

Product Overview

NSI8210 is a high reliability single channel digital isolator. The NSI8210 device is safety certified by UL1577 support 5kVrms insulation withstand voltage, while providing high electromagnetic immunity and low emissions at low power consumption. The data rate of NSI8210 is up to 150Mbps, and the common-mode transient immunity (CMTI) is up to 250kV/us. NSI8210 provides default output level configuration when the input power is lost. Wide supply voltage of NSI8210 supports to connect with most digital interface directly, easy to do the level shift. High system level EMC performance enhance reliability and stability of use. AEC-Q100 (Grade 1) option is provided for all devices.

Key Features

- Up to 5000V_{rms} Insulation voltage
- Data rate: DC to 150Mbps
- Power supply voltage: 2.5V to 5.5V
- All devices are AEC-Q100 qualified
- High CMTI: 250kV/us
- Chip level ESD: HBM: ±8kV
- Interlock function
- High system level EMC performance:
 - Enhanced system level ESD, EFT, Surge immunity
- Default output high level or low level option
- Isolation surge voltage: >10kV
- Low power consumption: 1.5mA/ch (1 Mbps)
- Low propagation delay: <15ns
- Operation temperature: -40°C~125°C
- RoHS-compliant packages:
 - SOW16 wide body

Safety Regulatory Approvals

- UL recognition: up to 5000V_{rms} for 1 minute per UL1577
- CQC certification per GB4943.1
- CSA component notice 5A
- DIN EN IEC 60747-17 (VDE 0884-17)

Applications

- Industrial automation system
- Isolated SPI, RS232, RS485
- General-purpose multichannel isolation
- Motor Control
- For automotive application

Device Information

Part Number	Package	Body Size
NSI8210Wx-XSWR	SOW16	10.30mm × 7.50mm

Functional Block Diagrams

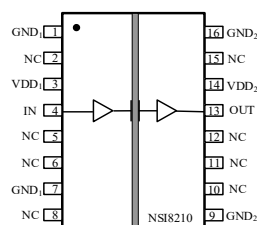


Figure 1. NSI8210Wx-XSWR Block Diagram

INDEX

1. PIN CONFIGURATION AND FUNCTIONS	3
2. ABSOLUTE MAXIMUM RATINGS	4
3. RECOMMENDED OPERATING CONDITIONS	4
4. THERMAL INFORMATION	5
5. SPECIFICATIONS	5
5.1. ELECTRICAL CHARACTERISTICS	5
5.2. SUPPLY CURRENT CHARACTERISTICS – 5V	6
5.3. SUPPLY CURRENT CHARACTERISTICS – 3.3V	6
5.4. SUPPLY CURRENT CHARACTERISTICS – 2.5V	7
5.5. SWITCHING CHARACTERISTICS – 5V	7
5.6. SWITCHING CHARACTERISTICS – 3.3V	8
5.7. SWITCHING CHARACTERISTICS – 2.5V	8
5.8. TYPICAL PERFORMANCE CHARACTERISTICS	9
5.9. PARAMETER MEASUREMENT INFORMATION	9
6. HIGH VOLTAGE FEATURE DESCRIPTION	11
6.1. INSULATION AND SAFETY RELATED SPECIFICATIONS	11
6.2. INSULATION CHARACTERISTICS	11
6.3. SAFETY-LIMITING VALUES	13
6.4. REGULATORY INFORMATION	14
7. FUNCTION DESCRIPTION	15
7.1. OVERVIEW	15
7.2. OOK MODULATION	16
8. APPLICATION NOTE	17
8.1. TYPICAL APPLICATION CIRCUIT	17
8.2. PCB LAYOUT	17
8.3. HIGH SPEED PERFORMANCE	18
8.4. TYPICAL SUPPLY CURRENT EQUATIONS	18
9. PACKAGE INFORMATION	19
10. ORDERING INFORMATION	20
11. DOCUMENTATION SUPPORT	20
12. TAPE AND REEL INFORMATION	21
13. REVISION HISTORY	23

1. Pin Configuration and Functions

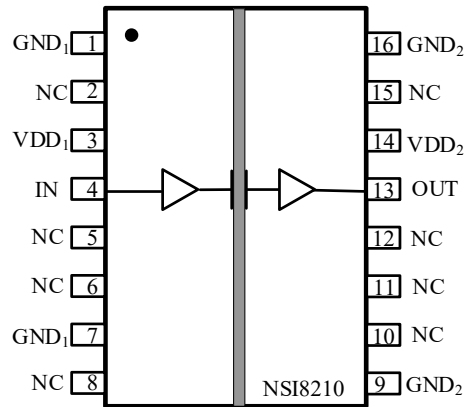


Figure 1.1 NSI8210W SOW16 Package

Table 1.1 NSI8210W SOW16 Pin Configuration and Description

<i>NSI8210W</i> <i>PIN NO.</i>	<i>SYMBOL</i>	<i>FUNCTION</i>
1	GND1	Ground 1, the ground reference for Isolator Side 1
2	NC	Not connect pin; it has no internal connection
3	VDD1	Power Supply for Isolator Side 1
4	IN	Logic Input
5	NC	Not connect pin; it has no internal connection
6	NC	Not connect pin; it has no internal connection
7	GND1	Ground 1, the ground reference for Isolator Side 1
8	NC	Not connect pin; it has no internal connection
9	GND2	Ground 2, the ground reference for Isolator Side 2
10	NC	Not connect pin; it has no internal connection
11	NC	Not connect pin; it has no internal connection
12	NC	Not connect pin; it has no internal connection
13	OUT	Logic Output
14	VDD2	Power Supply for Isolator Side 2
15	NC	Not connect pin; it has no internal connection
16	GND2	Ground 2, the ground reference for Isolator Side 2

2. Absolute Maximum Ratings

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Power Supply Voltage	VDD1, VDD2	-0.5		6.5	V	
Maximum Input Voltage	IN	-0.4		VDD+0.4	V	The maximum voltage must not exceed 6.5V
Maximum Output Voltage	OUT	-0.4		VDD+0.4	V	The maximum voltage must not exceed 6.5V
Maximum Input/Output Pulse Voltage	IN, OUT	-0.8		VDD+0.8	V	Pulse width should be less than 100ns, and the duty cycle should be less than 10%
Output current	I _o	-15		15	mA	
Operating Temperature	T _{opr}	-40		125	°C	
Junction Temperature	T _J	-40		150	°C	
Storage Temperature	T _{stg}	-65		150	°C	
Electrostatic discharge	HBM			±8000	V	
	CDM			±2000	V	

3. Recommended Operating Conditions

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Power Supply Voltage	VDD1, VDD2	2.5		5.5	V	
High-level Input Voltage	V _{IH}	2			V	
Low-level Input Voltage	V _{IL}			0.8	V	
Data Rate	DR	0		150	Mbps	
Operating Temperature	T _{opr}	-40		125	°C	

