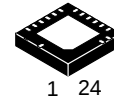


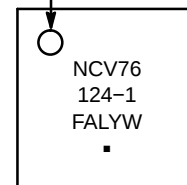
R **r** **r** **L** **r**
l **r** **PI**
NC 76124
V



QFNW24
CASE 484AA

MARKING DIAGRAM

Pin 1 Identifier



Features

NCV76124-1 = Specific Device Code
F = Fab Location
A = Assembly Location
L = Wafer Lot
YW = Year/Work Week
▪ = Pb-Free Designator

SAFETY DESIGN – ASIL B



ORDERING INFORMATION

See detailed ordering and shipping information on page 12 of this data sheet.

Non-NDA Data Sheet

Interested in what you see? If you would like more detailed information, please request the full version of our data sheet.

[Request Full Data Sheet](#)

Typical Applications

- •
•
•



NCV76124

BLOCK DIAGRAM & ESD SCHEMATIC

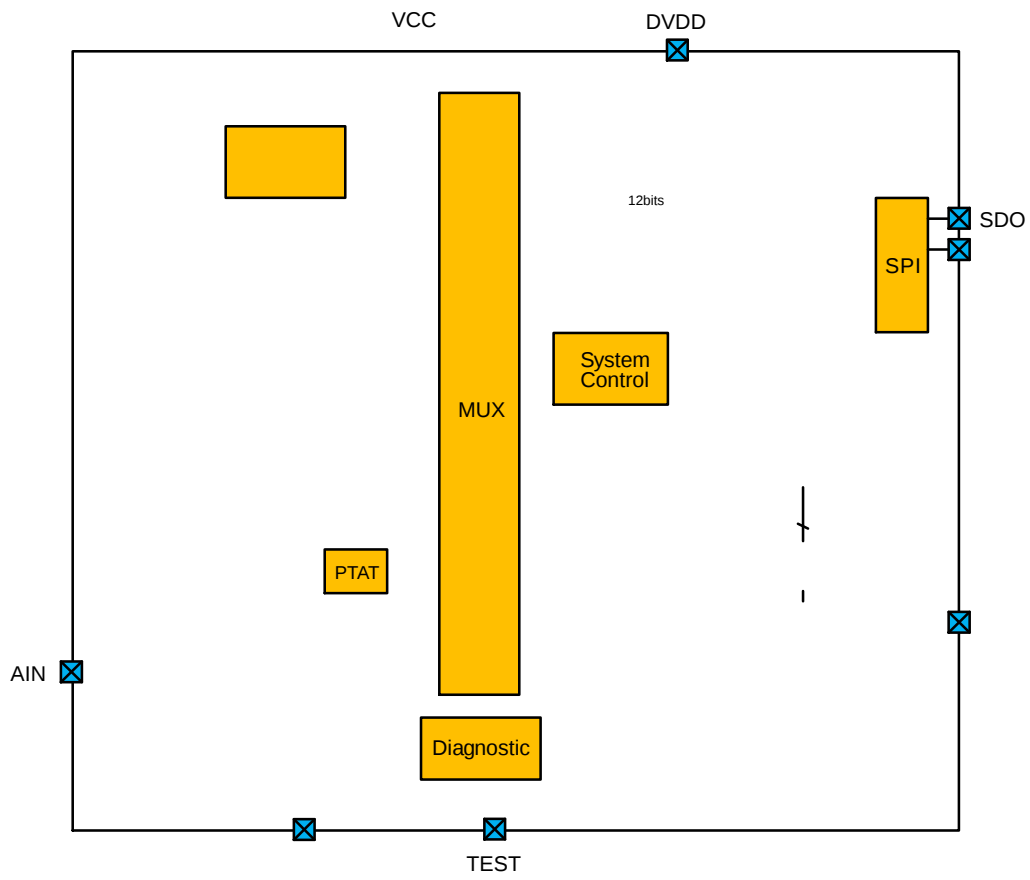


Figure 2. Block Diagram

NCV76124

PACKAGE AND PIN DESCRIPTION

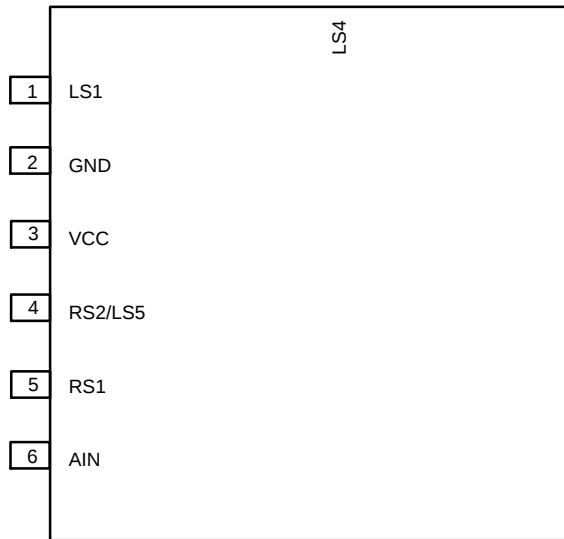


Figure 3. Pin Connections – QFNW24 4x4 0.5P (Top View)

Table 3. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Analog DC Supply				

ELECTRICAL CHARACTERISTICS

(All Min and Max parameters are guaranteed over full junction temperature (T_J) range (–40°C; 135°C), unless otherwise specified.)

