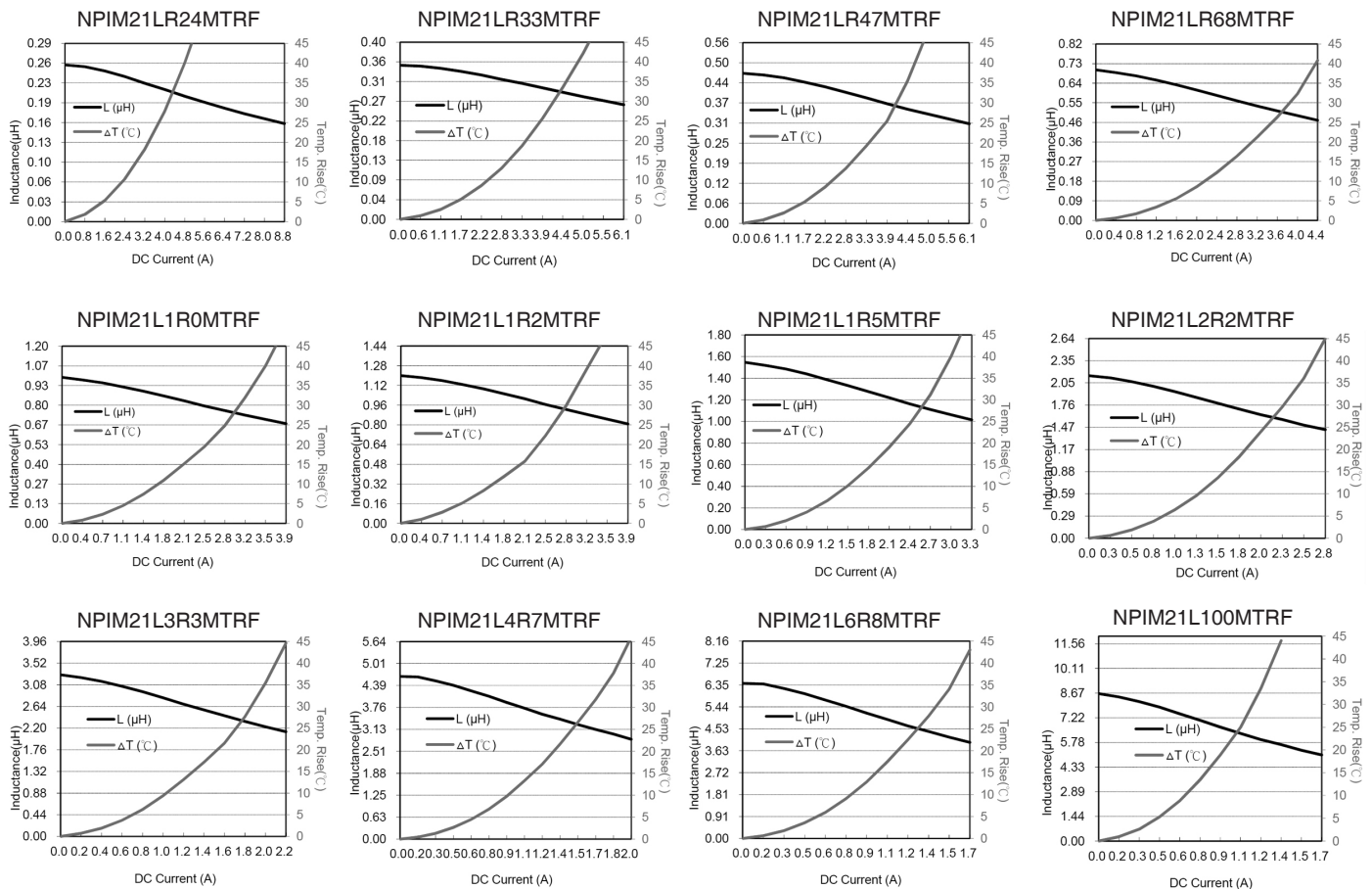
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



