

### Features

- Reinforced insulation for a working voltage up to 850 VDC
- Hi-Pot: 6000 VDC, 1 mA, 60 s
- Design construction: IEC 60664-1 & IEC 62368-1, UL 62368-1 & IEC 62477-1
- Creepage distance >9 mm
- Clearance distance >9 mm
- Overvoltage Category II, Pollution Degree 2, up to 5 km above sea level, Material Group I (CTI ≥ 600)
- AEC-Q200 compliant
- RoHS compliant\*

### Applications

- Automotive traction inverter and motor control
- Automotive on-board charger (OBC), DC-DC converter
- GaN, IGBT and SiC gate transformer driver bias supply
- UPS and solar inverters
- EV charging station, DC fast charging station
- Industrial motors, elevators and escalators

### Sustainability

- Small size reduces material use
- Eco-logistics-friendly packing
- High efficiency, low power loss
- Energy-saving low-power design
- Corrosion-resistant for longevity
- ISO 14001, low-impact energy

### Product Overview

The Model SM91270AL was developed for use with the TI Model UCC25800 and MPS Model MPQ18913 for LLC applications, and Maxim Model MAX25256 for full bridge. The full automation of manufacturing produces a high quality and cost-effective transformer. The Model SM91270AL is a low-profile component (less than 3.5 mm height

above PCB) with no base design structure. This planar transformer offers a working voltage of up to 850 VDC of reinforced insulation and a Hi-Pot isolation voltage of up to 6000 VDC with an extended operating temperature range of -40 to +125 °C. The maximum output power is up to 5.4 W in a small package.

### Electrical Specifications @ 25 °C

Specification	Value
Primary Inductance (1 V @ 100 kHz, 0 ADC) L (1-2, 3)	27.5 µH min.
Leakage Inductance (1 V @ 100 kHz, 0 ADC) L (1-2, 3 with Pin 4, 5, 6 Shorted)	1.2 µH max.
Capacitance (1 V @ 100 kHz, 0 ADC) (Pri-Sec)	4.5 pF max.
DCR (1-2, 3) (6-4, 5)	0.9 ohms max.
Turns Ratio (1-2, 3) (6-4, 5)	1 : 1 ±3 %
Hi-pot (Pri-Sec) (1 mA, 60 s)	6.0 kV DC
Working Voltage	850 VDC
Operating Temperature	-40 °C to +125 °C
Storage Temperature	-25 °C to +85 °C
Clearance/Creepage Distance of Primary to Secondary	9.0 mm min.
Moisture Sensitivity Level	1
ESD Classification (HBM)	N/A

