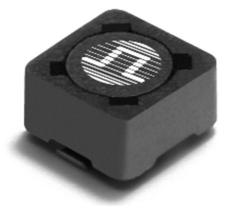
SMT POWER INDUCTORS
Shielded Drum Core - P1167 Series

Pulse
A TECHNITROL COMPANY



- **Height:** 4.8mm Max
- **Footprint:** 7.5mm x 7.5mm Max
- **Current Rating:** up to 3.5A
- **Inductance Range:** 1.8µH to 750µH

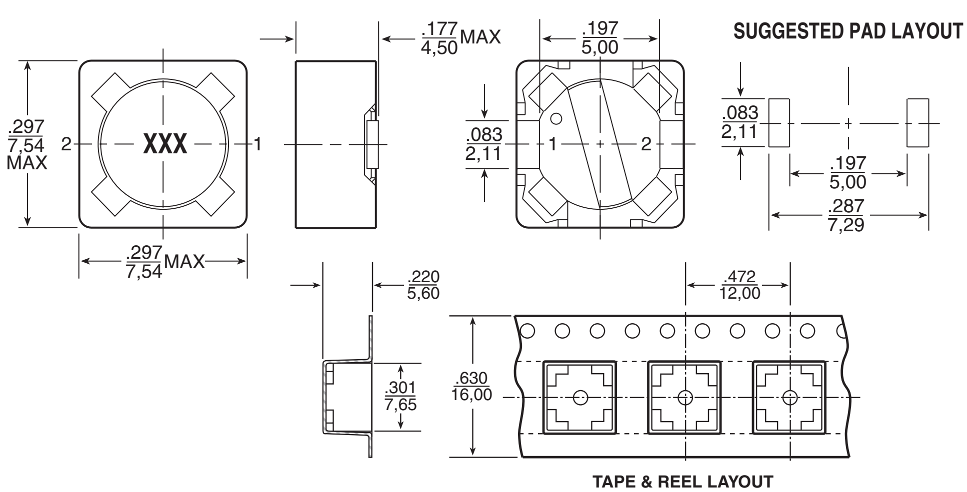
Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C

Part Number	Inductance @Irated (µH) MIN	Irated [2] (ADC)	DCR (mΩ) TYP	DCR (mΩ) MAX	Inductance @0ADC (µH ±20%)	Saturation [3] Current @25°C (A)	Heating [4] Current (A)	Trise [5] Factor (K0)	Core Loss [5] Factor (K1)	Core Loss [5] Factor (K2)
P1167.272	1.8	3.5	13	16	2.7*	3.5	3.6	2.146	6.79×10^{-8}	584.4
P1167.362	2.3	3.1	15	20	3.6*	3.1	3.4	2.146	6.79×10^{-8}	687.5
P1167.452	2.9	2.6	25	30	4.5*	2.9	2.6	2.146	6.79×10^{-8}	769.0
P1167.542	3.5	2.5	27	33	5.4*	2.7	2.5	2.146	6.79×10^{-8}	834.9
P1167.632	4.1	2.4	30	35	6.3*	2.5	2.4	2.146	6.79×10^{-8}	889.3
P1167.103	7.5	2.0	42	50	10	2.1	2.0	2.146	6.79×10^{-8}	1047.3
P1167.123	9.0	1.9	46	57	12	1.9	1.9	2.146	6.79×10^{-8}	1180.6
P1167.153	11.3	1.7	53	66	15	1.7	1.8	2.146	6.79×10^{-8}	1316.3
P1167.183	13.5	1.5	59	73	18	1.5	1.7	2.146	6.79×10^{-8}	1425.4
P1167.223	16.5	1.4	87	105	22	1.4	1.4	2.146	6.79×10^{-8}	1661.1
P1167.273	20.3	1.2	100	130	27	1.2	1.3	2.146	6.79×10^{-8}	1789.0
P1167.333	24.8	1.1	139	170	33	1.1	1.1	2.146	6.79×10^{-8}	2021.6
P1167.393	29.3	1.0	156	200	39	1.0	1.0	2.146	6.79×10^{-8}	2146.2
P1167.473	35.3	0.94	173	220	47	0.94	1.0	2.146	6.79×10^{-8}	2347.6
P1167.563	42.0	0.86	225	270	56	0.86	0.86	2.146	6.79×10^{-8}	2560.8
P1167.683	51.0	0.78	251	310	68	0.78	0.81	2.146	6.79×10^{-8}	2867.3
P1167.823	61.5	0.70	282	350	82	0.70	0.77	2.146	6.79×10^{-8}	3132.2
P1167.104	75.0	0.63	317	390	100	0.63	0.72	2.146	6.79×10^{-8}	3491.1
P1167.124	90.0	0.57	418	530	120	0.57	0.63	2.146	6.79×10^{-8}	3857.5
P1167.154	113	0.52	497	610	150	0.52	0.58	2.146	6.79×10^{-8}	4234.9
P1167.184	135	0.47	635	820	180	0.47	0.51	2.146	6.79×10^{-8}	4751.3
P1167.224	165	0.43	745	930	220	0.43	0.47	2.146	6.79×10^{-8}	5138.7
P1167.274	203	0.39	840	1040	270	0.39	0.44	2.146	6.79×10^{-8}	5655.6
P1167.334	248	0.35	1162	1470	330	0.35	0.38	2.146	6.79×10^{-8}	6193.2
P1167.394	293	0.32	1237	1570	390	0.32	0.37	2.146	6.79×10^{-8}	6844.5
P1167.474	353	0.29	1688	2180	470	0.29	0.31	2.146	6.79×10^{-8}	7517.1
P1167.564	420	0.26	2240	2960	560	0.26	0.27	2.146	6.79×10^{-8}	8227.1
P1167.684	510	0.23	2402	3180	680	0.23	0.26	2.146	6.79×10^{-8}	9237.6
P1167.824	615	0.21	2702	3500	820	0.21	0.25	2.146	6.79×10^{-8}	10123
P1167.105	750	0.19	3703	4930	1000	0.19	0.21	2.146	6.79×10^{-8}	11157

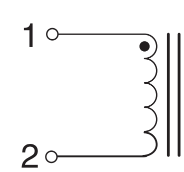
*Inductance at 0ADC tolerance on indicated part numbers is ±30%; tolerance is ±20% on all other parts.

NOTES FROM TABLE: *(See page 49)*

Mechanical



Schematic



Weight . . . . 0.9 grams
Tape & Reel. 900/reel

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

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

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Notes from Tables *(pages 44 - 48)*

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:

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

Total loss = Copper loss + Core loss (mW)

Copper loss = I_{RMS}^2 x DCR (Typical) (mW)

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

Core loss = K1 x 10^{-8} x f $(kHz)^{1.1}$ x $(K2 \times DI)^{2.15}$ (mW), where f varies between 25kHz and 300kHZ, and B less than 2000 Gauss.