

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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**Phase-out/Discontinued**

### 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

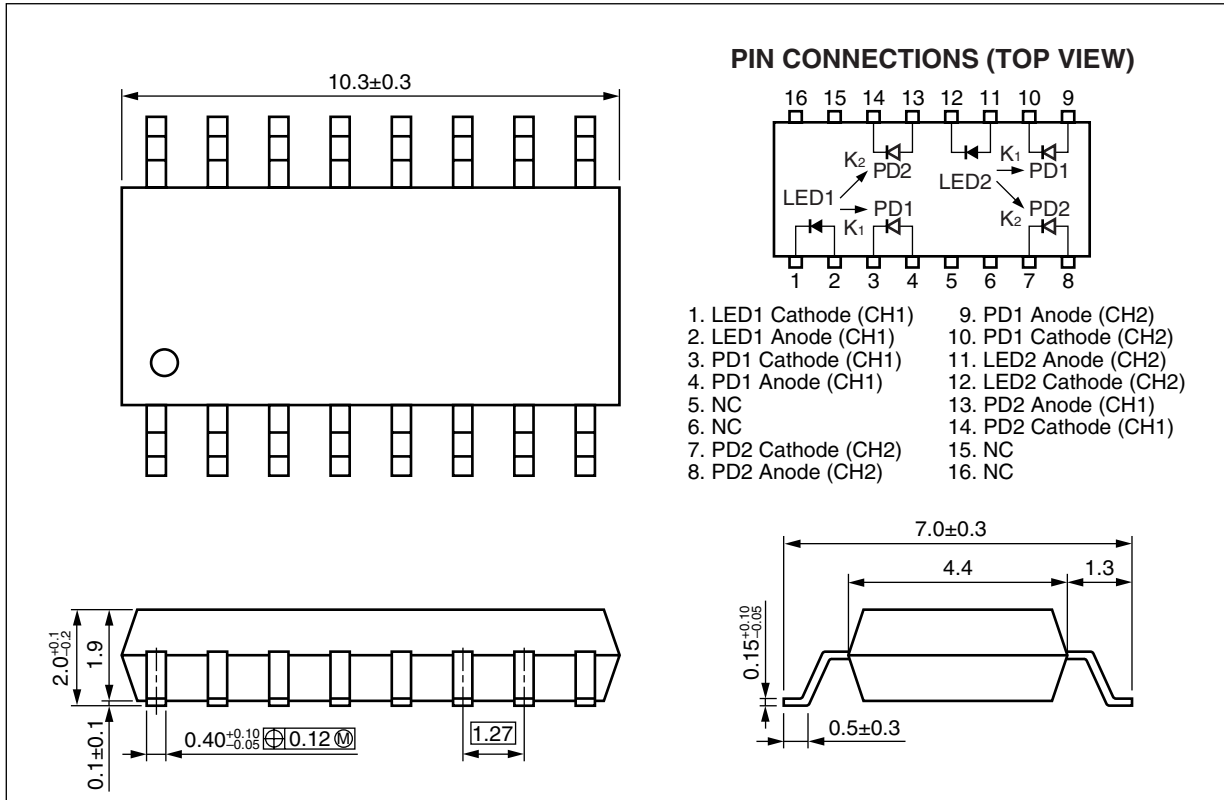
- For PCMCIA
- Small and thin package (16-pin SOP: Pin pitch = 1.27 mm, Height = 2.1 mm)
- High transfer gain linearity ( $\Delta K_3 = 1\% \text{ MAX.}$ )
- High isolation voltage (BV = 1 500 Vr.m.s.)
- Ordering number of taping product: PS8741-F3, F4: 2 500 pcs/reel
- <R> • Safety standards
  - UL approved: File No. E72422
  - BSI approved: No. 8525, 8526