## NPIM21L Size

| Series         | Inductance<br>( $\mu$ H) | Test<br>Conditions | Standard Values - Case Size 21 (2.5×2.0×1.2mm) |        |                |      |               |      |
|----------------|--------------------------|--------------------|------------------------------------------------|--------|----------------|------|---------------|------|
|                |                          |                    | DCR<br>( $\Omega$ )                            |        | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                          |                    | Max.                                           | Typ.   | Max.           | Typ. | Max.          | Typ. |
| NPIM21LR24MTRF | 0.24 $\pm$ 20%           | 1MHz, 1V           | 0.0222                                         | 0.0185 | 5.90           | 7.10 | 4.40          | 4.80 |
| NPIM21LR33MTRF | 0.33 $\pm$ 20%           |                    | 0.0300                                         | 0.0250 | 5.80           | 7.00 | 4.30          | 4.70 |
| NPIM21LR47MTRF | 0.47 $\pm$ 20%           |                    | 0.0345                                         | 0.0285 | 4.60           | 5.50 | 4.20          | 4.60 |
| NPIM21LR68MTRF | 0.68 $\pm$ 20%           |                    | 0.0402                                         | 0.0335 | 3.30           | 4.00 | 3.40          | 3.90 |
| NPIM21L1R0MTRF | 1.0 $\pm$ 20%            |                    | 0.0555                                         | 0.0465 | 3.00           | 3.70 | 3.20          | 3.50 |
| NPIM21L1R2MTRF | 1.2 $\pm$ 20%            |                    | 0.0685                                         | 0.0570 | 2.95           | 3.55 | 3.15          | 3.40 |
| NPIM21L1R5MTRF | 1.5 $\pm$ 20%            |                    | 0.0800                                         | 0.0665 | 2.40           | 2.90 | 2.80          | 3.00 |
| NPIM21L2R2MTRF | 2.2 $\pm$ 20%            |                    | 0.1110                                         | 0.0930 | 2.10           | 2.50 | 2.30          | 2.60 |
| NPIM21L3R3MTRF | 3.3 $\pm$ 20%            |                    | 0.1540                                         | 0.1280 | 1.60           | 1.90 | 2.00          | 2.20 |
| NPIM21L4R7MTRF | 4.7 $\pm$ 20%            |                    | 0.2300                                         | 0.1900 | 1.30           | 1.60 | 1.70          | 1.85 |
| NPIM21L6R8MTRF | 6.8 $\pm$ 20%            |                    | 0.2650                                         | 0.2200 | 1.10           | 1.35 | 1.50          | 1.60 |
| NPIM21L100MTRF | 10 $\pm$ 20%             |                    | 0.4150                                         | 0.3450 | 1.00           | 1.20 | 1.20          | 1.30 |

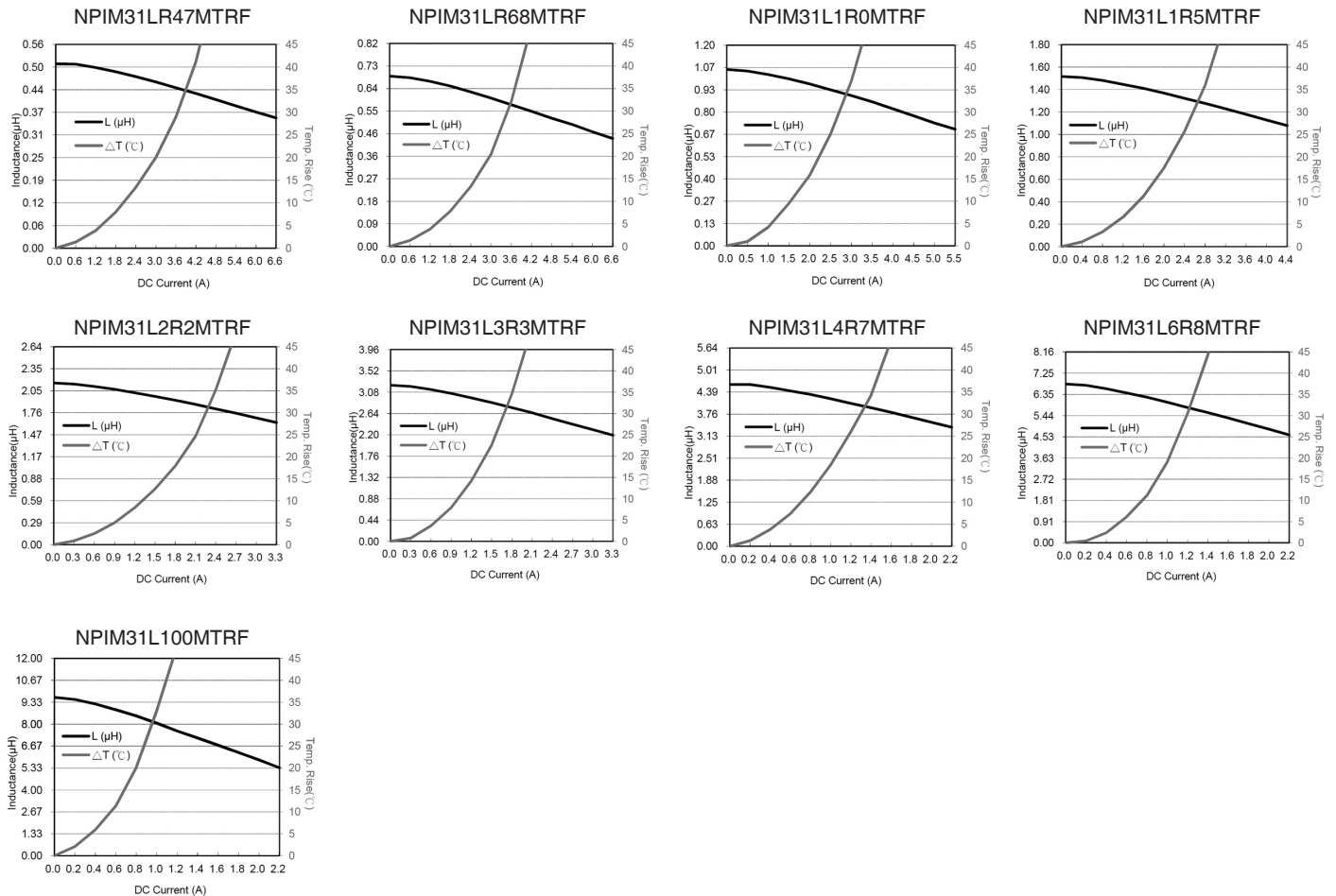
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



