NEC

PHOTOCOUPLER
PS8741

FOR OPTICAL DAA, HIGH LINEAR 16-PIN SOP PHOTOCOUPLER

–NEPOC Series–

DESCRIPTION

The PS8741 is an optically coupled isolator containing a GaAs LED on the input side and two photodiodes on the output side.

It is suitable for analog control applications such as PCMCIA card, modem, voice telephony and fax machines.

FEATURES

- For PCMCIA
- Small and thin package (16-pin SOP: Pin pitch = 1.27 mm, Height = 2.1 mm)
- High transfer gain linearity (ΔK_3 = 1% MAX.)
- High isolation voltage (BV = 1 500 Vr.m.s.)
- Ordering number of taping product: PS8741-F3, F4: 2 500 pcs/reel
- Safety standards
  - UL approved: File No. E72422 (S)

APPLICATIONS

- PCMCIA card
- Notebook PC, PDA
- Modem
- Telephone, FAX

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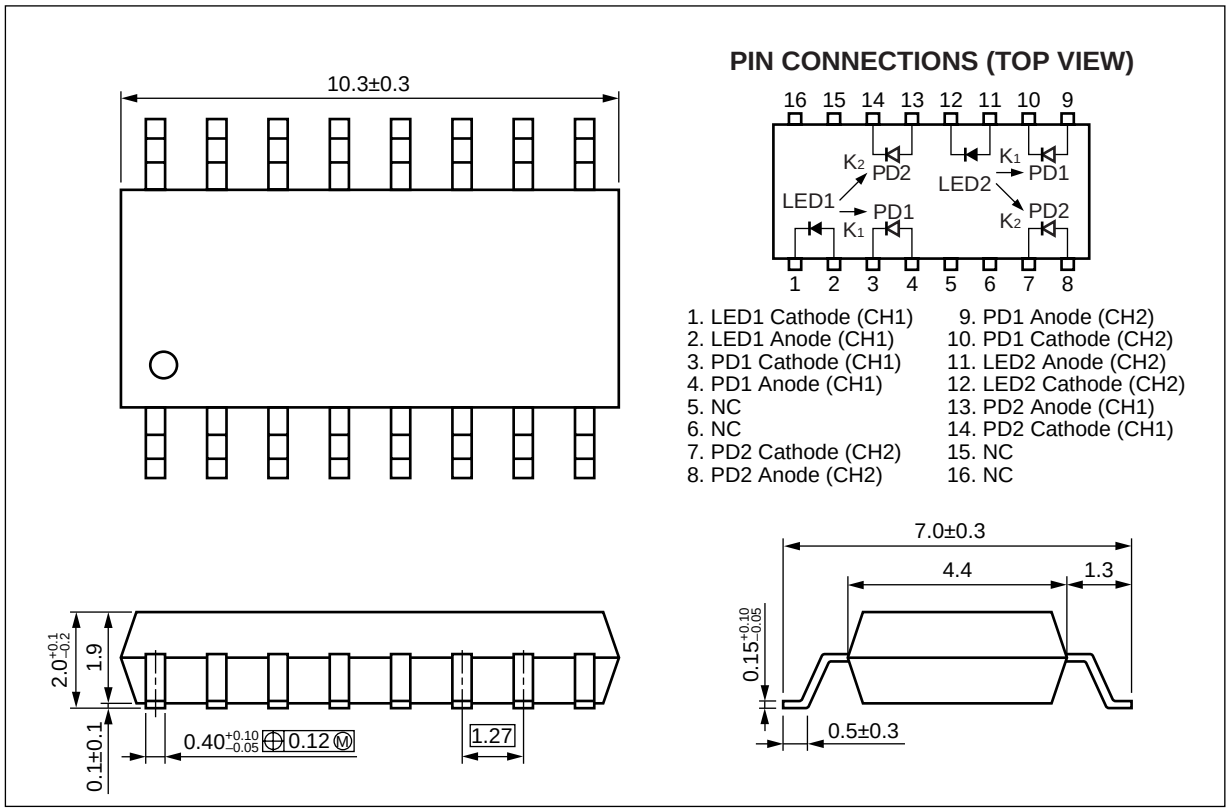
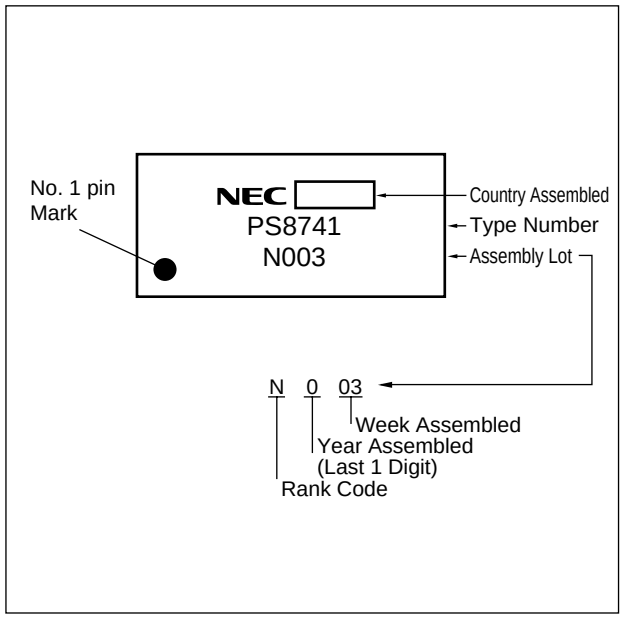
The mark ★ shows major revised points.

