



**PCN Number: SC144103**

**Notification Date\*:** October 15, 2014

<b>Title:</b> EOL and Replacement of the AT30TSE752, AT30TSE754 and AT30TSE758 Digital Temperature Sensors with the New AT30TSE752A, AT30TSE754A and AT30TSE758A		
<b>Product Identification:</b> All versions of the AT30TSE752/754/758		
<b>Reason for Change:</b>	<input type="checkbox"/> Material / Composition <input type="checkbox"/> Processing / Manufacturing <input checked="" type="checkbox"/> Design / Firmware <input checked="" type="checkbox"/> Datasheet	<input type="checkbox"/> Manufacturing Location <input type="checkbox"/> Quality / Reliability <input type="checkbox"/> Logistics <input type="checkbox"/> Other:
<b>Change Description:</b> The AT30TSE752/754/758 Digital Temperature Sensors are being replaced by the new Digital Temperature Sensors AT30TSE752A/754A/758A to address the errata specifications listed in the AT30TSE752/754/758 datasheet and to better address end market/application requirements.  In addition, the AT30TSE752A/754A/758A have been improved over the AT30TSE752/754/758 devices to feature an industry-first, wide supply voltage range of 1.7V to 5.5V versus the previous 2.7V to 5.5V of the AT30TSE752/754/758 devices. Attachment A highlights the differences between the AT30TSE752/754/758 devices and the new replacement AT30TSE752A/754A/758A devices.		
<b>Identification Method to Distinguish Change:</b> The base catalog part numbers change from the AT30TSE752, AT30TSE754, and AT30TSE758 to AT30TSE752A, AT30TSE754A, and AT30TSE758A respectively. Table 1 lists the full catalog part number combinations for each package option. Please refer to the AT30TSE752/754/758 and AT30TSE752A/754A/758A datasheets for details on the part marking schemes for each package type.		

Table 1

EOL Part Number	Replacement Part Number	Package	Carrier Type
AT30TSE752-MA8-T	AT30TSE752A-MA8M-T	8-pad UDFN	Tape and Reel
AT30TSE752-SS8-B	AT30TSE752A-SS8M-B	8-lead SOIC	Bulk (Tubes)
AT30TSE752-SS8-T	AT30TSE752A-SS8M-T	8-lead SOIC	Tape and Reel
AT30TSE752-XM8-B	AT30TSE752A-XM8M-B	8-lead MSOP	Bulk (Tubes)
AT30TSE752-XM8-T	AT30TSE752A-XM8M-T	8-lead MSOP	Tape and Reel
AT30TSE754-MA8-T	AT30TSE754A-MA8M-T	8-pad UDFN	Tape and Reel
AT30TSE754-SS8-B	AT30TSE754A-SS8M-B	8-lead SOIC	Bulk (Tubes)
AT30TSE754-SS8-T	AT30TSE754A-SS8M-T	8-lead SOIC	Tape and Reel
AT30TSE754-XM8-B	AT30TSE754A-XM8M-B	8-lead MSOP	Bulk (Tubes)
AT30TSE754-XM8-T	AT30TSE754A-XM8M-T	8-lead MSOP	Tape and Reel
AT30TSE758-MA8-T	AT30TSE758A-MA8M-T	8-pad UDFN	Tape and Reel
AT30TSE758-SS8-B	AT30TSE758A-SS8M-B	8-lead SOIC	Bulk (Tubes)
AT30TSE758-SS8-T	AT30TSE758A-SS8M-T	8-lead SOIC	Tape and Reel
AT30TSE758-XM8-B	AT30TSE758A-XM8M-B	8-lead MSOP	Bulk (Tubes)
AT30TSE758-XM8-T	AT30TSE758A-XM8M-T	8-lead MSOP	Tape and Reel

Note: Standard datasheet offerings are listed in the table; however, this PCN also applies to all special CAN (customer specific) part numbers that are not listed in the table.

<b>Qualification Data:</b>	<input checked="" type="checkbox"/> Available	<input type="checkbox"/> Will be available (mm/dd/yr):	<input type="checkbox"/> Not Applicable
<b>Samples:</b>	<input checked="" type="checkbox"/> AT30TSE754A/754A/ 758A devices Available	<input type="checkbox"/> Will be available (mm/dd/yr):	<input type="checkbox"/> Not Applicable
<b>Quantifiable Impact on Quality &amp; Reliability:</b> None			
<b>Forecasted Availability Date:</b> Now <b>Last Time Buy Date:</b> April 15, 2015 <b>Last Ship Date:</b> October 15, 2015 <i>*All orders placed after the notification date are non-cancellable and non-returnable (NCNR).</i>			
<b>Atmel Contact:</b> Please contact your Atmel Sales Representative or Distributor for additional information (when replying via e-mail please include the PCN number in subject line).			

