NPMT Series

Hot Press Flat Wire Mini Molded Power Inductors

9001:2015 CERTIFIED

ROHS/REACH COMPLIANT HALOGEN FREE

NIC Components Corp.

FEATURES

- 0806, 1008, 1210, 0418, 0420, 0430, 0524 AND 0530 CASE SIZES
- METAL MATERIAL FOR LARGE CURRENT AND LOW LOSS AND LOW DCR
- VINYL THERMAL SPRAY, BETTER SURFACE COMPACTNESS
- CLOSED MAGNETIC CIRCUIT DESIGN REDUCES LEAKAGE

SPECIFICATIONS

Specifications	Case Size			
	0806	**1008**	**1210**	**0418**
Inductance Range	0.24µH ~ 2.2µH	0.33µH ~ 4.7µH	0.22µH ~ 4.7µH	0.12µH ~ 1.5µH
	0420	**0430**	**0524**	**0530**
	0.1µH ~ 4.7µH	0.22µH ~ 4.7µH	0.15µH ~ 4.7µH	0.10µH ~ 4.7µH
Inductance Tolerance	±20% (M)			
Operating Temperature Range	-40°C ~ +125°C (including self-heating)			
DC Resistance, Rated Irms & Isat Current Ratings and Tolerances	See Standard Values and Specifications Table			

DIMENSIONS (mm)

Case Size	A	B	C	D	E	F	Fig.
NPMT0806	2.0 ± 0.30	1.60 ± 0.30	1.0 Max	0.7 ± 0.3	N/A	N/A	1
NPMT1008	2.5 ± 0.30	2.0 ± 0.30	1.0 Max	0.9 ± 0.30			
			1.2 Max				
NPMT1210	3.2 ± 0.30	2.5 ± 0.30	1.0 Max	1.1 ± 0.30			
			1.2 Max				
NPMT0418	4.1 ± 0.20	4.1 ± 0.20	1.8 Max	1.3 ± 0.30	4.1 ± 0.20	1.5 min.	2
NPMT0420			2.0 Max				
NPMT0430	4.2 ± 0.30	4.2 ± 0.30	3.0 Max		4.2 ± 0.30	1.6 min.	
NPMT0524	5.5 ± 0.20	5.3 ± 0.20	2.4 Max	1.8 ± 0.30	5.5 ± 0.20	1.7 min.	
NPMT0530			3.0 Max				

*See specifications tables for individual part thickness

Figure 1

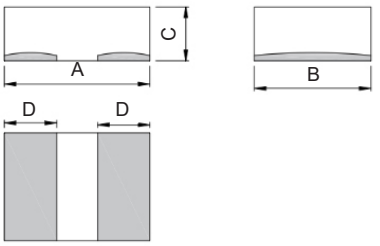
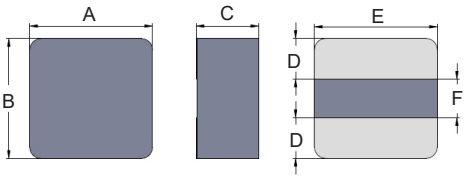


Figure 2



PART NUMBER SYSTEM

NPMT 0806 S 10 M R47 TR F

- F — RoHS Compliant
- TR — Packaging: TR = Tape & Reel
- R47 — Rated inductance in µH (R denotes decimal point)
- M — Inductance Tolerance Code: M = ±20%
- 10 — Thickness Code: 10 = 1.0 Max, 12 =1.2 Max (For 0806, 1008 & 1210 sizes)
- S — Performance code: Standard
- 0806 — Case Size = 0806
- NPMT — Series

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NPMT0806 SERIES (0806 Size Code, 2.0 x 1.6 mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (KHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0806S10MR24TRF	0.24	±20%	100	0.018	6.7	5.5	1.0 Max
NPMT0806S10MR33TRF	0.33	±20%	100	0.021	6.2	5.2	
NPMT0806S10MR47TRF	0.47	±20%	100	0.028	5.3	4.7	
NPMT0806S10MR68TRF	0.68	±20%	100	0.044	4.4	3.4	
NPMT0806S10M1R0TRF	1.0	±20%	100	0.049	3.8	3.2	
NPMT0806S10M1R5TRF	1.5	±20%	100	0.080	2.7	2.3	
NPMT0806S10M2R2TRF	2.2	±20%	100	0.130	2.45	2.0	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