Table 6. CURRENT CONSUMPTION (VCC = DVDD = 3.3 V)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Current Consumption in Active Mode (Note 7)	I _{CONS}	Configuration mode of one rain channel and 5 light channels	–	9	12	mA
Sleep Current*	I _{SLEEP}	T = 27°C	–	7	10	μA
Standby Current*	I _{STBY}	T = 27°C	–	–	350	μA

7. Without photodiodes DC current and NPN base current or LED current.

Table 7. LED DRIVER

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
DC GAIN of External NPN	h _{FE}		100	–	–	
Minimum LED Current Pulse Setting (Note 8)	I _{LED_MIN}		–	–	0.3	mA
Maximum LED Current Pulse Setting	I _{LED_MAX}		800	–	–	mA
Minimum LED Current Pulse Period Setting	T _{PP_LED_MIN}		–	150	–	μs
Maximum LED Current Pulse Period Setting	T _{PP_LED_MAX}		–	300	–	μs
DC LED Current Deviation from the Programmed Current	I _{LED_DCERR}		–10	–	10	%
VRLED Reference Threshold Voltage	V					

NCV76124

Table 10. RS1, RS2: RAIN SENSOR

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Average Reverse Voltage on Photodetector (between RSx and LSGND)	V_{R_RAIN}		1	1.65	2.3	V
Total Capacitance Value Connected between Pins RSx and LSGND	C_{IN_RAIN}		1	–	50	pF aLT00

NCV76124

Table 13. DIAGNOSTIC

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Open PD Threshold Voltage (for RSx and LSx)	V_{DIAG_RefL}		GND + 0.35	–	GND + 0.45	V
Short PD Threshold Voltage (for RSx and LSx)	V_{DIAG_RefH}	LSGND short to VCC by internal switch	$V_{CC} - 0.22$	–	$V_{CC} - 0.14$	V
LSGND Threshold Voltage	V_{Ref_GND}		1.1	–	1.3	V

Table 14. DIGITAL INPUTS (SCLK, NCS, SDI, EN)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
High Level Input Voltage	V_{IH}		0.7 * DVDD	–	DVDD	V
Low Level Input Voltage	V_{IL}		0	–		

Table 16. SPI INTERFACE (continued)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Fall Time	T _{fall}		–	–	100	ns
Min NCS High Time	T _{ncs_high}		900	–	–	ns
Max SDO Enable Time after Falling Edge of NCS	T _{sd0_ena_tri_X}	CL = 30 pF	–	–	30	ns
Output Rise Time	T _{sd0_rise}	CL = 30 pF	–	–	40	ns
Output Fall Time	T _{sd0_fall}	CL = 30 pF	–	–	30	ns
Max SDO Disable Time after Rising Edge of NCS	T _{sd0_dis_X_tri}	CL = 30 pF	–	–	30	ns
SPI Read Command Delay Time	T _{stby_delay}	Only for STBY mode	–	80	–	μs

