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

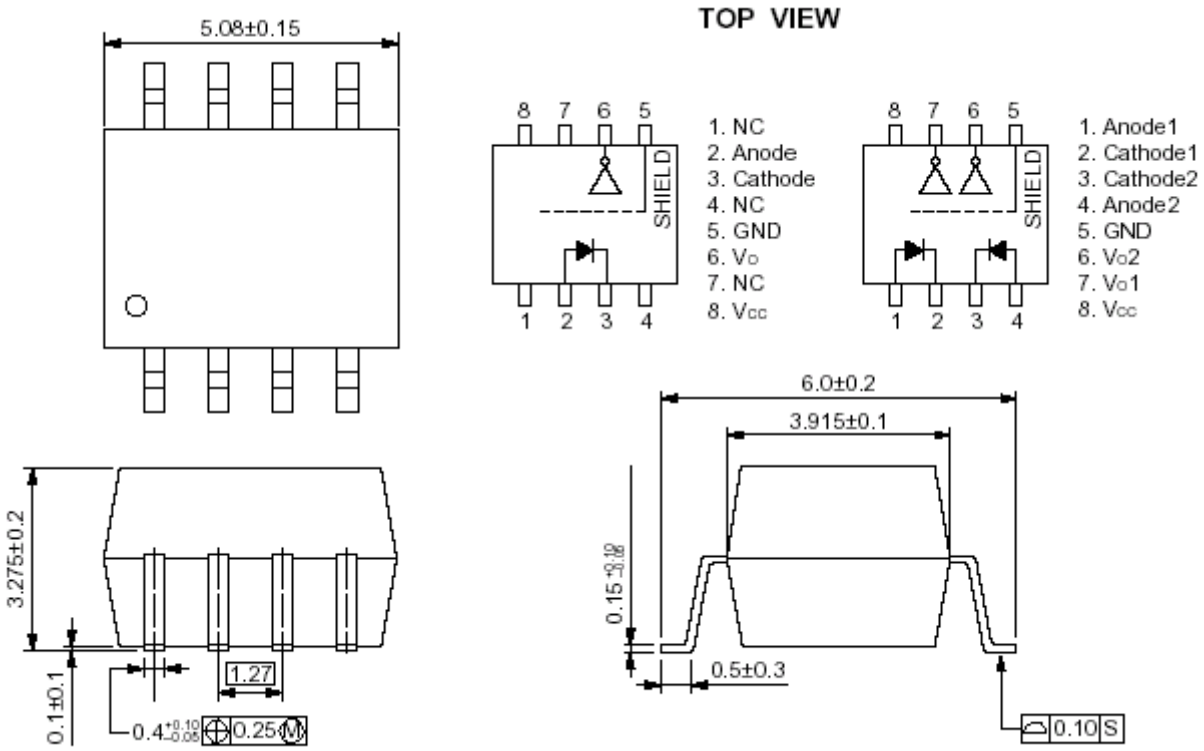
- Supply Voltage 3.3V
- Open collector output
- High common mode transient immunity (CM_H, CM_L = ±15 kV/μs Min.)
- Small package (SO8)
- High-speed (10 Mbps)
- High isolation voltage (BV = 2 500 Vr.m.s.)

APPLICATIONS

- Factory Automation Network
- Measurement equipment
- PDP

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}, RH = 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	$\lvert t_{PHL}-t_{PLH} \rvert$	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