NPMT1008 SERIES (1008 Size Code, 2.5 x 2.0 mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT1008S10MR22TRF	0.22	±20%	100	0.012	7.0	6.6	1.0 Max
NPMT1008S10MR33TRF	0.33	±20%	100	0.016	6.4	6.0	
NPMT1008S10MR47TRF	0.47	±20%	100	0.020	5.4	5.1	
NPMT1008S10MR68TRF	0.68	±20%	100	0.025	4.8	4.7	
NPMT1008S10M1R0TRF	1.0	±20%	100	0.042	3.8	4.0	
NPMT1008S10M1R5TRF	1.5	±20%	100	0.060	3.2	3.0	
NPMT1008S10M2R2TRF	2.2	±20%	100	0.085	2.7	2.5	
NPMT1008S10M3R3TRF	3.3	±20%	100	0.130	1.8	1.7	
NPMT1008S12MR24TRF	0.24	±20%	100	0.011	7.2	6.8	1.2 Max
NPMT1008S12MR33TRF	0.33	±20%	100	0.014	6.8	6.3	
NPMT1008S12MR47TRF	0.47	±20%	100	0.015	5.6	5.6	
NPMT1008S12MR68TRF	0.68	±20%	100	0.023	5.0	4.9	
NPMT1008S12M1R0TRF	1.0	±20%	100	0.033	4.2	4.2	
NPMT1008S12M1R5TRF	1.5	±20%	100	0.043	3.5	3.4	
NPMT1008S12M2R2TRF	2.2	±20%	100	0.066	3.1	2.8	
NPMT1008S12M3R3TRF	3.3	±20%	100	0.115	2.7	2.2	
NPMT1008S12M4R7TRF	4.7	±20%	100	0.170	2.5	1.8	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
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NPMT1210 SERIES (1210 Size Code, 3.2 x 2.5 mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT1210S10MR22TRF	0.22	±20%	100	0.011	8.5	7.0	
NPMT1210S10MR33TRF	0.33	±20%	100	0.015	7.0	6.0	
NPMT1210S10MR47TRF	0.47	±20%	100	0.018	5.5	5.5	
NPMT1210S10MR68TRF	0.68	±20%	100	0.022	5.2	5.0	
NPMT1210S10M1R0TRF	1.0	±20%	100	0.030	4.0	4.0	1.0 Max
NPMT1210S10M1R5TRF	1.5	±20%	100	0.0483	3.8	3.2	
NPMT1210S10M2R2TRF	2.2	±20%	100	0.067	3.3	2.7	
NPMT1210S10M3R3TRF	3.3	±20%	100	0.100	2.8	2.1	
NPMT1210S10M4R7TRF	4.7	±20%	100	0.143	1.9	1.7	
NPMT1210S12MR22TRF	0.22	±20%	100	0.0074	8.7	9.0	
NPMT1210S12MR33TRF	0.33	±20%	100	0.010	8.5	8.0	
NPMT1210S12MR47TRF	0.47	±20%	100	0.016	7.4	6.5	
NPMT1210S12MR68TRF	0.68	±20%	100	0.020	6.8	5.7	
NPMT1210S12M1R0TRF	1.0	±20%	100	0.026	5.7	5.0	1.2 Max
NPMT1210S12M1R5TRF	1.5	±20%	100	0.044	4.5	3.9	
NPMT1210S12M2R2TRF	2.2	±20%	100	0.061	4.3	3.6	
NPMT1210S12M3R3TRF	3.3	±20%	100	0.087	3.0	2.8	
NPMT1210S12M4R7TRF	4.7	±20%	100	0.122	2.4	1.9	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

NPMT0418 SERIES (0418 Size Code, 4.1 x 4.1 x 1.8mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0418SMR12TRF	0.12	±20%	100	0.0017	27.0	22.0	
NPMT0418SMR22TRF	0.22	±20%	100	0.0026	22.0	20.0	
NPMT0418SMR27TRF	0.27	±20%	100	0.0033	20.0	18.0	
NPMT0418SMR36TRF	0.36	±20%	100	0.0039	14.0	14.0	
NPMT0418SMR42TRF	0.42	±20%	100	0.0045	13.5	13.5	
NPMT0418SMR47TRF	0.47	±20%	100	0.0050	13.0	13.0	
NPMT0418SMR56TRF	0.56	±20%	100	0.0068	12.0	12.0	1.8 Max
NPMT0418SMR68TRF	0.68	±20%	100	0.0072	11.5	11.5	
NPMT0418SMR82TRF	0.82	±20%	100	0.0095	11.0	11.0	
NPMT0418SM1R0TRF	1.0	±20%	100	0.0100	10.0	10.0	
NPMT0418SM1R2TRF	1.2	±20%	100	0.0130	9.0	9.0	
NPMT0418SM1R5TRF	1.5	±20%	100	0.0165	7.5	7.5	
NPMT0418SM2R2TRF	2.2	±20%	100	0.0250	5.5	5.5	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

