BOURNS®

AUTOMOTIVE GRADE

SM91581AL

BMS Transformer



*RoHS and AEC-Q200 COMPLIANT

Features

- Hi-Pot: 8400 VDC
- Basic insulation per reinforced insulation IEC 62477-1:2022 & IEC 62477-2:2018, working voltage up to 2500 VDC
- Reinforced insulation per reinforced insulation IEC 62477-1:2022 & IEC 62477-2:2018, working voltage up to 1800 VDC
- Creepage distance >23.7 mm, pollution degree 2, material group CTI I
- Clearance distance >23.7mm, Overvoltage Category II, up to 5000 m above sea level
- AEC-Q200 and RoHS compliant*

Applications

- Battery Management Systems (BMS) in hybrid and electric powertrain systems
- Energy storage battery packs with Battery Management Systems

Sustainability

- High pallet density for lower CO_2
- Eco-Logistics-friendly packing
- High efficiency, low power loss

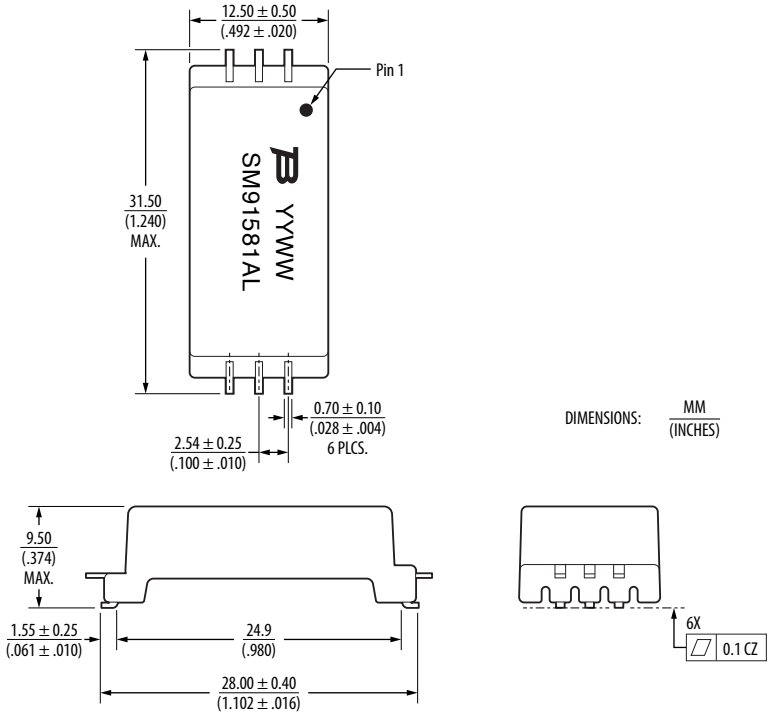
Product Overview

This single-channel reinforced insulation BMS signal transformer integrates common mode chokes to provide noise reduction and isolation in BMS communication circuits with Hi-Pot isolation voltages up to 8400 VDC with UL recognition. It is suitable for use inside 2500 V energy storage systems and electric vehicles. Automated assembly assures cost-effective production and higher quality.

Electrical Specifications @ 25 °C

Inductance (100 kHz/0.1 V)
(-40 °C to +125 °C)..... 150~450 µH
Leakage Inductance (100 kHz/0.1 V)
..... 0.6 µH max.
DCR
1-3.....0.5 Ω max.
4-6.....0.6 Ω max.
Turns Ratio 1:1
Insertion Loss (1-3)-(6-4)
4 MHz..... -0.3 dB max.
Return Loss (1-3)-(6-4)
4 MHz.....-20 dB min.
Common Mode Rejection Ratio (1-3)-(6-4)
1~100 MHz .....-30 dB min.
Hi-Pot
(1-3)-(6-4) ..... 8400 VDC 1 mA, 60 S
Operating Temperature .....-40 °C to +125 °C
Storage Temperature ..... -25 °C to +85 °C
Moisture Sensitivity Level..... 1

Product Dimensions



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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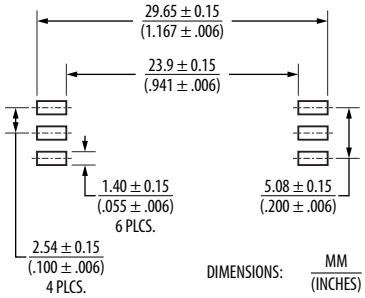
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Recommended Layout