## NPIM31L Size

| Series         | Inductance<br>( $\mu\text{H}$ ) | Test<br>Conditions | Standard Values - Case Size 31 (3.0x3.0x1.0mm) |       |                |      |               |      |
|----------------|---------------------------------|--------------------|------------------------------------------------|-------|----------------|------|---------------|------|
|                |                                 |                    | DCR<br>( $\Omega$ )                            |       | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                                 |                    | Max.                                           | Typ.  | Max.           | Typ. | Max.          | Typ. |
| NPIM31LR47MTRF | $0.47 \pm 20\%$                 | 1MHz, 1V           | 0.038                                          | 0.031 | 5.7            | 6.7  | 3.60          | 4.10 |
| NPIM31LR68MTRF | $0.68 \pm 20\%$                 |                    | 0.053                                          | 0.044 | 4.8            | 5.7  | 3.40          | 3.90 |
| NPIM31L1R0MTRF | $1.0 \pm 20\%$                  |                    | 0.068                                          | 0.057 | 4.5            | 5.2  | 2.70          | 3.10 |
| NPIM31L1R5MTRF | $1.5 \pm 20\%$                  |                    | 0.091                                          | 0.076 | 3.9            | 4.5  | 2.60          | 2.90 |
| NPIM31L2R2MTRF | $2.2 \pm 20\%$                  |                    | 0.115                                          | 0.096 | 3.4            | 3.9  | 2.20          | 2.50 |
| NPIM31L3R3MTRF | $3.3 \pm 20\%$                  |                    | 0.175                                          | 0.145 | 2.7            | 3.2  | 1.70          | 1.90 |
| NPIM31L4R7MTRF | $4.7 \pm 20\%$                  |                    | 0.265                                          | 0.220 | 2.1            | 2.4  | 1.30          | 1.50 |
| NPIM31L6R8MTRF | $6.8 \pm 20\%$                  |                    | 0.384                                          | 0.320 | 1.8            | 2.1  | 1.15          | 1.35 |
| NPIM31L100MTRF | $10 \pm 20\%$                   |                    | 0.540                                          | 0.450 | 1.3            | 1.6  | 0.95          | 1.10 |

