NEC

HIGH BANDWIDTH, LINEAR OPTOCOUPLER 16 PIN SOP

PS8742

FEATURES

- **HIGH SPEED RESPONSE:**
  fc = 6 MHz @ 3 dB TYP
- **HIGH ISOLATION VOLTAGE:**
  BV: 1500 $V_{r.m.s.}$
- **HIGH TRANSFER GAIN LINEARITY:**
  $\Delta K3$ = 1% MAX
- **SMALL THIN PACKAGE:**
  16 pin SOP: 225 mil,
  Pin pitch: 1.27 mm, Height = 2.1 mm
- **TAPING PRODUCT NUMBER**
  PS8742-F3, F4

DESCRIPTION

The PS8742 is an optically coupled isolator containing a GaAlAs LED on the light emitting diode (input) side and two photodiodes on the output side. This device is suitable for analog high linear control applications such as PCMCIA card, MODEM Voice telephony and FAX machines.

APPLICATIONS

- **PCMCIA Card**
- **Note PC/PDA**
- **MODEM**
- **FAX/ Telephone**
- **DSL**

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

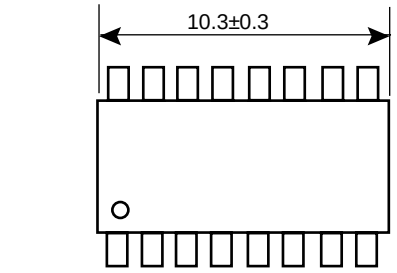
PART NUMBER				PS8742		
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 5 mA	V		1.6	2.1
	I_R	Reverse Current, V_R = 3 V	μA			10
	C_t	Terminal Capacitance, V = 0, f = 1 MHz	pF		60	
Detector	I_D	Dark Current, V_{CC} = 5 V, I_F = 0 mA	nA		1	25
Coupler	K_1	Servo Gain (I_{PD1}/I_F), V_{CC} = 5 V, I_F = 2 mA	%	0.1	0.5	1
	K_2	Forward Gain (I_{PD2}/I_F), V_{CC} = 5 V, I_F = 2 mA	%	0.1	0.5	1
	K_3	Transfer Gain (K_2/K_1), V_{CC} = 5 V, I_F = 2 mA		0.85	1	1.15
	ΔK_3	Transfer Gain linearity, V_{CC} = 5 V, I_F = 2 ~ 10 mA	%		0.03	1
	ΔK_3/°C	K_3 Temperature Coefficient, V_{CC} = 5 V, T_A = -40 ~ 85°C	%/°C		0.005	
	-3 dB	Frequency Response, Photoconductive Mode	MHz		6	

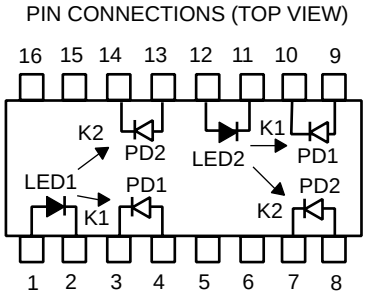
ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
I_F	Forward Current	mA	25
V_R	Reverse Voltage	V	3
P_D	Power Dissipation	mW/ch	45
IFP	Peak Forward Current[2]	A	0.25
Detector			
V_R	Reverse Voltage	V	20
P_C	Power Dissipation	mW/ch	50
Coupled			
PT	Total Power Dissipation	mW	180
BV	Isolation Voltage[3]	$V_{r.m.s.}$	1500
T_A	Operating Temperature	°C	-40 to +85
T_{STG}	Storage Temperature	°C	-40 to +100

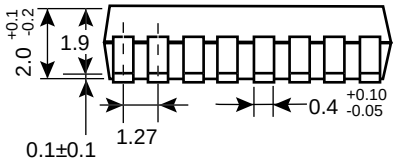
Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. PW = 100 µs, Duty Cycle = 1%.
3. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

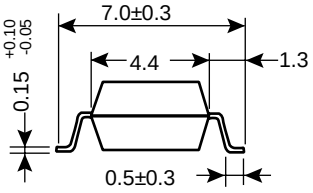
OUTLINE DIMENSIONS (Units in mm)





1. LED1 ANODE (CH1)
2. LED1 CATHODE (CH1)
3. PD1 CATHODE (CH1)
4. PD1 ANODE (CH1)
5. NC
6. NC
7. PD2 CATHODE (CH2)
8. PD2 ANODE (CH2)
9. PD1 ANODE (CH2)
10. PD1 CATHODE (CH2)
11. LED2 CATHODE (CH2)
12. LED2 ANODE (CH2)
13. PD2 ANODE (CH1)
14. PD2 CATHODE (CH1)
15. NC
16. NC





USAGE CAUTIONS

1. Since this product is sensitive to electro-static discharge, take anti-ESD measures, such as using a wrist strap, while handling it.

2. Recommended Soldering Conditions

Infrared Reflow

• Peak reflow temperature	235 °C (Package surface temperature)
• Time of temperature higher than 210°C	30 seconds or less
• Preheating conditions	120 to 160°C (Package surface temperature) 60 to 90 seconds
• Number of reflows	One

3. Take measures to protect this product from external light during actual use.
Exposure to strong light, such as sunlight, strobe light or searchlight can cause the product to malfunction.