4. Thermal Information

Parameters	Symbol	SOW16	Unit
IC Junction-to-Air Thermal Resistance	$R_{\theta JA}$	94.4	°C/W
Junction-to-case (top) thermal resistance	$R_{\theta JC (top)}$	57.3	°C/W
Junction-to-board thermal resistance	$R_{\theta JB}$	57.1	°C/W

5. Specifications

5.1. Electrical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Power on Reset	V_{DDPOR}	2	2.2	2.4	V	POR threshold as during power-up
	V_{DDHYS}		0.1		V	POR threshold Hysteresis
Rising input switching threshold	V_{IT+}		1.6	2	V	
Falling input switching threshold	V_{IT-}	0.8	1.2		V	
Input threshold voltage hysteresis	$V_{I(HYS)}$		0.4		V	
High Level Output Voltage	V_{OH}	$V_{DD}-0.4$			V	$I_{OH} = -4mA$
Low Level Output Voltage	V_{OL}			0.4	V	$I_{OL} = 4mA$
Output Impedance	R_{out}		50		ohm	
Input Pull high or low Current	I_{pull}		8	15	μA	
Start Up Time after POR	t_{rbs}		10		μsec	
Common Mode Transient Immunity	CMTI	±200	±250		kV/μs	See Figure 5.6 , $C_L = 15pF$

5.2. Supply Current Characteristics – 5V

(VDD1=VDD2=5V ± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1=VDD2=5V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Supply current	IDD1(Q0)		0.64	0.96	mA	All Input 0V for NSI8210N0 or All Input at supply for NSI8210N1
	IDD2(Q0)		1.27	1.91	mA	
	IDD1(Q1)		1.66	2.49	mA	All Input at supply for NSI8210N0 or All Input 0V for NSI8210N1
	IDD2(Q1)		1.28	1.92	mA	
	IDD1(1M)		1.16	1.74	mA	All Input with 1Mbps, CL=15pF
	IDD2(1M)		1.33	2.00	mA	
	IDD1(10M)		1.17	1.76	mA	All Input with 10Mbps, CL=15pF
	IDD2(10M)		1.78	2.67	mA	
	IDD1(100M)		1.34	2.01	mA	All Input with 100Mbps, CL=15pF
	IDD2(100M)		6.16	9.24	mA	

5.3. Supply Current Characteristics – 3.3V

(VDD1=VDD2=3.3V ± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1=VDD2=3.3V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Supply current	IDD1(Q0)		0.6	0.9	mA	All Input 0V for NSI8210N0 or All Input at supply for NSI8210N1
	IDD2(Q0)		1.22	1.83	mA	
	IDD1(Q1)		1.62	2.43	mA	All Input at supply for NSI8210N0 or All Input 0V for NSI8210N1
	IDD2(Q1)		1.23	1.85	mA	
	IDD1(1M)		1.11	1.67	mA	All Input with 1Mbps, CL=15pF
	IDD2(1M)		1.26	1.89	mA	
	IDD1(10M)		1.12	1.68	mA	All Input with 10Mbps, CL=15pF
	IDD2(10M)		1.56	2.34	mA	
	IDD1(100M)		1.17	1.76	mA	All Input with 100Mbps, CL=15pF
	IDD2(100M)		4.48	6.72	mA	

5.4. Supply Current Characteristics – 2.5V

(VDD1=VDD2=2.5V ± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1=VDD2=2.5V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Supply current	IDD1(Q0)		0.58	0.87	mA	All Input 0V for NSI8210N0 or All Input at supply for NSI8210N1
	IDD2(Q0)		1.2	1.8	mA	
	IDD1(Q1)		1.6	2.4	mA	All Input at supply for NSI8210N0 or All Input 0V for NSI8210N1
	IDD2(Q1)		1.2	1.8	mA	
	IDD1(1M)		1.09	1.64	mA	All Input with 1Mbps, CL=15pF
	IDD2(1M)		1.23	1.85	mA	
	IDD1(10M)		1.10	1.65	mA	All Input with 10Mbps, CL=15pF
	IDD2(10M)		1.46	2.19	mA	
	IDD1(100M)		1.07	1.61	mA	All Input with 100Mbps, CL=15pF
	IDD2(100M)		3.72	5.58	mA	

5.5. Switching Characteristics – 5V

(VDD1=5V± 10%, VDD2=5V± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1 = 5V, VDD2 = 5V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Data Rate	DR	0		150	Mbps	
Minimum Pulse Width	PW			5.0	ns	
Propagation Delay	t _{PLH}	2.5	6.54	15	ns	See Figure 5.5 , CL = 15pF
	t _{PHL}	2.5	8.30	15	ns	See Figure 5.5 , CL = 15pF
Pulse Width Distortion t _{PHL} – t _{PLH}	PWD			5.0	ns	See Figure 5.5 , CL = 15pF
Rising Time	t _r			5.0	ns	See Figure 5.5 , CL = 15pF
Falling Time	t _f			5.0	ns	See Figure 5.5 , CL = 15pF
Peak Eye Diagram Jitter	t _{JIT(PK)}		350		ps	
Part-to-Part Delay Skew	t _{SK(p2p)}			5.0	ns	

5.6. Switching Characteristics – 3.3V

(VDD1=3.3V± 10%, VDD2=3.3V± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1 = 3.3V**, **VDD2 = 3.3V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Data Rate	DR	0		150	Mbps	
Minimum Pulse Width	PW			5.0	ns	
Propagation Delay	t _{PLH}	2.5	8.0	15	ns	See Figure 5.5 , C _L = 15pF
	t _{PHL}	2.5	8.7	15	ns	See Figure 5.5 , C _L = 15pF
Pulse Width Distortion t _{PHL} – t _{PLH}	PWD			5.0	ns	See Figure 5.5 , C _L = 15pF
Rising Time	t _r			5.0	ns	See Figure 5.5 , C _L = 15pF
Falling Time	t _f			5.0	ns	See Figure 5.5 , C _L = 15pF
Peak Eye Diagram Jitter	t _{JIT(PK)}		350		ps	
Part-to-Part Delay Skew	t _{SK(p2p)}			5.0	ns	

5.7. Switching Characteristics – 2.5V

(VDD1=2.5V± 10%, VDD2=2.5V± 10%, Ta=-40°C to 125°C. Unless otherwise noted, Typical values are at **VDD1 = 2.5V**, **VDD2 = 2.5V**, Ta = 25°C)

Parameters	Symbol	Min	Typ	Max	Unit	Comments
Data Rate	DR	0		150	Mbps	
Minimum Pulse Width	PW			5.0	ns	
Propagation Delay	t _{PLH}	2.5	9.0	15	ns	See Figure 5.5 , C _L = 15pF
	t _{PHL}	2.5	9.3	15	ns	See Figure 5.5 , C _L = 15pF
Pulse Width Distortion t _{PHL} – t _{PLH}	PWD			5.0	ns	See Figure 5.5 , C _L = 15pF
Rising Time	t _r			5.0	ns	See Figure 5.5 , C _L = 15pF
Falling Time	t _f			5.0	ns	See Figure 5.5 , C _L = 15pF
Peak Eye Diagram Jitter	t _{JIT(PK)}		350		ps	
Part-to-Part Delay Skew	t _{SK(p2p)}			5.0	ns	