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NPMT0420 SERIES (0420 Size Code, 4.1 x 4.1 x 2.0mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0420SMR10TRF	0.10	±20%	100	0.0013	32.0	30.5	2.0 Max
NPMT0420SMR12TRF	0.12	±20%	100	0.0013	28.0	28.0	
NPMT0420SMR15TRF	0.15	±20%	100	0.0017	26.0	25.5	
NPMT0420SMR20TRF	0.20	±20%	100	0.0019	25.0	24.3	
NPMT0420SMR22TRF	0.22	±20%	100	0.0019	24.0	23.5	
NPMT0420SMR33TRF	0.33	±20%	100	0.0033	16.0	15.0	
NPMT0420SMR47TRF	0.47	±20%	100	0.0045	14.0	14.0	
NPMT0420SMR56TRF	0.56	±20%	100	0.0048	13.0	13.0	
NPMT0420SMR68TRF	0.68	±20%	100	0.0055	11.0	11.0	
NPMT0420SM1R0TRF	1.0	±20%	100	0.0082	9.5	10.0	
NPMT0420SM1R2TRF	1.2	±20%	100	0.0096	9.0	9.5	
NPMT0420SM1R5TRF	1.5	±20%	100	0.0125	7.6	9.0	
NPMT0420SM2R2TRF	2.2	±20%	100	0.0175	6.5	8.0	
NPMT0420SM4R7TRF	4.7	±20%	100	0.0420	4.5	5.0	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

NPMT0430 SERIES (0430 Size Code, 4.2 x 4.2 x 3.0mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0430SMR22TRF	0.22	±20%	100	0.0020	26.0	24.7	3.0 Max
NPMT0430SMR47TRF	0.47	±20%	100	0.0035	18.0	19.0	
NPMT0430SMR68TRF	0.68	±20%	100	0.0044	16.0	16.0	
NPMT0430SM1R0TRF	1.0	±20%	100	0.0065	11.0	10.0	
NPMT0430SM1R5TRF	1.5	±20%	100	0.0095	9.5	10.0	
NPMT0430SM2R2TRF	2.2	±20%	100	0.0145	7.5	9.5	
NPMT0430SM3R3TRF	3.3	±20%	100	0.0172	6.5	9.0	
NPMT0430SM4R7TRF	4.7	±20%	100	0.0270	5.1	5.9	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

NPMT0524 SERIES (0524 Size Code, 5.5 x 5.3 x 2.4mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0524SMR15TRF	0.15	±20%	100	0.0012	40.0	35.0	2.4 Max
NPMT0524SMR30TRF	0.30	±20%	100	0.0020	27.0	25.0	
NPMT0524SMR33TRF	0.33	±20%	100	0.0021	26.0	23.0	
NPMT0524SMR47TRF	0.47	±20%	100	0.0026	20.0	16.0	
NPMT0524SMR56TRF	0.56	±20%	100	0.0030	18.0	16.0	
NPMT0524SMR68TRF	0.68	±20%	100	0.0040	16.0	14.0	
NPMT0524SM1R0TRF	1.0	±20%	100	0.0057	13.0	12.0	
NPMT0524SM1R5TRF	1.5	±20%	100	0.0080	11.0	11.0	
NPMT0524SM2R2TRF	2.2	±20%	100	0.0130	9.5	9.5	
NPMT0524SM3R3TRF	3.3	±20%	100	0.0180	8.0	8.0	
NPMT0524SM4R7TRF	4.7	±20%	100	0.0260	6.3	6.3	

*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

NPMT0530 SERIES (0530 Size Code, 5.5 x 5.3 x 3.0mm)