PACKAGE DIMENSIONS (UNIT: mm)



MARKING



ORDERING INFORMATION

Part Number	Package	Packing Style	Application Part Number*1
PS8741	16-pin SOP	Magazine case 45 pcs	PS8741
PS8741-F3		Embossed Tape 2 500 pcs/reel	
PS8741-F4			

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

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

Parameter		Symbol	Ratings	Unit
Diode	Forward Current (DC)	I_F	50	mA
	Reverse Voltage	V_R	3	V
	Power Dissipation	P_D	80	mW/ch
	Peak Forward Current*1	I_{FP}	0.5	A
Detector	Reverse Voltage	V_R	20	V
	Power Dissipation	P_C	50	mW/ch
Isolation Voltage*2		BV	1 500	Vr.m.s.
Total Power Dissipation		P_T	180	mW
Operating Ambient Temperature		T_A	–40 to +85	°C
Storage Temperature		T_{stg}	–40 to +100	°C

***1** PW = 100 μs, Duty Cycle = 1%

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

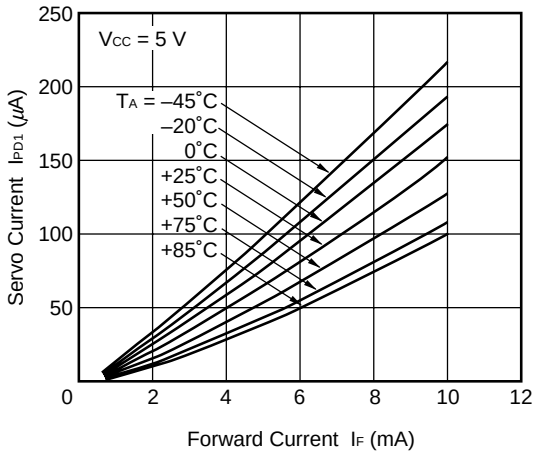
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 5 mA		1.1	1.4	V
	Reverse Current	I_R	V_R = 3 V			10	μA
	Terminal Capacitance	C_t	V = 0 V, f = 1 MHz		30		pF
Detector	Dark Current	I_D	V_{CC} = 5 V, I_F = 0 mA		1	25	nA
Coupled	Servo Gain (I_{PD1}/I_F)	K_1	V_{CC} = 5 V, I_F = 2 mA	0.3	1.0	1.8	%
	Forward Gain (I_{PD2}/I_F)	K_2		0.3	1.0	1.8	
	Transfer Gain (K_2/K_1)	K_3	V_{CC} = 5 V, I_F = 2 mA	0.75	1.0	1.25	
	Transfer Gain Linearity	ΔK_3	V_{CC} = 5 V, I_F = 2 to 10 mA		0.3	1	%
	K_3 Temperature Coefficient	$\Delta K_3/\Delta T$	V_{CC} = 5 V, I_F = 2 to 10 mA, T_A = –40 to +85°C		0.005		%/°C

★ 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.
3. Avoid storage at a high temperature and high humidity.

TYPICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

SERVO CURRENT vs. FORWARD CURRENT



SERVO GAIN vs. FORWARD CURRENT

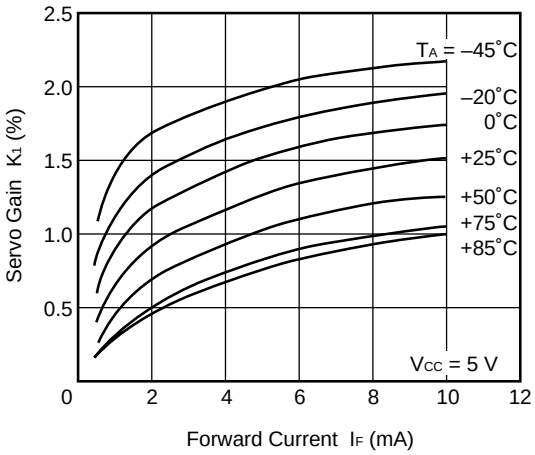
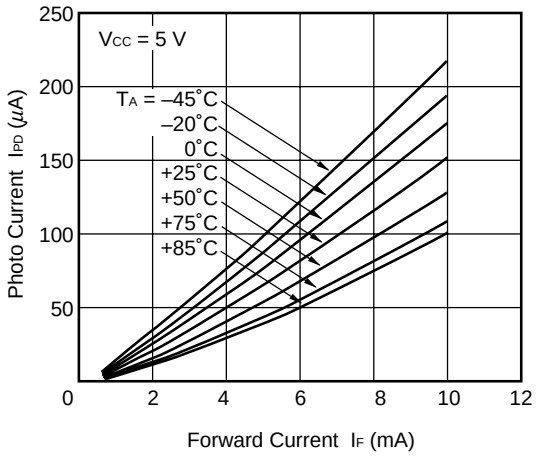
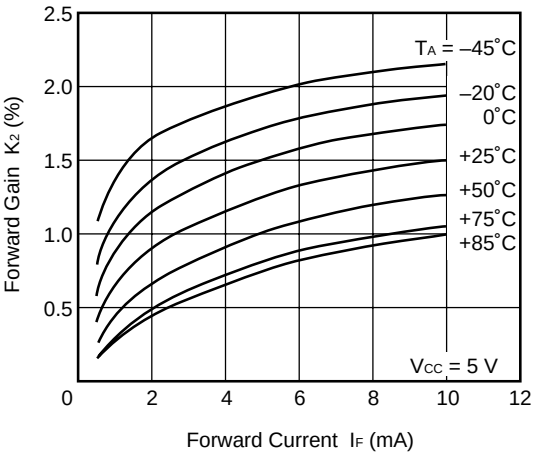


