

THT Current Sense Transformers

P0581NL / P0582NL AND P0583NL



- UL/C-UL recognized components
- 3000Vrms gate to drive winding test
- Useful operating frequency from 50kHz to 500 kHz
- Most popular winding configurations

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

Part ⁶ Number	Turns Ratio	Primary Inductance (1-10) (mH MIN)	DCR Pri (1-10) (Ω MAX)	DCR Sec1 (3-7) (mΩ ±15%)	DCR Sec2 (4-8) (mΩ ±15%)	Hipot (Pri-Sec) (Vrms)
P0581NL	200:1:1	76	2.8	1.7	1.7	3000
P0582NL	100:1:1	19	1.4	1.7	1.7	3000
P0583NL	50:1:1	5	0.7	1.7	1.7	3000

Additional Specifications

Part Number	Reference Data				Calculation Data	
	RT	Ipk (Amps)	Droop (%)	Max Flux Density	Kb	Req (mΩ)
P0581NL	200	34	1.00	2000	17.12	.9
P0582NL	100	35	1.98	2000	68.49	.8
P0583NL	15	36	1.19	2000	273.97	.75

Notes:

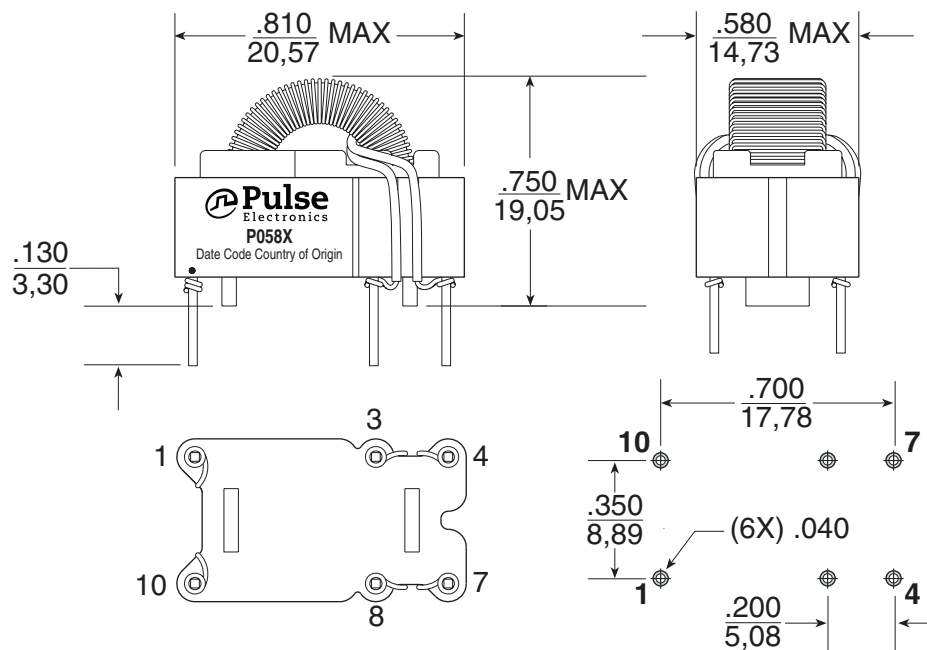
- These current sense transformers have two one turn primaries that can be used in parallel. The listed current ratings are for parallel connection.
- The reference values are for an application using the termination resistor (Rt) and operating with unipolar waveform at 100kHz, 40% duty cycle. The estimated temperature rise is 55°C.
- The peak flux density should remain below 2100 Gauss to ensure that the core does not saturate. Use the following formula to calculate the peak flux density: $B_{pk} = K_b * I_{pk} * R_t * \text{don} / (F_f * \text{freq. in kHz})$ where: Rt is the terminating resistor in the application and the Ff is 1 for unipolar waveform and 2 for bipolar waveform.
- To calculate the droop: $\text{Droop Exponent (D)} = R_t * \text{don} / (L_{pri} \text{ in mH} * \text{Freq. in kHz})$
 $\% \text{Droop} = (1 - e^{-D}) * 100$
- The temperature rise of the component is calculated based on the total core loss and copper loss:
 - To calculate total copper loss (W): $P_{cu} = I_{pk}^2 * R_{eq} * F_f * \text{don}$ where Ff is 1 for unipolar waveform and 2 for bipolar waveform
 - To calculate total core loss (W): $P_{core} = 0.000073 * (\text{Freq. in kHz})^{1.67} * (B_{op} \text{ in kG})^{2.552}$ where: $B_{op} \text{ in kG} = K_b * I_{pk} * R_t * \text{don} / (2000 * \text{Freq. in kHz})$
 - To calculate temperature rise: $\text{Temperature Rise (C)} = 60.18 * (\text{Core Loss (W)} + \text{Copper Loss (W)})^{.433}$

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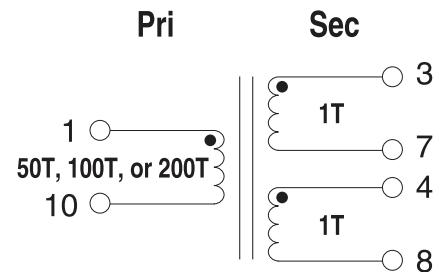
Mechanical

Schematic

P058XNL



SUGGESTED PCB HOLE PATTERN



Weight5 grams

Tray80/tray

Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are: $\pm \frac{.010}{.25}$

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