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Renesas Electronics Corporation

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User's Manual

M38K29T-ADF

User's Manual

Temporary Target Board for M38K09RFS and M38K29RFS

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Rev.1.00 2003.09

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\SUPPORT\Product-name\SUPPORT.TXT

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1. Things to Check When Unpacking

The M38K29T-ADF package consists of the following products. When unpacking it, check to see that all of these components are included.

Table 1.1 Package components

Item	Quantity
Temporary target board M38K29T-ADF	1
USB connectors UBA-4R-D10T-1 for downstream ports (made by JST)	2
USB connector UBB-4R-D10T-1 for upstream ports (made by JST)	1
M38K29T-ADF User's manual (English)	1
M38K29T-ADF User's manual (Japanese)	1

* If you find any item missing or faulty, or any suggestion, contact your local distributor.

2. Outline

This product is a temporary target board used to develop software with a PC4701 emulator system. It supplies to the M38K09RFS and M38K29RFS MCU the minimum required signals needed to operate the emulator MCU, including power supply voltage, clock signals and reset signals. And also, it has USB connectors on-board for simplified evaluation of USB-related functions. Use it when a target system is not ready.

3. Specifications

Table 3.1 lists the specifications of the M38K29T-ADF.

Table 3.1 Specifications of the M38K29T-ADF

Applicable MCU	M38K09RFS, M38K29RFS
Clock	6.0MHz oscillator mounted
Power supply voltage	3.0 V to 5.25 V (supplied separately*)
RESET	• Reset circuit mounted (power-on reset and reset switch) • Reset output of an emulation pod connected
External dimensions	Width: 90 mm, Depth: 115 mm
Others	• Universal part prepared • Patterns for installing USB connectors prepared

* Because power cannot be supplied from an emulation pod for the PC4701 (e.g. M38000TL2-FPD), prepare an external power supply.

4. Setup

This chapter describes how to set up the M38K29T-ADF.

⚠ CAUTION

Note on Setup:

- Always shut OFF power before connecting this product. Otherwise, internal circuits may be damaged.

(1) Mount the emulator MCU on the M38K29T-ADF.

After checking the position of the No. 1 pin of the emulator MCU, mount the emulator MCU referencing Figure 4.1.

(2) Insert the connector on the tip of the emulation pod probe to the socket on the emulator MCU.

