

6.2.7 Register 6: Temp ADC Control Register (Read/Write, Address Pointer = 00110)

Bit #	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
Bit Name	RFB	RFB	ADC2X	ADCS	ISEN	CEN	TEN	AREN	RV1	RV0	M1	M0	G1	G0	R1	R0
POR Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Bit Descriptions:

RFB: Reserved Factory Bit: Set to zero for proper operation

ADC2X: Temp ADC runs 2x faster (not for internal Temp Sense Mode)

0 = 1x conversion speed (6ms typical, R1, R0 = '00', TEN = '0', AREN = '0')

1 = 2x conversion speed (3ms typical, R1, R0 = '00', TEN = '0', AREN = '0')

ADCS: Start (restart) the Temp ADC (single conversion control if CEN = 0)

0 = No Start/Restart Temp ADC

1 = Start/Restart Temp ADC (each write of a '1' causes single conversion; when conversion is completed ADCS = '0')

ISEN: TEMP_{IN} Current source (I_{TEMP}) Enable

1 = Enable 7 μ A current source, I_{TEMP}

0 = Disable 7 μ A current source, I_{TEMP}

CEN: Enable Temp ADC Continuous Conversion Mode

1 = Continuous Conversion mode

0 = Noncontinuous Conversion mode

TEN: Internal Temperature Mode Enable

1 = Enable Internal Temperature Mode

0 = External Signal Mode

For TEN = 1, set the following bits as shown:

ADC2X = 0

ADCS = set as desired

CEN = set as desired

AREN = 0

RV[1:0] = 00

M[1:0] = 00

G[1:0] = 00

R[1:0] = Set for desired Temp ADC resolution.

AREN: Temp ADC internal reference enable

1 = Enable Temp ADC internal reference (internal reference is 2.048V typical)

0 = Disable Temp ADC internal reference (use external ADC reference; see RV[1:0])

RV[1:0]: Temp ADC External Reference Select (V_{SA}, V_{EXC}, V_{REF})

M[1:0]: Temp ADC Input Mux Select

G[1:0]: Temp ADC PGA Gain Select (x1, 2, 4, or 8)

R[1:0]: Temp ADC Resolution (Conversion time) Select

Table 6–13. Temp ADC Reference Select

AREN [8]	RV1 [7]	RV0 [6]	Temp ADC Reference (V_{REFT})
0	0	0	V_{REF}
0	0	1	V_{EXC}
0	1	0	V_{SA}
0	1	1	Factory Reserved
1	X	X	Temp ADC Internal REF (2.048V)

NOTE: X = don't care.

Table 6–14. Temp ADC Input Mux Select

M1 [5]	M0 [4]	Temp ADC PGA +Input	Temp ADC PGA –Input
0	0	$TEMP_{IN}$	GND_A
0	1	V_{EXC}	$TEMP_{IN}$
1	0	V_{OUT}	GND_A
1	1	V_{REF}	$TEMP_{IN}$

Table 6–15. Temp ADC PGA Gain Select

G1 [3]	G0 [2]	Temp ADC PGA Gain
0	0	1
0	1	2
1	0	4
1	1	8

Figure 6–3. Internal Temperature Mode (Register 6 [9] = '1')

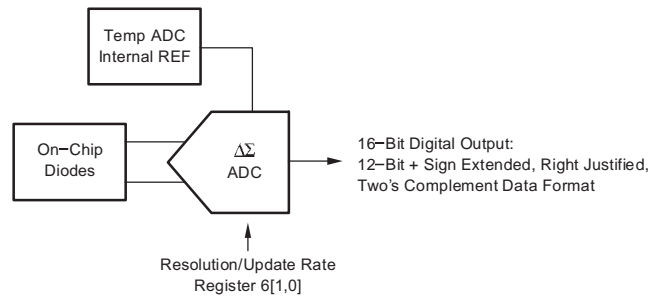


Figure 6–4. External Signal Mode (Register 6 [9], TEN = '0')

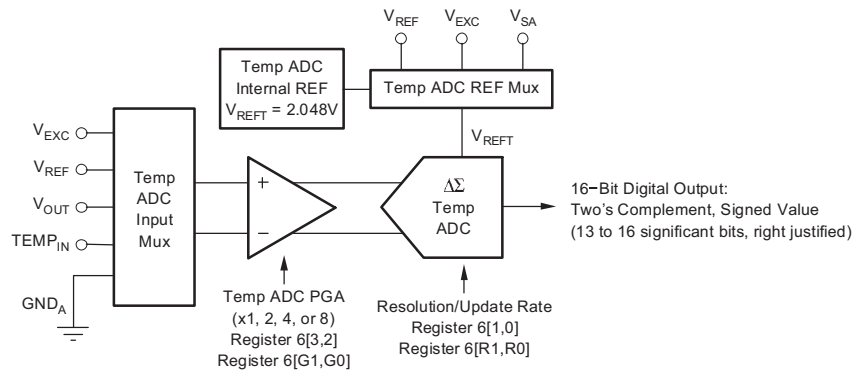


Figure 6–5. Temp ADC Mux Configurations

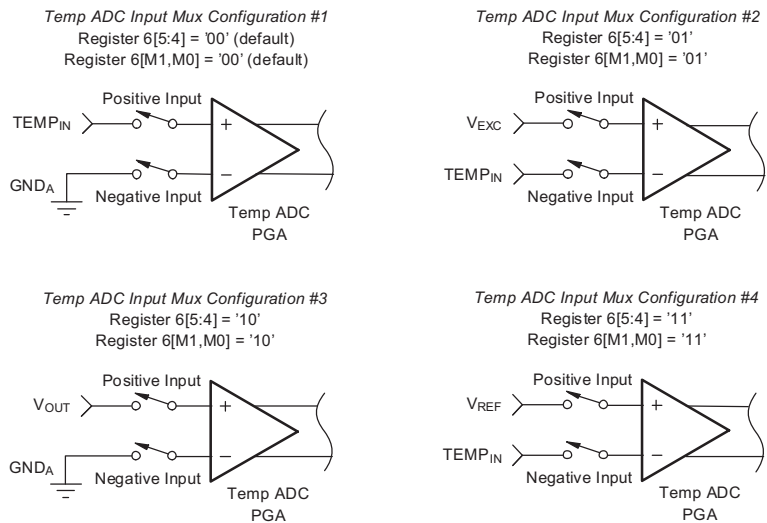


Table 6–16. Temp ADC—Resolution (Conversion Time) Select

R1 [1]	R0 [0]	Internal Temperature Mode [TEN = 1]	External Signal Mode [TEN = 0], External Reference [AREN = 0]	External Signal Mode [TEN = 0], Internal Reference [2.048V, AREN = 1]
0	0	9-Bit + Sign, 0.5°C, (3ms)	11-Bit + Sign (6ms)	11-Bit + Sign (8 ms)
0	1	10-Bit + Sign, 0.25°C, (6ms)	13-Bit + Sign (24ms)	13-Bit + Sign (32ms)
1	0	11-Bit + Sign, 0.125°C, (12ms)	14-Bit + Sign (50 ms)	14-Bit + Sign (64 ms)
1	1	12-Bit + Sign, 0.0625°C, (24ms)	15-Bit + Sign (100 ms)	15-Bit + Sign (128 ms)