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PRELIMINARY DATA SHEET

NEC

**HIGH NOISE REDUCTION
10 Mbps OPEN COLLECTOR OUTPUT TYPE
5 PIN SOP OPTOCOUPLER**

PS9714

FEATURES

- **HIGH COMMON MODE TRANSIENT IMMUNITY:**
CMH, CML: ± 20 kV/ μ s TYP
- **HIGH SPEED RESPONSE:**
10 Mbps
- **HIGH ISOLATION VOLTAGE:**
BV: 2500 Vr.m.s.
- **OPEN COLLECTOR OUTPUT TYPE**
- **5 PIN SOP (SMALL OUTLINE PACKAGE)**
- **TAPE AND REEL AVAILABLE:**
PS9714-F3, F4: 3500 Pcs/Reel

DESCRIPTION

The PS9714 is an optically coupled isolator containing a GaAIAs LED on the light emitting diode (input) side and a photodiode and a signal processing circuit on the detector (output) side on one chip. The PS9714 is in a plastic SOP (Small Outline Package) type for high density applications.

APPLICATIONS

- **MEASUREMENT EQUIPMENT**
- **PDP**
- **FACTORY AUTOMATION NETWORK**

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

		PART NUMBER	PS9714			
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = 10 mA, T _A = 25°C	V	1.4	1.65	1.9
	I _R	Reverse Current, V _R = 3 V, T _A = 25°C	μ A			10
	C _t	Terminal Capacitance, V = 0 V, f = 1 MHz, T _A = 25°C	pF		30	
Detector	I _{OH}	High Level Output Current, V _{CC} = V _O = 5.5 V, V _F = 0.8 V	μ A		2	250
	V _{OL}	Low Level Output Voltage, V _{CC} = 5.5 V, I _F = 5 mA, I _O = 13 mA	V		0.2	0.6
	I _{CCH}	High Level Supply Current, V _{CC} = 5.5 V, I _F = 0 mA	mA		3	8
	I _{CCL}	Low Level Supply Current, V _{CC} = 5.5 V, I _F = 10 mA	mA		6.5	11
	I _{FHL}	Threshold Input Current, V _{CC} = 5 V, V _O = 0.8 V, R _L = 350 Ω	%		2.0	5.0
Coupled	R _{I-O}	Isolation Resistance, V _{in-out} = 1kV _{DC} , R _H = 40 to 60%, T _A = 25°C	Ω	10 ¹¹		
	C _{I-O}	Isolation Capacitance, V = 0, f = 1 MHz, T _A = 25°C	pF		0.9	
	t _{PHL}	Propagation Delay Time, High \rightarrow Low ¹ , V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω T _A = 25°C	ns		40	100 75
	t _{PLH}	Propagation Delay Time, Low \rightarrow High ¹ , V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω T _A = 25°C	ns		55	100 75
	t _r	Rise Time, V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	ns		20	
	t _f	Fall Time, V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	ns		10	
	PWD	Pulse Width Distortion, V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	ns		30	50
	t _{PSK}	Propagation Skew, V _{CC} = 5 V, I _F = 7.5 mA, R _L = 350 Ω	ns			60
	CMH	Common Mode Transient Immunity at High Level Output ² V _{CC} = 5 V, V _{CM} = 1 kV, T _A = 25°C, I _F = 0 mA, V _O (MIN) = 2 V	kV/ μ s	10	20	
	CML	Common Mode Transient Immunity at Low Level Output ² V _{CC} = 5 V, V _{CM} = 1 kV, T _A = 25°C, I _F = 7.5 mA, V _O (MAX) = 0.8 V	kV/ μ s	10	20	

Please see notes on the next page.

ABSOLUTE MAXIMUM RATINGS¹

(T_A = 25°C unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
I _F	Forward Current	mA	30
V _R	Reverse Voltage	V	3
Detector			
V _{CC}	Supply Voltage	V	7
V _O	Output Voltage	V	7
I _O	Output Current	mA	25
P _C	Power Dissipation ²	mW	40
BV	Isolation Voltage ³	V _{r.m.s.}	2500
T _A	Operating Ambient Temp.	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-55 to +125

RECOMMENDED OPERATING CONDITIONS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{FL}	Low Level Input Voltage	V	0		0.8
I _{FH}	High Level Input Current	mA	6.3		12.5
V _{CC}	Supply Voltage	V	4.5	5	5.5
N	TTL (loads) (R _L = 1kΩ)				5
R _L	Pull-up Resistance	Ω	330		4k

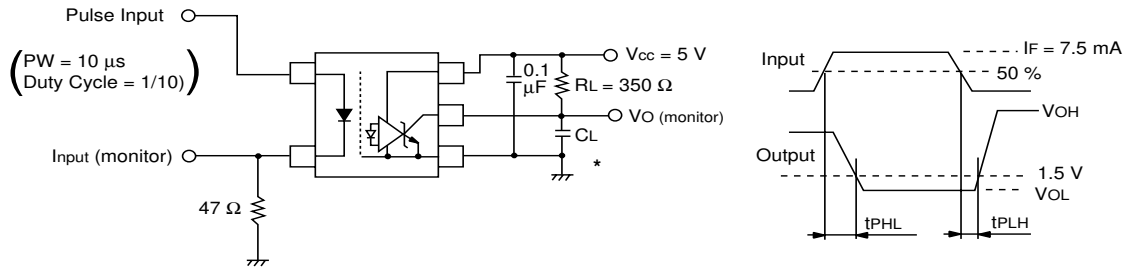
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. 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.