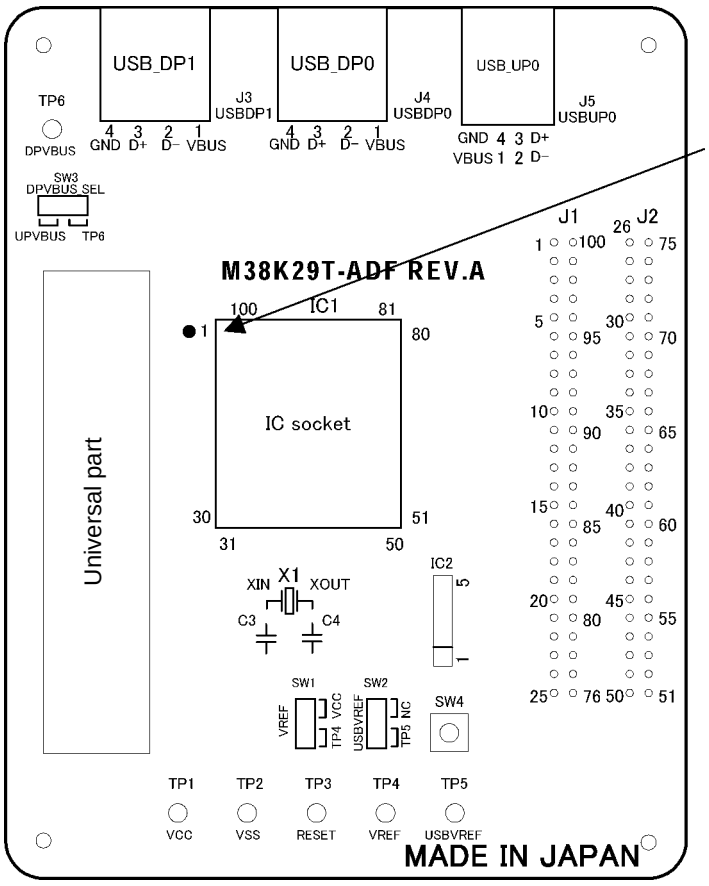

Figure 4.1 Position of No. 1 pin of the M38K29T-ADF's emulator MCU

(3) Connect the RESET cable (white) and the GND cable (black) of the emulation pod to pin RESET (TP3) and pin Vss (TP2) of the M38K29T-ADF respectively. Leave the Vcc cable (yellow) unconnected.

(4) Set the MCU type select switch of the M38000TL2-FPD to the RSS/RFS side.

(5) Connect an external power supply to pin Vcc (TP1) of the M38K29T-ADF. And connect the GND output of the power supply to pin Vss (TP2). Use a power supply whose rising time is 10 ms or less.

Table 4.1 lists the correspondence of the connector cables and signals, and Figure 4.2 shows connecting the cables to the M38K29T-ADF.