### How to Order

**SM91270 A L - E**

Model \_\_\_\_\_

AEC-Q200 Compliancy Designator \_\_\_\_\_

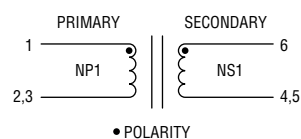
RoHS Compliancy Designator \_\_\_\_\_

Packaging \_\_\_\_\_  
E = 800 pcs. per 13-inch Reel

### Packaging Specifications

Packaging	Pieces per 13-inch Reel
Tape & Reel	800

### Electrical Schematic

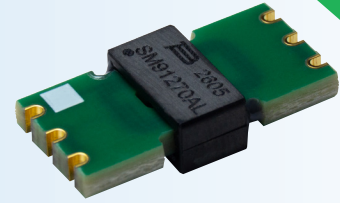


### Contact Information

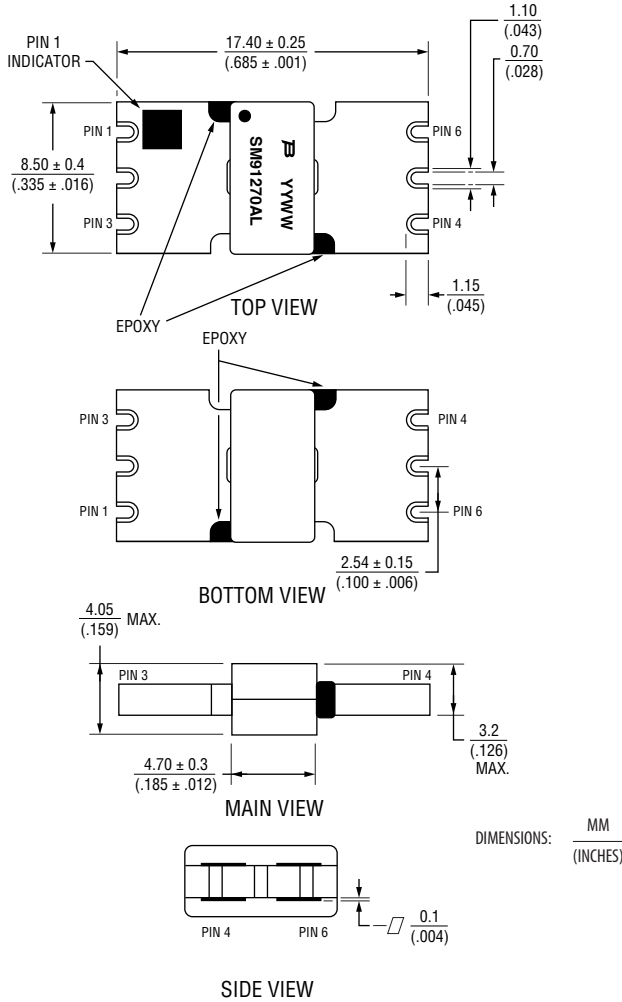
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\* RoHS Directive 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

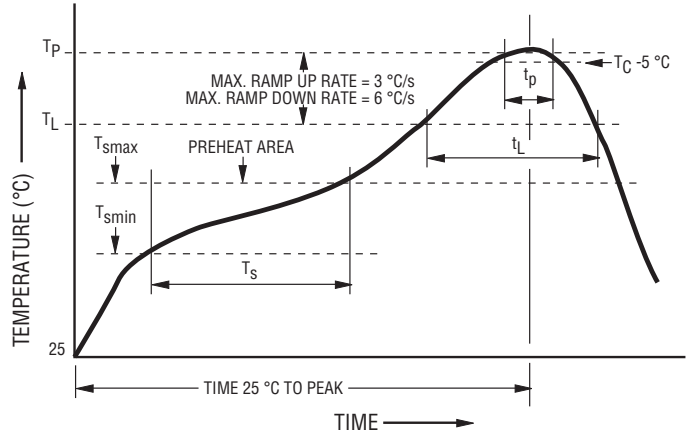
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### Product Dimensions

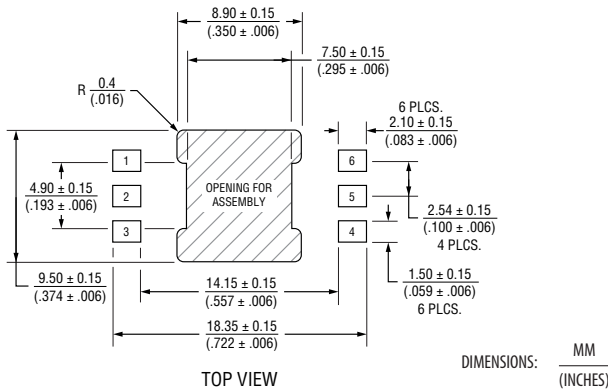


### Solder Profile



Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{smin}$ ) Temperature Max. ( $T_{smax}$ ) Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	150 °C 200 °C 60~120 seconds
Ramp Up Rate ( $T_L$ to $T_p$ )	3 °C / second max.
Liquidus Temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	217 °C 60~150 seconds
Peak Package Body Temperature ( $T_p$ )	$T_p \leq T_C$ (see table below)
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_C$ )	< 30 seconds
Ramp Down Rate ( $T_p$ to $T_L$ )	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

### Recommended Layout



### Pb-Free Process Classification Temperatures ( $T_C$ )

Package Thickness	Volume mm <sup>3</sup> < 350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> > 2000
< 1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
> 2.5 mm	250 °C	245 °C	245 °C

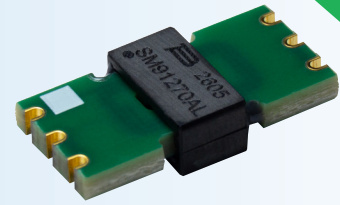
**NOTE:**

The product has been tested under this reflow condition. Deviations from this, especially higher temperatures for longer duration, could impact performance.