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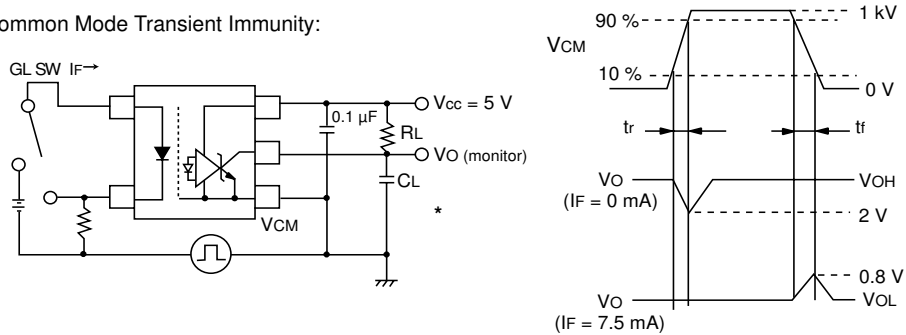
Notes:

1. Test Circuit for Propagation Delay Time:



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

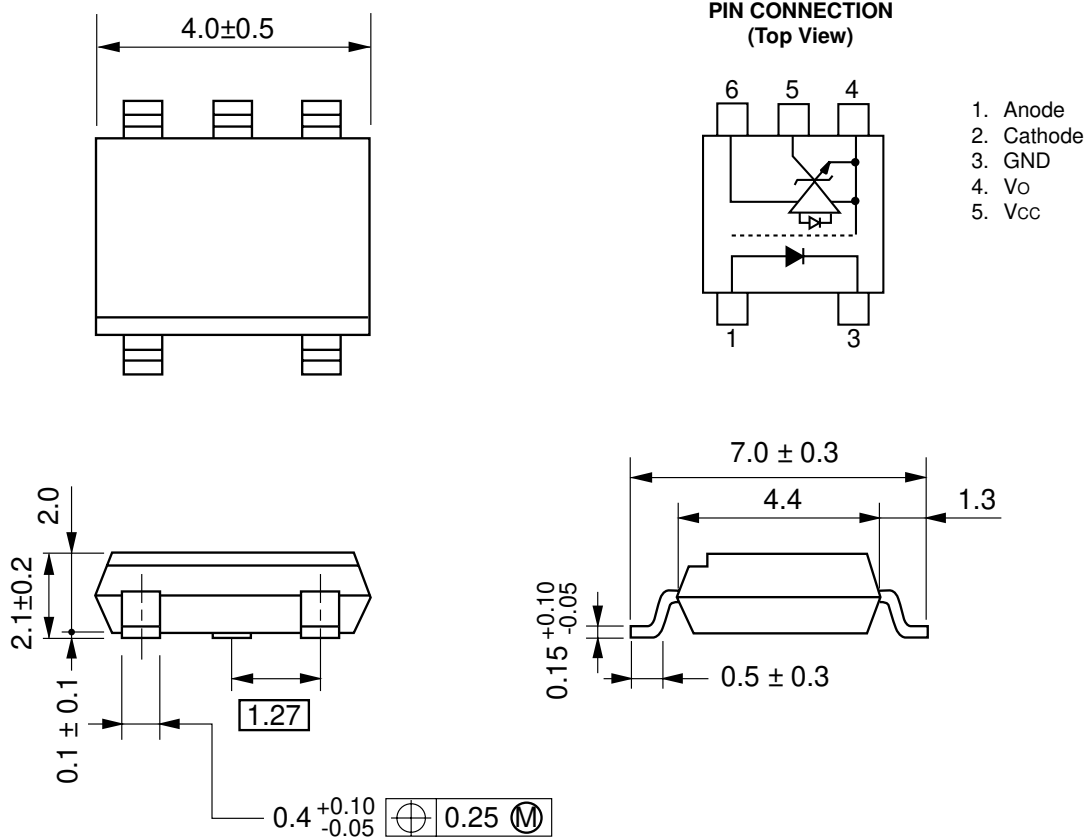
2. Test Circuit for Common Mode Transient Immunity:



USAGE CAUTIONS

1. Protect against static electricity when handling this product.
2. Bypass capacitor greater than 0.1 μF is used between V_{CC} and GND near device (lead distance: 10 mm MAX).

PACKAGE OUTLINE (Units in mm)



Life Support Applications

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12/13/2001