Assembly year
WW = Work Week
▪ = Pb−Free Device

(Note: Microdot may be in either location)

PIN ASSIGNMENTS

V_{DD}	1	8	SCL
D+	2	7	SDA
D−	3	6	$\overline{\text{ALERT}}$/$\overline{\text{THERM2}}$
$\overline{\text{THERM}}$	4	5	GND

DFN8
(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information on page 1 this data sheet.

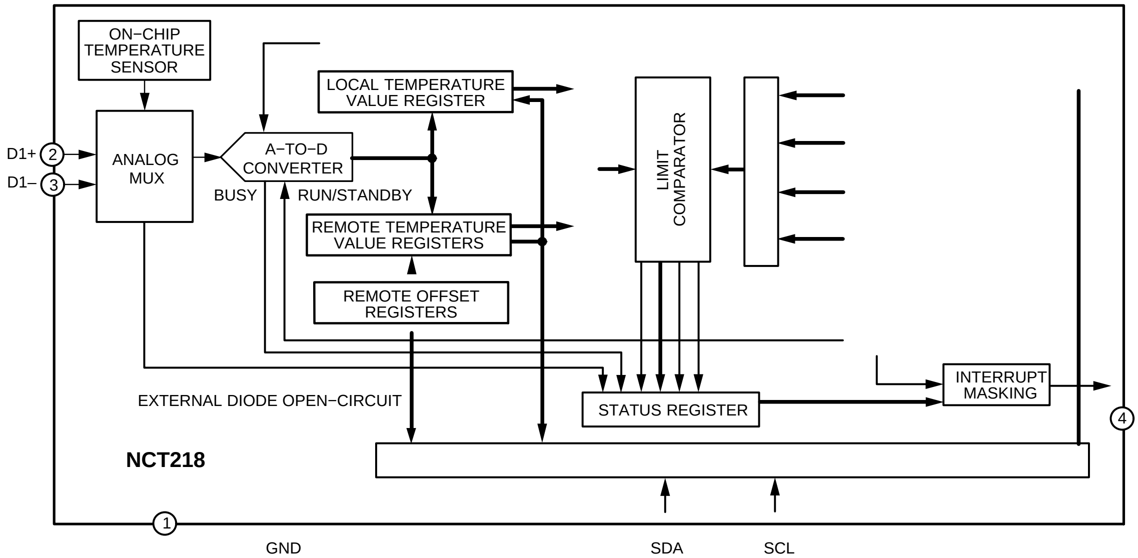

Figure 1. Functional Block Diagram

Table 2. ABSOLUTE MAXIMUM RATINGS (Note 1)

Rating	Symbol	Value	Unit
Supply Voltage (V_{DD}) to GND	V_{DD}	−0.3, +3	V
D+		−0.3 to V_{DD} + 0.25	V
D− to GND		−0.3 to +0.6	V
SCL, SDA, $\overline{ALERT}$, $\overline{THERM}$		−0.3 to +5.25	V
Input current on D−		±1	mA
Input current on SDA, $\overline{THERM}$	I_{IN}	−1, +50	mA
Maximum Junction Temperature	$T_{J(max)}$	150.7	°C
Operating Temperature Range	TOP	−40 to 125	

Table 4. ELECTRICAL CHARACTERISTICS
($T_A = T_{MIN}$ to T_{MAX}, V_{DD} = 1.6 V to 2.75 V. All specifications for −40°C to +125°C, unless otherwise noted.)

