

CAN Glitch Filtering of the PIC18FXX8

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INTRODUCTION

This technical brief describes the PIC18FXX8 family's CAN glitch filtering ability during Idle state. Specifically, does the device interpret a recessive-to-dominant transition as a Start-of-Frame (SOF) if the bus is recessive at the Sample Point? Also, will a second recessive-to-dominant transition within one bit time cause a resynchronization event?

The test results apply to the entire PIC18FXX8 family of devices, which includes:

- PIC18F248
- PIC18F258
- PIC18F448
- PIC18F458

TEST SET UP

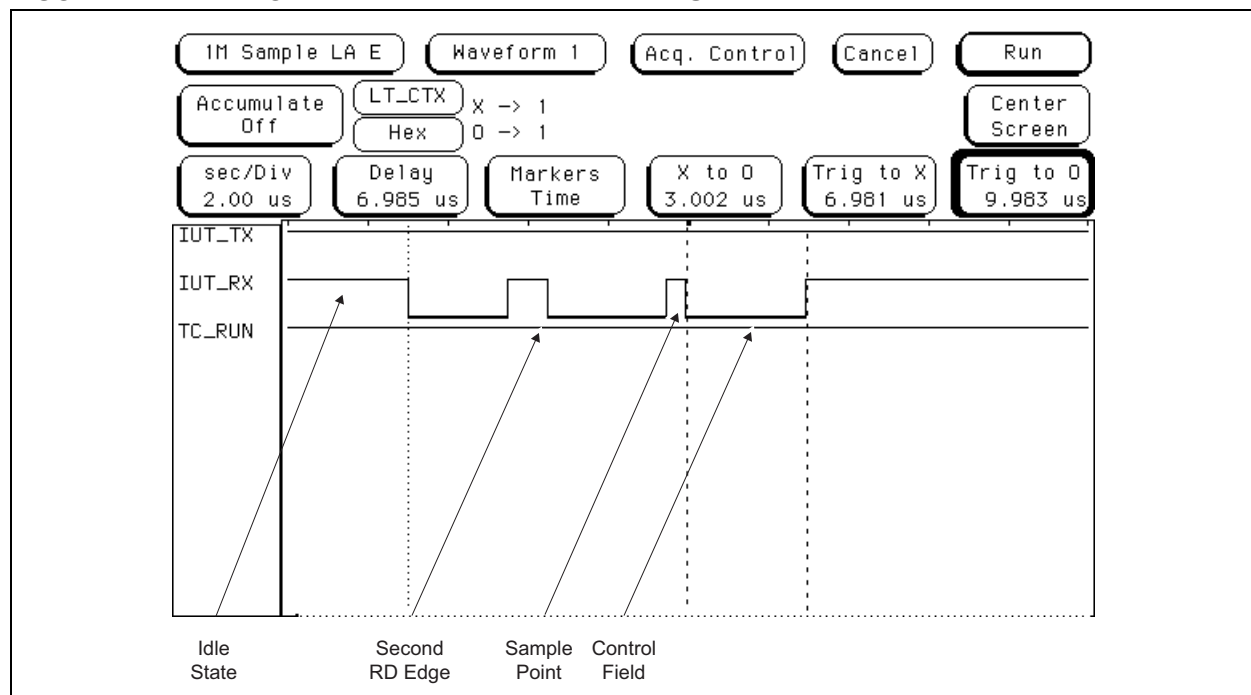
Device: PIC18F458
CPU Clock: 16 MHz
CAN Clock: 8 MHz
Baud rate: 100K
SJW: 4 TQ
NTQ: 20
SP: 14

TEST DESCRIPTION

The device will receive the bit pattern described below and shown in Figure 1:

Dominant Block = 5 TQ (1-5)
Recessive Block = 2 TQ (6-7)
Dominant Block = 6 TQ (8-13)
Recessive Block = 1 TQ (14) (SP)
Dominant Block = 6 TQ (15-20)

FIGURE 1: INPUT BIT PATTERN WHILE IN IDLE STATE



The 6 dominant TQs before and after the Sample Point will determine if the second recessive-to-dominant edge causes a resynchronization, which would move the sample point into the "Control Field".

