



**THE DATASHEET OF  
P0438NLT**



# SMT Power Inductors

Shielded Toroid Series - Ros1/Ros2 Series



- Height:** 3.2mm and 5.3mm Max
- Footprint:** 8.1mm x 5.3mm and 14.0mm x 10.2mm
- Current Rating:** up to 5A
- Inductance Range:** .51μH to 357μH

## Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C

Pulse Part Number	Inductance @ Irated (μH MIN)	Irated (A)	DCR (mΩ)		Inductance @ OADC (μH +/- 15%)	Reference ET (V*μsec)	Trise Factor (Ko)	Coreloss Factor (Kl)	ET Factor (K2)
			TYP	MAX					
<b>Ros 1 Series</b>									
P0430NL	0.51	2.00	14	16.1	.7	.8	1.45	1.27E-11	476.2
P0432NL	0.85	1.50	18	20.7	1.1	1.2	1.45	1.27E-11	370.4
P0435NL	2.72	1.00	40	46	3.9	2.3	1.45	1.27E-11	196.1
P0438NL	8.84	0.50	140	161	12.2	4.4	1.45	1.27E-11	111.1
P0439NL	10.79	0.45	155	178	14.7	5.0	1.45	1.27E-11	101.0
P0441NL	25.50	0.29	280	322	33.8	8.4	1.45	1.27E-11	66.7
P0445NL	88	0.16	1065	1225	122	15	1.45	1.27E-11	35.1
P0446NL	127	0.14	1600	1840	179	18	1.45	1.27E-11	29.0
<b>Ros 2 Series</b>									
P0450NL	0.51	5.00	8.1	9.3	.65	3	.508	8.87E-11	181.8
P0452NL	1.09	5.00	11.4	13.1	1.5	.5	.508	8.87E-11	113.6
P0453NL	1.53	5.00	13.0	15	2.3	1.0	.508	8.87E-11	90.9
P0454NL	1.78	3.00	15.0	17.3	2.3	7.5	.508	8.87E-11	90.9
P0456NL	4.76	2.00	26.1	30	6.3	13	.508	8.87E-11	56.8
P0460NL	22.95	1.00	90.4	104	34	31	.508	8.87E-11	24.6
P0461NL	39.10	0.90	123.5	142	57.2	39	.508	8.87E-11	18.9
P0462NL	40.80	0.80	240.0	276	62.5	35	.508	8.87E-11	18.2
P0463NL	69.70	0.60	245.2	282	100	55	.508	8.87E-11	14.0
P0465NL	137	0.40	480.9	553	180	78	.508	8.87E-11	10.0
P0466NL	182	0.35	681.7	784	254	87	.508	8.87E-11	8.7
P0467NL	272	0.30	1030.4	1185	422.5	105	.508	8.87E-11	7.0
P0468NL	357	0.25	1200.0	1380	500	130	.508	8.87E-11	6.1

USA 858 674 8100

Germany 49 7032 7806 0

Singapore 65 6287 8998

Shanghai 86 21 62787060

China 86 755 33966678

Taiwan 886 3 4356768

# SMT Power Inductors

Shielded Toroid Series - Ros1/Ros2 Series



**Notes:**

1. Temperature rise is 55C in typical buck or boost circuits with the rated IDC current and reference ET applied to the inductor.
2. Total loss in the inductor is 80 mW (ROS1) and 280 mW (ROS 2) for 55C temperature rise above ambient.
3. To estimate temperature rise in a given application, you must determine the total losses (copper losses + core losses) and apply the following formula:  
Temp Rise (C) = (Total Losses (mW))<sup>.833</sup> \* K0 (from table)