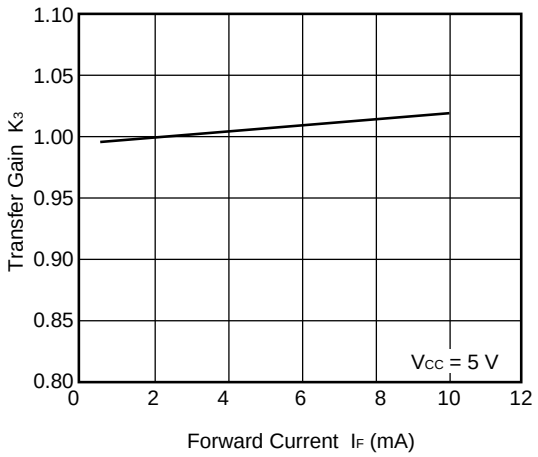
PHOTO CURRENT vs. FORWARD CURRENT



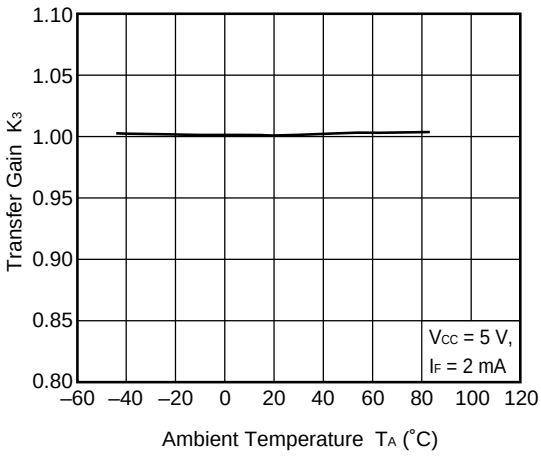
FORWARD GAIN vs. FORWARD CURRENT



TRANSFER GAIN vs. FORWARD CURRENT



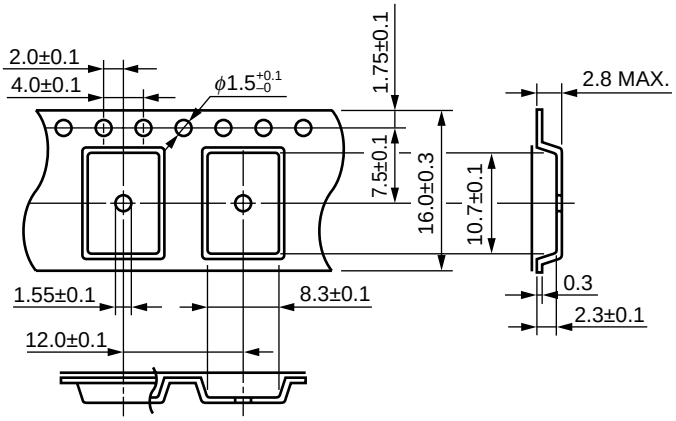
TRANSFER GAIN vs. AMBIENT TEMPERATURE



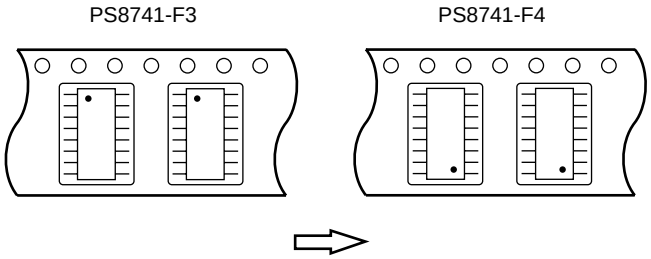
Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

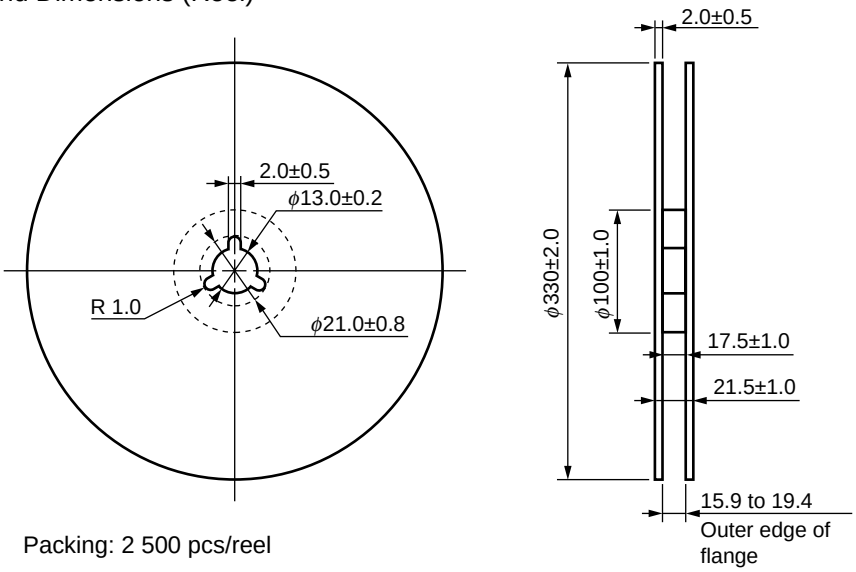
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