5.8. Typical Performance Characteristics

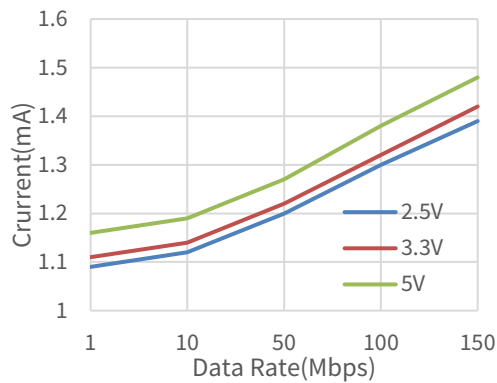


Figure 5.1 NSI8210 VDD1 Supply Current vs Data Rate

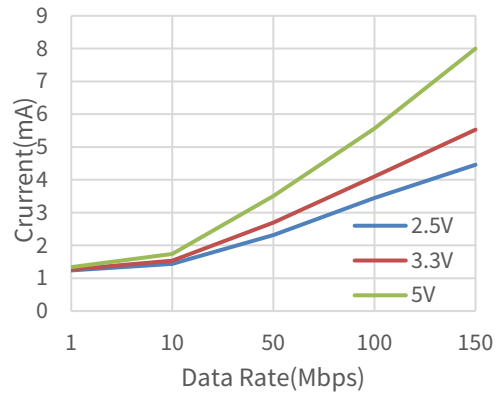


Figure 5.2 NSI8210 VDD2 Supply Current vs Data Rate

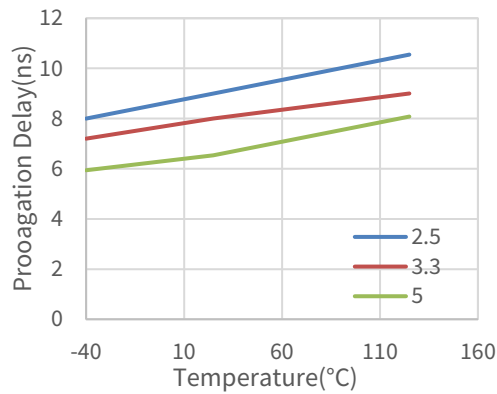


Figure 5.3 Rising Edge Propagation Delay Vs Temp

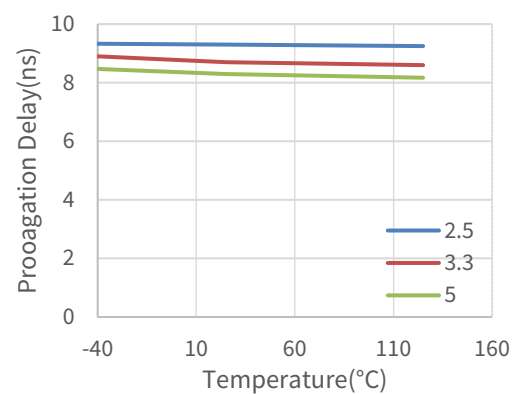


Figure 5.4 Falling Edge Propagation Delay Vs Temp

5.9. Parameter Measurement Information

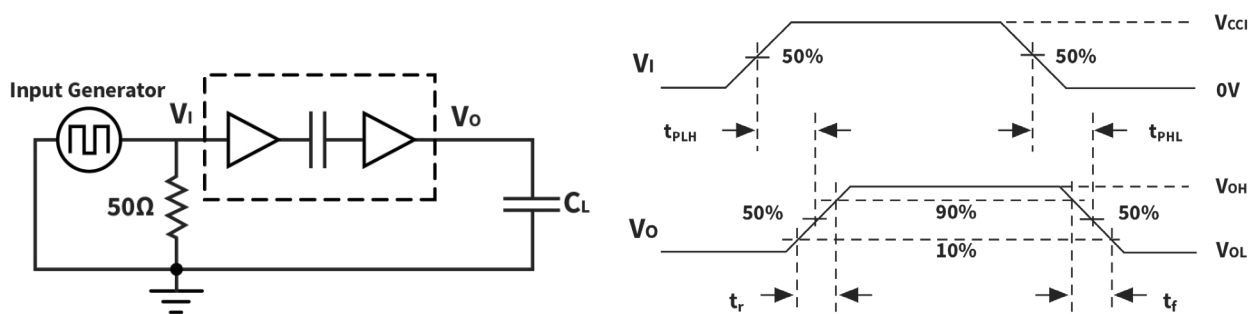


Figure 5.5 Switching Characteristics Test Circuit and Waveform

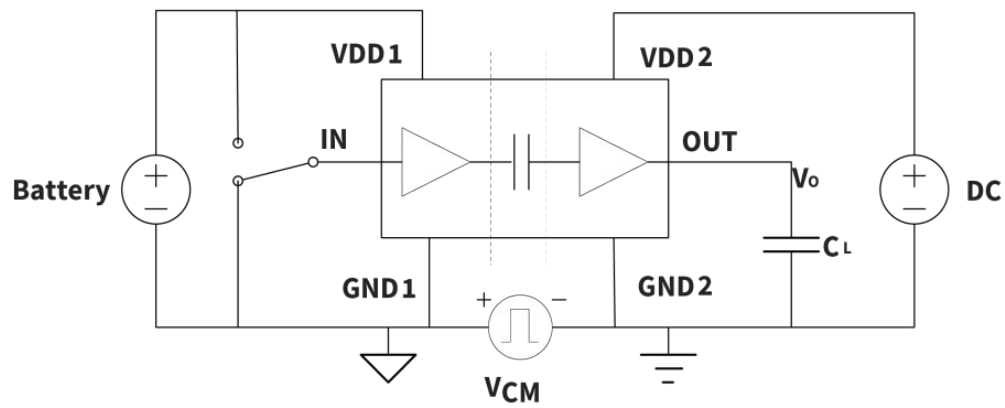


Figure 5.6 Common-Mode Transient Immunity Test Circuit

6. High Voltage Feature Description

6.1. Insulation and Safety Related Specifications

<i>Parameters</i>	<i>Symbol</i>	<i>Value</i> <i>SOW16</i>	<i>Unit</i>	<i>Comments</i>
Minimum External Clearance	CLR	8.0	mm	IEC 60664-1
Minimum External Creepage	CPG	8.0	mm	IEC 60664-1
Distance Through Insulation	DTI	28	μm	
Tracking Resistance (Comparative Tracking Index)	CTI	>600	V	DIN EN 60112 (VDE 0303-11); IEC 60112
Material Group		I		IEC 60664-1