4. To determine copper losses, calculate:

$$\text{Copper Loss (mW)} = I_{DC}^2 \times DCR$$

5. For core loss in mWatts, using frequency f (in Hz) and operating flux density B (in Gauss), calculate:

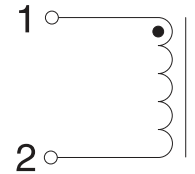
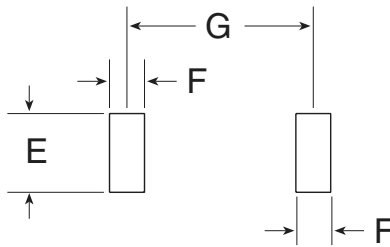
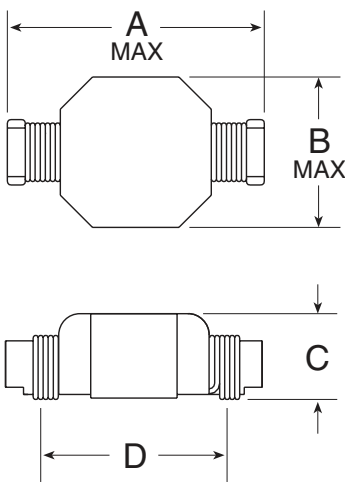
$$\text{Copper Loss (mW)} = K2 * f^{1.26} * B^{2.11}$$

6. For flux density (B), calculate ET (V-μsec) for the application, and multiply by ET<sub>10</sub> factor from the table.

**Mechanical**

**Schematic**

PXXXX



**Suggested Pad Layout**

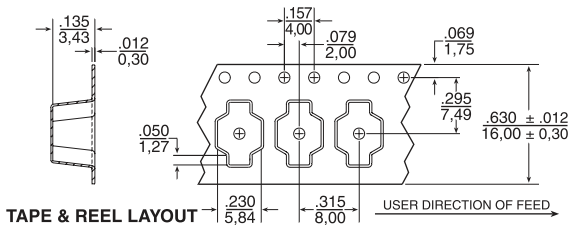
PKG	A	B	C	D	E	F	G
ROS 1	.335 8,51	.225 5,72	.125 3,18	.250 6,35	.100 2,54	.050 1,27	.250 6,35
ROS 2	.545 13,84	.390 9,91	.215 5,46	.440 11,18	.120 3,05	.065 1,65	.440 11,18

	ROS 1	ROS 2
Weight .....	0.29 grams	1.1 grams
Tape & Reel .....	2000/reel	600/reel

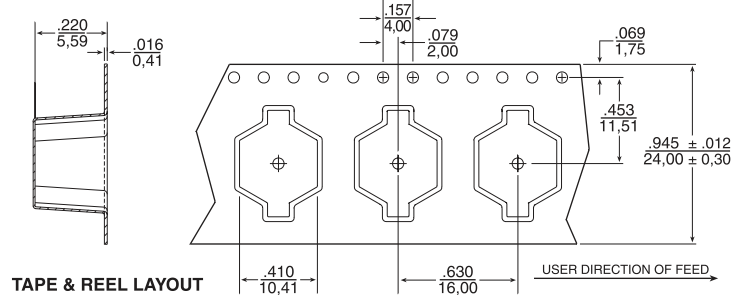
Dimensions:  $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are  $\pm \frac{.010}{0,25}$

**ROS 1**



**ROS 2**



# SMT Power Inductors

Shielded Toroid Series - Ros1/Ros2 Series

---

## For More Information

### Pulse Worldwide Headquarters

12220 World Trade Drive  
San Diego, CA  
92128  
U.S.A.

Tel: 858 674 8100  
Fax: 858 674 8262

### Pulse Europe

Einsteinstrasse 1  
D-71083 Herrenberg  
Germany

Tel: 49 7032 78060  
Fax: 49 7032 7806 135

### Pulse China Headquarters

B402, Shenzhen Academy of  
Aerospace Technology Bldg.  
10th Kejinan Road  
High-Tech Zone  
Nanshan District  
Shenzen, PR China  
518057  
Tel: 86 755 33966678  
Fax: 86 755 33966700

### Pulse North China

Room 2704/2705  
Super Ocean Finance  
Ctr.  
2067 Yan An Road  
West  
Shanghai 200336  
China

Tel: 86 21 62787060  
Fax: 86 2162786973

### Pulse South Asia

135 Joo Seng Road  
#03-02  
PM Industrial Bldg.  
Singapore 368363

Tel: 65 6287 8998  
Fax: 65 6287 8998

### Pulse North Asia

3F, No. 198  
Zhongyuan Road  
Zhongli City  
Taoyuan County 320  
Taiwan R. O. C.

Tel: 886 3 4356768  
Fax: 886 3 4356823 (Pulse)  
Fax: 886 3 4356820 (FRE)

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners. © Copyright, 2015. Pulse Electronics, Inc. All rights reserved.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View P0438NLT on WIN SOURCE](#)

 [Pulse Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management