INSTRUCTION MANUAL

OKI

MSM7583 Evaluation Board

Oki Electric Industry Co., Ltd.

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OKI Semiconductor

MSM7583 Evaluation Board

π/4 Shift QPSK MODEM

This board is used to evaluate an MSM7583 device (π/4 shift QPSK modem LSI). The evaluation board is provided with peripherals needed to operate the LSI, having the capability to evaluate its characteristics easily.

For details of specifications and functions of the MSM7583, refer to data sheets.

1. Configuration of Evaluation Board

- Evaluation board 1
- Attached power cord 1
- Female connector components for the flat cable ....1 set

2. Circuit Diagrams of Evaluation Board

- Circuit diagram ....See Figures 1.1 and 1.2.
- Board layout ....See Figure 2.
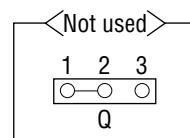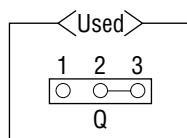
3. Information for Using Evaluation Board

(1) Power Supply
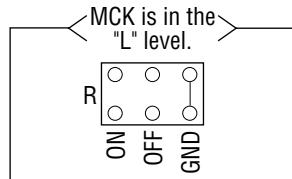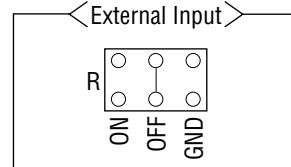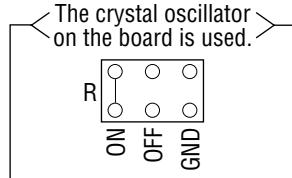
Supply power to the evaluation board via the attached power cord. Red and brown wires are for +5V, the black wire is to the ground, and the green wire is for –5V.

(2) Switches
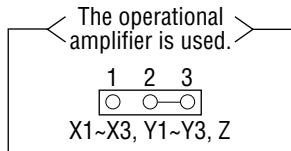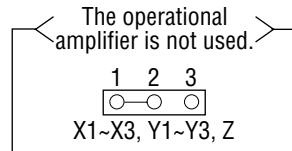
☆ Terminals A to N are used to open/close signals such as SLS11, SLS21, SLS12, SLS22, RXSEL, RCW1, AFC1, RPR1, RCW2, AFC2, RPR2, PDN2, PDN1, and PDN0 to the switches S1-S14. With terminals closed, the signal can be asserted or negated by control switches S1 to S14. With terminals open, control signals can be entered through pins 1 to 14 of the 40-pin flat cable connector.

☆ Terminals P is used to connect IFCK with X2 in MSM7583. During use, this terminal must be closed.

☆ Terminal Q is used to control input to X1 in MSM7583. Set this terminal as follows, depending on whether the oscillating circuit of MSM7583 is used.

☆ Terminal R is used to control the input of MCK (master clock) to MSM7583. Set this terminal as follows:

The crystal oscillator
on the board is used.

R

ON OFF GND

External Input

R

ON OFF GND

MCK is in the
"L" level.

R

ON OFF GND

☆ Terminals T to W are used to open/close reset input and serial control register input for MSM7583. The MSM7583 mode can be set through appropriate closed terminals by peripherals on the board. With appropriate terminals open. Control signals can be entered through pins 30 to 33 of the 40-pin flat cable connector.

☆ Terminals X1 to X3, Y1 to Y3, and Z are used to output quadrature modulation output I and Q, and envelope ENV. Inserting the operational amplifiers into the 8-pin IC sockets marked with OPA allows buffering outputs of added differential quadrature modulation outputs and also of envelope output. Set these terminals as follows:

The operational
amplifier is not used.

1   2   3

X1~X3, Y1~Y3, Z

The operational
amplifier is used.

1   2   3

X1~X3, Y1~Y3, Z

With the operational amplifier not used, I+, I–, Q+, Q– and ENV output signals of MSM7583 are given out directly at the BNC terminals on the board. With the operational amplifier used, the addition of I+ and I– is output at I+ of the BNC terminal, the addition of Q+ and Q– at Q+, and buffered ENV output at ENV of the BNC terminal.
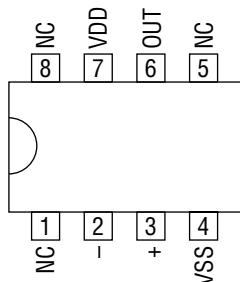
(3) Crystal Oscillator

MSM7583 uses a crystal oscillator depending on the input IF signal frequency. The following are frequencies used:

IF signal frequency	Frequency of crystal oscillator
1.2MHz/10.8MHz	Not used
10.7MHz	19.0222MHz
10.75MHz	19.1111MHz

(4) Operational Amplifier

The operational amplifier to be inserted into the 8-pin IC socket marked with OPA must have the following pin assignment.

```
      NC  VDD  OUT  NC
      [8] [7] [6] [5]
     ┌──────────────────┐
     │ ⌒                │
     │                  │
     └──────────────────┘
      [1] [2] [3] [4]
      NC   –   +  VSS
```

### (5) Setting MSM7583 Serial Control Register

Turning on the switch by the push button for the serial control register allows CS to load MSM7583 with data set by switches A0 to A2 and B0 to B7. For contents of the registers, see data sheets.

(6) Other I/O Signals

☆ IF signals (modulating wave inputs) are to be entered through BNC terminals IFIN1 and IFIN2 on the board.

☆ TXCI, TXD and TXW (send clock, send data and send data window) are to be entered through pins 27 to 29 of the 40-pin flat cable connector.

☆ External control signals can be entered and signals can be output through the 40-pin flat cable connector. For the relationships between signals and connector pins, see the separate circuit diagram.

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MSM7583

VDD2

HC04
12 13

R12
10kΩ
R13
10kΩ

VDD2

HC00-1
1 2 3

CS
Push Button Switch

HC00-1
4 5 6

HC74
1 1CL VCC 14
2 1D
3 1CK 1Q 5
4 1PR 1Q 6
13 2CL
12 2D
11 2CK 2Q 9
10 2PR 2Q 8
7 GND

HC161
1 CL VCC 16
2 CK CAR 15
3 A
4 B
5 C
6 D
7 ENP
9 LOA
8 GND ENT 10

VDD2

HC74
1 1CL VCC 14
2 1D
3 1CK 1Q 5
4 1PR 1Q 6
13 2CL
12 2D
11 2CK 2Q 9
10 2PR 2Q 8
7 GND

HC00-1
10 9 8

HC04
1 2

HC00-1
13 12 11

HC04
3 4

EXCK

DEN

VDD2

HC393
1 1CK VCC 14
13 2CK 1QA 3
1QB 4
1QC 5
1QD 6
2QA 11
2 1CL 2QB 10
12 2CL 2QC 9
7 GND 2QD 8

R11
10kΩ

R/W
A2
A1
A0
B7
B6
B5
B4
B3
B2
B1
B0

HC165
6 H VCC 16
5 G QH 9
4 F QH 7
3 E
14 D
13 C S/L 1
12 B INH 15
11 A CK 2
10 SI GN 8

VDD2

DIN

VDD2

R14
10kΩ
R15
10kΩ

HC00-2
1 2 3

RESET
Push Button Switch

HC00-2
4 5 6

RESET

VDD2

Crystal Oscillator

1
VCC 14

19.2MHz

7 GND OUT 8

MCK

HC165
6 H VCC 16
5 G QH 9
4 F QH 7
3 E
14 D
13 C S/L 1
12 B INH 15
11 A CK 2
10 SI GN 8

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