<i>Description</i>	<i>Test Condition</i>	<i>Value</i> <i>SOW16</i>
Overvoltage Category per IEC60664-1	For Rated Mains Voltage $\leq$ 150Vrms	I to IV
	For Rated Mains Voltage $\leq$ 300Vrms	I to IV
	For Rated Mains Voltage $\leq$ 600Vrms	I to IV
	For Rated Mains Voltage $\leq$ 1000Vrms	I to III
Climatic Classification		40/125/21
Pollution Degree per DIN VDE 0110		2

6.2. Insulation Characteristics

<i>Description</i>	<i>Test Condition</i>	<i>Symbol</i>	<i>Value</i> <i>SOW16</i>	<i>Unit</i>
Maximum repetitive isolation voltage		V_{IORM}	2121	V_{PEAK}
Maximum Working Isolation Voltage	AC voltage	V_{IOWM}	1500	V_{RMS}
	DC voltage		2121	V_{DC}

Description	Test Condition	Symbol	Value SOW16	Unit
Apparent Charge	Method a, after Input/output safety test subgroup 2/3, $V_{ini}=V_{IOTM}$, $t_{ini} = 60\text{ s}$, $V_{pd(m)}=1.2*V_{IORM}$, $t_m=10\text{s}$.	q_{pd}	<5	pC
	Method a, after environmental tests subgroup 1, $V_{ini}=V_{IOTM}$, $t_{ini}=60\text{s}$, $V_{pd(m)}=1.6*V_{IORM}$, $t_m=10\text{s}$			pC
	Method b, routine test (100% production) and preconditioning (type test); $V_{ini}=1.2*V_{IOTM}$, $t_{ini}=1\text{s}$ $V_{pd(m)}=1.875*V_{IORM}$, $t_m=1\text{s}$ (method b1) or $V_{pd(m)}=V_{ini}$, $t_m=t_{ini}$ (method b2)			pC
Apparent Charge	Method a, after Input/output safety test subgroup 2/3, $V_{ini}=V_{IOTM}$, $t_{ini} = 60\text{ s}$, $V_{pd(m)}=1.2*V_{IORM}$, $t_m=10\text{s}$.	q_{pd}		pC
	Method a, after environmental tests subgroup 1, $V_{ini}=V_{IOTM}$, $t_{ini}=60\text{s}$, $V_{pd(m)}=1.3*V_{IORM}$, $t_m=10\text{s}$			pC
	Method b, routine test (100% production) and preconditioning (type test); $V_{ini}=1.2*V_{IOTM}$, $t_{ini}=1\text{s}$ $V_{pd(m)}=1.5*V_{IORM}$, $t_m=1\text{s}$ (method b1) or $V_{pd(m)}=V_{ini}$, $t_m=t_{ini}$ (method b2)			pC
Maximum transient isolation voltage	$t = 60\text{ sec}$	V_{IOTM}	8000	V_{PEAK}
Maximum impulse voltage	Tested in air, 1.2/50-us waveform per IEC62368-1	V_{IMP}	6250	V_{PEAK}
Maximum Surge Isolation Voltage	Test method per IEC60065, 1.2/50us waveform, $V_{IOSM} \geq V_{IMP} \times 1.3$	V_{IOSM}	10000	V_{PEAK}
Isolation resistance	$V_{IO} = 500\text{V}$, $T_{amb}=25^{\circ}\text{C}$	R_{IO}	$>10^{12}$	Ω

Description	Test Condition	Symbol	Value SOW16	Unit
	$V_{IO} = 500V, 100^{\circ}C \leq T_{amb} \leq 125^{\circ}C$		$>10^{11}$	Ω
	$V_{IO} = 500V, T_{amb} = T_s$		$>10^9$	Ω
Isolation capacitance	$f = 1MHz$	C_{IO}	0.6	pF
UL1577				
Withstand Isolation Voltage	$V_{TEST} = V_{ISO}, t = 60 s$ (qualification), $V_{TEST} = 1.2 \times V_{ISO}, t = 1 s$ (100% production test)	V_{ISO}	5000	V_{RMS}

6.3. Safety-Limiting Values

Reinforced isolation safety-limiting values as outlined in VDE-0884-17 of NSI8210W-DSWR SOW16(300mil)

Description	Test Condition	Value	Unit
Safety Supply Power	$R_{\theta JA} = 86.5^{\circ}C/W^{1)}, V_I = 5.5 V, T_J = 150^{\circ}C, T_A = 25^{\circ}C$	1445	mW
Safety Supply Current	$R_{\theta JA} = 86.5^{\circ}C/W^{1)}, T_J = 150^{\circ}C, T_A = 25^{\circ}C$	262.7	mA
Safety Temperature ²⁾		150	$^{\circ}C$

- 1) Calculate with the junction-to-air thermal resistance, $R_{\theta JA}$, of SOW16(300mil) package ([Thermal Information Table](#)) which is that of a device installed on a low effective thermal conductivity test board (1s) according to JESD51-3.
- 2) The maximum safety temperature has the same value as the maximum junction temperature (T_J) specified for the device.

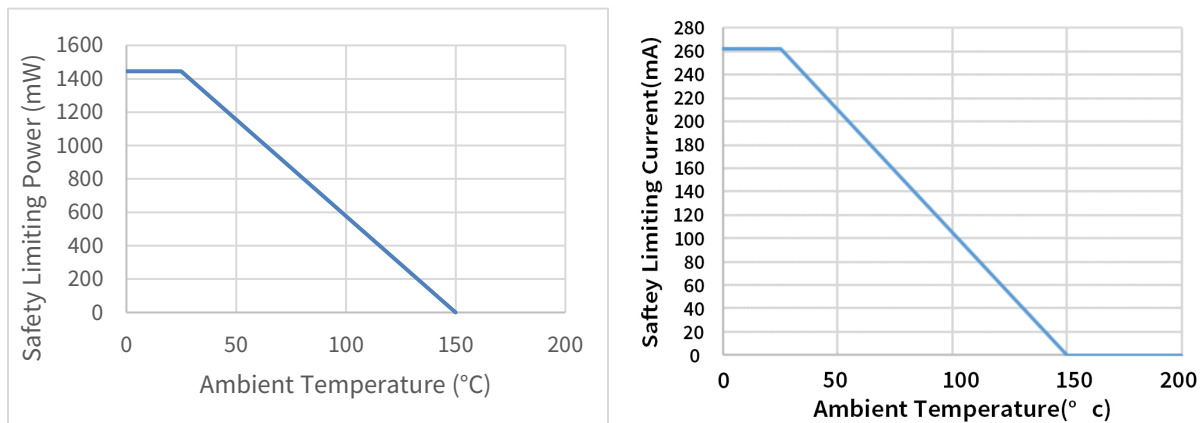


Figure 6.1 NSI8210W-DSWR Thermal Derating Curve, Dependence of Safety Limiting Values with Case Temperature per DIN VDE V 0884-17

6.4. Regulatory Information

The NSI8210W-DSWR are approved by the organizations listed in table.

