

# **NEC's HIGH NOISE REDUCTION** HIGH SPEED ANALOG OUTPUT **5 PIN SOP OPTOCOUPLER**

# **PS8101**

### **FEATURES**

- HIGH COMMON MODE TRANSISENT IMMUNITY: CMH,CML: ±10 kV/µs MIN
- **HIGH ISOLATION VOLTAGE:** WWW.DZSC.COM BV: 2500 Vr.m.s.
- **HIGH SUPPLY VOLTAGE:** Vcc = 35 V
- **HIGH SPEED RESPONSE:**  $t_{PHL} = 0.8 \mu s MAX$ ,  $t_{PLH} = 1.2 \mu s MAX$
- **AVAILABLE IN TAPE AND REEL:** PS8101-F3, F4



### DESCRIPTION

NEC's PS8101 is an optically coupled isolator containing a GaAlAs LED on the light emitting diode (input) side and a PIN photodiode and a high speed amplifier transistor on the output side on one chip. Its small package makes it ideal for high density circuits and applications.

### **APPLICATIONS**

- COMPUTERS AND PERIPHERALS MANUFACTURES
- **GENERAL PURPOSE INVERTER**
- **POWER SUPPLIES**
- **RELAY AND PULSE TRANSFORMER** REPLACEMENTS

### ELECTRICAL CHARACTERISTICS (TA = 25°C)

	PART NUMBER				PS8101		
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	
Diode	VF	Forward Voltage, IF = 16 mA	V		1.7	2.2	
	IR	Reverse Current, VR = 3 V	μΑ		1.1	10	
	ΔVF/ΔΤ	Forward Voltage Temp. Coefficient, IF = 16 mA	mV/°C		-1.6		
	Ct	Terminal Capacitance, V = 0 V, f = 1.0 MHz	pF	180	60		
Detector	IOH(1)	High Level Output Current IF = 0 mA, Vcc = Vo = 5.5 V	nA	MMM	3	500	
	IOH(2)	High Level Output Current IF = 0 mA, Vcc = Vo = 30 V	μΑ			100	
	VoL	Low Level Output Voltage IF = 16 mA, Vcc = 4.5 V, Lo = 1.2 mA	V		0.1	0.4	
	ICCL	Low Level Supply Current IF = 16 mA, Vo = Open, Vcc = 30 V	μΑ		50		
	Іссн	High Level Supply Current IF = 0 mA, Vo = Open, Vcc = 30 V	μΑ		0.01	2	
Coupled	CTR	Current Transfer Ratio, IF= 16 mA, Vcc = 4.5 V, Vo = 0.4 V	%	15	20	35	
	Rı-o	Isolation Resistance, V IN-OUT = 1k VDC, RH = 40 to 60 %	Ω	10 <sup>11</sup>	DISU.		
	Cı-o	Isolation Capacitance, V = 0, f = 1.0 MHz	pF	A WILL	0.4		
	tPHL	Propagation Delay Time, (High $\rightarrow$ Low) <sup>1</sup> IF = 16 mA, Vcc = 5 V, RL = 2.2 k $\Omega$ , CL = 15 pF	μs		0.5	0.8	
	tpLH	Propagation Delay Time, (Low $\rightarrow$ High) <sup>1</sup> IF= 16 mA, Vcc = 5 V, RL = 2.2 k $\Omega$ , CL = 15 pF	μs		0.6	1.2	
	Смн	Common Mode Transient Immunity at High Level Output <sup>2</sup> IF= 0 mA, Vcc = 5 V, RL = 4.1 k Ω, VcM = 1.5 kV	kV/μs	10			
	Смь	Common Mode Transient Immunity at Low Level Output $^2$ IF= 16 mA, Vcc = 5 V, RL = 4.1 k $\Omega$ , Vcm = 1.5 kV	kV/μs	-10			

NOTES: 1. CTR rank K: 20 to 35 (%) N: 10 to 35 (%) **PDF** ON'T ON NEXT PAGE.

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# ABSOLUTE MAXIMUM RATINGS<sup>1</sup> (TA = 25°C)

		, ,						
PARAMETERS	UNITS	RATING						
Diode								
Forward Current	mA	25						
Reverse Voltage	V	5.0						
Power Dissipation	mW	45						
Detector								
Supply Voltage	V	35						
Output Voltage	V	35						
Output Current	mA	8.0						
Power Dissipation	mW	100						
Coupled								
Isolation Voltage <sup>2</sup>	Vr.m.s.	2500						
Operating Ambient Temp.	°C	-55 to +100						
Storage Temperature	°C	-55 to +125						
	Forward Current Reverse Voltage Power Dissipation  Supply Voltage Output Voltage Output Current Power Dissipation  Isolation Voltage <sup>2</sup> Operating Ambient Temp.	Forward Current mA Reverse Voltage V Power Dissipation mW  Supply Voltage V Output Voltage V Output Current mA Power Dissipation mW  Isolation Voltage² Vr.m.s. Operating Ambient Temp. °C						

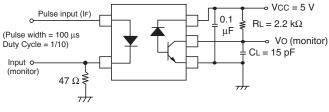
### Notes:

- 1. Operation in excess of any one of these parameters may result in permanent damage.
- 2. AC voltage for one minute at TA = 25°C, RH = 60% between input and output.

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### NOTES:

2. Test Circuit for Propagation Delay Time:



<sup>\*</sup>CL is approximately 15 pF which includes probe and stray wiring capacitance.

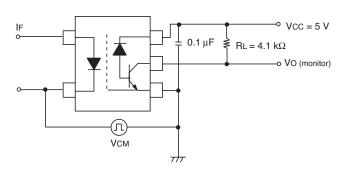
VCM 90 %

(IF = 0 mA)

Vo -

10 %

# 3. Test Circuit forCommon Mode Transient Immunity:



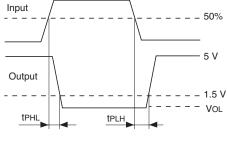
### Usage Cautions:

- (IF = 16 mA) 1. When handling this product, precautions should be taken against static electricity.
- 2. A by-pass capacitor of  $\geq 0.1 \,\mu\text{F}$  is used between Vcc and GND.

### **ORDERING INFORMATION**

PART NUMBER	PACKAGE	PACKAGE STYLE	APPLIICATION PART NUMBER*
PS8101	5-pin SOP	Magazine case 100 PCS	PS8101
PS8101-F3		Embossed Tape	
PS8101-F4		2500 pcs/reel	

\* For the application of the Safety Standard, following part number should be used.



0 V

5 V

- Vol

- 2 V

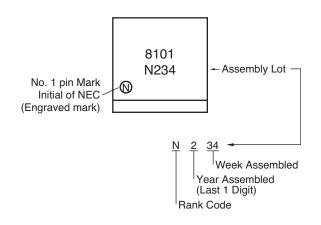
- 0.8 V

## **OUTLINE DIMENSIONS** (Units in mm)

⊕0.25M

# PS8101 (Top View) 1. Anode 2. Cathode 3. GND 4. Vo 5. Vcc

### **MARKING**



Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.