

PRELIMINARY DATA SHEET

CEL

**NEC's HIGH CMR,
10 Mbps 3.3V OPEN COLLECTOR
OUTPUT TYPE SO8 OPTOCOUPLER**

PS9821-1/-2

DESCRIPTION

NEC's PS9821 is an optically coupled high-speed isolator containing a GaAlAs LED on the input side and a photodiode and a signal processing circuit on the output side on one chip.

FEATURES

- Supply Voltage 3.3V
- Open collector output
- High common mode transient immunity ($CM_H, CM_L = \pm 15 \text{ kV}/\mu\text{s Min.}$)
- Small package (SO8)
- High-speed (10 Mbps)
- High isolation voltage ($BV = 2\ 500 \text{ Vr.m.s.}$)

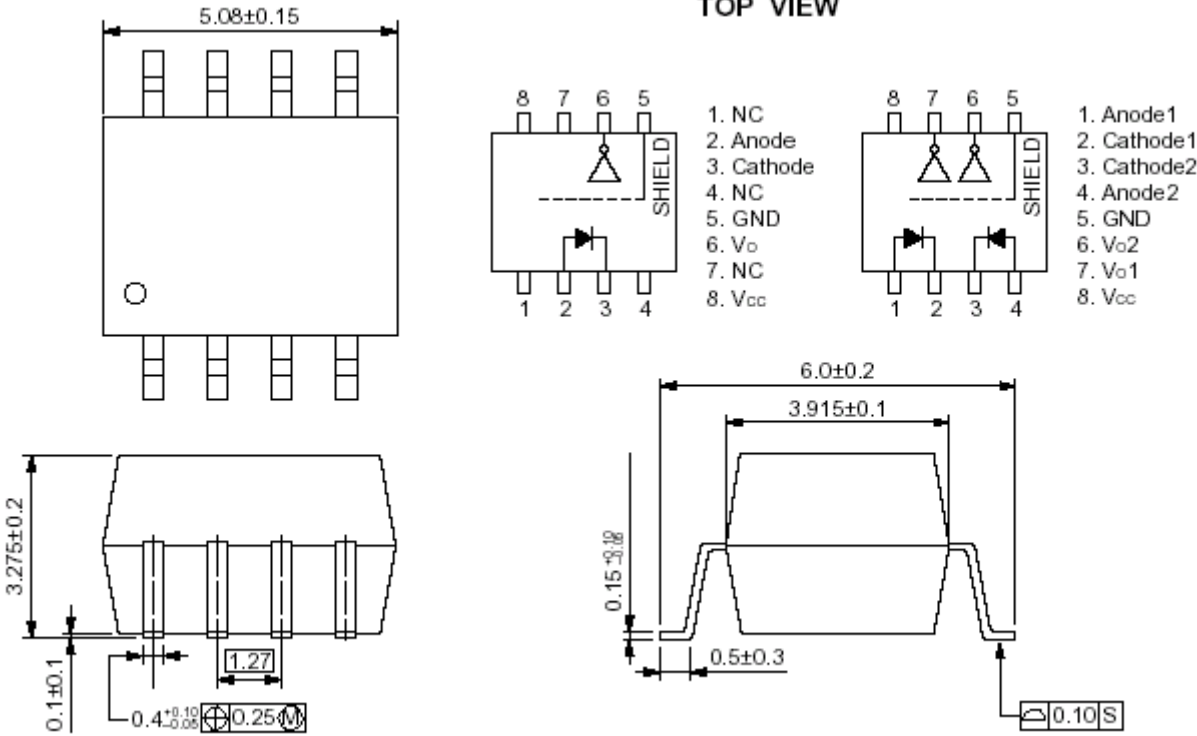
APPLICATIONS

- Factory Automation Network
- Measurement equipment
- PDP

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PACKAGE DIMENSIONS (UNIT: mm)

PS9821-1/-2



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Diode	Forward Current	I _F	20	mA
	Reverse Voltage	V _R	5	V
Detector	Supply Voltage	V _{CC}	7	V
	Output Voltage	V _O	7	V
	Output Current	I _O	25	mA
	Power Dissipation	P _C	40	mW
Isolation Voltage ^{*1}		BV	2 500	Vr.m.s.
Operating Ambient Temperature		T _A	-40 to +85	°C
Storage Temperature		T _{stg}	-55 to +125	°C

*1 AC voltage for 1 minute at T_A = 25°C, RH = 60% between input and output.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Low Level Input Voltage	V _{FL}	0		0.8	V
High Level Input Current	I _{FH}	6.3		12.5	mA
Supply Voltage	V _{CC}	2.7	-	3.6	V
TTL (R _L = 1 kΩ, loads)	N			5	
Pull-up resistor	R _L	330		4 k	Ω

ELECTRICAL CHARACTERISTICS (T_A = -40 to +85°C, unless otherwise specified)

Parameter		Symbol	Conditions	MIN.	TYP. ^{*1}	MAX.	Unit
Diode	Forward Voltage	V _F	I _F = 10 mA, T _A = 25°C	1.4	1.65	1.8	V
	Reverse Current	I _R	V _R = 3 V, T _A = 25°C			10	μA
	Terminal Capacitance	C _t	V = 0 V, f = 1 MHz, T _A = 25°C		30		pF
Detector	High Level Output Current	I _{OH}	V _{CC} = V _O = 3.3 V, V _F = 0.8 V		0.3	50	μA
	Low Level Output Voltage ^{*2}	V _{OL}	V _{CC} = 3.3 V, I _F = 5 mA, I _{OL} = 8 mA		0.3	0.6	V
	High Level Supply Current	I _{CCH}	V _{CC} = 3.3 V, I _F = 0 mA		4.5	7	mA
	Low Level Supply Current	I _{CCL}	V _{CC} = 3.3 V, I _F = 10 mA		7.0	10	mA
Coupled	Threshold Input Current (H → L)	I _{FHL}	V _{CC} = 3.3 V, V _O = 0.8 V, R _L = 350 Ω		3	5	mA
	Isolation Resistance	R _{I-O}	V _{I-O} = 1 kV _{DC} , R _H = 40 to 60%, T _A = 25°C	10 ¹¹			Ω
	Isolation Capacitance	C _{I-O}	V = 0 V, f = 1 MHz, T _A = 25°C		0.9		pF
	Propagation Delay Time (H → L) ^{*3}	t _{PHL}	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA T _A = 25°C		-	75	ns
	Propagation Delay Time (L → H) ^{*3}	t _{PLH}	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA T _A = 25°C			90	ns
	Rise Time	t _r	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA		20		
	Fall Time	t _f	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA		10		
	Pulse Width Distortion (PWD) ^{*3}	t _{PHL} - t _{PLH}	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA T _A = 25°C		-	25	ns
	Propagation Delay Skew	t _{PSK}	V _{CC} = 3.3 V, R _L = 350 Ω, I _F = 7.5 mA T _A = 25°C			40	
	Common Mode Transient Immunity at High Level Output ^{*4}	CM _H	R _L = 350 Ω, T _A = 25°C, I _F = 0 mA, V _{O(MIN.)} = 2 V, V _{CM} = 50V	15			kV/μs
Common Mode Transient Immunity at Low Level Output ^{*4}	CM _L	R _L = 350 Ω, T _A = 25°C, I _F = 7.5 mA, V _{O(MAX.)} = 0.8 V, V _{CM} = 50V	15			kV/μs	

Life Support Applications

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