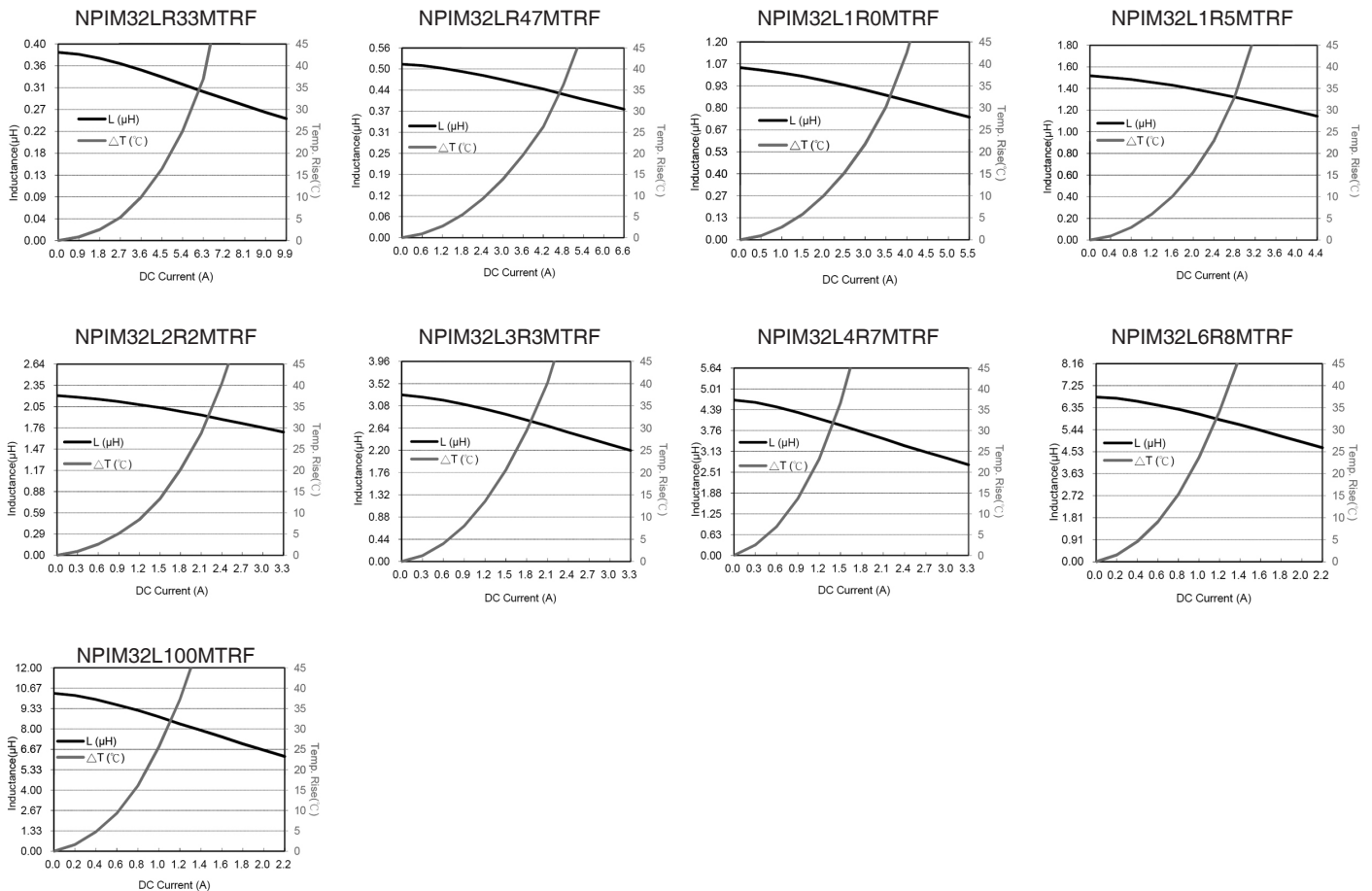
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



