NEC

Customer Notification

V850ES/Fx2

32-Bit Single-Chip Microcontrollers
Operating Precautions

Difference Flash vs. Mask

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(B) Description of Operating Precautions

No. 1	Mask Options
	Some options can be set in a kind of non-volatile register. This function is called mask ROM option. The data cannot be changed during runtime. The Power On Clear (POC) functionality can be enabled/disabled different. 1. The flash device needs a different order code to choose between with/without POC. µPD70F323*M1* Without power-on clear function µPD70F323*M2* With power-on clear function 2. The mask ROM version has one more bit in the mask ROM option byte to configure. Bit 2 ('MP2') of Mask Option Byte define if POC is activated or not. MP2 = 0 POC disabled MP2 = 1 POC enabled For all other options: In case of mask products, set the option data same as flash memory products.

No. 2	Start-up time
	The start-up time from Reset/Power-up differs from flash to mask device. In a flash device the internal firmware checks the settings for the reset vector and boot block swap. Depending on the setting, flash blocks have to be swapped. A mask ROM device does not include such functionality. Therefore a mask device starts a bit faster. The oscillation stabilization time do not change. (Measurements show an average operating time of the internal firmware (during start-up) of 2.3 ms for the flash device. This time will be decreased.)

No. 3	Memory size
	Following device type has a different RAM size: µPD70F3232 Flash 128 KByte RAM **12** KByte (3FFC000 - 3FFEFFF) µPD703232 Mask 128 KByte RAM **6** KByte (3FFD800 - 3FFEFFF) Following device only exists with mask ROM memory and has no flash equivalent: µPD703230 Flash 64 KByte RAM 4 KByte (3FFE000 - 3FFEFFF)

No. 4	Storage
	The maximum storage temperature for the mask ROM device is higher than the flash device. Mask Storage temperature T_{stg} = -65 to +150 °C Flash Storage temperature T_{stg} = -40 to +125 °C

No. 5	Supply current
	The supply current of the mask ROM device is different (smaller) to the flash device. Refer to the electrical specification of the device.

No. 6	Pin leakage current
	The pin leakage current differs on pin FLMD0. This pin only exists on the flash device and has a different leakage current than the other I/O pins. On the mask ROM product, this does not apply. For flash memory product, specification of FLMD0 is as follows: Input leakage current, high: 2 µA Input leakage current, low: -2 µA (Usually +/- 0.5 µA per pin)

No. 7	Pins
	Two pins are only available in the flash device: FLMD0 FLMD1 One pin is only available in the mask device: IC Connect to VSS directly

No. 8	N-Wire
	The on-chip debug function is provided only in the flash memory version. It is not provided with the mask ROM version. However, the OCDM register also exists in the mask ROM version and it controls the pull-down resistor connected to the P05/INTP2 pin, so set the OCDM register even for the mask ROM version.

No. 9	Programmer interface
	A programmer connection (CSI, UART, and N-Wire) is not possible.

No. 10	EME
	The EME behaviour is different from mask to flash device. Refer to the EME measurement report of the device.

No. 11	Software change
	In opposite to the flash memory producs, the mask ROM products cannot be updated/corrected. (Self)programming is not supported in any way. A modified ROM code needs a new product order/production.

No. 12	Order
	The mask ROM order can be done by Internet. Please visit out internet site for further instructions: http://193.141.220.25/ros/internet.html

(C) Valid Specification

Item	Date published	Document No.	Document Title
1	Nov-2005	U17830EE1V0UM00	V850ES/Fx2 32-Bit Single-Chip Microcontroller Hardware (User's Manual)
2	Nov-2004	U17834EE1V0DS00	V850ES/FE2 Data Sheet
3	Dez-2005	U17833EE2V0DS00	V850ES/FF2 Data Sheet
4	Nov-2005	U17832EE1V0DS00	V850ES/FG2 Data Sheet
5	Nov-2005	U17831EE1V0DS00	V850ES/FJ2 Data Sheet
6	Feb-2005	EEDT-CD-0144-1.1	EME of µPD70F3231GB
7	Jan-2005	EEDT-CD-0145-1.1	EME of µPD70F3233GK
8	Aug-2003	EEDT-CD-0113-1.0	EME of µPD70F3236GC
9	Feb-2004	EEDT-CD-0106-2.0	EME of µPD70F3239M2GJ
10	Feb-2005	EEDT-CD-0157-1.0	EME of µPD70F3239HGJ

(D) Revision History

Version	Date published	Document No.	Comment
1.0	Apr-2006	TPS-HE-D-4270	Initial release