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**To be completed by customer:**

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Company:  
Name:  
Title:  
Date:  
Email  
Address:  
Location:  
Comments:

## Attachment A

*RED text indicates changes/improvements*

Parameter/Feature	AT30TSE752/754/758 (based on 09/2013 datasheet)		AT30TSE752A/754A/758A (based on 09/2014 datasheet)	
Operating Voltage	2.7V to 5.5V		1.7V to 5.5V	
Operating Temperature	-55°C to +125°C		-55°C to +125°C	
<b>Temperature Sensor Accuracy and Conversion Characteristics</b>				
Temperature Sensor Accuracy	±1.0°C typ (±1.5°C max)	T <sub>A</sub> = 0°C to +55°C V <sub>CC</sub> = 2.7V to 3.6V	±0.5°C typ (±1.0°C max)	T <sub>A</sub> = 0°C to +85°C V <sub>CC</sub> = 1.7V to 5.5V
	±1.0°C typ (±2.0°C max)	T <sub>A</sub> = 0°C to +55°C V <sub>CC</sub> = 3.6V to 5.5V		
	±1.0°C typ (±2.0°C max)	T <sub>A</sub> = -5°C to +90°C V <sub>CC</sub> = 2.7V to 3.6V	±1.0°C typ (±2.0°C max)	T <sub>A</sub> = -25°C to +105°C V <sub>CC</sub> = 1.7V to 5.5V
	±2.0°C typ (±3.0°C max)	T <sub>A</sub> = -20°C to +105°C V <sub>CC</sub> = 3.6V to 5.5V		
	±3.0°C typ	T <sub>A</sub> = -40°C to +125°C V <sub>CC</sub> = 2.7V to 5.5V	±2.0°C typ (±3.0°C max)	T <sub>A</sub> = -40°C to +125°C V <sub>CC</sub> = 1.7V to 5.5V
	±2.0°C typ (±3.0°C max)	T <sub>A</sub> = -20°C to +125°C V <sub>CC</sub> = 2.7V to 3.6V		
	±3.0°C typ	T <sub>A</sub> = -55°C to +125°C V <sub>CC</sub> = 2.7V to 5.5V	±3.0°C typ	T <sub>A</sub> = -55°C to +125°C V <sub>CC</sub> = 1.7V to 5.5V
Conversion Resolution	Selectable 9 to 12 bits (0.5°C to 0.0625°C)		Selectable 9 to 12 bits (0.5°C to 0.0625°C)	
Conversion Time	25ms typ (37.5ms max)	9-bit resolution	25ms typ (37.5ms max)	9-bit resolution
	50ms typ (75ms max)	10-bit resolution	50ms typ (75ms max)	10-bit resolution
	100ms typ (150ms max)	11-bit resolution	100ms typ (150ms max)	11-bit resolution
	200ms typ (300ms max)	12-bit resolution	200ms typ (300ms max)	12-bit resolution

## Attachment A (Continued)

*RED text indicates changes/improvements*

Parameter/Feature	AT30TSE752/754/758 (based on 09/2013 datasheet)	AT30TSE752A/754A/758A (based on 09/2014 datasheet)
<b>Nonvolatile Register Characteristics</b>		
Nonvolatile Register Program Time ( $t_{PROG}$ )	1.0ms min (5.0ms max)	1.0ms min (5.0ms max)
Volatile to Nonvolatile Register Copy Time ( $t_{COPYW}$ )	1.0ms min (5.0ms max)	1.0ms min (5.0ms max)
Nonvolatile to Volatile Register Copy Time ( $t_{COPYR}$ )	100 $\mu$ s min (200 $\mu$ s max)	100 $\mu$ s min (200 $\mu$ s max)
Nonvolatile Register Program/Copy Endurance ( $N_{ENDUR}$ )	50K cycles min (100K cycles typ)	50K cycles min (100K cycles typ)
<b>Power-Up Conditions</b>		
Power-On Reset Time ( $t_{POR}$ )	500 $\mu$ s max	1ms max
Power-up Device Delay before Nonvolatile Register or Memory Program Allowed ( $t_{PUW}$ )	500 $\mu$ s max	1ms max
Power-On Reset Voltage ( $V_{POR}$ )	2.6V max	1.6V max
Maximum Allowable Power-Up Time ( $t_{PU}$ )	1ms max	N/A