Table 4.1 Connector cables of the M38000TL2-FPD and applicable signals

Cable color	Signal
White	RESET
Black	Vss
Yellow	No connection

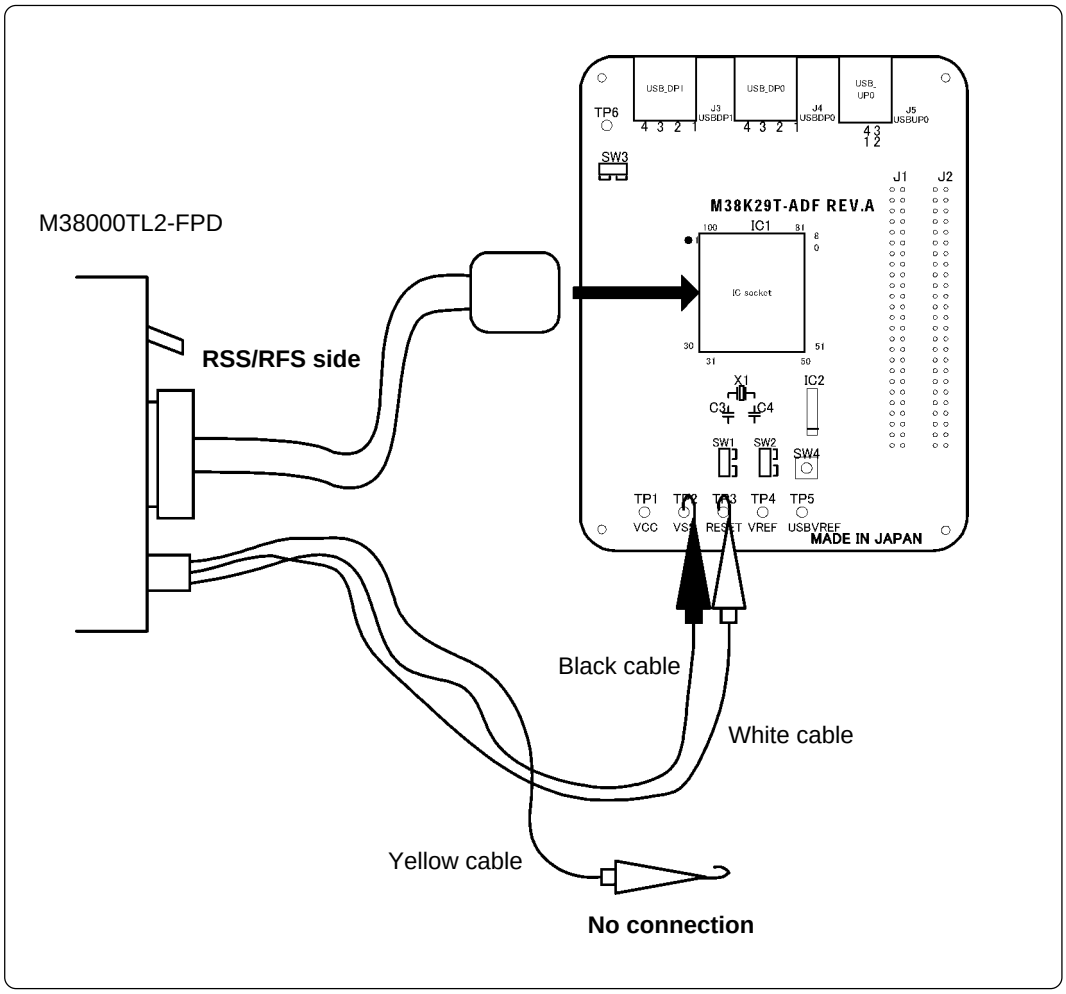

Figure 4.2 Connecting the cables to the M38K29T-ADF

(6) Set switches SW1 to SW3 according to your application. Table 4.2 describes the functions of the switches.

Table 4.2 Functions of switches SW1, SW2 and SW3 of the M38K29T-ADF

No.	Name	Function	Factory-setting
SW1	VREF	Allows you to choose whether to apply Vcc or an external power supply to the MCU's pin VREF (43-pin). **For the M38K09RFS and M38K29RFS, set this switch to the Vcc side.**	Vcc
SW2	USBVREF	Allows you to choose whether to apply an external power supply to the MCU's pin USBVREF (64-pin). When the operating voltage of the MCU (Vcc) is between 4.0 and 5.25 V, set switch SW2 to the NC side. When the operating voltage of the MCU (Vcc) is less than 4.0 V, set switch SW2 to the TP5 side and apply a voltage (3.0 to 3.6 V) to the TP5 (USBVREF).	NC
SW3	DPVBUS_SEL	Allows you to choose whether to apply an external power supply or the VBUS of upstream to the VBUS of USB downstream. To use an external power supply, set switch SW3 to the TP6 side and apply 5 V to the TP6 (DPVBUS). To supply the VBUS of upstream, set switch SW3 to the UPVBUS side. When the VBUS of upstream is supplied, the VBUS of upstream is connected to the VBUS of downstream. Therefore, do not apply a voltage to the TP6 (DPVBUS).	TP6

5. Oscillator Circuit

The M38K29T-ADF has a 6.0MHz oscillator on-board. Figure 5.1 shows a circuit diagram of the oscillator. When replacing the oscillator, the constants depend on an oscillator you use. It is advisable to refer to the values recommended by the manufacturers.

