BOURNS®

AUTOMOTIVE GRADE

SM91081AL

LAN Transformer



*RoHS and AEC-Q200 COMPLIANT

Features

- Designed to meet IEEE 802.3cg - 10BASE-T1S
- Single pair Ethernet technology
- Developed for use with Microchip's LAN8670
- Hi-Pot voltage up to 1,500 VAC or 2,250 VDC
- Built-in common mode choke
- AEC-Q200 compliant and automotive grade
- Expanded temperature range: -40 to +125 °C
- RoHS compliant*

Applications

- Embedded controllers migrating from CAN or RS-485
- Industrial automation sensors and actuators
- Building control and HVAC systems
- Ethernet-enabled field instrumentation

Sustainability

- Small size reduces material use
- Eco-logistics-friendly packing
- High efficiency, low power loss

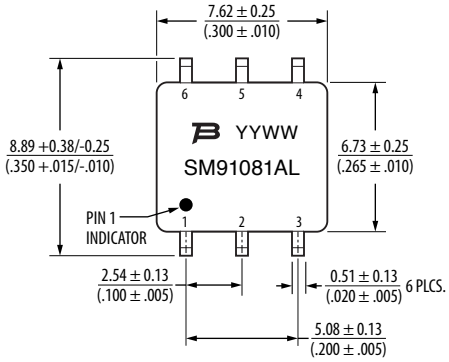
Product Overview

This single-Pair Ethernet (10Base-T1S) isolation transformer module includes a common mode choke for noise rejection in Ethernet applications. This model is designed to meet IEEE 802.3cg - 10Base-T1S, is AEC-Q200 compliant and offers 1,500 VAC isolation voltage with an extended operating temperature range of -40 to +125 °C.

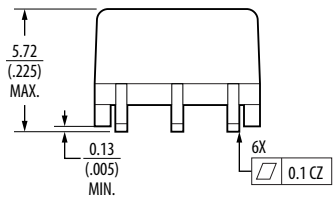
Electrical Specifications @ 25 °C

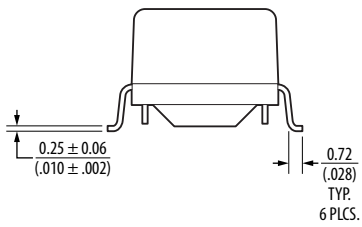
Inductance (100 kHz / 100 mV / 8mA)
(-40 °C ~ +125 °C) ..... 350 µH min.
Leakage Inductance
(1-3) with (6-4) shorted ..... 0.5 µH max.
Cww (1-6) ..... 35pF max.
DCR
1-3 ..... 1.0 Ω max.
4-6 ..... 1.4 Ω max.
Turns Ratio ..... 1:1 ±2 %
Insertion Loss (1-3)-(6-4)
1~100 MHz ..... -1.1 dB max.
Return Loss (1-3)-(6-4)
1~40 MHz ..... -16 dB min.
40~100 MHz..-10+20*log (f/80 MHz) dB min.
Common Mode Rejection Ratio (1-3)-(6-4)
1~60 MHz ..... -37 dB min.
60~100 MHz ..... -30 dB min.
Differential to Common Rejection Ratio (1-3)-(6-4)
30 MHz ..... -35 dB min.
60 MHz ..... -35dB min.
Hi-Pot (1 mA, 60 s) ..... 1,500 VAC / 2,250 VDC
Operating Temp. Range ..... -40 °C to +125 °C
Storage Temp. Range ..... -25 °C to +85 °C
Moisture Sensitivity Level 1

Product Dimensions



DIMENSIONS: MM (INCHES)





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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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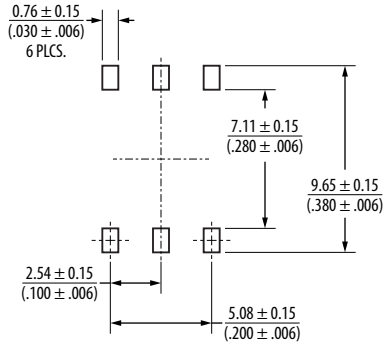
Recommended Layout



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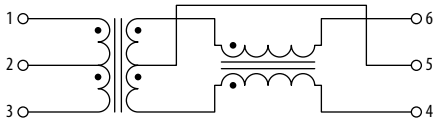
Electrical Schematic