## NPIM32L Size

| Series         | Inductance<br>( $\mu\text{H}$ ) | Test<br>Conditions | Standard Values - Case Size 32 (3.0x3.0x1.2mm) |       |                |      |               |      |
|----------------|---------------------------------|--------------------|------------------------------------------------|-------|----------------|------|---------------|------|
|                |                                 |                    | DCR<br>( $\Omega$ )                            |       | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                                 |                    | Max.                                           | Typ.  | Max.           | Typ. | Max.          | Typ. |
| NPIM32LR33MTRF | $0.33 \pm 20\%$                 | 1MHz, 1V           | 0.0220                                         | 0.018 | 7.30           | 8.6  | 4.80          | 6.40 |
| NPIM32LR47MTRF | $0.47 \pm 20\%$                 |                    | 0.0255                                         | 0.021 | 6.40           | 7.5  | 4.20          | 5.00 |
| NPIM32L1R0MTRF | $1.0 \pm 20\%$                  |                    | 0.0495                                         | 0.041 | 4.90           | 5.7  | 3.20          | 3.90 |
| NPIM32L1R5MTRF | $1.5 \pm 20\%$                  |                    | 0.0740                                         | 0.063 | 4.50           | 5.1  | 2.60          | 3.00 |
| NPIM32L2R2MTRF | $2.2 \pm 20\%$                  |                    | 0.1100                                         | 0.091 | 3.50           | 4.1  | 2.20          | 2.40 |
| NPIM32L3R3MTRF | $3.3 \pm 20\%$                  |                    | 0.1500                                         | 0.125 | 2.60           | 3.0  | 1.80          | 2.10 |
| NPIM32L4R7MTRF | $4.7 \pm 20\%$                  |                    | 0.2050                                         | 0.170 | 2.10           | 2.5  | 1.35          | 1.55 |
| NPIM32L6R8MTRF | $6.8 \pm 20\%$                  |                    | 0.2900                                         | 0.240 | 1.85           | 2.2  | 1.10          | 1.30 |
| NPIM32L100MTRF | $10 \pm 20\%$                   |                    | 0.3450                                         | 0.290 | 1.45           | 1.7  | 1.05          | 1.25 |

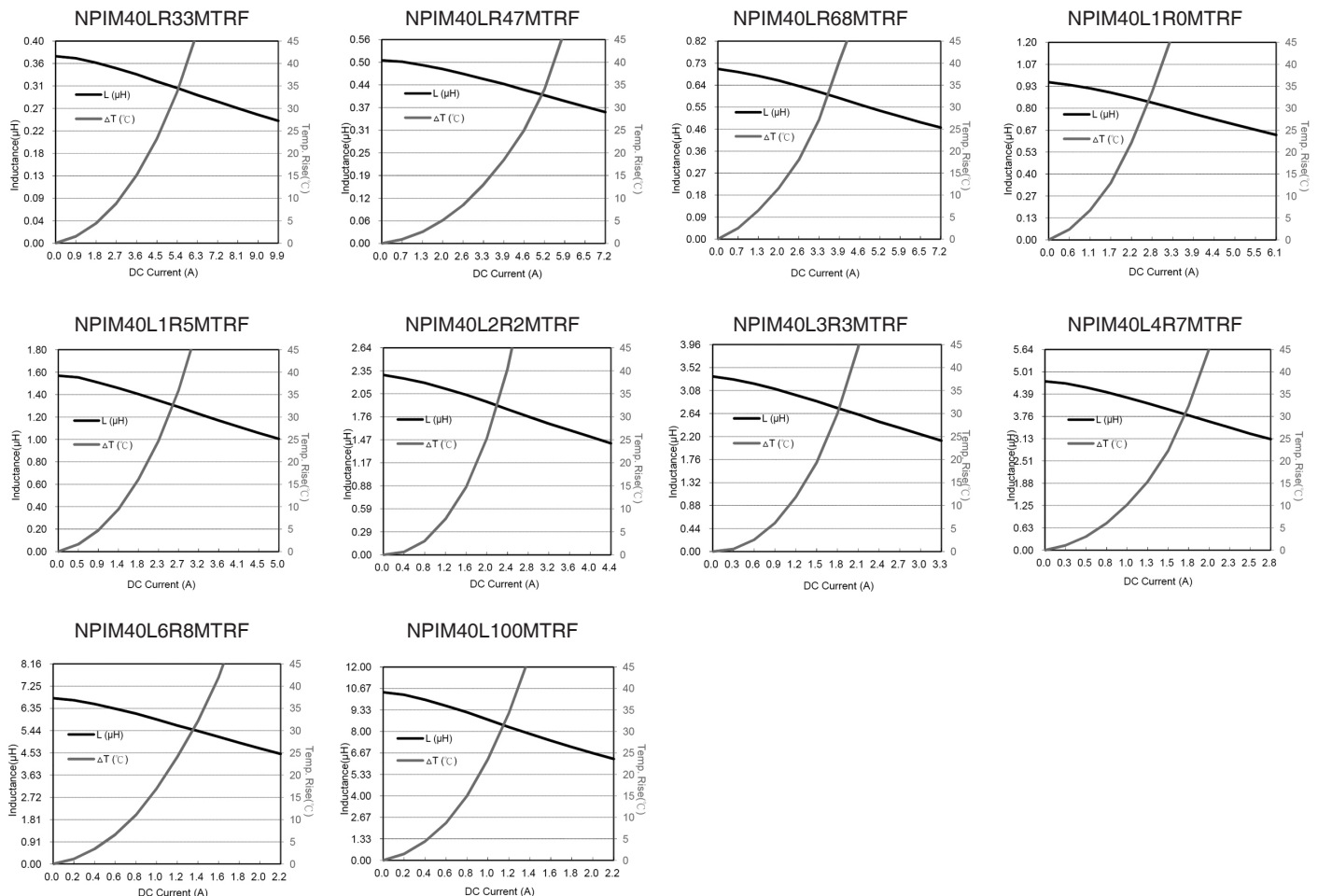
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