TEST RESULTS

The "Pass" condition for this test is that the device stays in the Idle state and does not recognize a SOF. If the device recognizes a SOF, it will transmit an Error Frame, 6 bits (60 μ s) after the end of the bit pattern. The bit pattern comes into the device on the IUT_RX line and the device responds on the IUT_TX line. The test result is illustrated in Figure 2.

FIGURE 2: DEVICE STAYS IN IDLE STATE

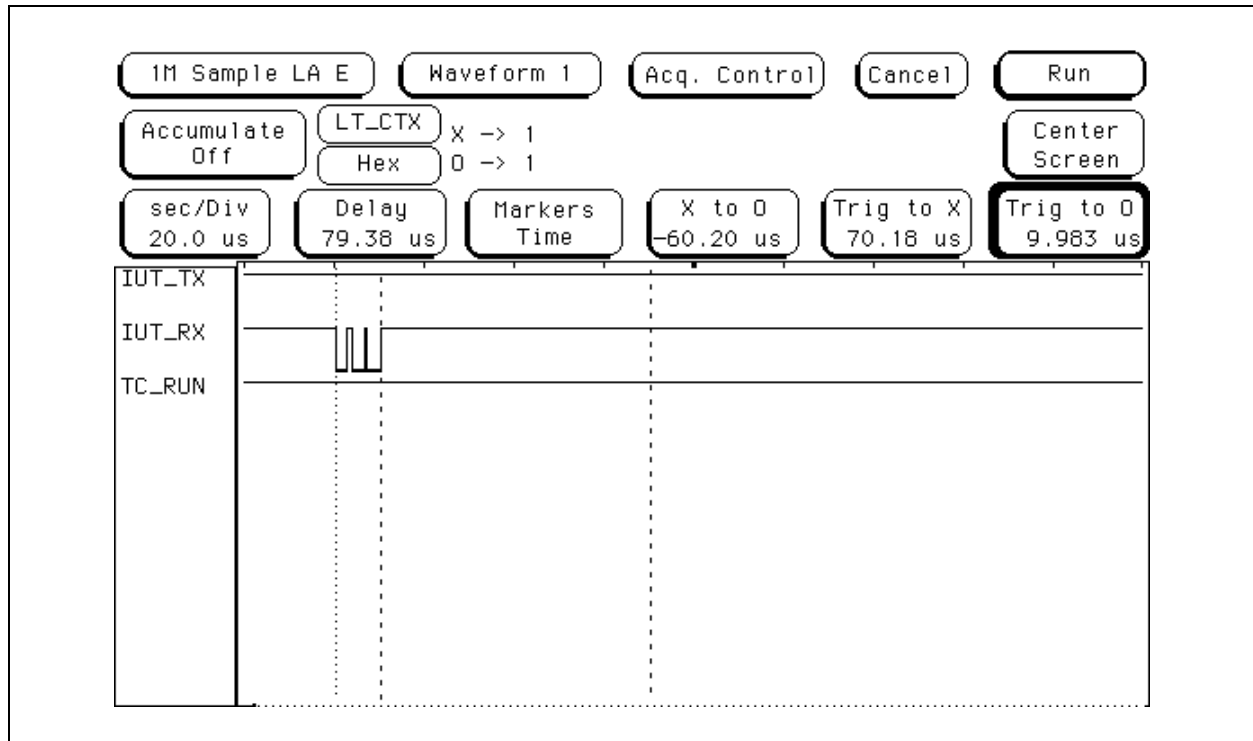


Figure 2 shows that the device passes this test as no Error Frame is transmitted on the IUT_TX line. This shows that the first recessive-to-dominant edge was not recognized as a SOF, as the bus was recessive at the Sample Point. It also shows that the second recessive-to-dominant transition did not generate a resynchronization.

ADDITIONAL RESOURCES

The above test was performed by the C&S Group at Fachhochschule Braunschweig/Wolfenbittel. The actual report from C&S is in German and is on file at Microchip Technology Inc.

A number of application notes, reference designs and reference codes for CAN-based applications can be found at: www.microchip.com.

For more on the CAN specification developed by Robert Bosch GmbH see: www.can.bosch.com.

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