

Dallas Semiconductor manufactures several devices for applications that must comply with J1 Japanese standards, which are very similar to the North American T1 standards. This application note focuses on the requirements for implementing J1 using Dallas Semiconductor devices.

JAPANESE STANDARDS

For each of the following Japanese standards there is a corresponding ITU standard for T1.

J1	T1
JT-G703	ITU G.703
JT-G704	ITU G.704
JT-G706	ITU G.706

- **JT-G703. Physical/Electrical Characteristics of Hierarchical Digital Interfaces:** Defines the physical and electrical characteristics of the transmitter output pulse.

Dallas Device Functionality: Selecting the desired output-pulse setting for T1 will meet the requirements of J1.

- **JT-G704. Synchronous Frame Structures Used at Primary and Secondary Hierarchical Levels:** Defines the basic frame structure and includes the specifications for CRC-6 required for J1.

Dallas Device Functionality: Register setting provides ability to calculate CRC-6 according to Japanese standard.

- **JT-G706. Frame Alignment and Cyclic Redundancy Check (CRC) Procedures:** Defines the procedure for implementing CRC-6 in equipment that receives signals defined in JT-G704.

Dallas Device Functionality: Register setting provides ability to check CRC-6 according to Japanese standard.

- **“Japanese Yellow Alarm” D4 12th F-Bit Mode:** When D4 framing is used, a one is placed in the S-bit position of frame 12.

Dallas Device Functionality: Separate register settings for transmit and receive implement the “Japanese Yellow Alarm.”

- **JT-I431. ISDN Primary Rate User-Network Interface, Layer 1 Specifications:** This standard refers to JT-G704 and JT-G706 for CRC-6 calculation and checking.

Table 1. **DALLAS J1 DEVICES**

DEVICE NUMBER	JAPANESE STANDARDS	DEVICE FUNCTION
DS2148, DS21Q48 DS21348, DS21Q348	JT-G703	E1/T1/J1 Line Interface Unit
DS2149	JT-G703	T1/J1 Line Interface Unit
DS21Q42, DS21FF42, DS21FT42	JT-G704, JT-G706	T1/J1 Framer
DS2152 DS21352, DS21Q352 DS21552, DS21Q552	JT-G703, JT-G704, JT-G706	T1/J1 Single-Chip Transceiver
DS2155, DS21Q55	JT-G703, JT-G704, JT-G706	T1/E1/J1 Single-Chip Transceiver

ENABLING J1 FUNCTIONALITY USING DALLAS DEVICES

The following information will focus on the J1 features of each Dallas device and how they are enabled. The data sheet must be used for a complete description of device functionality.

DS2148, DS21Q48, DS21348, DS21Q348

- **Output pulse according to JT-G703**
 - a) Select the desired T1 setting for line build-out and the output waveform will meet J1 (JT-G703) requirements.
 - b) Register CCR4 (Address = 03 hex).
 - c) Set or Clear L0, L1, L2 (CCR4.5, CCR4.6, CCR4.7) for desired line build-out.

DS2149

- **Output pulse according to JT-G703**
 - a) Select the desired T1 setting for line build-out and the output waveform will meet J1 (JT-G703) requirements.
 - b) Register CR1 (Address = 10 hex).
 - c) Set or Clear L0, L1, L2, L3 (CR1.0, CR1.1, CR1.2, CR1.3) for desired line build-out.

DS21Q42, DS21FF42, DS21FT42

- **Calculate CRC6 according to JT-G704**
 - a) Register CCR5 (Address = 19 hex).
 - b) Set the TJC bit (CCR5.7).
- **Check CRC6 according to JT-G706**
 - a) Register CCR6 (Address = 1E hex).
 - b) Set the RJC bit (CCR6.7).
- **Transmit Japanese Yellow Alarm**
 - a) Register TCR2 (Address = 36 hex).
 - b) Set the TD4YM bit (TCR2.1).
- **Receive Japanese Yellow Alarm**
 - a) Register RCR2 (Address = 2C hex).
 - b) Set the RD4YM bit (RCR2.2).

DS2152, DS21352, DS21Q352, DS21552, DS21Q552

- **Output pulse according to JT-G703**
 - a) Select the desired T1 setting for line build-out and the output waveform will meet J1 (JT-G703) requirements.
 - b) Register LICR (Address = 7C hex).
 - c) Set or Clear L0, L1, L2 (LICR.5, LICR.6, LICR.7) for desired line build-out.
- **Calculate CRC6 according to JT-G704**
 - a) Register CCR5 (Address = 19 hex).
 - b) Set the TJC bit (CCR5.7).
- **Check CRC6 according to JT-G706**
 - a) Register CCR6 (Address = 1E hex).
 - b) Set the RJC bit (CCR6.7).
- **Transmit Japanese Yellow Alarm**
 - a) Register TCR2 (Address = 36 hex).
 - b) Set the TD4YM bit (TCR2.1).
- **Receive Japanese Yellow Alarm**
 - a) Register RCR2 (Address = 2C hex).
 - b) Set the RD4YM bit (RCR2.2).

DS2155, DS21Q55

- **Output pulse according to JT-G703**
 - a) Select the desired T1 setting for line build-out and the output waveform will meet J1 (JT-G703) requirements.
 - b) Register LIC1 (Address = 78 hex).
 - c) Set or Clear L0, L1, L2 (LIC1.5, LIC1.6, LIC1.7) for desired line build-out.
- **Calculate CRC6 according to JT-G704**
 - a) Register T1TCR1 (Address = 05 hex).
 - b) Set the TJC bit (T1TCR1.7).
- **Check CRC6 according to JT-G706**
 - a) Register T1RCR2 (Address = 04 hex).
 - b) Set the RJC bit (T1RCR2.1).
- **Transmit Japanese Yellow Alarm**
 - a) Register T1TCR2 (Address = 06 hex).
 - b) Set the TD4YM bit (T1TCR2.2).
- **Receive Japanese Yellow Alarm**
 - a) Register T1RCR2 (Address = 04 hex).
 - b) Set the RD4YM bit (T1RCR2.0).