## NPIM40L Size

| Series         | Inductance<br>( $\mu\text{H}$ ) | Test<br>Conditions | Standard Values - Case Size 40 (4.0x4.0x1.0mm) |        |                |      |               |      |
|----------------|---------------------------------|--------------------|------------------------------------------------|--------|----------------|------|---------------|------|
|                |                                 |                    | DCR<br>( $\Omega$ )                            |        | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                                 |                    | Max.                                           | Typ.   | Max.           | Typ. | Max.          | Typ. |
| NPIM40LR33MTRF | $0.33 \pm 20\%$                 | 1MHz, 1V           | 0.0190                                         | 0.0155 | 7.40           | 8.70 | 5.00          | 5.80 |
| NPIM40LR47MTRF | $0.47 \pm 20\%$                 |                    | 0.0240                                         | 0.0200 | 6.40           | 7.90 | 4.70          | 5.50 |
| NPIM40LR68MTRF | $0.68 \pm 20\%$                 |                    | 0.0340                                         | 0.0280 | 5.30           | 6.30 | 3.40          | 3.90 |
| NPIM40L1R0MTRF | $1.0 \pm 20\%$                  |                    | 0.0540                                         | 0.0450 | 4.70           | 5.70 | 3.00          | 3.50 |
| NPIM40L1R5MTRF | $1.5 \pm 20\%$                  |                    | 0.0745                                         | 0.0620 | 3.55           | 4.20 | 2.70          | 3.10 |
| NPIM40L2R2MTRF | $2.2 \pm 20\%$                  |                    | 0.1080                                         | 0.0900 | 3.00           | 3.60 | 2.40          | 2.70 |
| NPIM40L3R3MTRF | $3.3 \pm 20\%$                  |                    | 0.1740                                         | 0.1450 | 2.40           | 2.80 | 1.80          | 2.00 |
| NPIM40L4R7MTRF | $4.7 \pm 20\%$                  |                    | 0.2050                                         | 0.1750 | 2.05           | 2.45 | 1.60          | 1.90 |
| NPIM40L6R8MTRF | $6.8 \pm 20\%$                  |                    | 0.2800                                         | 0.2300 | 1.70           | 2.00 | 1.35          | 1.55 |
| NPIM40L100MTRF | $10 \pm 20\%$                   |                    | 0.3900                                         | 0.3250 | 1.40           | 1.70 | 1.10          | 1.30 |