How to Order

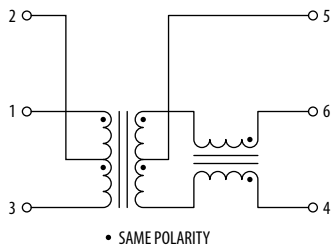
SM91581 A L - E

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

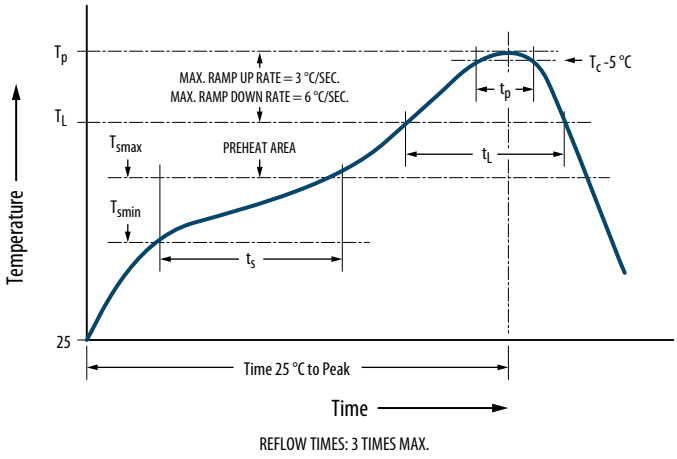
Packaging Specifications

Tape & Reel .....300 pcs. per 13-inch reel

Electrical Schematic



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.
Liquidous 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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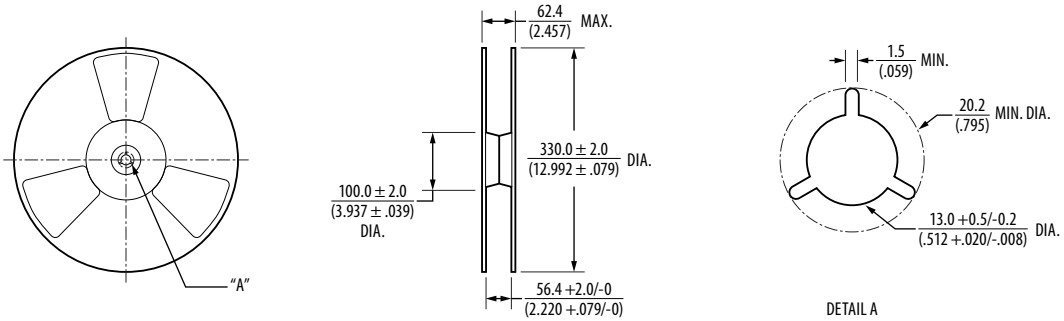
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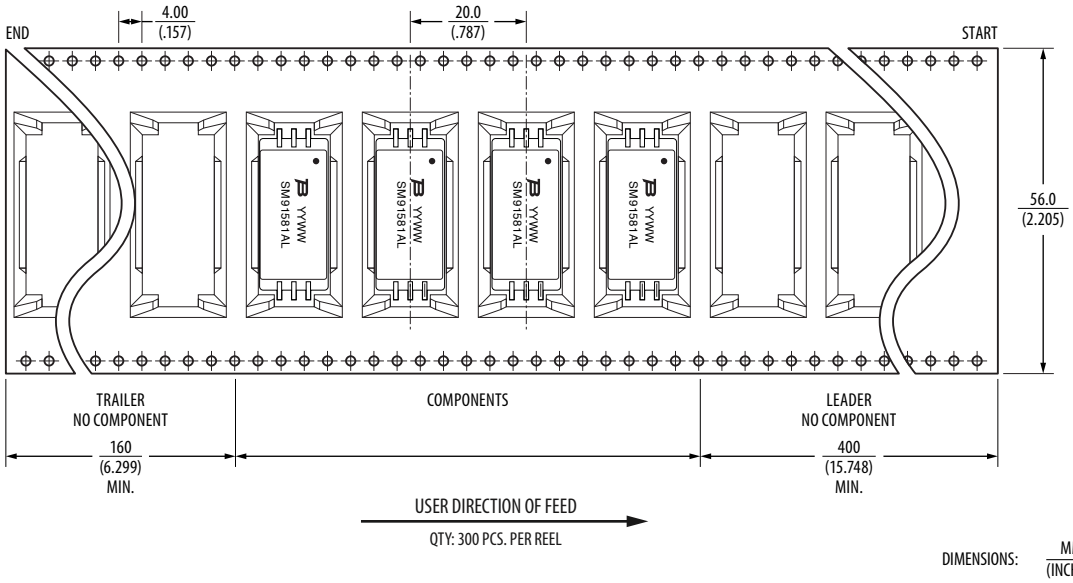


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Packaging Information

Specifications and tolerances comply with EIA-481 requirements.





DIMENSIONS: MM (INCHES)

REV. 08/26

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