

SMT POWER INDUCTORS

Shielded Drum Core - P1170/P1171 Series



Pulse®
A TECHNITROL COMPANY



- Height: 6.0mm Max
- Footprint: 12.2mm x 12.2mm Max
- Current Rating: up to 13A
- Inductance Range: .32μH to 750μH

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

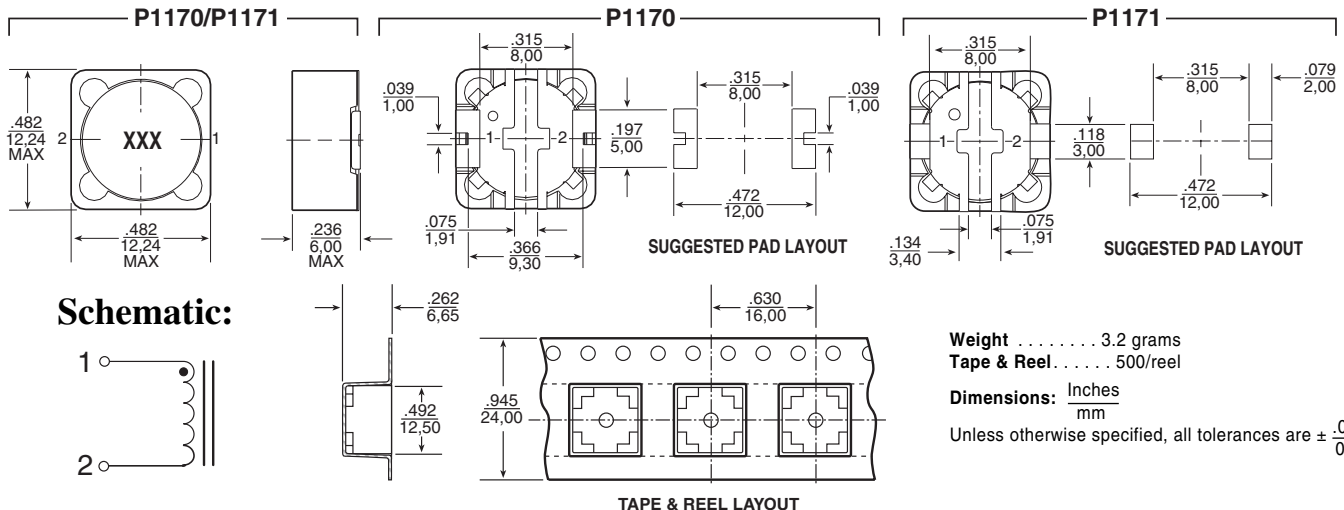
Part Numbers		Inductance @Irated (μH) MIN	Irated ² (A)dc	DCR (mΩ)		Inductance @0A _{dc} (μH)	Saturation Current (A) @25°C	Heating Current ⁴ (A)	Trise ⁵ Factor (K0)	Core Loss Factor ⁵ (K1)	Core Loss Factor ⁵ (K2)
				TYP	MAX						
P1170.901	P1171.901	0.6	13	2.0	2.9	0.9*	14	13	5.376	2.92 x 10 ⁻⁷	136.3
P1170.142	P1171.142	0.9	11	3.0	4.2	1.4*	13	11	5.376	2.92 x 10 ⁻⁷	165.0
P1170.222	P1171.222	1.5	9.6	4.0	5.7	2.2*	9.7	9.6	5.376	2.92 x 10 ⁻⁷	212.1
P1170.302	P1171.302	2.0	8.3	5.4	7.7	3.0*	8.3	8.3	5.376	2.92 x 10 ⁻⁷	244.7
P1170.392	P1171.392	2.5	7.0	7.4	10	3.9*	7.0	7.1	5.376	2.92 x 10 ⁻⁷	275.7
P1170.502	P1171.502	3.3	6.4	8.5	12	5.0*	6.4	6.6	5.376	2.92 x 10 ⁻⁷	311.9
P1170.642	P1171.642	4.2	5.3	13	18	6.4*	5.8	5.3	5.376	2.92 x 10 ⁻⁷	357.2
P1170.103	P1171.103	7.5	4.4	19	25	10	4.6	4.4	5.376	2.92 x 10 ⁻⁷	424.2
P1170.123	P1171.123	9.0	4.2	21	27	12	4.3	4.2	5.376	2.92 x 10 ⁻⁷	471.3
P1170.153	P1171.153	11.3	4.0	22	30	15	4.0	4.1	5.376	2.92 x 10 ⁻⁷	548.5
P1170.183	P1171.183	13.5	3.4	32	40	18	3.4	3.4	5.376	2.92 x 10 ⁻⁷	578.4
P1170.223	P1171.223	16.5	3.0	36	45	22	3.0	3.2	5.376	2.92 x 10 ⁻⁷	666.6
P1170.273	P1171.273	20.3	2.7	41	51	27	2.7	3.0	5.376	2.92 x 10 ⁻⁷	734.2
P1170.333	P1171.333	24.8	2.6	56	70	33	2.6	2.6	5.376	2.92 x 10 ⁻⁷	813.8
P1170.393	P1171.393	29.3	2.4	60	75	39	2.4	2.5	5.376	2.92 x 10 ⁻⁷	879.9
P1170.473	P1171.473	35.3	2.2	79	100	47	2.2	2.2	5.376	2.92 x 10 ⁻⁷	977.3
P1170.563	P1171.563	42.0	2.0	85	110	56	2.0	2.1	5.376	2.92 x 10 ⁻⁷	1041.8
P1170.683	P1171.683	51.0	1.8	97	120	68	1.8	1.9	5.376	2.92 x 10 ⁻⁷	1144.6
P1170.823	P1171.823	61.5	1.7	127	158	82	1.7	1.7	5.376	2.92 x 10 ⁻⁷	1260.2
P1170.104	P1171.104	75.0	1.4	182	230	100	1.4	1.4	5.376	2.92 x 10 ⁻⁷	1413.9
P1170.124	P1171.124	90.0	1.3	201	253	120	1.3	1.4	5.376	2.92 x 10 ⁻⁷	1533.2
P1170.154	P1171.154	113	1.2	225	280	150	1.2	1.3	5.376	2.92 x 10 ⁻⁷	1710.4
P1170.184	P1171.184	135	1.1	249	310	180	1.1	1.2	5.376	2.92 x 10 ⁻⁷	1889.9
P1170.224	P1171.224	165	1.0	319	400	220	1.0	1.1	5.376	2.92 x 10 ⁻⁷	2101.8
P1170.274	P1171.274	203	0.91	363	460	270	0.91	1.0	5.376	2.92 x 10 ⁻⁷	2327.8
P1170.334	P1171.334	248	0.82	539	620	330	0.82	0.82	5.376	2.92 x 10 ⁻⁷	2554.4
P1170.394	P1171.394	293	0.72	561	690	390	0.72	0.81	5.376	2.92 x 10 ⁻⁷	2775.7
P1170.474	P1171.474	353	0.68	629	770	470	0.68	0.77	5.376	2.92 x 10 ⁻⁷	3057.7
P1170.564	P1171.564	420	0.63	851	1060	560	0.63	0.66	5.376	2.92 x 10 ⁻⁷	3317.6
P1170.684	P1171.684	510	0.57	950	1200	680	0.57	0.62	5.376	2.92 x 10 ⁻⁷	3660.4
P1170.824	P1171.824	615	0.52	1241	1550	820	0.52	0.54	5.376	2.92 x 10 ⁻⁷	4007.2
P1170.105	P1171.105	750	0.46	1398	1750	1000	0.46	0.51	5.376	2.92 x 10 ⁻⁷	4437.0