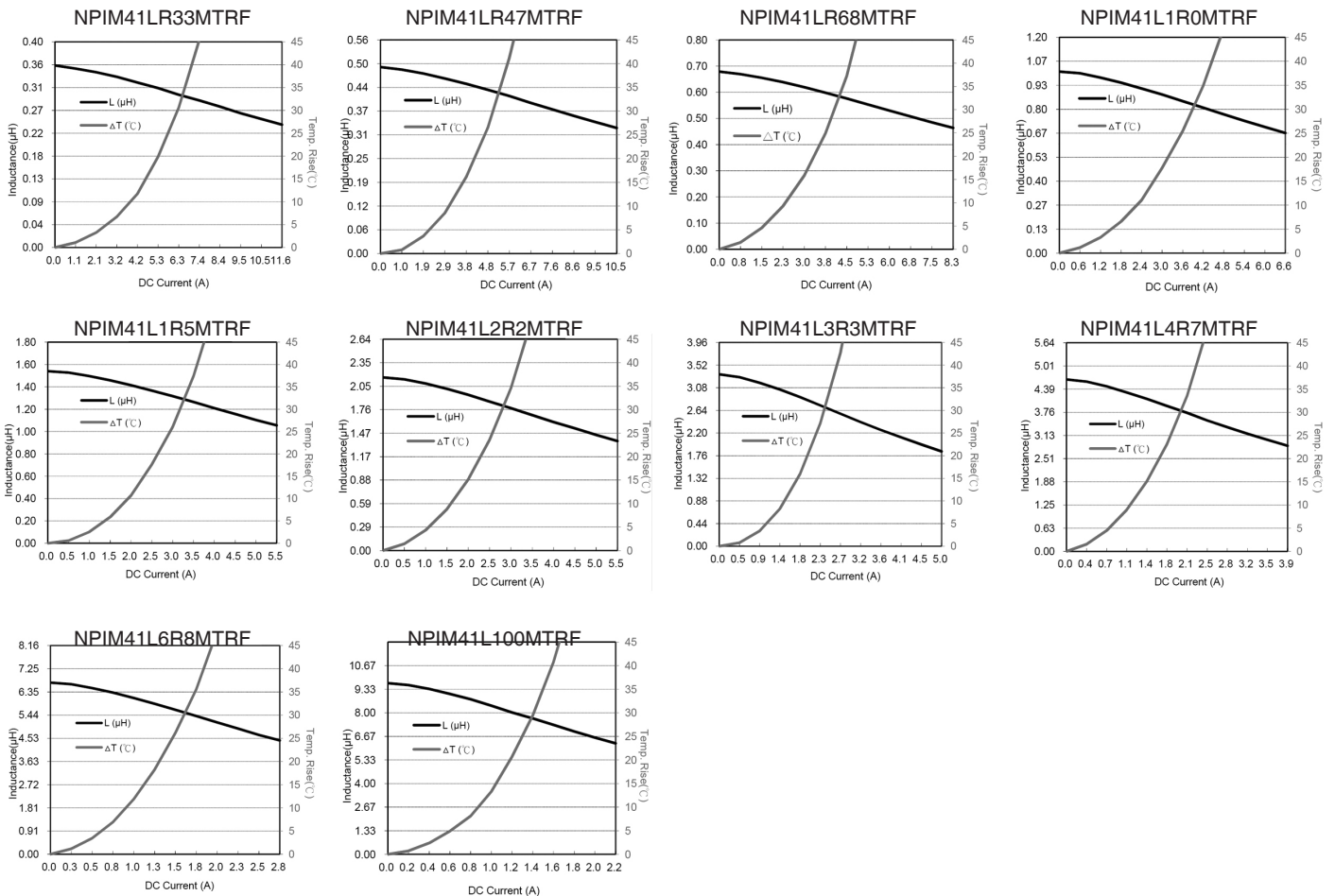
Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



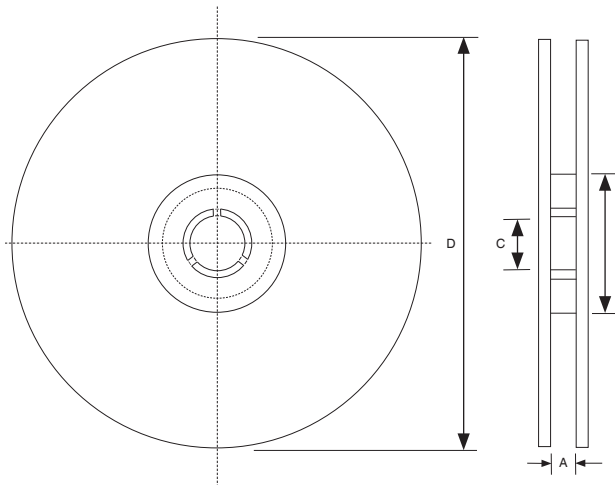
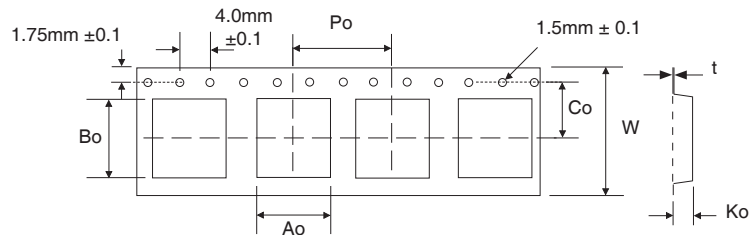
## NPIM41L Size