#### APPLICATIONS

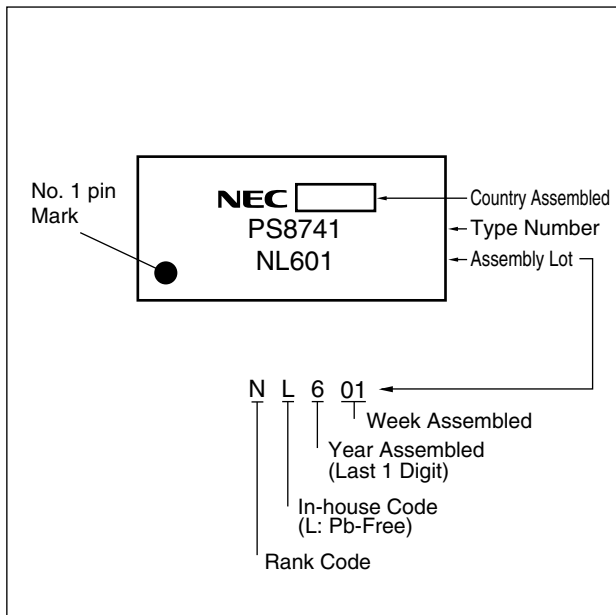
- PCMCIA card
- Notebook PC, PDA
- Modem
- Telephone, FAX

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PACKAGE DIMENSIONS (UNIT: mm)



<R> MARKING EXAMPLE



<R> **ORDERING INFORMATION**

Part Number	Order Number	Solder plating Specification	Packing Style	Safety Standard	Application Part Number <sup>*1</sup>
PS8741	PS8741-A	Pb-Free	Magazine case 45 pcs	Standard products (UL, BSI Approved)	PS8741
PS8741-F3	PS8741-F3-A		Embossed Tape 2 500 pcs/reel		
PS8741-F4	PS8741-F4-A				

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

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C, unless otherwise specified)**

Parameter		Symbol	Ratings	Unit
Diode	Forward Current (DC)	I <sub>F</sub>	50	mA
	Reverse Voltage	V <sub>R</sub>	3	V
	Power Dissipation	P <sub>D</sub>	80	mW/ch
	Peak Forward Current <sup>*1</sup>	I <sub>FP</sub>	0.5	A
Detector	Reverse Voltage	V <sub>R</sub>	20	V
	Power Dissipation	P <sub>C</sub>	50	mW/ch
Isolation Voltage <sup>*2</sup>		BV	1 500	Vr.m.s.
Total Power Dissipation		P <sub>T</sub>	180	mW
Operating Ambient Temperature		T <sub>A</sub>	-40 to +85	°C
Storage Temperature		T <sub>stg</sub>	-40 to +100	°C

\*1 PW = 100 μs, Duty Cycle = 1%

\*2 AC voltage for 1 minute at T<sub>A</sub> = 25°C, RH = 60% between input and output  
Pins 1-8 shorted together, 9-16 shorted together.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, unless otherwise specified)**

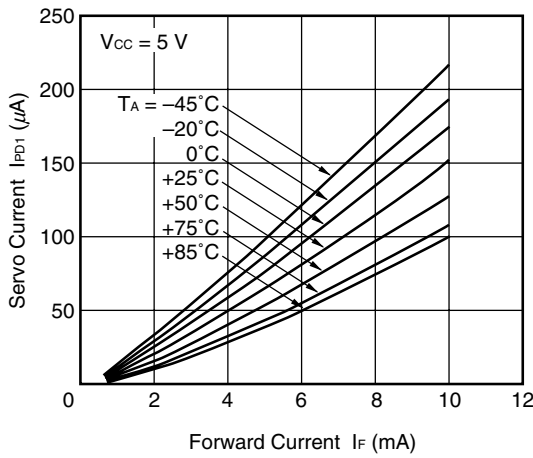
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 5 mA		1.1	1.4	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 3 V			10	μA
	Terminal Capacitance	C <sub>t</sub>	V = 0 V, f = 1 MHz		30		pF
Detector	Dark Current	I <sub>D</sub>	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 0 mA		1	25	nA
Coupled	Servo Gain (I <sub>PD1</sub> /I <sub>F</sub> )	K <sub>1</sub>	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 2 mA	0.3	1.0	1.8	%
	Forward Gain (I <sub>PD2</sub> /I <sub>F</sub> )	K <sub>2</sub>		0.3	1.0	1.8	
	Transfer Gain (K <sub>2</sub> /K <sub>1</sub> )	K <sub>3</sub>	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 2 mA	0.75	1.0	1.25	
	Transfer Gain Linearity	ΔK <sub>3</sub>	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 2 to 10 mA		0.3	1	%
	K <sub>3</sub> Temperature Coefficient	ΔK <sub>3</sub> /ΔT	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 2 to 10 mA, T <sub>A</sub> = -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<sub>CC</sub> 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 ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**