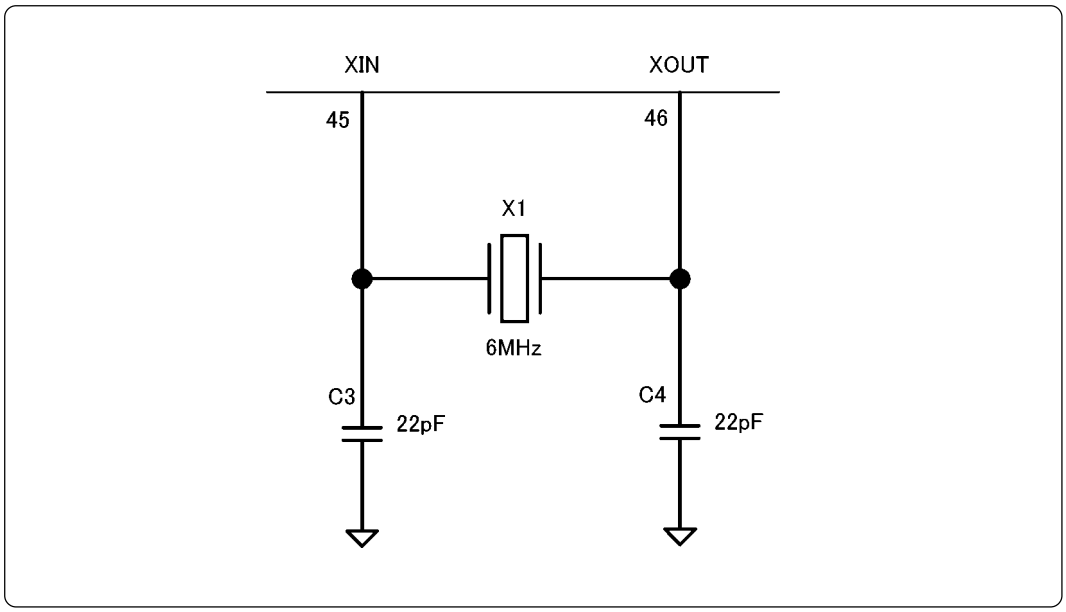

Figure 5.1 Circuit diagram of the oscillator

6. Reset Circuit

Figure 6.1 shows the reset circuit and its waveform. In this product, reset is cleared in about 100 ms from the instant Vcc passes about 2.1 V after having started from 0 V. When Vcc drops down to about 2.1 V, reset turns effective.

