

Replacement of On Semi LM75 with Philips LM75A

The LM75A can replace On Semi LM75 without modifying the software or hardware and will behave the same.

1. Comparison

Parameters	LM75A	LM75
✓ Package and Pin-to-pin Drop in Replacement	YES	YES
✓ Functionally Identical (Configuration/etc)	YES	YES
✓ No Software Change (Identical Register Definition)	YES	YES
✓ Accuracy $\pm 2^{\circ}\text{C}$ From -25°C to 100°C	YES	YES
✓ Compatible AC/DC spec	YES	YES
✓ Identical thermal shutdown default setting (T_{OS} and $T_{hysteresis}$)	YES	YES

2. Noticeable Differences

The major difference between LM75 and LM75A is: The LM75A has the higher Temperature Resolutions, and the LM75 has the faster conversion time. The LM75A do not impact the currently written software for LM75 or is only used if higher temperature sensor resolution is desired.

Parameters	LM75A	LM75	Comments
✓ Temperature Resolution	11-bit ¹	9-bit	LM75A is Better
✓ ESD HBM	2000 V	1000 V	LM75A is Better
✓ Temperature accuracy	Accuracy $\pm 2^{\circ}\text{C}$ (MAX) From -25°C to $+100^{\circ}\text{C}$	Accuracy $\pm 3^{\circ}\text{C}$ (MAX), $\pm 0.5^{\circ}\text{C}$ (Typ), From $+25^{\circ}\text{C}$ to $+100^{\circ}\text{C}$	The range of temperature are different
✓ Conversion time	100 ms (typical)	55 ms (typical)	LM75A is Slower
✓ I_{DD} Shutdown ✓ (ADC converter is off)	3.5 μA (typical)	1.0 μA (typical)	LM75A is Higher

Note:

1. Still compatible with the existing 9-bit software used by the LM75 because the extra bits are transparent to the software. Switching to LM75A, the user automatically benefits the 11-bit resolution no software change. Both devices require 16 clock cycles to read the temperature value. It doesn't matter if the intended temperature reading is for 9-bit or 11-bit.



3. Orderable Part Number Cross Reference

Package	LM75	LM75A
SO8/SOIC8	N/A	LM75DP
TSSOP8/Micro8	LM75DM-33R2, LM75DM-50R2	LM75ADP

*The Supply Voltage of LM75DM-33R2 is 3.3 V, the Supply Voltage of LM75DM-50R2 is 5.0 V.

For more information contact Philips Semiconductors via e-mail – i2c.support@philips.com