<i>UL</i>		<i>VDE</i>	<i>CQC</i>	<i>TUV</i>
UL 1577 Component Recognition Program	Approved under CSA Component Acceptance Notice 5A	DIN EN IEC 60747-17 (VDE 0884-17)	Certified according to GB4943.1	Certified According to EN IEC 62368-1
Single Protection, 5000V _{rms} Isolation voltage	Single Protection, 5000V _{rms} Isolation voltage	Reinforced Insulation V _{IORM} =2121V _{peak} V _{IOTM} =8000V _{peak} V _{IOSM} =10000V _{peak}	Reinforced insulation	5000V _{rms} for 1min
E500602	E500602	40052820	CQC20001264939	R50574061

7. Function Description

7.1. Overview

The NSI8210 is a single-channel digital isolator based on a capacitive isolation barrier technique. The digital signal is modulated with RF carrier generated by the internal oscillator at the Transmitter side. Then it is transferred through the capacitive isolation barrier and demodulated at the Receiver side.

NSI8210 is a high reliability single channel digital isolator with AEC-Q100(Grade 1) qualified, it's certified by UL1577 and support 5kVrms insulation withstand voltage, while providing high electromagnetic immunity and low emissions at low power consumption. The data rate of NSI8210 is up to 150Mbps, and the common-mode transient immunity (CMTI) is up to 250kV/us. NSI8210 provides default output level configuration when the input power is lost. Wide supply voltage of NSI8210 supports to connect with most digital interface directly, easy to do the level shift.

NSI8210 has a default output status when VDD1 is unready and VDD2 is ready as shown in Table 7.1, which helps for diagnosis when power is missing at the transmitter side. The other outputs follow the same status with the input A within 1us after powering up respectively.

Table 7.1 Output status vs. power status with interlock function

Input	VDD1 status	VDD2 status	Output	Comment
H ¹	Ready	Ready	H	Normal operation.
L ²	Ready	Ready	L	
X ³	Unready	Ready	L(NSI8210x0) H(NSI8210x1)	The output follows the same status with the input within 20us after input side VDD1 is powered on.
X	Ready	Unready	Undetermined	The output follows the same status with the input within 20us after output side VDD2 is powered on.
Note: ¹ H=Logic high; ² L=Logic low; ³ X=Logic low or logic high (1) There is a protection diode between the input and the VDD1. When the VDD1 is floating, the strong drive signal through the input pin will put the VDD1 in an indeterminate state.				

7.2. OOK Modulation

NSI8210 is based on a capacitive isolation barrier technique and the digital signal is modulated with RF carrier generated by the internal oscillator at the transmitter side, as shown in Figure 7.1 & Figure 7.2, then it is transferred through the capacitive isolation barrier and demodulated at the receiver side. The modulation uses OOK modulation technique with key benefits of high noise immunity and low radiation EMI.

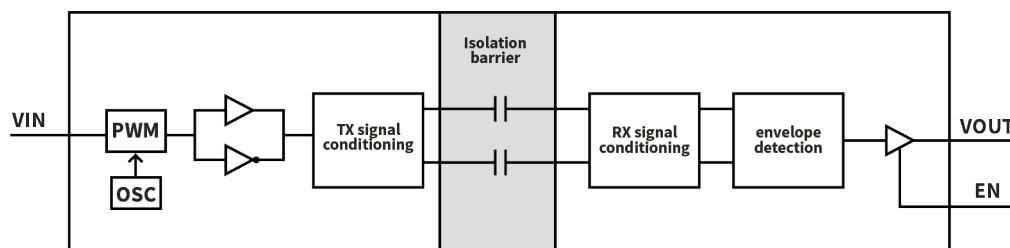


Figure 7.1 Single Channel Function Block Diagram

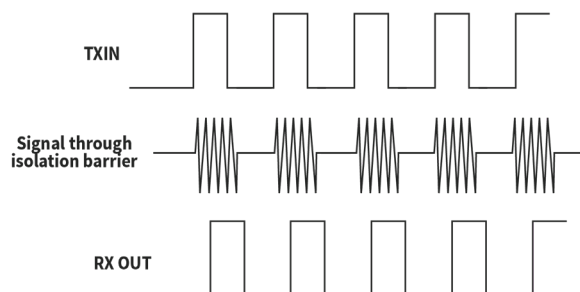


Figure 7.2 OOK Modulation

8. Application Note

8.1. Typical Application Circuit

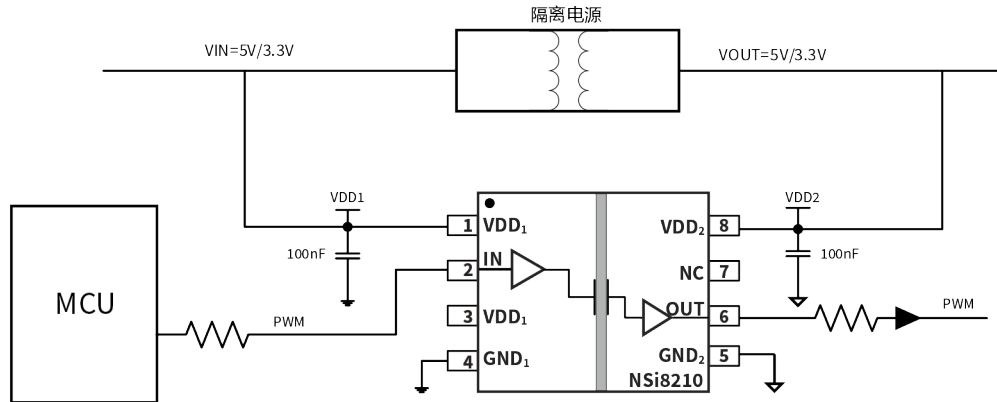


Figure 8.1 Typical PWM isolation circuit

8.2. PCB Layout

NSI8210 requires a 0.1 μ F bypass capacitor between VDD1 and GND1, VDD2 and GND2. The capacitor should be placed as close as possible to the package. Figure 8.2 to Figure 8.3 show the recommended PCB layout, make sure the space under the chip should keep free from planes, traces, pads and via. To enhance the robustness of a design, the user may also include resistors (50–300 Ω) in series with the inputs and outputs if the system is excessively noisy. The series resistors also improve the system reliability such as latch-up immunity.

The typical output impedance of an isolator driver channel is approximately 50 Ω , $\pm 40\%$. When driving loads where transmission line effects will be a factor, output pins should be appropriately terminated with controlled impedance PCB traces.

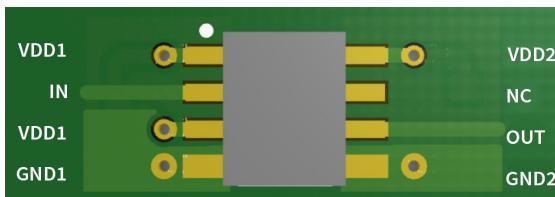


Figure8.2 Recommended PCB Layout — Top Layer



Figure8.3 Recommended PCB Layout — Bottom Layer

8.3. High Speed Performance

Figure 8.4 shows the eye diagram of NSI8210 at 50Mbps data rate output. The result shows a typical measurement on NSI8210 with low jitter and wide open eye characteristics.

