

**OPEN-COLLECTOR ACTIVE HIGH OUTPUT TYPE
5-PIN SOP PHOTOCOUPLER**

-NEPOC™ Series-

DESCRIPTION

The PS9716 is an optically coupled isolator containing a GaAlAs LED on the input side and a photodiode and a signal processing circuit on the output side on one chip.

This is SOP (Small Outline Package) type for high-density applications.

FEATURES

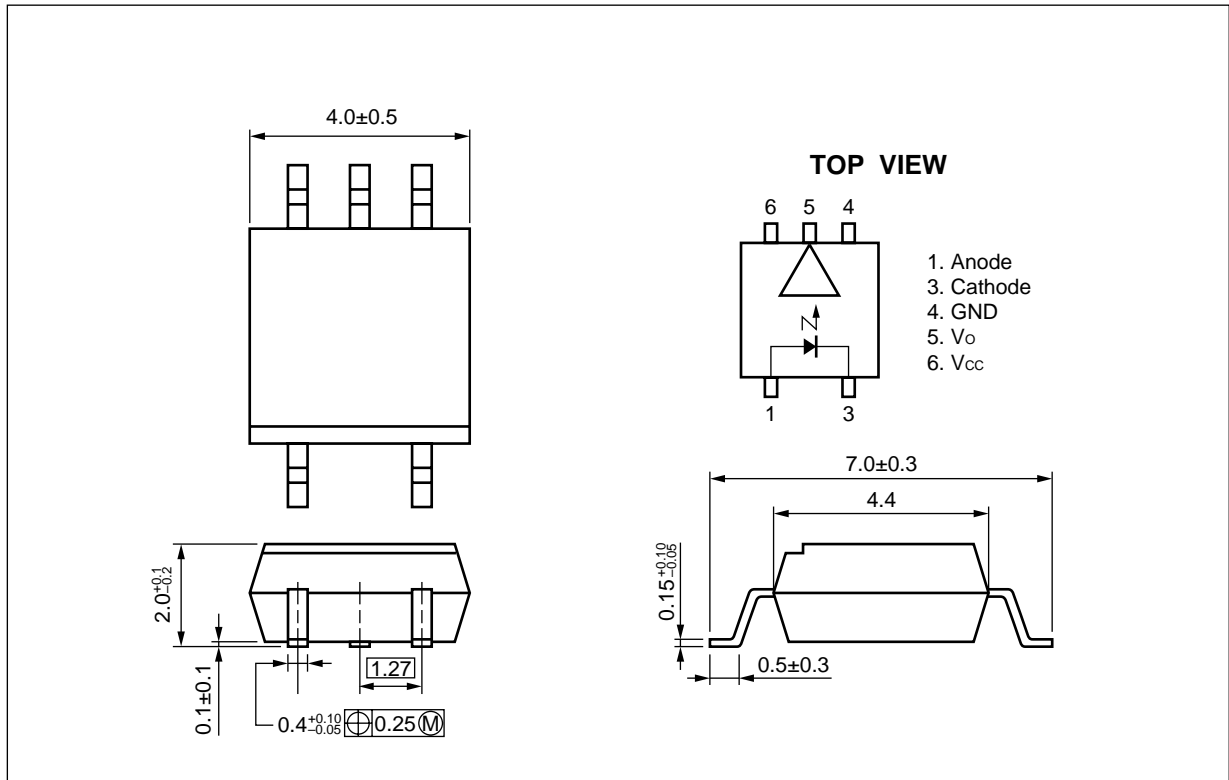
- High isolation voltage (BV = 2 500 Vr.m.s.)
- Small and thin package (5-pin SOP)
- High-speed response (t_{PHL} , t_{PLH} = 75 ns MAX.)
- Open-collector type (Active high output type)
- Ordering number of taping product: PS9716-F3, F4

APPLICATIONS

- Computer and peripheral manufactures
- Measurement equipment
- Audio-Visual

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PACKAGE DIMENSIONS (UNIT : mm)



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

Parameter		Symbol	Ratings	Unit
Diode	Forward Current	I _F	30	mA
	Reverse Voltage	V _R	3	V
Detector	Supply Voltage	V _{CC}	7	V
	Output Voltage	V _O	7	V
	Output Current	I _O	20	mA
	Power Dissipation ^{*1}	P _C	40	mW
Isolation Voltage ^{*2}		BV	2 500	Vr.m.s.
Operating Ambient Temperature		T _A	-40 to +85	°C
Storage Temperature		T _{stg}	-55 to +125	°C

*1 Applies to output pin V_O and power supply pin V_{CC}.

