App Note 341: DS2151, DS2153 Device Identification

Application Note 341 describes how to identify the device correctly by software. This application note provides the procedure that allows the software to identify the device or poll the device identification register to determine if the device is a DS2151, DS2152 DS2153, DS2154, DS2155 or DS21x5y single chip transceiver (SCT).

IDENTIFYING A DS2151 OR DS2153

Boards designed for T1 or E1 operation have an installation option for either the DS2151 or the DS2153 single-chip transceiver.

The following procedure allows software to identify which device is installed and then carry out the proper initialization and driver load:

1. Write 00h to address 7Dh, 36h, 15h, 19h
2. Write 55h to address 23h
3. Read address 23h
4. If read of address 23h = 55h, then the device is a DS2153; else, the device is a DS2151.

IDENTIFYING A DS2152 OR DS2154

Since the DS2152 and DS2154 are pin-compatible devices, a single board can be created that will work with either device. To easily determine which device is installed on the board, the software only needs to poll the device identification register to determine if the device is T1 or E1 and what its revision number is.

IDR: DEVICE IDENTIFICATION REGISTER

(MSB)							(LSB)
T1E1	0	0	0	ID3	ID2	ID1	ID0

The T1E1 bit is used to determine the device, which is 0 for a DS2152 and 1 for a DS2154. The

four IDR bits are used to determine the revision of the device. Revision A1 is assigned the bit pattern of 0000, A2 is assigned 0001, and so forth.

Because of an A2 revision error of the DS2152, reading the device identification register will return the value of 80h instead of 01h. The value of 80h was originally reserved for revision A1 of the DS2154. This revision was never released, so the value of 80h is unique to the DS2152 A2 revision.

To correctly identify the devices, implement the following algorithm in software:

Read the ID register

If (MSB = 0), then DeviceID = DS2152

Else if ID register = 80h, then DeviceID = DS2152

    Else DeviceID = DS2154

IDENTIFYING A DS21X5Y

Since the DS21352, DS21552, DS21354, and DS21554 are pin-compatible devices, a single board can be created that will work with any device. To easily determine which device is installed on the board, the software only needs to poll the device identification register to determine if the device is T1 or E1 and what its revision number is.

IDR: DEVICE IDENTIFICATION REGISTER

MSB)							(LSB)
T1E1	Bit 6	Bit 5	Bit 4	ID3	ID2	ID1	ID0

The T1E1 bit is used to determine the device, which is 0 for a DS21X52 and 1 for a DS21X54. The four most significant bits (T1E1, Bit 6, Bit 5, and Bit 4) are used to determine the exact device part number. The following table shows how to interpret the specific bit patterns for the DS21X5Y devices and the DS2152 and DS2154.

DEVICE IDENTIFICATION BIT MAP

Device	T1E1	Bit 6	Bit 5	Bit 4
DS2152	0	0	0	0
DS21352	0	0	0	1

DS21552	0	0	1	0
DS2154	1	0	0	0
DS21354	1	0	0	1
DS21554	1	0	1	0

The four IDR bits are used to determine the revision of the device. Revision A1 is assigned the bit pattern of 0000, A2 is assigned 0001, and so forth. Note that part revisions are assigned sequentially, which means if a part has revisions A1, A2, and B1, then the assigned bit patterns are 0000, 0001, and 0010.

IDENTIFYING A DS2155

Since the DS2155 is pin compatible with the DS21352, DS21552, DS21354, and DS21554 devices, a single board can be created that will work with any device. To easily determine which device is installed on the board, the software only needs to poll the device identification register to determine which device the board is populated with and what its revision number is.

IDR: DEVICE IDENTIFICATION REGISTER

(MSB)							(LSB)
ID7	ID6	ID5	ID4	ID3	ID2	ID1	ID0

Since the DS2155 is a T1, J1, and E1 device, the four most significant bits (ID7, ID6, ID5, and ID4) are used to determine the exact device part number. The following table shows how to interpret the specific bit patterns for the DS2155.

DEVICE IDENTIFICATION BIT MAP

Device	T1E1	Bit 6	Bit 5	Bit 4
DS2155	1	0	1	1

The four least significant bits (ID3, ID2, ID1, and ID0) are used to determine the revision of the device. Revision A1 is assigned the bit pattern of 0000, A2 is assigned 0001, and so forth. Note that part revisions are assigned sequentially, which means if a part has revisions A1, A2, and B1, then the assigned bit patterns are 0000, 0001, and 0010.

More Information

DS2152: [QuickView](#) -- [Full (PDF) Data Sheet](#) -- [Free Samples](#)

DS2154: [QuickView](#) -- [Full (PDF) Data Sheet](#) -- [Free Samples](#)

DS2155: [QuickView](#) -- [Full (PDF) Data Sheet](#) -- [Free Samples](#)