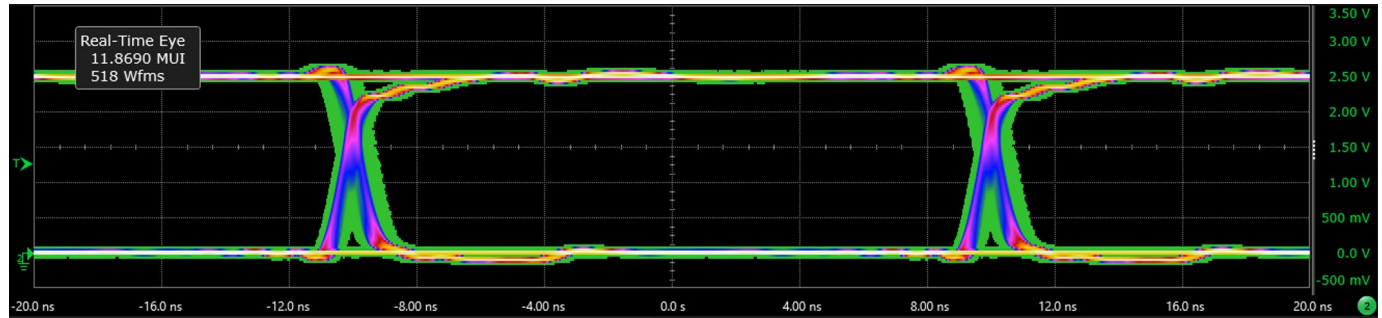


Figure 8.4 Eye Diagram at 50Mbps PRBS $2^{16}-1$, 2.5V and 25°C

8.4. Typical Supply Current Equations

The typical supply current of NSI8210 can be calculated using below equations. I_{DD1} and I_{DD2} are typical supply currents measured in mA, f is data rate measured in Mbps, C_L is the capacitive load measured in pF

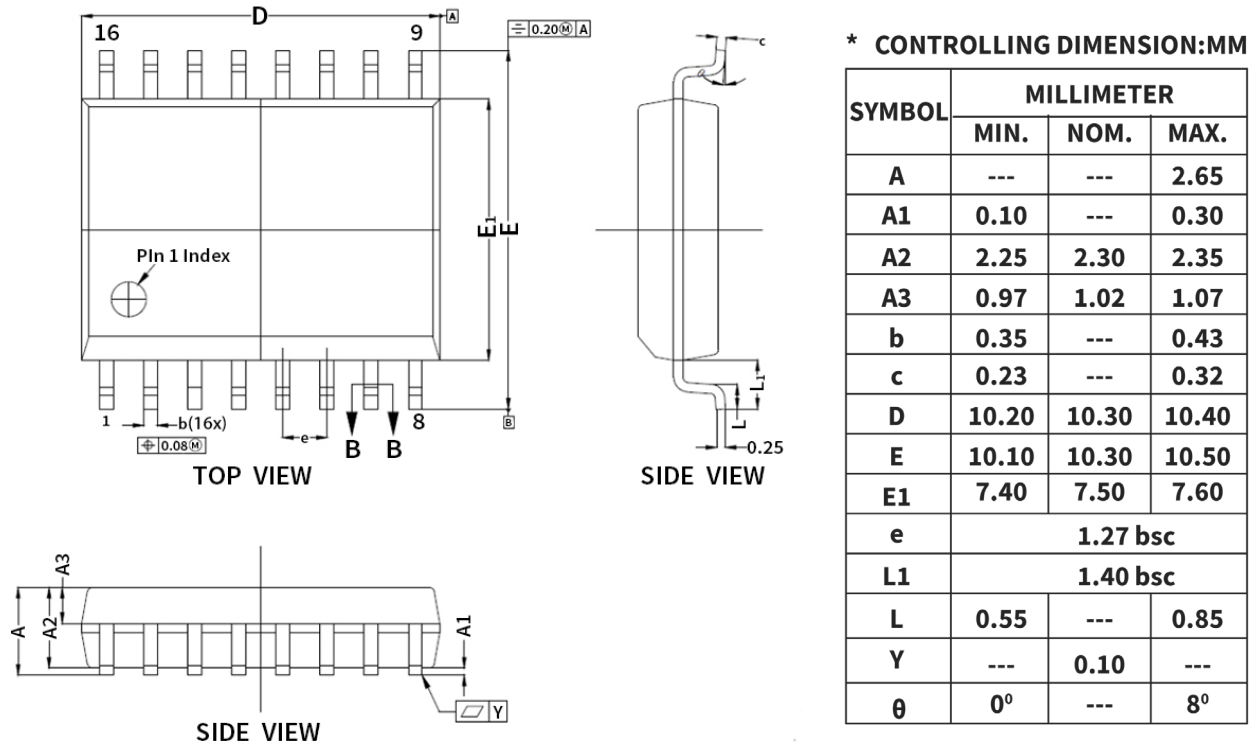
NSI8210:

$$I_{DD1} = 0.6 * a1 + 1.25 * b1 + 1.1 * c1.$$

$$I_{DD2} = 0.9 * a1 + 1.85 * b1 + VDD2 * f * C_L * c1 * 10^{-9}$$

Where $a1$ is the channel number of default state inputs at side 1, $b1$ is the channel number of non-default state inputs at side 1, $c1$ is the channel number of switch signal inputs at side 1.

9. Package Information



NOTE: This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.