Refer to IPC/JEDEC J-STD-020

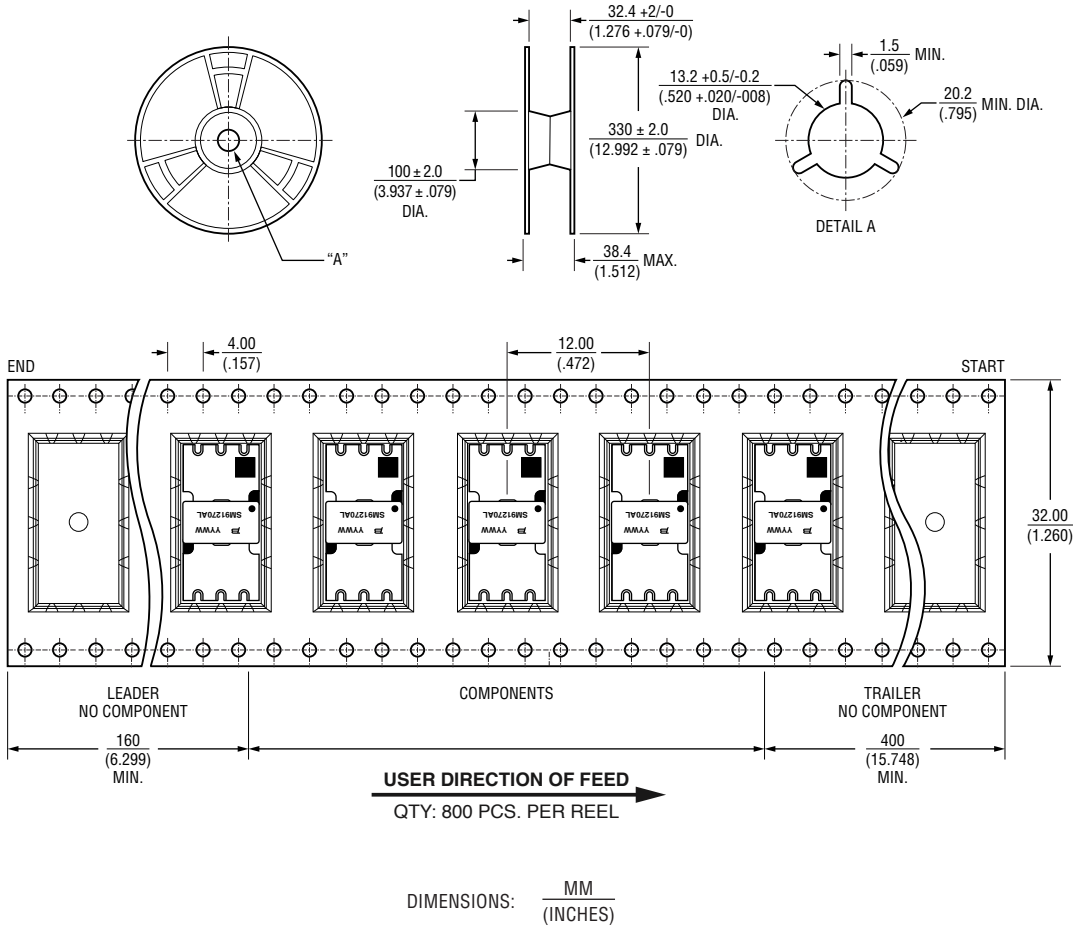
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### Packaging Specifications

Specifications and tolerances comply with EIA-481 requirements.



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