

Replacement of Mitsumi MM3286 with NXP LM75B

The LM75B can replace the Mitsumi MM3286 without modifying the software or hardware and will behave exactly the same or better.

1. Comparison

Parameters	LM75B	MM3286
✓ Package and Pin-to-pin Drop in Replacement	YES	YES
✓ Functionally Identical (Configuration/etc) ¹	YES	YES
✓ No Software Change (Identical Register Definition)	YES	YES
✓ Accuracy $\pm 2^{\circ}\text{C}$ From -25°C to 100°C	YES	YES
✓ Same AC/DC Parameters	YES	YES

2. Noticeable Differences

LM75B has higher resolution and is still backward compatible with MM3286's 9-bit format. Also, LM75B has wider operating voltage than MM3286. Although MM3286 technically has faster conversion time, and slightly lower inactive current consumption, the faster conversion time is insignificant because of the slow thermal response time of SO8 package.

Parameters	LM75B	MM3286	Comments
✓ Temperature Resolution	11-bit ¹	9-bit	LM75B is Better
✓ Temperature accuracy	$\pm 3^{\circ}\text{C}$ from -55°C to $+125^{\circ}\text{C}$	$\pm 3^{\circ}\text{C}$ from -40°C to $+125^{\circ}\text{C}$	Temperature range is wider on LM75B
✓ Operating supply	2.8 V – 5.5 V	3.0 V – 5.5 V	LM75B operates over a wider supply range
✓ I_{DD} Quiescent (During conversion, I ² C-bus inactive)	100 μA	75 μA	MM3286 has slightly lower current
✓ Conversion time	10ms	2ms	MM3286 has faster temperature conversion
✓ SMBus Timeout	Supported (hold SDA low 200 ms max)	Not supported	LM75B is better

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¹ Still compatible with the existing 9-bit software used by the MM3286 because the extra bits are transparent to the software and are not used. If the user wants higher resolution when switching to the LM75B, then they simply modify the software to read the two additional bits after the 9th bit. The 11-bit mode gives the temperature resolution of 0.125 °C as compared with the 9-bit mode of 0.5 °C. Both devices require 16 clock cycles to read the temperature value. It doesn't matter if the intended temperature reading is for 8-bit, 9-bit, or 11-bit.

3. Orderable Part Number Cross Reference

Package	MM3286	LM75B
SO8	MM3286	LM75BD
MSOP8	Not Available	LM75BDP
XSON8U	Not Available	LM75BGD

For more information contact NXP Semiconductors via e-mail – i2c.support@nxp.com