

Replacement of Microchip TCN75 with Philips LM75A

The LM75A can replace the TCN75-5.0 or TCN75-3.3 without modifying the software or hardware and will behave exactly the same or better.

1. Comparison

Parameters	LM75A	TCN75
✓ Package and Pin-to-pin Drop in Replacement	YES	YES
✓ Functionally Identical (ALERT/Configuration/etc)	YES	YES
✓ No Software Change (Identical Register Definition)	YES	YES
✓ Accuracy ± 3 °C From -55 °C to 125 °C	YES	YES
✓ Same AC/DC Parameters	YES	YES

2. Noticeable Differences

These differences make the LM75A a better device, do not impact the currently written software for TCN75 or are only used if higher temperature sensor resolution is desired.

Parameters	LM75A	TCN75	Comments
✓ Accuracy from -25 °C to 100 °C	± 2 °C max	± 3 °C max	LM75A is Better
✓ ESD HBM	2000 V	1000 V	LM75A is Better
✓ Temperature Resolution	11-bit ¹	9-bit	LM75A is Better
✓ I _{DD} Standby (one shot ADC converter on)	100 μ A (typical)	250 μ A (typical)	LM75A is Better
✓ I _{DD} Shutdown (ADC converter is off)	3.5 μ A (typical)	1.0 μ A (typical)	LM75A is Higher
✓ Minimum SCL high time (t _{HIGH})	0.6 μ s	1.25 μ s	LM75A is Better
✓ Minimum SCL Low time (t _{LOW})	1.3 μ s	1.25 μ s	Same
✓ Conversion time	100 ms (typical)	55 ms (typical)	LM75A is Slower

Note:

1. Still compatible with the existing 9-bit software used by the TCN75 because the extra bits are transparent to the software and are not used. If the user wants higher resolution when switching to the LM75A, 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.



3. Orderable Part Number Cross Reference

Package	TCN75	LM75A
SO8/SOIC8	TCN75-3.3MOA	LM75AD
SO8/SOIC8	TCN75-5.0MOA	LM75AD
TSSOP8/MSOP8	TCN75-3.3MUA	LM75ADP
TSSOP8/MSOP8	TCN75-5.0MUA	LM75ADP

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