

# SMT Power Inductors - SLIC Series

Ruggedized

**PulseR**  
Ruggedized Solutions

PL1434, PL1435, PL3059



- R Current Rating up to 2.6 - 7.2 A<sub>DC</sub>
- R Frequency Range: up to 1MHz
- R Lead Finish: Sn63/Pb37, Sn100 optional (see 'Notes')
- R Operating Temperature -40°C to +130°C

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

| Part Number <sup>4,6</sup>  | Inductance @ Irated (μH) | Irated (A) | DCR(mΩ) |       | Reference ET (V-μsec) | Inductance @ 0ADC (μH) | Flux Density Factor (K1) | Core Loss Factor (K2) | Temp Rise Factor (K3) |
|-----------------------------|--------------------------|------------|---------|-------|-----------------------|------------------------|--------------------------|-----------------------|-----------------------|
|                             |                          |            | (TYP)   | (MAX) |                       |                        |                          |                       |                       |
| SLIC Series: LCI-50 Package |                          |            |         |       |                       |                        |                          |                       |                       |
| PL1434                      | 9.3                      | 7.20       | 15.895  | 18.7  | 4.92                  | 16                     | 0.41                     | 4.52E-10              | 67.9                  |
| PL1435                      | 16.1                     | 5.10       | 27.2    | 32.0  | 6.27                  | 25.9                   | 0.32                     | 4.52E-10              | 67.9                  |
| PL3059                      | 50                       | 2.60       | 113.05  | 133   | 10.5                  | 72.9                   | 0.19                     | 4.52E-10              | 67.9                  |

**Notes:** 1. Reference values are for an inductor with a 55°C temperature rise. The core loss is 10% of the copper loss at the ET listed and 500kHz.

2. Core does not saturate abruptly. The ET and DC current are limited by the desired inductance and temperature rise.

3. 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 losses (or temperature rise) for a given application, both copper and core losses should be taken into account.

Estimated Temperature Rise:

$$\text{Trise} = K3 * (\text{Coreloss(W)} + \text{Copperloss(W)})^{.833} \text{ (C)}$$

$$\text{CopperLoss} = \text{Irms}^2 * \text{DCR\_Typical (m}\Omega\text{)} / 1000$$

$$\text{CoreLoss} = K2 * (\text{Freq\_kHz})^{1.26} * (\Delta B)^{2.11}$$

$$\Delta B = K1 * \text{Volt-}\mu\text{sec} * 100$$

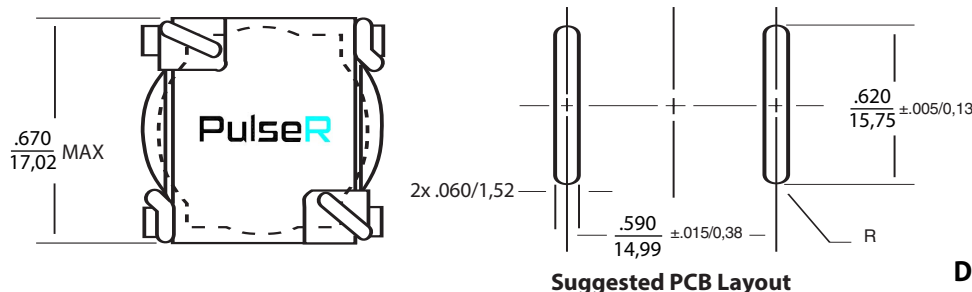
4. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PL1434 becomes **PL1434T**).

5. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

6. To order RoHS-compliant parts (Sn100 Lead Finish), add suffix 'NL' to the part number (i.e. PL3059 becomes **PL3059NL**).

## Mechanical

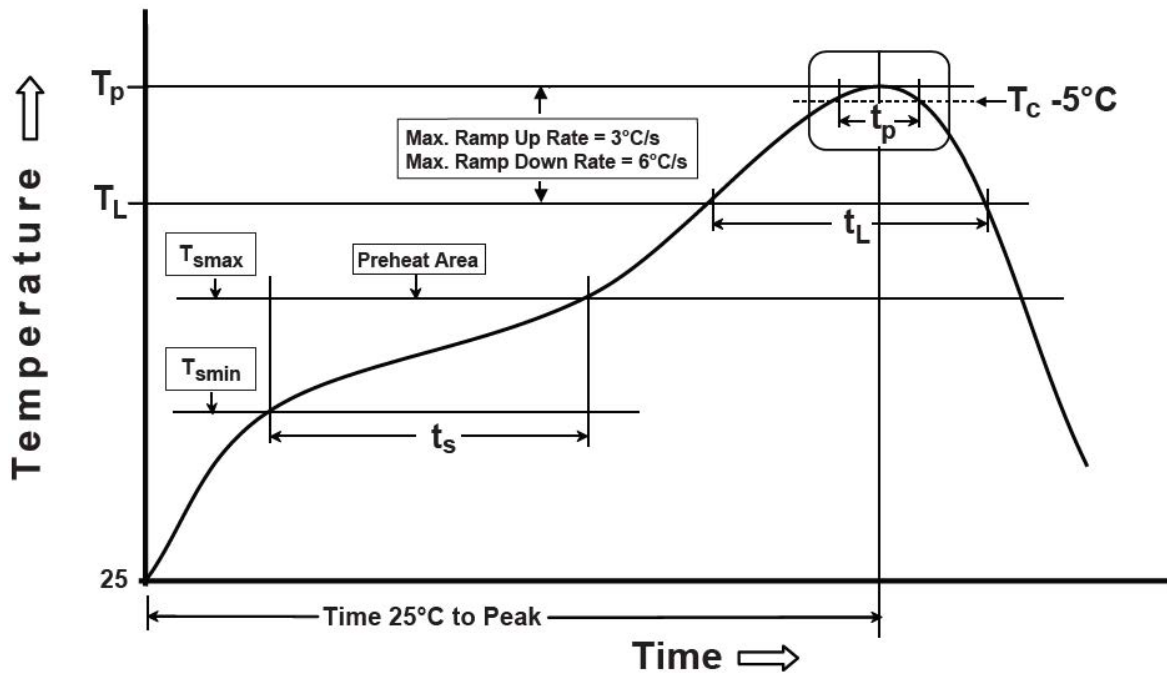
### SLIC Series (LCI-50 Package)



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

Unless otherwise specified,  
all tolerances are ±.005/0,13

## Tin/Lead Recommended Reflow Profile (Based on J-STD-020D)



| $T_{SMIN}$<br>(°C) | $T_{SMAX}$<br>(°C) | $T_L$<br>(°C) | $T_P$<br>(°C MAX) | $t_s$<br>(s) | $t_L$<br>(s) | $t_p$<br>(s MAX) | Ramp-up rate<br>( $T_L$ to $T_P$ ) | Ramp-down rate<br>( $T_P$ to $T_L$ ) | Time<br>25°C to peak temperature<br>(s MAX) |
|--------------------|--------------------|---------------|-------------------|--------------|--------------|------------------|------------------------------------|--------------------------------------|---------------------------------------------|
| 100                | 150                | 183           | 235               | 60-120       | 60-150       | 20               | 3°C/s MAX                          | 6°C/s MAX                            | 360                                         |

### Notes:

1. All temperatures measured on the package leads.
2. Maximum times of reflow cycle: 2.

### For More Information

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