NIC P/N	'L' Inductance (uH)	Tolerance	"L" Test Frequency (MHz)	DCR Typ. (ohms)	Isat* Max. (A)	Irms* Max. (A)	Thickness (mm)
NPMT0530SMR10TRF	0.10	±20%	100	0.00066	65.0	44.0	3.0 Max
NPMT0530SMR15TRF	0.15	±20%	100	0.00085	44.0	38.0	
NPMT0530SMR18TRF	0.18	±20%	100	0.0011	35.0	32.0	
NPMT0530SMR20TRF	0.20	±20%	100	0.0013	33.0	30.0	
NPMT0530SMR22TRF	0.22	±20%	100	0.0013	30.0	28.0	
NPMT0530SMR33TRF	0.33	±20%	100	0.0018	28.0	26.0	
NPMT0530SMR36TRF	0.36	±20%	100	0.0019	26.0	24.5	
NPMT0530SMR47TRF	0.47	±20%	100	0.0024	24.0	22.0	
NPMT0530SMR56TRF	0.56	±20%	100	0.0027	22.0	20.0	
NPMT0530SMR68TRF	0.68	±20%	100	0.0033	21.0	18.0	
NPMT0530SMR82TRF	0.82	±20%	100	0.0041	19.0	16.5	
NPMT0530SM1R0TRF	1.0	±20%	100	0.0050	17.0	15.5	
NPMT0530SM1R5TRF	1.5	±20%	100	0.0071	15.0	13.0	
NPMT0530SM1R8TRF	1.8	±20%	100	0.0086	13.0	11.5	
NPMT0530SM2R2TRF	2.2	±20%	100	0.0098	10.5	10.5	
NPMT0530SM3R3TRF	3.3	±20%	100	0.0140	9.0	9.0	
NPMT0530SM4R7TRF	4.7	±20%	100	0.0220	8.0	8.0	

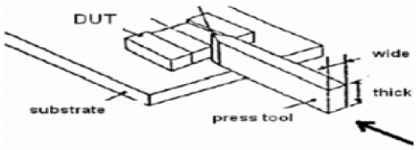
*Isat approximate -30% inductance. Irms approximate +40°C temperature rise.
Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

ENVIRONMENTAL CHARACTERISTICS

Item	Performance	Test Condition
Life Test	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow 3 times.(IPC/ JEDEC J-STD-020E Classification Reflow Profiles) Temperature: 125±2°C Applied current: rated current Duration: 1000 ± 12hrs Measured at room temperature after placing for 24 hrs.
Load Humidity		Preconditioning: Run through IR reflow for 3times. (IPC/JEDECJ-STD-020E Classification Reflow Profiles) Humidity: 85±2%R.H, Temperature: 85°C±2°C Duration: 1000hrs Min. Bead:with 100% rated current, Inductance: with 100% rated current Measured at room temperature after placing for 24±2 hrs.
Moisture Resistance		Preconditioning: Run through IR reflow 3 times.(IPC/ JEDEC J-STD-020E Classification Reflow Profiles) 1. Baked at 50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs,keep at 25°C for 2 hrs then keep at -10°C for 3 hrs. 4. Keep at 25 °C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.

ENVIRONMENTAL CHARACTERISTICS

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Thermal Shock</td><td rowspan="4">Appearance: No damage.
Inductance: within±10% of initial value
Q: Shall not exceed the specification value.
RDC: within ±15% of initial value and shall not exceed the specification value</td><td>Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles)
Reflow Profiles
Condition for 1 cycle
Step1:-40±2°C 30±5min
Step2:125±2°C <=0.5min
Step3:125±2°C 30±5min
Number of cycles: 500
Measured at room temperature after placing for 24±2 hrs.</td></tr>
<tr><td>Vibration</td><td>Preconditioning: Run through IR reflow for 3 times.
(IPC/JEDECJ-STD-020E Classification Reflow Profiles)
Oscillation Frequency: 10Hz~2KHz~10Hz for 20 minutes
Equipment: Vibration checker
Total Amplitude: 10g
Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).</td></tr>
<tr><td>Bending</td><td>Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm
<0805 inch(2012mm):40x100x0.8mm
Bending depth: >=0805 inch(2012mm):1.2mm
<0805 inch(2012mm):0.8mm
duration of 10 sec.</td></tr>
<tr><td>Shock</td><td>
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr>
<tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
<tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
</table>
3 Shocks in each direction along 3 perpendicular axes. (18 shocks)
</td></tr>
<tr><td>Solderability</td><td>More than 95% of the terminal electrode should be covered with solder</td><td>a. Method B1, 4 hrs @155°C dry heat @255°C±5°C
Test time:5 +0/-0.5 seconds.

b. Method D category 3. (steam aging 8hours ± 15 min)@ 260°C±5°C
Test time: 30 +0/-0.5 seconds.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td rowspan="2">Appearance: No damage.
Inductance: within±10% of initial value
Q: Shall not exceed the specification value.
RDC: within ±15% of initial value and shall not exceed the specification value</td><td>Depth: completely cover the termination
<table>
<tr><th>Temperature(°C)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr>
<tr><td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>Terminal Strength</td><td>Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles)
With the component mounted on a PCB with the device to betested, apply a force(>0805:1kg , <=0805:0.3kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.
 