*Inductance at 0A_{dc} tolerance on indicated part numbers is ±30%; tolerance is ±20% on all other parts.

NOTES FROM TABLE: (See page 44)

**Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P1170.901 becomes P1170.901T). Pulse complies to industry standard tape and reel specification EIA481. To order RoHS compliant part, add the suffix "NL" to the part number (i.e. P1170.901 becomes P1170.901NL and P1170.901T becomes P1170.901NLT).

Mechanical



SMT POWER INDUCTORS

Shielded Drum Core

P1166 through P1173 Series



Notes from Tables (pages 37 - 43)

1. Temperature of the component (ambient plus temperature rise) must be within specified operating temperature range.
2. The rated current as listed is either the saturation current or the heating current depending on which value is lower.
3. The saturation current is the current which causes the inductance to drop to 65% (or 75%) of its nominal inductance at zero bias. This current is determined by placing the component at room ambient (25°C), and applying a short duration pulse current (to eliminate self-heating effects) to the component.
4. The heating current is the DC current, which causes the temperature of the part to increase by not more than 40°C. This current is determined by extending the terminals of the component with 30mm length 28 gauge buss wires and applying the current to the device for 30 minutes. The temperature is measured by placing the thermocouple between the winding and the shield.
5. In high volt*time applications, additional heating in the component can occur due to core losses in the inductor which may necessitate derating the current in order to limit the temperature rise of the component. In order to determine the approximate total loss (or temperature rise) for a given application, both copper losses and core losses should be taken into account.

Estimated Temperature Rise:

$$\text{Trise} = [\text{Total loss (mW)} / K0]^{.833} (^\circ\text{C})$$

$$\text{Total loss} = \text{Copper loss} + \text{Core loss (mW)}$$

$$\text{Copper loss} = I_{\text{RMS}}^2 \times \text{DCR (Typical)} \text{ (mW)}$$

$$I_{\text{rms}} = [I_{\text{DC}}^2 + DI^2/12]^{1/2} \text{ (A)}$$

$$\text{Core loss} = K1 \times f \text{ (kHz)}^{1.1} \times (K2 \times DI)^{2.15} \text{ (mW)},$$

where f varies between 25kHz and 300kHz, and B less than 2000 Gauss.