SERVO CURRENT vs. FORWARD CURRENT



SERVO GAIN vs. FORWARD CURRENT

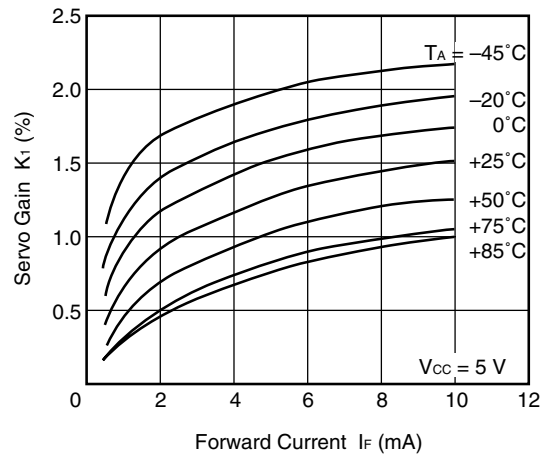
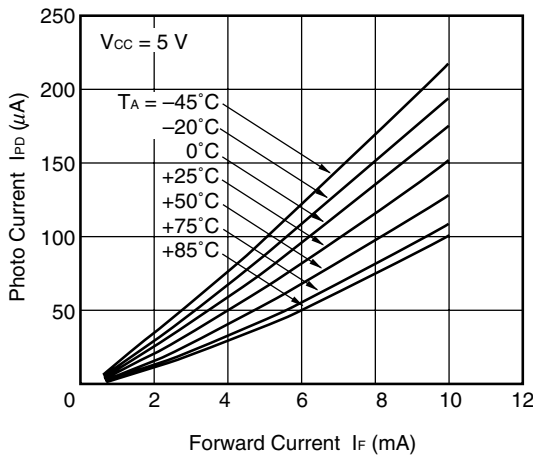
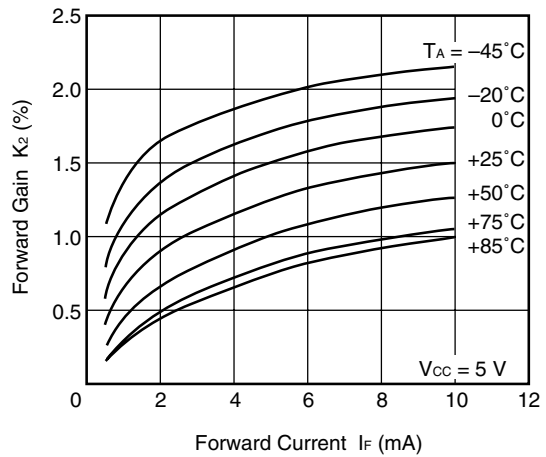


