■DIFFERENCES BETWEEN CAN, AVC-LAN AND BEAN

1. General

- The protocols, which are the rules for establishing data communication, differ between the CAN, AVC-LAN*1 and BEAN*2. If the ECUs in the networks use different frameworks for their data, such as communication speed, communication wire, and signals, they will be unable to understand each other. Therefore, protocols (rules) must be established among them.
- Compared to the AVC-LAN*1 and BEAN*2, the CAN features high-speed data transmission. Therefore, the CAN is able to transmit larger amounts of data faster than the other protocols. This feature makes it possible to transmit data accurately in the power train and chassis control system, which requires large amounts of data to be transmitted in short periods of time.

*1: AVC-LAN is used in the audio-visual system of some other TOYOTA models, but is not on the new Camry.

*2: The BEAN is used in the body electrical system of the previous Camry and some other TOYOTA models, but is not used on the new Camry.

Protocol	CAN (ISO Standard)	AVC-LAN (TOYOTA Original)	BEAN (TOYOTA Original)
Communication Speed	500 kbps*/HS-CAN 250 kbps*/MS-CAN (Max. 1 M bps)	Max. 17.8 kbps*	Max. 10 kbps*
Communication Wire	Twisted-pair Wire	Twisted-pair Wire	AV Single Wire
Drive Type	Differential Voltage Drive	Differential Voltage Drive	Single Wire Voltage Drive
Data Length	1-8 Byte (Variable)	0-32 Byte (Variable)	1-11 Byte (Variable)

*: bps: abbreviation for “Bits Per Second”, indicating the number of bits that can be transmitted per second.

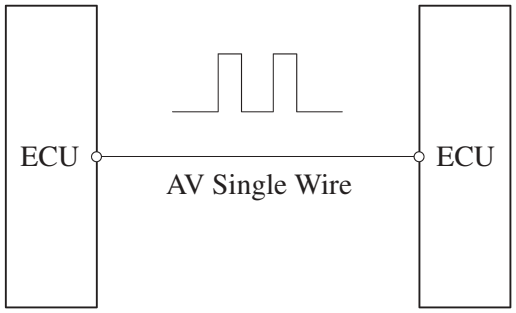
2. Communication Wire

A twisted-pair wire is used for CAN and AVC-LAN*1 communication. A single, AV (Automobile Vinyl) wire is used for BEAN*2 communication.

*1: AVC-LAN is used in the audio-visual system on some other TOYOTA models, but is not used on the new Camry.

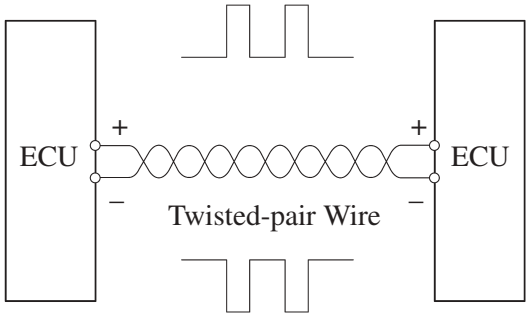
*2: The BEAN is used in the body electrical system of the previous Camry and some other TOYOTA models, but is not used on the new Camry.

Communication Wire	Outline
Twisted-pair Wire for CAN  241BE168	This communication wire is a pair of twisted lines. Communication is driven by applying voltage of 1.5 to 2.5 V and 2.5 to 3.5 V to the two lines in order to send a single signal. This system, which is called a “Differential Voltage Drive”, reduces noise.
Twisted-pair Wire for AVC-LAN  241BE168	This communication wire is a pair of twisted lines. Communication is driven by applying positive (+) and negative (–) voltages to the two lines in order to send a single signal. This system, which is called a “Differential Voltage Drive”, reduces noise.
AV Single Wire 240BE09	This is a lightweight single communication wire that consists of a single core line surrounded by insulation. Voltage is applied to this line in order to drive communication, and this system is called a “Single Wire Voltage Drive”.



240BE11

Single Wire Voltage Drive



240BE12

Differential Voltage Drive