</td></tr>
</table>

Note: When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.

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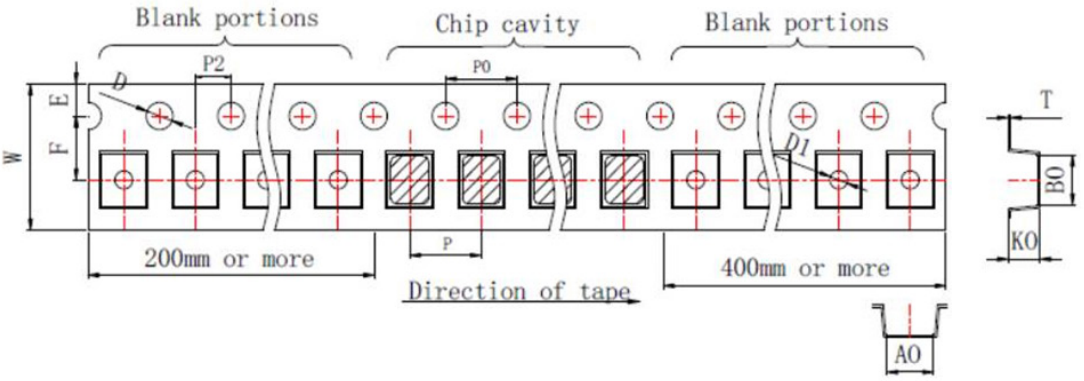
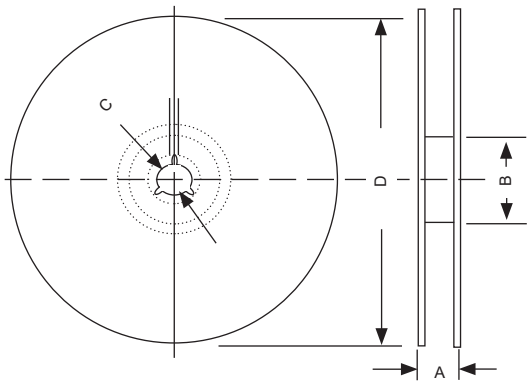
TAPE DIMENSIONS (mm)

TYPE	A0	B0	K0	W	E	F	P	P0	P2	T	D
NPMT0806	1.9±0.1	2.3 ± 0.1	1.2±0.1	8.0±0.1	1.75±0.1	3.5±0.1	4.0±0.1	4.0±0.1	2.0±0.1	0.23 ± 0.10	1.5+0.1/-0.0
NPMT1008	2.45±0.1	2.9 ± 0.1	1.35±0.1							0.24 ± 0.05	
NPMT1210	2.9±0.1	3.6 ± 0.1	1.4±0.1							0.22 ± 0.05	
NPMT0418	4.5±0.1	4.5±0.1	2.0±0.1	12.0±0.3		5.5±0.1	8.0±0.3			0.35±0.05	
NPMT0420			2.2±0.1								
NPMT0430			3.2±0.1								
NPMT0524	6.0±0.1	5.8±0.1	2.7±0.1								
NPMT0530											



REEL DIMENSIONS (mm) & QUANTITIES

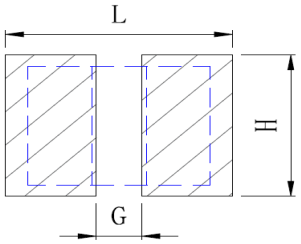
TYPE	A	B	C	D	Reel Qty
NPMT0806	8.4+1.5/-0.0	60 ± 1.0	13.0+0.5/-0.2	178 ± 2.0	2K
NPMT1008					
NPMT1210					
NPMT0418	12.4+2.0/-0.0	100 ± 2.0		330 ± 2.0	3K
NPMT0420					3K
NPMT0430					2K
NPMT0524					2.5K
NPMT0530					2.5K



LAND PATTERN DIMENSIONS

Series	L	G	H
NPMT0806	2.5	0.5	1.9
NPMT1008	2.9	0.5	2.3
NPMT1210	3.7	0.7	2.8
NPMT0418	4.5	1.2	4.5
NPMT0420	4.5	1.2	4.5
NPMT0430	4.5	1.2	4.5
NPMT0524	5.6	1.3	6.0
NPMT0530	5.6	1.3	6.0

RECOMMENDED LAND PATTERN



REFLOW SOLDERING PROFILE