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

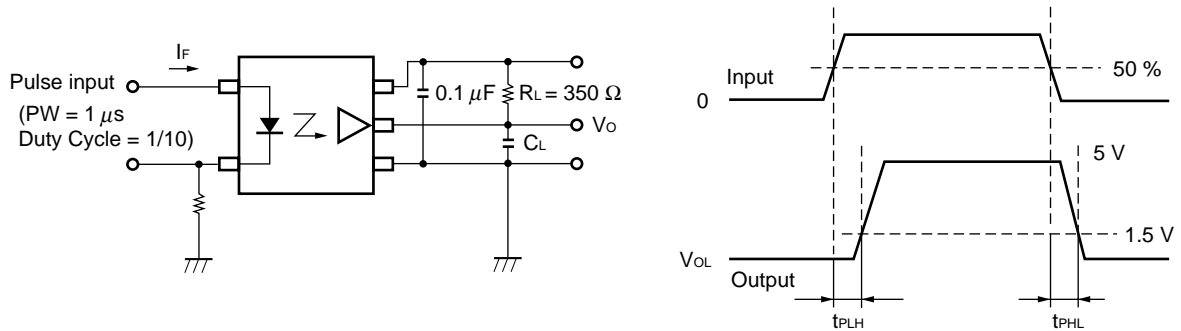
RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Low Level Input Voltage	V _{FL}	0		0.8	V
High Level Input Current	I _{FH}	7	10	15	mA
Supply Voltage	V _{CC}	4.5	5.0	5.5	V
Operating Ambient Temperature	T _A	0		70	°C

ELECTRICAL CHARACTERISTICS (T_A = 0 to +70 °C, unless otherwise specified)

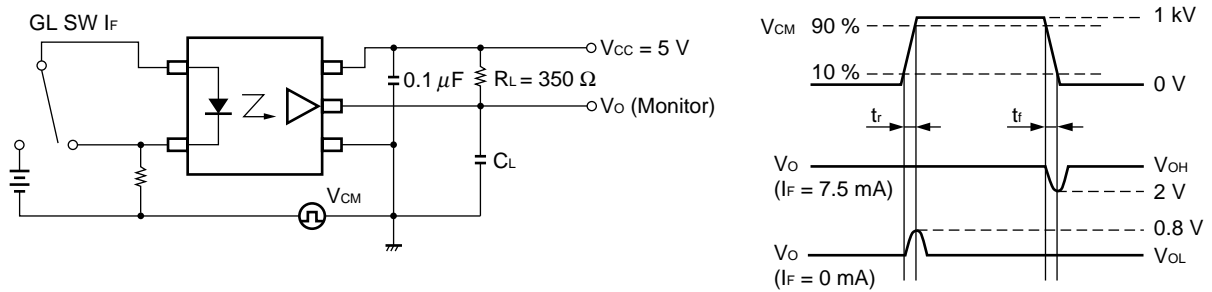
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Diode	Forward Voltage	V _F	I _F = 10 mA, T _A = 25 °C	1.4	1.65	1.9	V	
	Reverse Current	I _R	V _R = 3 V, T _A = 25 °C			10	μA	
	Terminal Capacitance	C _t	V = 0 V, f = 1 MHz, T _A = 25 °C		30		pF	
Detector	High Level Output Current	I _{OH}	V _{CC} = V _O = 5.5 V, I _F = 5 mA		2	250	μA	
	Low Level Output Voltage	V _{OL}	V _{CC} = 5.5 V, V _F = 0.8 V, I _O = 13 mA		0.2	0.6	V	
	High Level Supply Current	I _{CCH}	V _{CC} = 5.5 V, I _F = 10 mA		10	15	mA	
	Low Level Supply Current	I _{CCL}	V _{CC} = 5.5 V, I _F = 0 mA		6	8	mA	
Coupled	Threshold Input Current (L → H)	I _{FLH}	V _{CC} = 5 V, V _O = 2 V, R _L = 350 Ω		2	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		0.4		pF	
	Propagation Delay Time (H → L) ¹	t _{PHL}	V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	T _A = 25 °C		50	75	ns
							100	
	Propagation Delay Time (L → H) ¹	t _{PLH}	V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	T _A = 25 °C		50	75	ns
							100	
	Rise Time	t _r	V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω		10		ns	
	Fall Time	t _f	V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω		5		ns	
Common Mode Transient Immunity at High Level Output ²	CM _H	I _F = 7.5 mA, V _{O(MIN.)} = 2V, R _L = 350 Ω, V _{CM} = 1 kV, T _A = 25 °C	10			kV/μs		
Common Mode Transient Immunity at Low Level Output ²	CM _L	I _F = 0 mA, V _{O(MAX.)} = 0.8V, R _L = 350 Ω, V _{CM} = 1 kV, T _A = 25 °C	10			kV/μs		

*1 Test circuit for propagation delay time



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

*2 Test circuit for common mode transient immunity



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

USAGE CAUTIONS

1. This product is weak for static electricity by designed with high-speed integrated circuit so protect against static electricity when handling.
2. By-pass capacitor of more than 0.1 μF is used between V_{CC} and GND near device. Also, ensure that the distance between the leads of the photocoupler and capacitor is no more than 10 mm.

[MEMO]

[MEMO]

CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.

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