IEEE P802.3da 10 Mb/s Single Pair Multidrop Segments Enhancement Task

24 JAN 2024 Interim Session

DC Resistance of Automotive Terminals

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Background and Reference

- November plenary it was requested for input on T-Connector Resistance. see https://www.ieee802.org/3/da/public/1123/Paul_01_da_2023_11_13.pdf for resistance assumptions.
- My main area of experience is automotive.
- "*SAE/USCAR-2 REVISION 8 PERFORMANCE SPECIFICATION FOR AUTOMOTIVE ELECTRICAL CONNECTOR SYSTEMS*" revised 2022-6 section 5.3.1 Dry Circuit Resistance Criteria.
- Criteria based on Nominal Male Terminal Size and Plating.
- The criteria shall be met post of any of the conditioning (including life).
- This test determines the combined resistance of the two conductor crimps (or single crimp in the case of a Header Connector) and the contact interface of a mated terminal pair in a connector, under low-energy conditions.

SAE/USCAR 2 MAXIMUM VALUES FOR DRY CIRCUIT

Max. Total Connection Resistance (mΩ)

Nominal Male Terminal Size	Terminals with Tin plating	Terminals with Precious Metal Plating (Ag or Au)
0.50 mm	25.0	25.0
0.64 mm	20.0	10.0
1.2 mm	15.0	10.0
1.5 mm	10.0	10.0
2.8 mm	5.0	5.0
9.5 mm	1.0	1.0
Coax center pin dia. >0.4 mm	24 - Center 6 - Shield	24 - Center 6 - Shield

Note: Cited from Table 5.3.2.4 of SAE/USCAR 2

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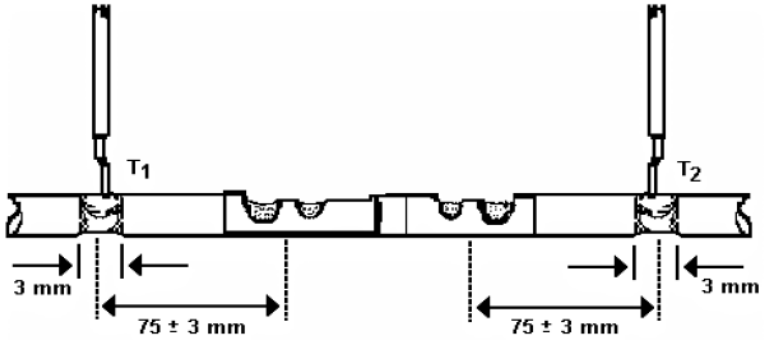
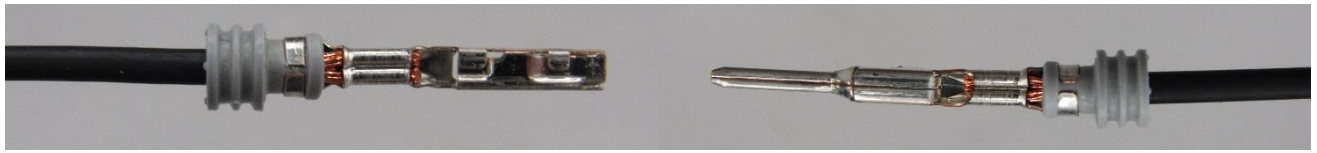
SAE/USCAR 2 Test Setup Figure and Implemented





Aptiv Female OCS 1.5 mm Terminal

Molex Male MX150 Terminal

Terminals Crimped onto 1.00 mm² Cable with a Cable Seal on Each

OCS - Optimal Component Series

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