CEL

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

PS8101

FEATURES

- **HIGH COMMON MODE TRANSISENT IMMUNITY:**
  C_{MH},C_{ML}: ±10 kV/μs MIN
- **HIGH ISOLATION VOLTAGE:**
  BV: 2500 $V_{r.m.s.}$
- **HIGH SUPPLY VOLTAGE:**
  V_{CC} = 35 V
- **HIGH SPEED RESPONSE:**
  t_{PHL} = 0.8 μs MAX, t_{PLH} = 1.2 μs MAX
- **AVAILABLE IN TAPE AND REEL:**
  PS8101-F3, F4

ESD SENSITIVE

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 (T_A = 25°C)

PART NUMBER				PS8101		
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 16 mA	V		1.7	2.2
	I_R	Reverse Current, V_R = 3 V	μA			10
	$\Delta V_F/\Delta T$	Forward Voltage Temp. Coefficient, I_F = 16 mA	mV/°C		-1.6	
	C_t	Terminal Capacitance, V = 0 V, f = 1.0 MHz	pF		60	
Detector	$I_{OH(1)}$	High Level Output Current I_F = 0 mA, V_{CC} = V_O = 5.5 V	nA		3	500
	$I_{OH(2)}$	High Level Output Current I_F = 0 mA, V_{CC} = V_O = 30 V	μA			100
	V_{OL}	Low Level Output Voltage I_F = 16 mA, V_{CC} = 4.5 V, I_O = 1.2 mA	V		0.1	0.4
	I_{CCL}	Low Level Supply Current I_F = 16 mA, V_O = Open, V_{CC} = 30 V	μA		50	
	I_{CCH}	High Level Supply Current I_F = 0 mA, V_O = Open, V_{CC} = 30 V	μA		0.01	2
Coupled	CTR	Current Transfer Ratio, I_F= 16 mA, V_{CC} = 4.5 V, V_O = 0.4 V	%	15	20	35
	R_{I-O}	Isolation Resistance, V_{IN-OUT} = 1k V_{DC}, RH = 40 to 60 %	Ω	10^{11}		
	C_{I-O}	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	t_{PHL}	Propagation Delay Time, (High → Low)[1] I_F = 16 mA, V_{CC} = 5 V, R_L = 2.2 k Ω, C_L = 15 pF	μs		0.5	0.8
	t_{PLH}	Propagation Delay Time, (Low → High)[1] I_F= 16 mA, V_{CC} = 5 V, R_L = 2.2 k Ω, C_L = 15 pF	μs		0.6	1.2
	C_{MH}	Common Mode Transient Immunity at High Level Output[2] I_F= 0 mA, V_{CC} = 5 V, R_L = 4.1 k Ω, V_{CM} = 1.5 kV	kV/μs	10		
	C_{ML}	Common Mode Transient Immunity at Low Level Output [2] I_F= 16 mA, V_{CC} = 5 V, R_L = 4.1 k Ω, V_{CM} = 1.5 kV	kV/μs	-10		

NOTES:
1. CTR rank
   K: 20 to 35 (%)
   N: 10 to 35 (%)

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ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATING
Diode			
I_F	Forward Current	mA	25
V_R	Reverse Voltage	V	5.0
P_D	Power Dissipation	mW	45
Detector			
V_{CC}	Supply Voltage	V	35
V_O	Output Voltage	V	35
I_O	Output Current	mA	8.0
P_C	Power Dissipation	mW	100
Coupled			
BV	Isolation Voltage[2]	$V_{r.m.s.}$	2500
T_A	Operating Ambient Temp.	°C	-55 to +100
T_{STG}	Storage Temperature	°C	-55 to +125