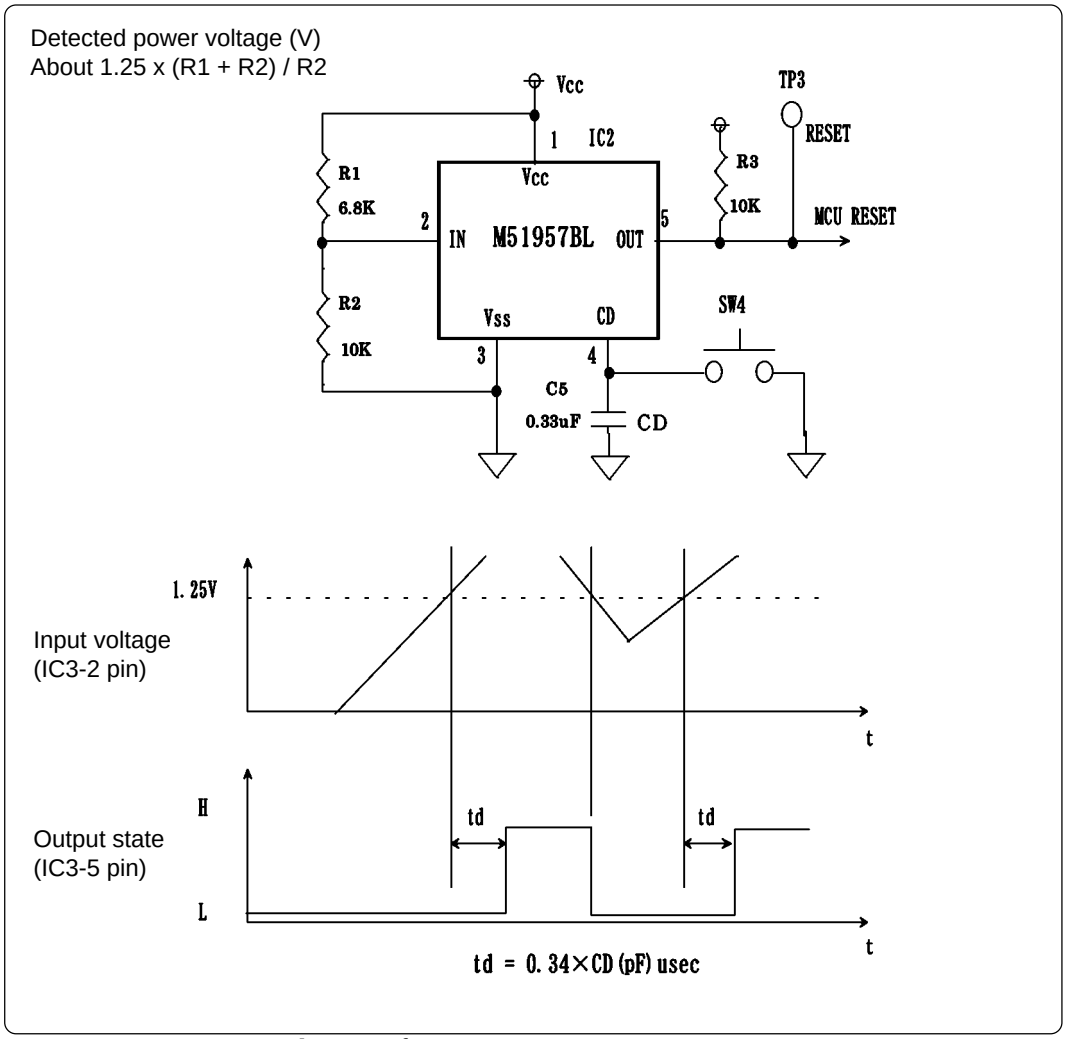

Figure 6.1 Reset circuit and its waveform

By using switch SW4, you can rest the MCU manually.

Table 6.1 Function of switch SW4 (reset switch)

No.	Name	Function
SW4	RESET	This is the reset switch. Press down this switch to reset the MCU.

7. USB Port Circuit

The M38K29T-ADF has some patterns for simplified evaluation of USB-related functions.

Figure 7.1 shows a USB port circuit diagram. This diagram is a summarized version for reference purposes. Therefore, to design your circuit, see USB specifications or reference materials about 38K0 and 38K2 Group circuits.

When the M38K29T-ADF is shipped from the factory, USB-related parts are not mounted. Mount them as necessary. And, though the USB connectors are included with this product, resistors are not included. Get them separately.

(1) USB Reference Power Supply (USBVREF)

If you make an MCU operate at 4.0 ≤ Vcc ≤ 5.25 V, use the internal USB reference power supply source of the MCU. To use it, set switch SW2 to the NC side.

If you make an MCU operate at 3.0 ≤ Vcc < 4.0 V, you cannot use the internal USB reference power supply source of the MCU. Set switch SW2 to the TP5 side and apply a voltage between 3.0 and 3.6 V to TP5.

(2) USB Reference Voltage Output (TrON)

This is the pullup voltage output pin for the USB up-port. The M38K29T-ADF has the pattern for mounting a resistor for pulling up the D0+ pin. Use a 1.5kΩ resistor at R4.

(3) USB Upstream I/O (D0+/D0-)

Pins D+/D- represent the USB upstream signal pair D+ and D-. These signals have the patterns for mounting a USB connector and resistors for impedance-matching. To do so, use resistors for impedance matching at R5 and R6, and mount connector UBB-4R-D10T-1 included with this product (made by JST) for USB upstream at J5.

(4) USB Downstream I/O (D1-/D1+ and D2-/D2+)

Pins D+/D- represent the USB downstream signal pair D+ and D-. For these signals, the M38K29T-ADF has the patterns for mounting resistors for impedance-matching and pulldown resistors. To do so, use resistors for impedance matching at R7, R8, R11 and R12, use pulldown resistors at R9, R10, R13 and R14, and mount the UBA-4R-D10T-1 connectors included with this product (made by JST) for USB downstream at J3 and J4.