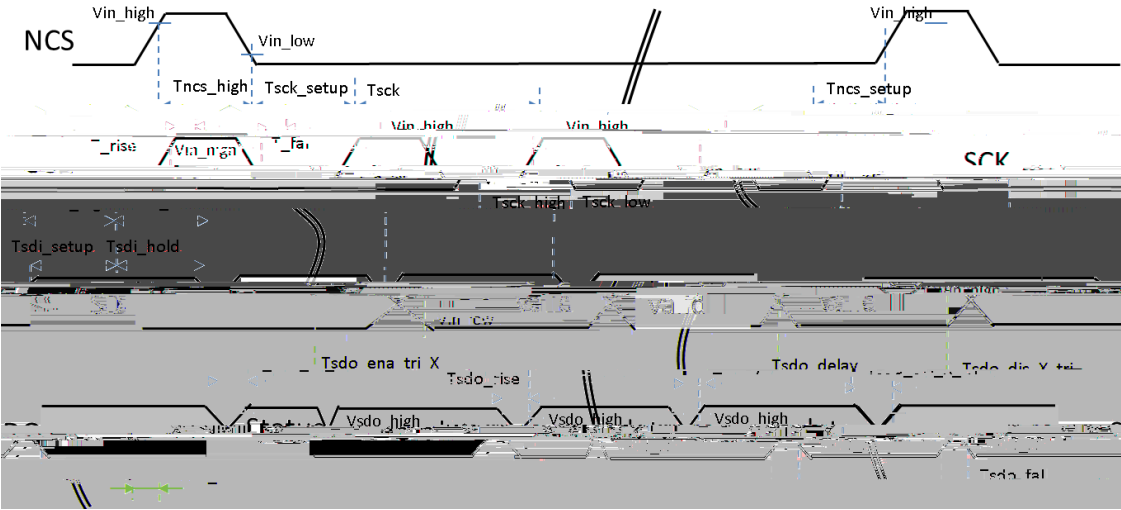


Figure 4. SPI Communication Timing

DIAGNOSTICS

SPI Command Instruction

SPI INTERFACE
General

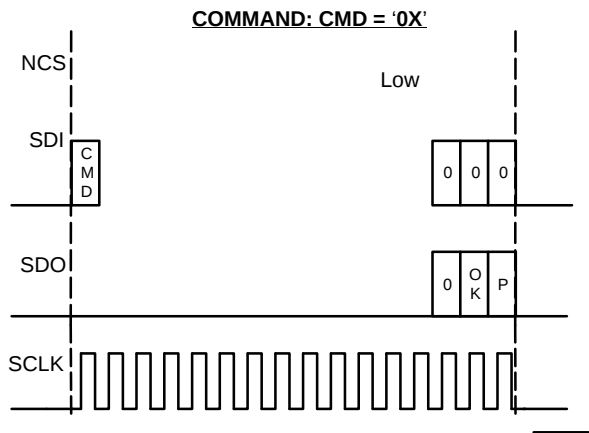


Figure 7. SPI Command Instruction Frame

SPI Transfer Format

-
-
-

CMD	INSTRUCTION
0x	COMMAND
10	WRITE
11	READ

SPI Write Instruction

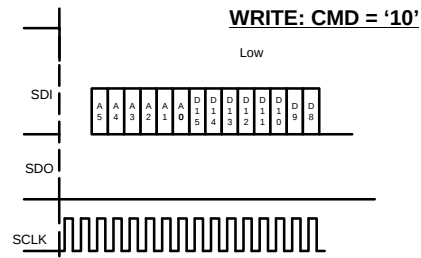
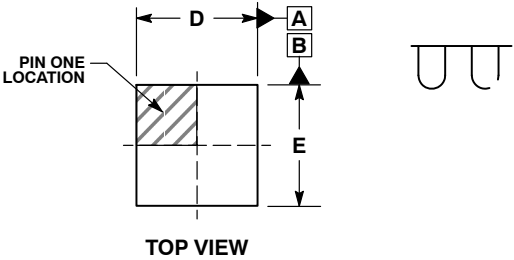


Figure 8. SPI Write Frame

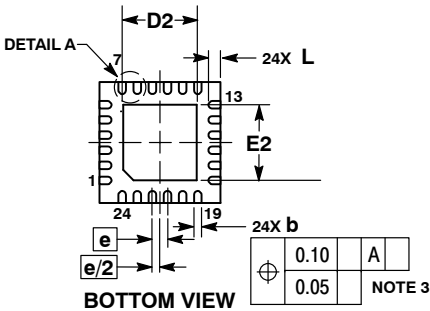
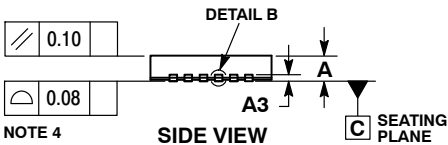
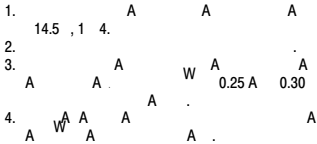
QFNW24 4x4, 0.5P
CASE 484AA
ISSUE A

1 24
SCALE 2:1

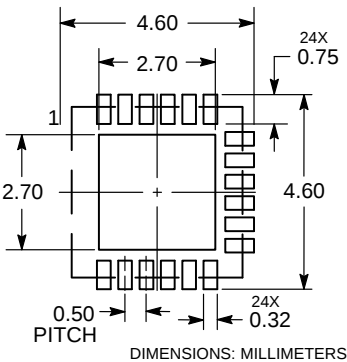
DATE 07 AUG 2018



ALTERNATE
CONSTRUCTION
DETAIL A



RECOMMENDED
SOLDERING FOOTPRINT



GENERIC
MARKING DIAGRAM*



- XXXXXX = Specific Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

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