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

ORDERING INFORMATION

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

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

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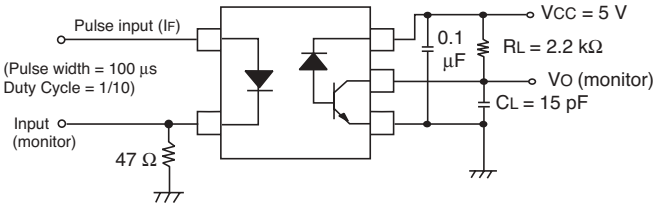
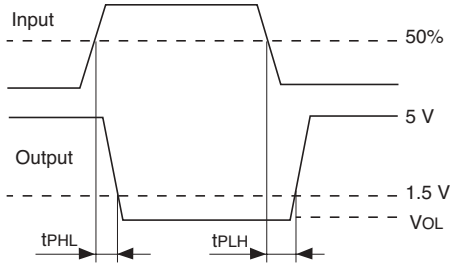
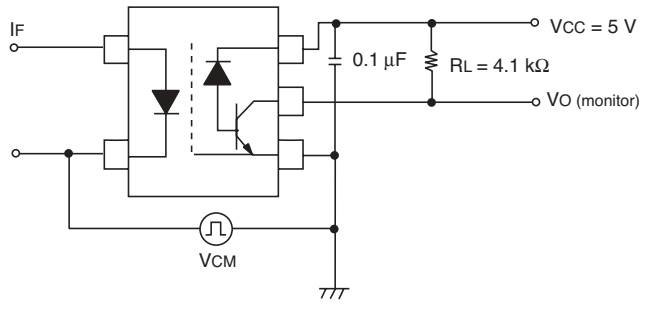
NOTES:
2. Test Circuit for Propagation Delay Time:

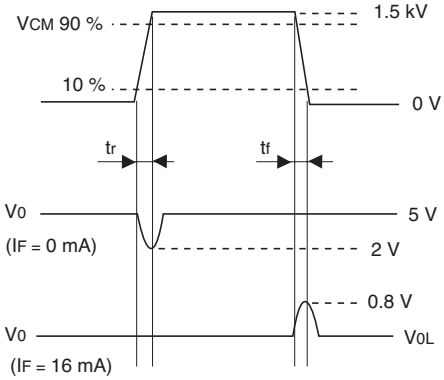




*C_L is approximately 15 pF which includes probe and stray wiring capacitance.

3. Test Circuit forCommon Mode Transient Immunity:

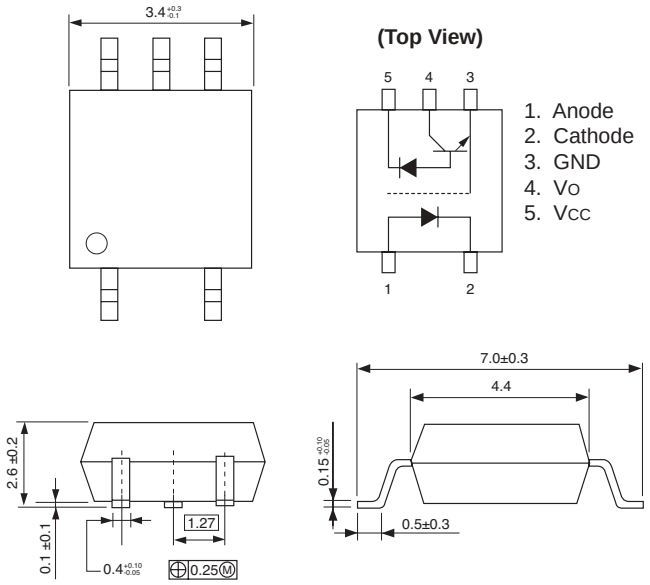




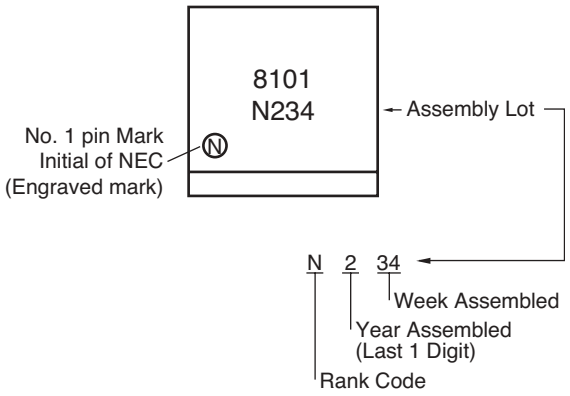
Usage Cautions:
1. When handling this product, precautions should be taken against static electricity.
2. A by-pass capacitor of ≥ 0.1 µF is used between V_{CC} and GND.

OUTLINE DIMENSIONS (Units in mm)

PS8101



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.