

# Comparing FM32xx and FM3227x/FM32L27x

## *I<sup>2</sup>C Processor Companion with F-RAM Devices*



### DESCRIPTION

The FM32xx and FM3227x/FM32L27x processor companion families are similar in many ways, however there are a few key differences. The original FM32xx family operates over a wide voltage range, 2.7V to 5.5V. The FM3227x and FM32L27x families are split into 5V and 3V versions, respectively.

The following table shows the new part numbers and the corresponding densities.

Density	Original Family	New 5V Family	New 3V Family
256Kb	FM32256-G	FM32278-G	FM32L278-G
64Kb	FM3264-G	FM32276-G	FM32L276-G
16Kb	FM3216-G	FM32274-G	FM32L274-G
4Kb	FM3204-G	FM32272-G	FM32L272-G

The original and new devices are mostly the same. The interface, features, and densities are the same, however, there are two differences: (1) operating voltage range, (2) trickle charger, and (3) no special battery insertion precautions on the new devices.

#### Register 0Bh, FM32xx

Reg	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0Bh	SNL	-	-	WP1	WP0	VBC	VTP1	VTP0

#### Register 0Bh, FM3227x/FM32L27x

Reg	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0Bh	SNL	-	FC	WP1	WP0	VBC	-	VTP

- (1) The new FM3227x devices operate from 4.0V to 5.5V and requires only one bit to program two VTP trip points, 3.9V and 4.4V. Similarly the new FM32L27x devices operate from 2.7V to 3.6V and also requires only one bit to program two VTP trip points, 2.6V and 2.9V. Register 0Bh is shown above for original and new devices. Note: This is code compatible with the original FM32xx since Bit 1 in the new FM3227x/FM32L27x is ignored.
- (2) The new devices have a higher trickle charger current for the base setting (FC=0). They also have a new Fast Charge mode (FC=1) that is user-selectable. This Fast Charge mode allows a 0.1F supercap to be fully charged in 15 minutes. Note the VBC bit remains in location Bit 2, Register 0Bh. The FC bit has been added to location Bit 5, Register 0Bh. If the trickle charger is disabled (i.e. VBC=0 and battery used as backup source), then the trickle charger changes are irrelevant.
- (3) On the original FM32xx devices, there was a chance that higher than normal  $I_{BAK}$  current would occur when the battery was first inserted. A recommended sequence of applying power ( $V_{DD}$  and  $V_{BAK}$ ) was described in the datasheet (pg 6). The new FM3227x/32L27x devices do not have this problem. The battery may be installed whether or not the device is  $V_{DD}$ -powered.

All other specifications have remained the same for the new family of companions. The new families are software backward compatible.

The original and new devices are available in the “green”/RoHS package, designated as “-G”.

## COMPARISON TABLE

The differences between the original and new families are summarized below.

	<b>Original Family</b>	<b>New 5V Family</b>	<b>New 3V Family</b>	
	<b>FM32xx</b>	<b>FM3227x</b>	<b>FM32L27x</b>	<b>Comments</b>
<b>Operating Voltage Range</b>	2.7V to 5.5V	4.0 to 5.5V	2.7V to 3.6V	Split into 5V and 3V versions.
<b>Voltage Detect Trip Points</b>	2.6V, 2.9V, 3.9V, 4.4V	3.9V, 4.4V	2.6V, 2.9V	New devices have only one VTP bit in register 0Bh.
<b>Trickle Charger (min - max range)</b>	5 – 25 $\mu$ A	50 – 120 $\mu$ A, FC=0 200 – 2500 $\mu$ A, FC=1		Added Fast Charge mode (Register 0Bh, bit 5). Increased current on standard setting.