| Series         | Inductance<br>( $\mu$ H) | Test<br>Conditions | Standard Values - Case Size 41 (4.0x4.0x1.2mm) |       |                |      |               |      |
|----------------|--------------------------|--------------------|------------------------------------------------|-------|----------------|------|---------------|------|
|                |                          |                    | DCR<br>( $\Omega$ )                            |       | Isat<br>(Amps) |      | IDC<br>(Amps) |      |
|                |                          |                    | Max.                                           | Typ.  | Max.           | Typ. | Max.          | Typ. |
| NPIM41LR33MTRF | 0.33 $\pm$ 20%           | 1MHz, 1V           | 0.017                                          | 0.013 | 9.10           | 10.8 | 6.10          | 7.00 |
| NPIM41LR47MTRF | 0.47 $\pm$ 20%           |                    | 0.019                                          | 0.016 | 8.20           | 10.0 | 4.80          | 5.60 |
| NPIM41LR68MTRF | 0.68 $\pm$ 20%           |                    | 0.026                                          | 0.022 | 7.10           | 8.2  | 4.00          | 4.60 |
| NPIM41L1R0MTRF | 1.0 $\pm$ 20%            |                    | 0.035                                          | 0.029 | 5.20           | 6.2  | 3.90          | 4.50 |
| NPIM41L1R5MTRF | 1.5 $\pm$ 20%            |                    | 0.054                                          | 0.045 | 4.50           | 5.6  | 3.30          | 3.60 |
| NPIM41L2R2MTRF | 2.2 $\pm$ 20%            |                    | 0.078                                          | 0.065 | 3.90           | 4.6  | 2.80          | 3.20 |
| NPIM41L3R3MTRF | 3.3 $\pm$ 20%            |                    | 0.125                                          | 0.103 | 3.20           | 4.0  | 2.25          | 2.60 |
| NPIM41L4R7MTRF | 4.7 $\pm$ 20%            |                    | 0.145                                          | 0.125 | 2.55           | 3.1  | 1.95          | 2.25 |
| NPIM41L6R8MTRF | 6.8 $\pm$ 20%            |                    | 0.220                                          | 0.190 | 2.10           | 2.5  | 1.65          | 1.85 |
| NPIM41L100MTRF | 10 $\pm$ 20%             |                    | 0.300                                          | 0.250 | 1.70           | 2.0  | 1.45          | 1.65 |

Maximum +40°C temperature rise at IDC. Maximum -30% inductance drop from initial measured value at Isat.



| Case Size | CARRIER TAPING DIMENSIONS (mm) AND REEL QUANTITY |            |            |            |            |           |             |          |
|-----------|--------------------------------------------------|------------|------------|------------|------------|-----------|-------------|----------|
|           | Ao                                               | Bo         | Ko         | Co         | W          | Po        | t           | Quantity |
| NPIM26L   | 1.84 ± 0.1                                       | 2.25 ± 0.1 | 1.15 ± 0.1 | 3.5 ± 0.05 | 8.0 ± 0.1  | 4.0 ± 0.1 | 0.22 ± 0.05 | 3,000    |
| NPIM20L   | 2.45 ± 0.1                                       | 3.1 ± 0.1  | 1.4 ± 0.1  | 3.5 ± 0.05 | 8.0 ± 0.1  | 4.0 ± 0.1 | 0.23 ± 0.05 | 3,000    |
| NPIM21L   |                                                  |            |            |            |            |           |             |          |
| NPIM31L   | 3.26 ± 0.1                                       | 3.4 ± 0.1  | 1.4 ± 0.1  | 3.5 ± 0.1  | 8.0 ± 0.3  | 4.0 ± 0.1 | 0.3 ± 0.05  | 2,000    |
| NPIM32L   |                                                  |            |            |            |            |           |             |          |
| NPIM40L   | 4.3 ± 0.1                                        | 4.3 ± 0.1  | 1.6 ± 0.1  | 5.5 ± 0.1  | 12.0 ± 0.3 | 8.0 ± 0.1 | 0.3 ± 0.05  | 1,000    |
| NPIM41L   |                                                  |            |            |            |            |           |             |          |



| Tape Width | REEL DIMENSIONS (mm) |            |            |           |
|------------|----------------------|------------|------------|-----------|
|            | A(mm)                | B(mm)      | C(mm)      | D(mm)     |
| NPIM26L    | 8.4 +0.2/-0.1        | 62.0 ± 1.5 | 13.5 ± 0.5 | 180 ± 3.0 |
| NPIM20L    |                      |            |            |           |
| NPIM21L    |                      |            |            |           |
| NPIM31L    |                      |            |            |           |
| NPIM32L    |                      |            |            |           |
| NPIM40L    |                      |            |            |           |
| NPIM41L    |                      |            |            |           |