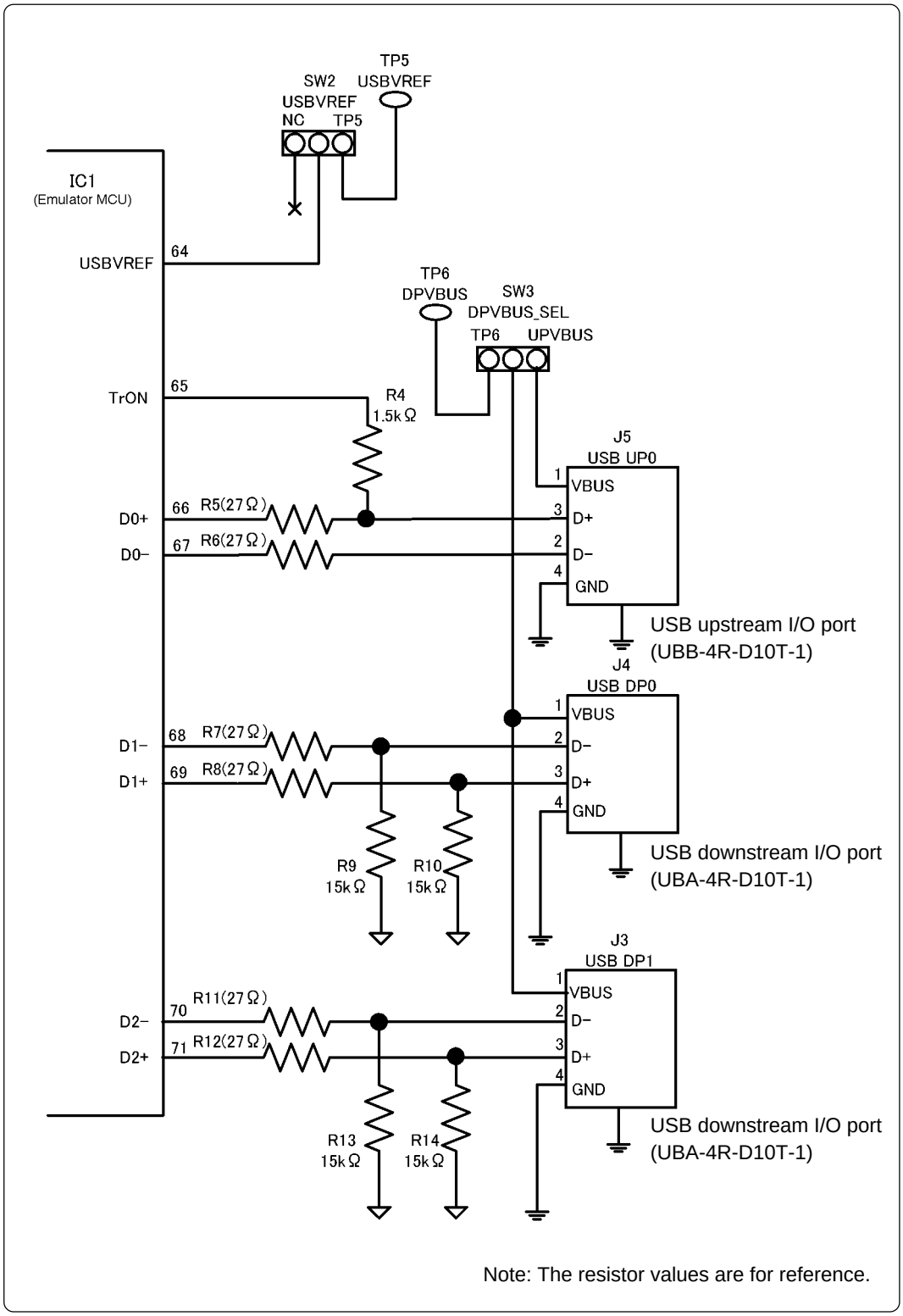

Figure 7.1 USB port circuit diagram

8. Pin Layout

Figure 8.1 shows the pin layout of the M38K29T-ADF.