Parameter	Test Conditions	Min	Typ	Max	Unit
TEMPERATURE SENSOR					
Measurement Range		−40		+125	°C
REMOTE SENSOR ACCURACY					
V_{DD} = 1.6 V to 2.75 V T_A = 25°C to 85°C	T_D = −40°C to +125°C			±1	°C
LOCAL SENSOR ACCURACY					
V_{DD} = 1.6 V to 2.75 V	T_A = 25°C to 85°C T_A = −40°C to +125°C			±1.75 ±3	°C

Theory of Operation

Temperature Measurement Method

Series Resistance Cancellation

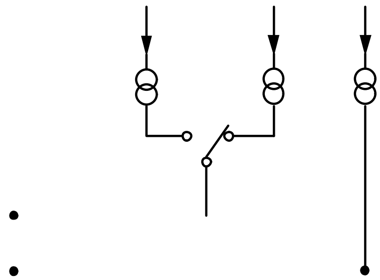

Figure 4. Input Signal Conditioning

Table 6. TEMPERATURE DATA FORMAT (Temperature High Byte)

Temperature	Binary	Offset Binary (Note 1)
-55°C	0 000 0000 (Note 2)	0 000 1001
0°C	0 000 0000	0 100 0000
+1°C	0 000 0001	0 100 0001
+10°C	0 000 866w1.com	

Conversion Rate Register

Table 9. STATUS REGISTER BIT ASSIGNMENTS

Bit	Name	Function
7	BUSY	1 when ADC is converting
6	LHIGH (Note 4)	1 when local high temperature limit is tripped
5	LLOW (Note 4)	1 when local low temperature limit is tripped
4	RHIGH (Note 4)	1 when remote high temperature limit is tripped
3	RLOW (Note 4)	1 when remote low temperature limit is tripped
2	OPEN (Note 4)	1 when remote sensor is an open circuit
1	RTHRM	1 when remote $\overline{\text{THERM}}$ limit is tripped
0	LTHRM	1 when local $\overline{\text{THERM}}$ limit is tripped

4. These flags stay high until the status register is read or they are reset by POR unless Pin 6 is configured as $\overline{\text{THERM2}}$. Then, only Bit 2 remains high until the status register is read or is reset by POR.

Offset Register

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– °

°

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Table 10. SAMPLE OFFSET REGISTER CODES

Offset Value	0x11	0x12
-128°C	1000 0000	00 00 0000
-4°C		

SERIAL INTERFACE

Addressing the Device

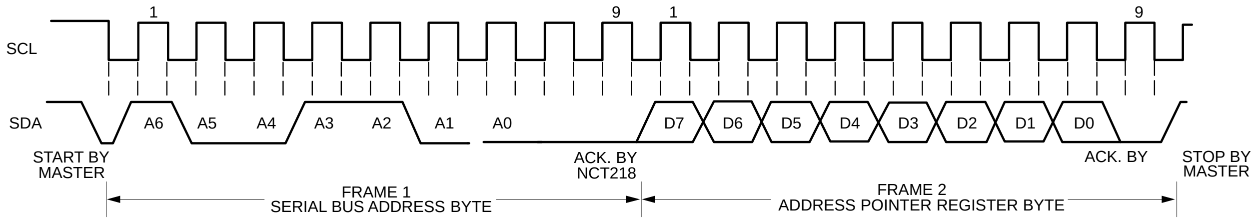


Figure 5. Writing to the Address Pointer Register

Table 14. ORDERING INFORMATION

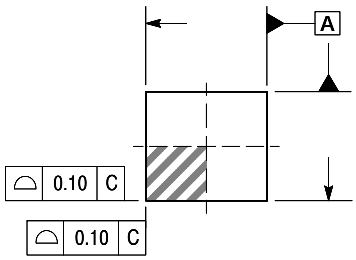
Device Number	Package Type	Shipping†
NCT218MTR2G	WDFN8 (Pb−Free)	
NCT218FCT2G	WLCSP8 (Pb−Free)	

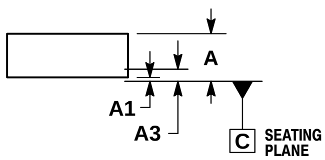
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

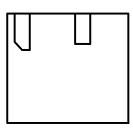
WDFN8 2x1.8, 0.5P
CASE 511BU
ISSUE O

SCALE 4:1

DATE 18 JAN 2012







DIM	MILLIMETERS	
	MIN	MAX
A		