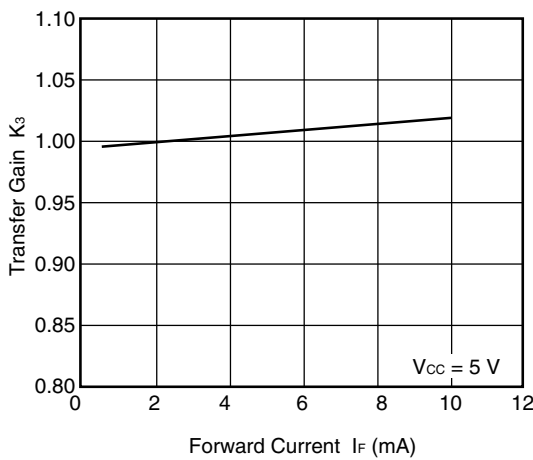
PHOTO CURRENT vs. FORWARD CURRENT



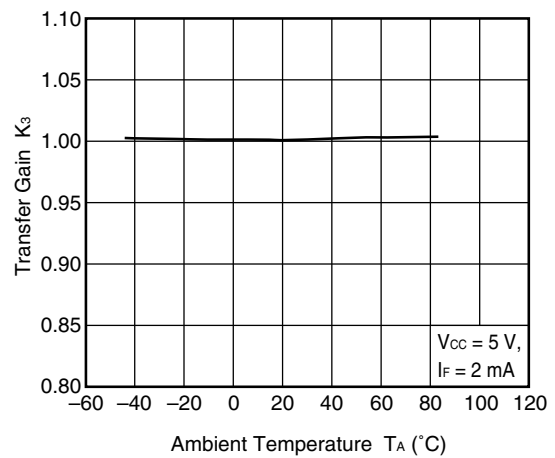
FORWARD GAIN vs. FORWARD CURRENT



TRANSFER GAIN vs. FORWARD CURRENT



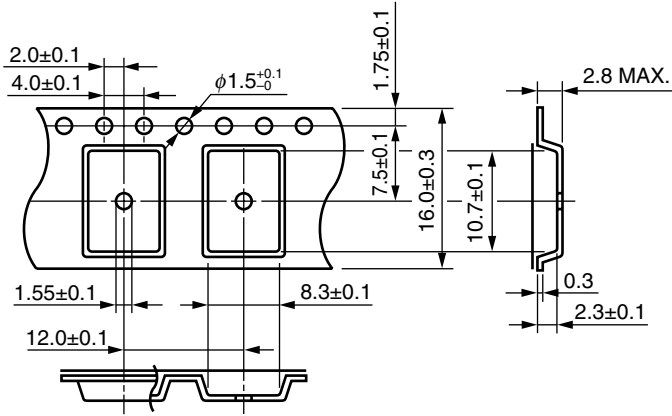
TRANSFER GAIN vs. AMBIENT TEMPERATURE



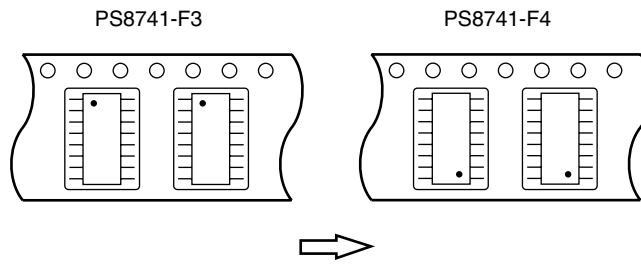
**Remark** The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