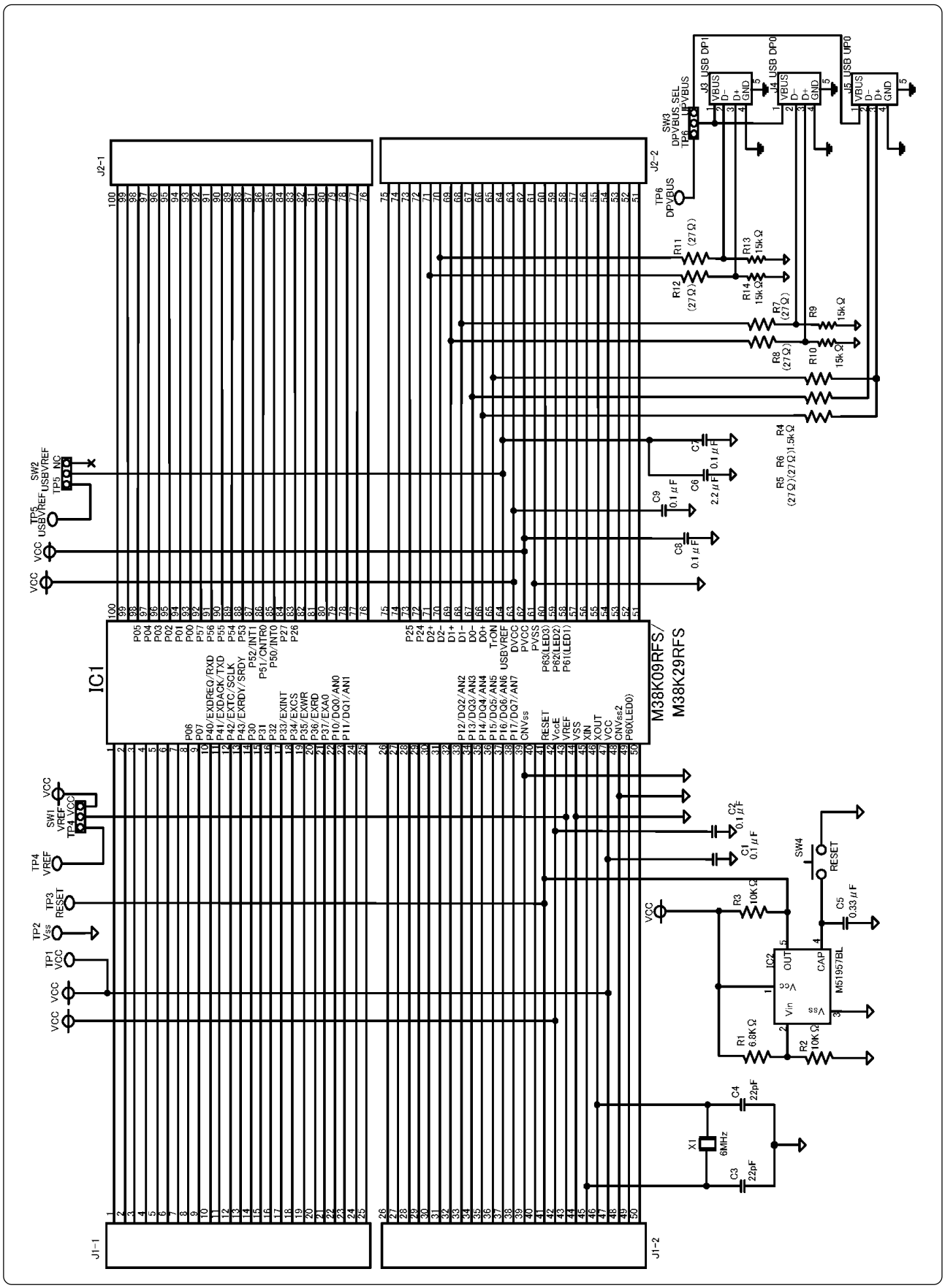

Figure 8.1 Pin layout of the M38K29T-ADF

M38K29T-ADF User's Manual

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User's Manual

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