RED text indicates changes/improvements

Parameter/Feature	AT30TSE752/754/758 (based on 09/2013 datasheet)		AT30TSE752A/754A/758A (based on 09/2014 datasheet)	
<b>DC Characteristics</b>				
Active Current, Bus Inactive, Active Temperature Conversions	95µA typ (125µA max)	$V_{CC} = 3.3V$	60µA typ (75µA max)	$1.7V \leq V_{CC} \leq 2.0V$
	120µA typ (175µA max)	$V_{CC} = \text{Max (5.5V)}$	65µA typ (95µA max)	$2.7V \leq V_{CC} \leq 3.6V$
			85µA typ (125µA max)	$4.5V \leq V_{CC} \leq 5.5V$
Active Current, Bus Active, $f_{SCL} = 400kHz$ Active Temperature Conversions	125µA typ (175µA max)	$V_{CC} = 3.3V$	120µA typ (160µA max)	$1.7V \leq V_{CC} \leq 2.0V$
	200µA typ (250µA max)	$V_{CC} = \text{Max (5.5V)}$	150µA typ (225µA max)	$2.7V \leq V_{CC} \leq 3.6V$
			225µA typ (325µA max)	$4.5V \leq V_{CC} \leq 5.5V$
Active Current, Nonvolatile Register Read or EEPROM Read $f_{SCL} =$ 400kHz Active Temperature Conversions	0.30mA typ (0.50mA max)	$V_{CC} = 3.3V$	0.15mA typ (0.20mA max)	$1.7V \leq V_{CC} \leq 2.0V$
	0.60mA typ (0.90mA max)	$V_{CC} = \text{Max (5.5V)}$	0.23mA typ (0.35mA max)	$2.7V \leq V_{CC} \leq 3.6V$
			0.48mA typ (0.63mA max)	$4.5V \leq V_{CC} \leq 5.5V$
Active Current, Nonvolatile Register Copy or EEPROM Write $f_{SCL} = 400kHz$ Active Temperature Conversions	0.70mA typ (0.90mA max)	$V_{CC} = 3.3V$	0.70mA typ (1.50mA max)	$1.7V \leq V_{CC} \leq 2.0V$
	1.60mA typ (2.0mA max)	$V_{CC} = \text{Max (5.5V)}$	2.00mA typ (3.40mA max)	$2.7V \leq V_{CC} \leq 3.6V$
			2.50mA typ (4.40mA max)	$4.5V \leq V_{CC} \leq 5.5V$
Shutdown Mode Current, Bus Inactive	0.6µA typ (1.6µA max)	$V_{CC} = 3.3V$	0.4µA typ (2.5µA max)	$1.7V \leq V_{CC} \leq 2.0V$
	1.1µA typ (3.5µA max)	$V_{CC} = \text{Max (5.5V)}$	0.6µA typ (3.5µA max)	$2.7V \leq V_{CC} \leq 3.6V$
			1.2µA typ (5.5µA max)	$4.5V \leq V_{CC} \leq 5.5V$
Shutdown Mode Current, Bus Active, $f_{SCL} = 400kHz$	125µA typ (165µA max)	$V_{CC} = 3.3V$	110µA typ (140µA max)	$1.7V \leq V_{CC} \leq 2.0V$
	185µA typ (220µA max)	$V_{CC} = \text{Max (5.5V)}$	130µA typ (180µA max)	$2.7V \leq V_{CC} \leq 3.6V$
			180µA typ (270µA max)	$4.5V \leq V_{CC} \leq 5.5V$

RED text indicates changes/improvements

Parameter/Feature	AT30TSE752/754/758 (based on 09/2013 datasheet)		AT30TSE752A/754A/758A (based on 09/2014 datasheet)	
<b>AC Characteristics</b>				
Maximum Clock Frequency	400kHz (Fast Mode)	$V_{CC} \geq 2.7V$	1MHz (Fast Mode Plus)	$V_{CC} \geq 1.7V$
<b>Errata</b>				
Errata 1	The internal fault counter will be reset when updating the Configuration Register, the $T_{HIGH}$ Limit Register, or the $T_{LOW}$ Limit Register		None	
Errata 2	Depending on power supply ramp time, the ALERT pin may not be configured in the proper state to be a true open drain		None	
Errata 3	After power-up, the device will not copy the contents of the NVFT1 and NVFT0 bits from the Nonvolatile Configuration Register into the FT1 and FT0 bits of the Configuration Register until after the first temperature conversion cycle has completed. As a result, both the FT1 and FT0 bits of the Configuration Register will be set to zero (Fault Tolerance Queue value of one) for the first temperature conversion cycle; therefore, a single temperature fault could trigger the ALERT output for the very first temperature conversion after device power-up.		None	
Errata 4	When switching between Comparator and Interrupt modes (or vice versa) while the ALERT pin is active, the device will not retain its active alert state and will automatically deassert the ALERT pin.		None	