Packing: 2 500 pcs/reel

RECOMMENDED SOLDERING CONDITIONS

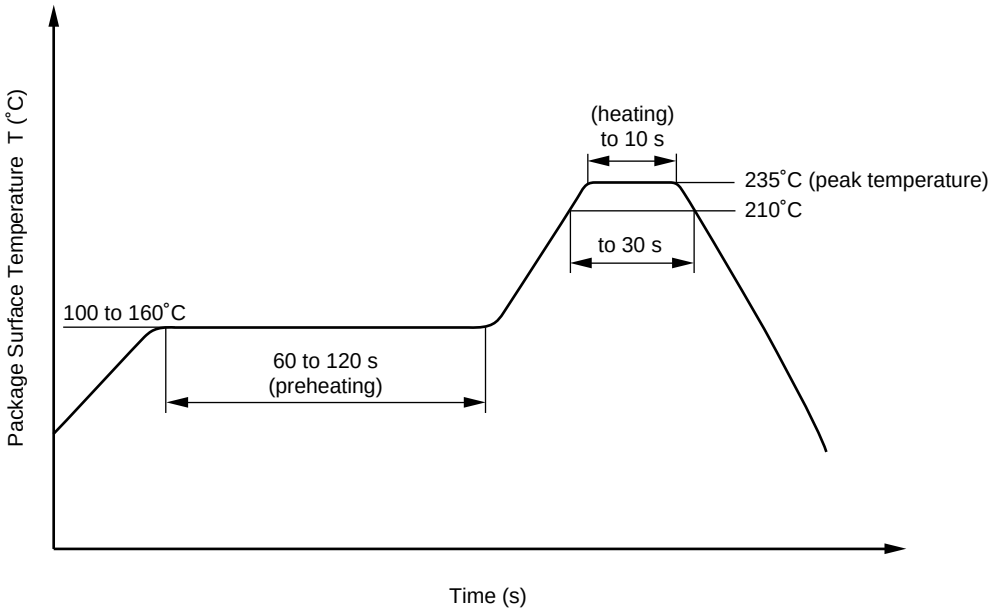
(1) Handling (Soldering iron)

- Temperature 260°C or below
- Time 5 seconds or less
- Leave more than 1.0 mm from the lead roof
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

(2) Infrared reflow soldering

- Peak reflow temperature 235°C (Package surface temperature)
- Time of temperature higher than 210°C 30 seconds or less
- Preheating conditions 100 to 160°C (Package surface temperature), 60 to 120 seconds
- Number of reflows One
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

Recommended Temperature Profile of Infrared Reflow



(3) Cautions

- Fluxes

  Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.

- **The information in this document is current as of February, 2003. The information is subject to change without notice. For actual design-in, refer to the latest publications of NEC's data sheets or data books, etc., for the most up-to-date specifications of NEC semiconductor products. Not all products and/or types are available in every country. Please check with an NEC sales representative for availability and additional information.**
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  (Note)

  (1) "NEC" as used in this statement means NEC Corporation, NEC Compound Semiconductor Devices, Ltd. and also includes its majority-owned subsidiaries.

  (2) "NEC semiconductor products" means any semiconductor product developed or manufactured by or for NEC (as defined above).

M8E 00.4-0110

SAFETY INFORMATION ON THIS PRODUCT

Caution GaAs Products	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested. • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

▶**For further information, please contact**

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