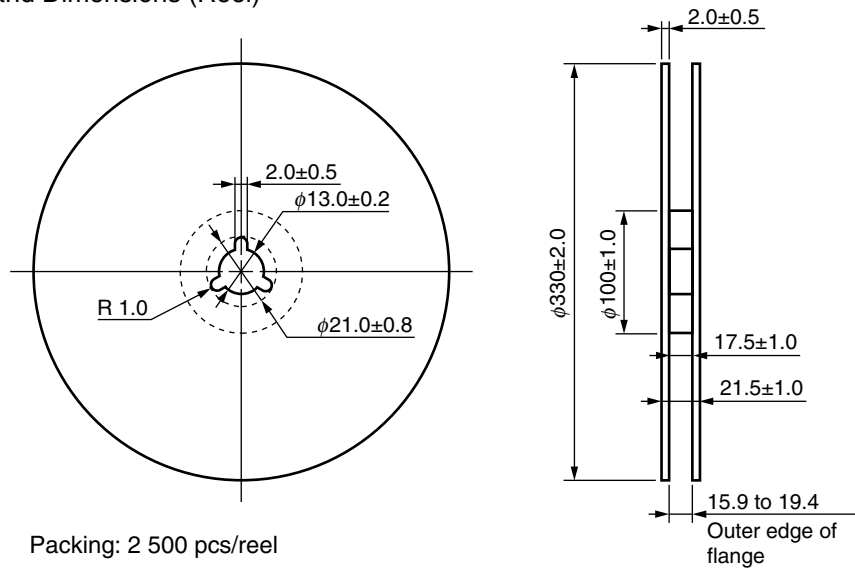
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)





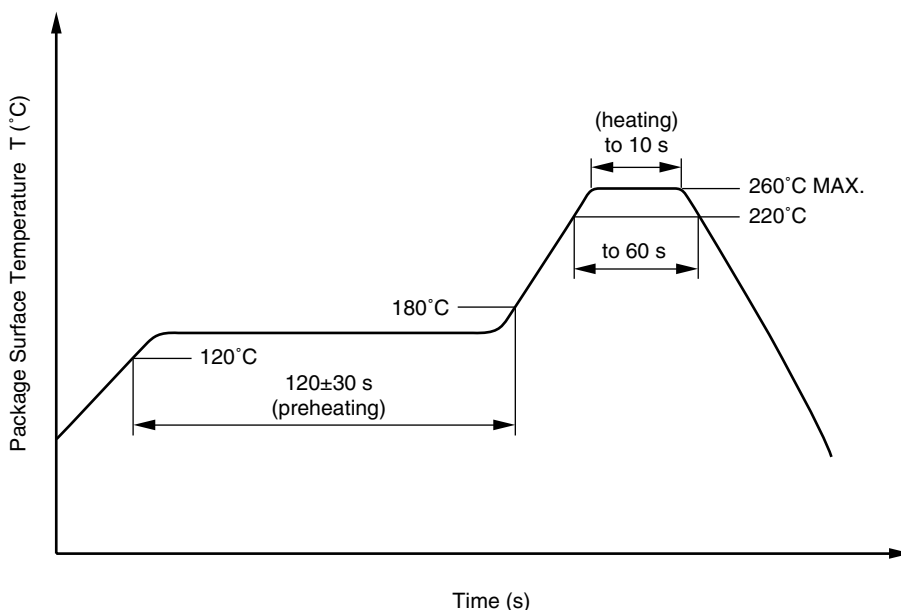
**NOTES ON HANDLING**

**1. Recommended soldering conditions**

**(1) Infrared reflow soldering**

- Peak reflow temperature 260°C or below (package surface temperature)
- Time of peak reflow temperature 10 seconds or less
- Time of temperature higher than 220°C 60 seconds or less
- Time to preheat temperature from 120 to 180°C 120±30 s
- Number of reflows Three
- 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



**(2) Wave soldering**

- Temperature 260°C or below (molten solder temperature)
- Time 10 seconds or less
- Preheating conditions 120°C or below (package surface temperature)
- Number of times One (Allowed to be dipped in solder including plastic mold portion.)
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

**<R> (3) Soldering by soldering iron**

- Peak temperature (lead part temperature) 350°C or below
- Time (each pins) 3 seconds or less
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

- (a) Soldering of leads should be made at the point 1.5 to 2.0 mm from the root of the lead.
- (b) Please be sure that the temperature of the package would not be heated over 100°C.

**(4) Cautions**

- Fluxes

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

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► For further information, please contact

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