• SAME POLARITY

How to Order

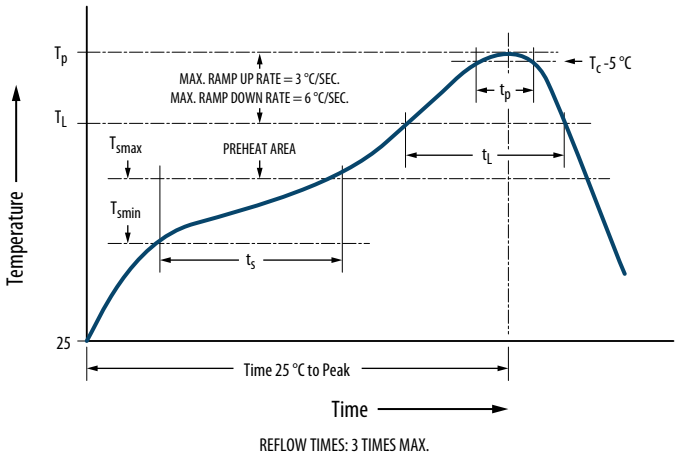
SM91081 A L - E

- Model
- AEC-Q200 Compliant
- RoHS Compliant
- Tape & Reel Packaging

Packaging Specifications

Tape & Reel .....800 pcs. per 13-inch reel

Soldering Profile



REFLOW TIMES: 3 TIMES MAX.

Profile Feature	Pb Free Assembly
Preheat - 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)	217 °C
Time (t_L) maintained above T_L	60-150 seconds
Peak package body temperature (T_p)	$T_p \leq T_c$ (see below)
Time (t_p) at T_c - 5 °C (T_p should be equal to or less than 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.

Pb-Free Process Classification Temperatures (T_c)

Package Thickness	Volume <350 mm³	Volume 350 - 2000 mm³	Volume >2000 mm³
<1.6 mm	260 °C	260 °C	260 °C
1.6 ~ 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

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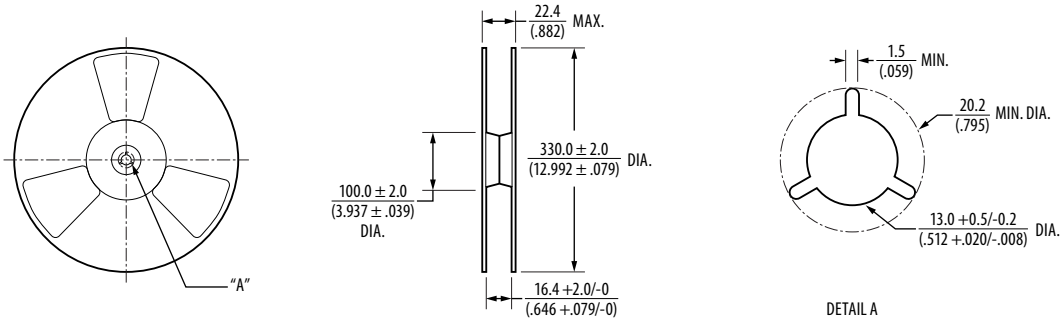
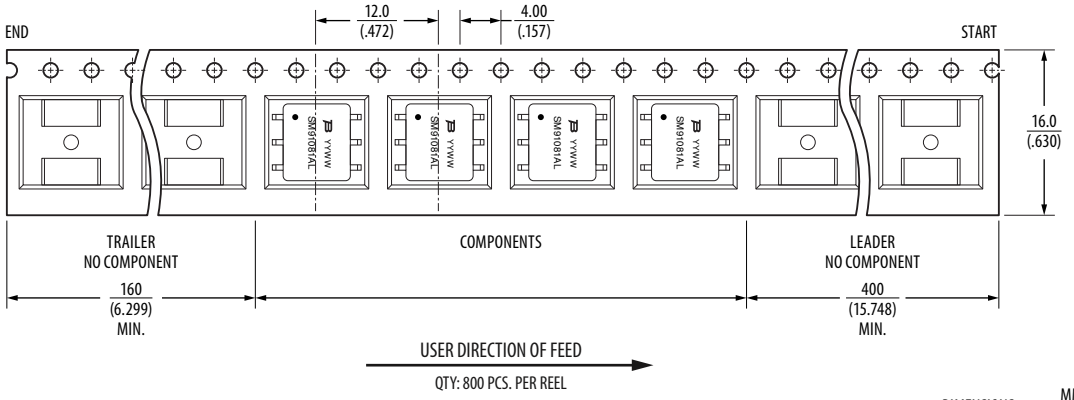
Packaging Information

Specifications and tolerances comply with EIA-481 requirements.





DIMENSIONS: MM (INCHES)

REV. 10/26

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