Figure 9.1 SOP16(300mil)/SOW16 Package Shape and Dimension in millimeters

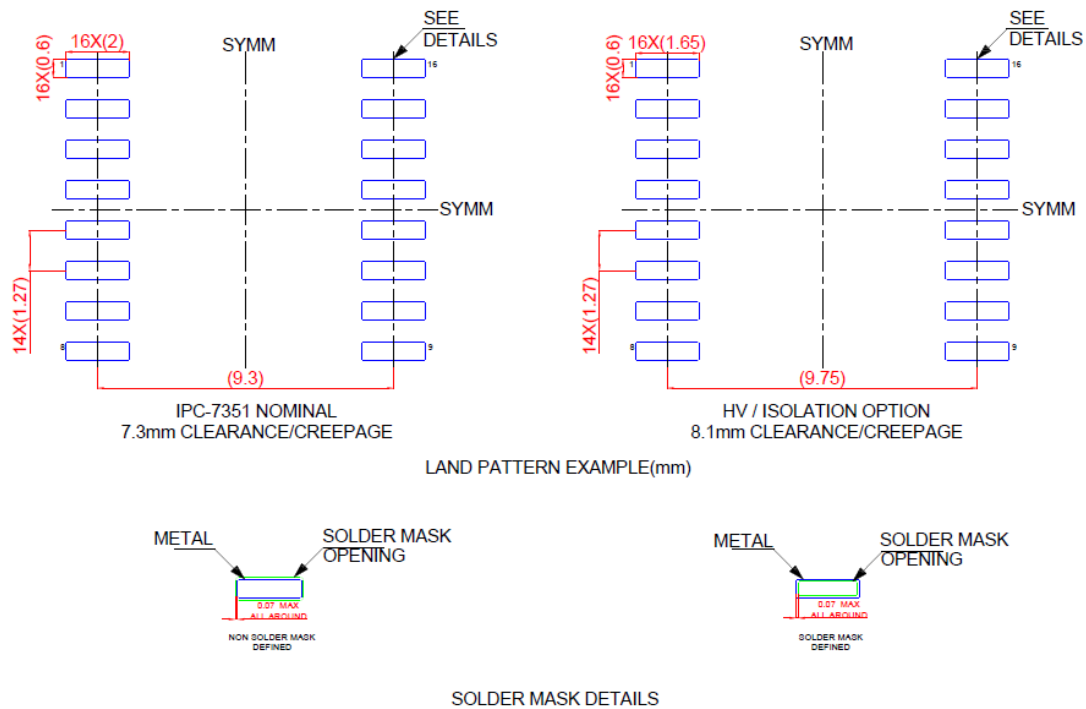


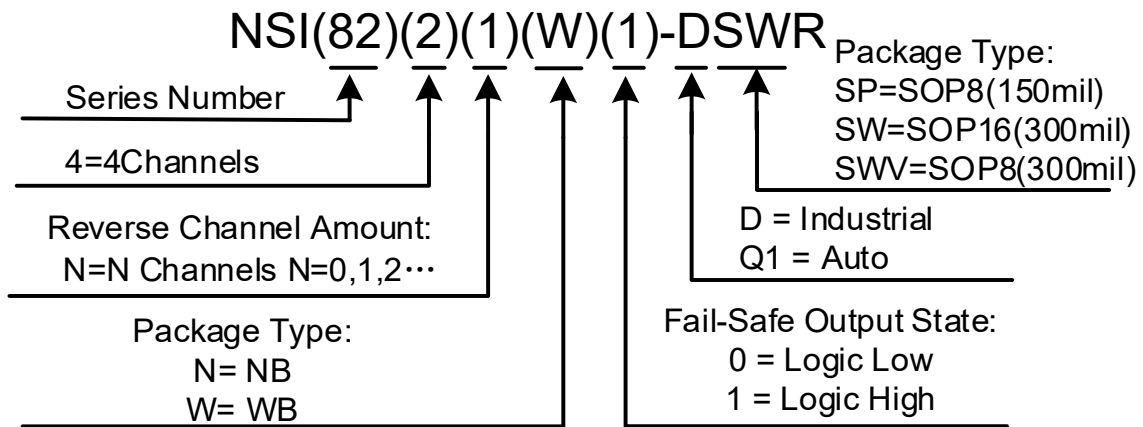
Figure 9.2 SOP16(300mil)/SOW16 Package Board Layout Example

10. Ordering Information

Part Number	Isolation Rating (kV)	Number of side 1 inputs	Number of side 2 inputs	Max Data Rate (Mbps)	Default Output State	Temperature	MSL	Package Type	Package Drawing	SPQ
NSI8210W0-DSWR	5	1	0	150	Low	-40 to 125°C	2	SOW16 (300mil)	SOW16	1000
NSI8210W1-DSWR	5	1	0	150	High	-40 to 125°C	2	SOW16 (300mil)	SOW16	1000

NOTE: All packages are RoHS-compliant with peak reflow temperatures of 260 °C according to the JEDEC industry standard classifications and peak solder temperatures.
Automotive devices are AEC-Q100 qualified.

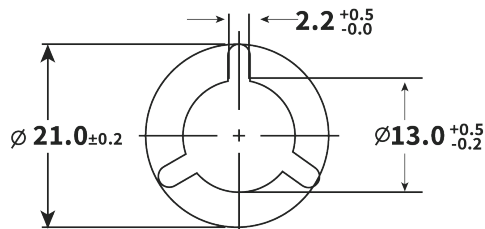
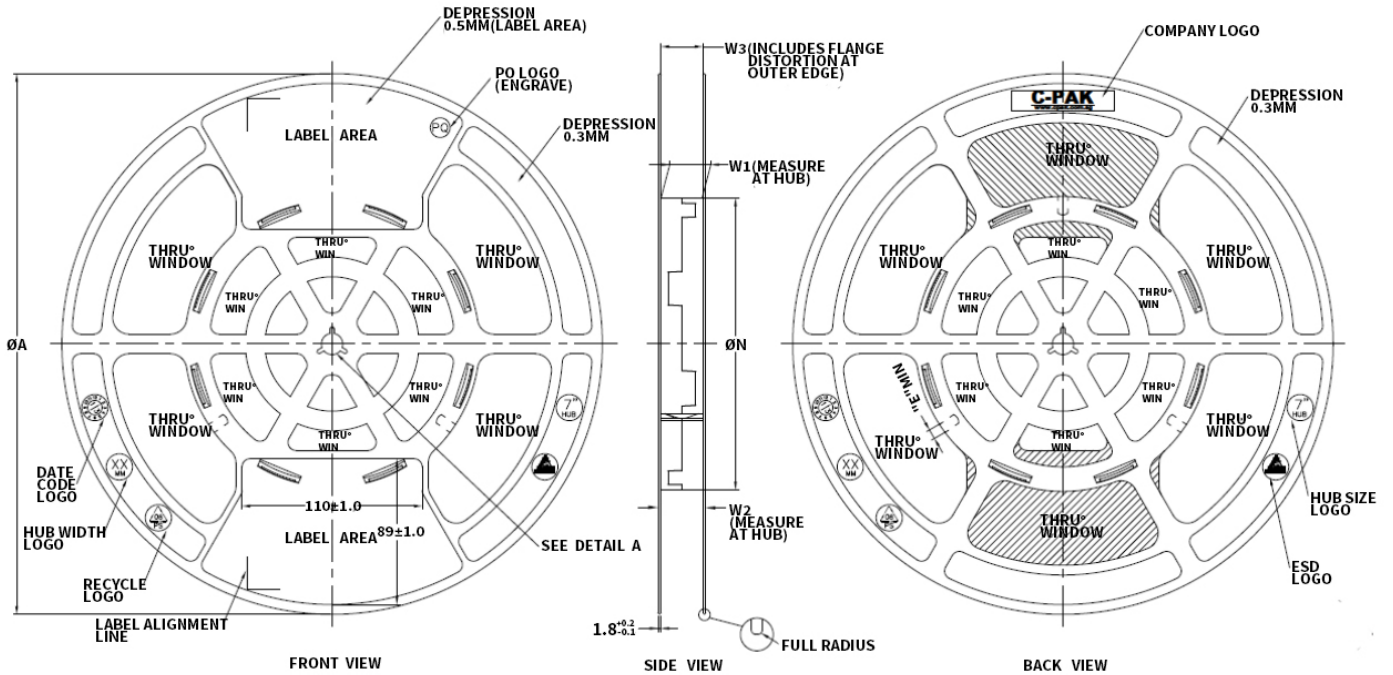
Part Number Rule:



11. Documentation Support

Part Number	Product Folder	Datasheet	Technical Documents	Isolator selection guide
NSI8210	tbd	tbd	tbd	tbd

12. Tape and Reel Information

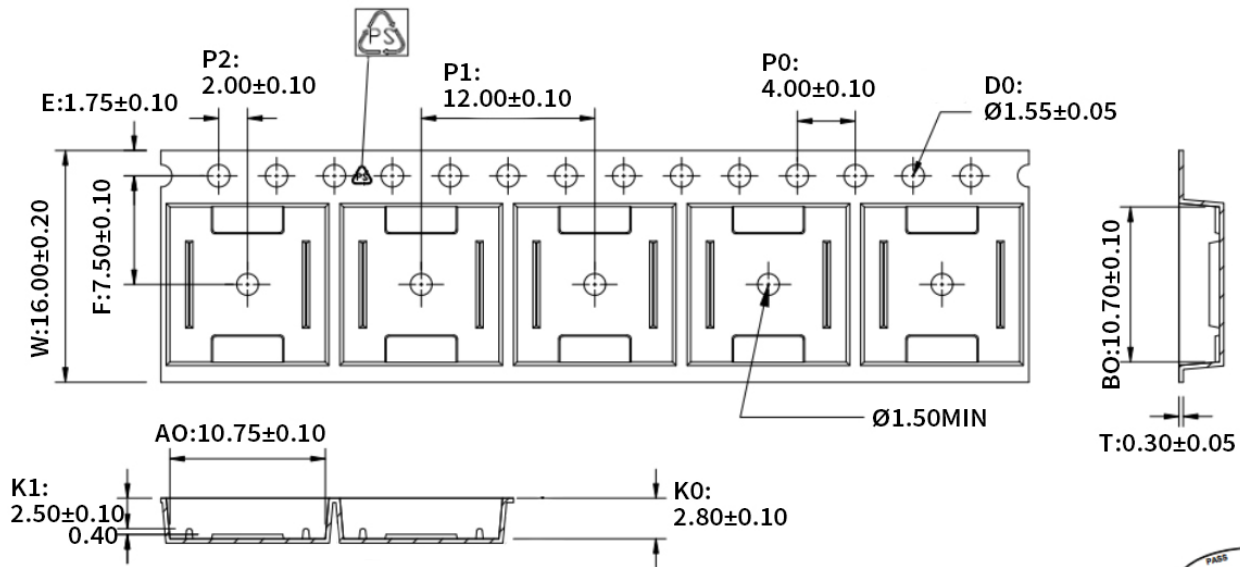


**ARBOR HOLE
DETAIL A
SCALE: 3:1**

PRODUCT SPECIFICATION						
TAPE WIDTH	Ø A ±2.0	Ø N ±2.0	W1	W2 (Max)	W3	E (MIN)
08MM	330	178	8.4 ^{+1.5} _{-0.0}	14.4	SHALL ACCOMMODATE TAPE WIDTH WITHOUT INTERFERENCE	5.5
12MM	330	178	12.4 ^{+2.0} _{-0.0}	18.4		5.5
16MM	330	178	16.4 ^{+2.0} _{-0.0}	22.4		5.5
24MM	330	178	24.4 ^{+2.0} _{-0.0}	30.4		5.5
32MM	330	178	32.4 ^{+2.0} _{-0.0}	38.4		5.5

SURFACE RESISTIVITY			
LEGEND	SR RANGE	TYPE	COLOUR
A	BELOW 10 ¹²	ANTISTATIC	ALL TYPES
B	10 ⁶ TO 10 ¹¹	STATIC DISSIPATIVE	BLACK ONLY
C	10 ⁵ & BELOW 10 ⁵	CONDUCTIVE(GENERIC)	BLACK ONLY
E	10 ⁹ TO 10 ¹¹	ANTISTATIC(COATED)	ALL TYPES

Figure 12.1 Reel Information (for all packages)



- 1.10 sprocket hole pitch cumulative tolerance ± 0.20 .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481 requirements.
5. Thickness: $0.30 \pm 0.05 \text{ mm}$.
6. Packing length per 22" reel: 378 Meters. (Rewind $N=122$)
7. Component load per 13" reel: 1000 pcs.
8. Surface resistivity: $10^5 \sim 10^{10} \Omega/\square$



W	16.00 ± 0.20
A0	10.75 ± 0.10
B0	10.70 ± 0.10
K0	2.80 ± 0.10
K1	2.50 ± 0.10

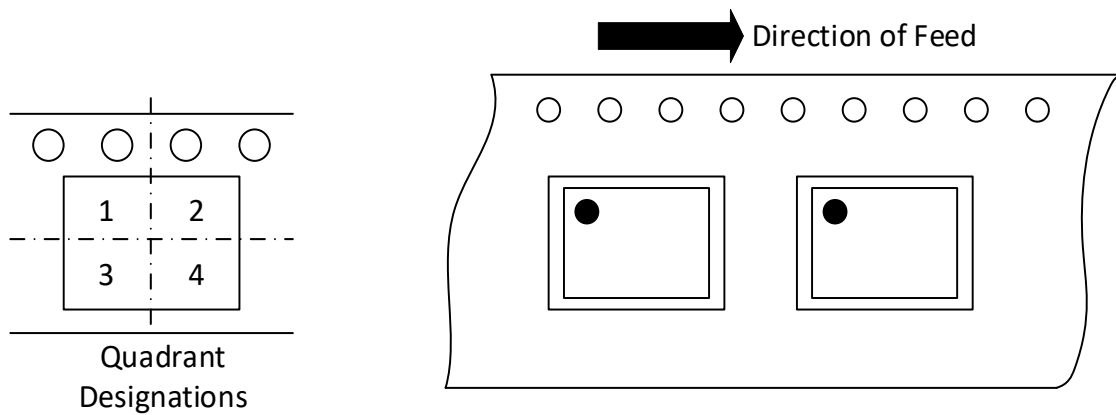


Figure 12.2 Tape Information of SOW16

13. Revision History

Revision	Description	Date
1.0	Initial Version.	2020/12/7
1.1	Update Pin Configuration and Functions	2022/3/1
1.2	Update Insulation and Safety Related Specifications, add Thermal Derating Curve, add Junction Temperature, Change Tstg to -65, Update SOW16 Package information	2022/9/14
1.3	Correct formatting and images. Update Input characteristics. Update Safety certification info throughout the document. Update eye diagram. Update Package Information and Tape and Reel Information. Update Function Description. Update Applications description. change the CTI of SOP8 from 400 to 600, change the Material Group of SOP8 from II to I.	2025/3/15
1.4	Delete SOP8(150mil) and SOW8(300mil) package products.	2026/3/20

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