CEL

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

APPLICATIONS

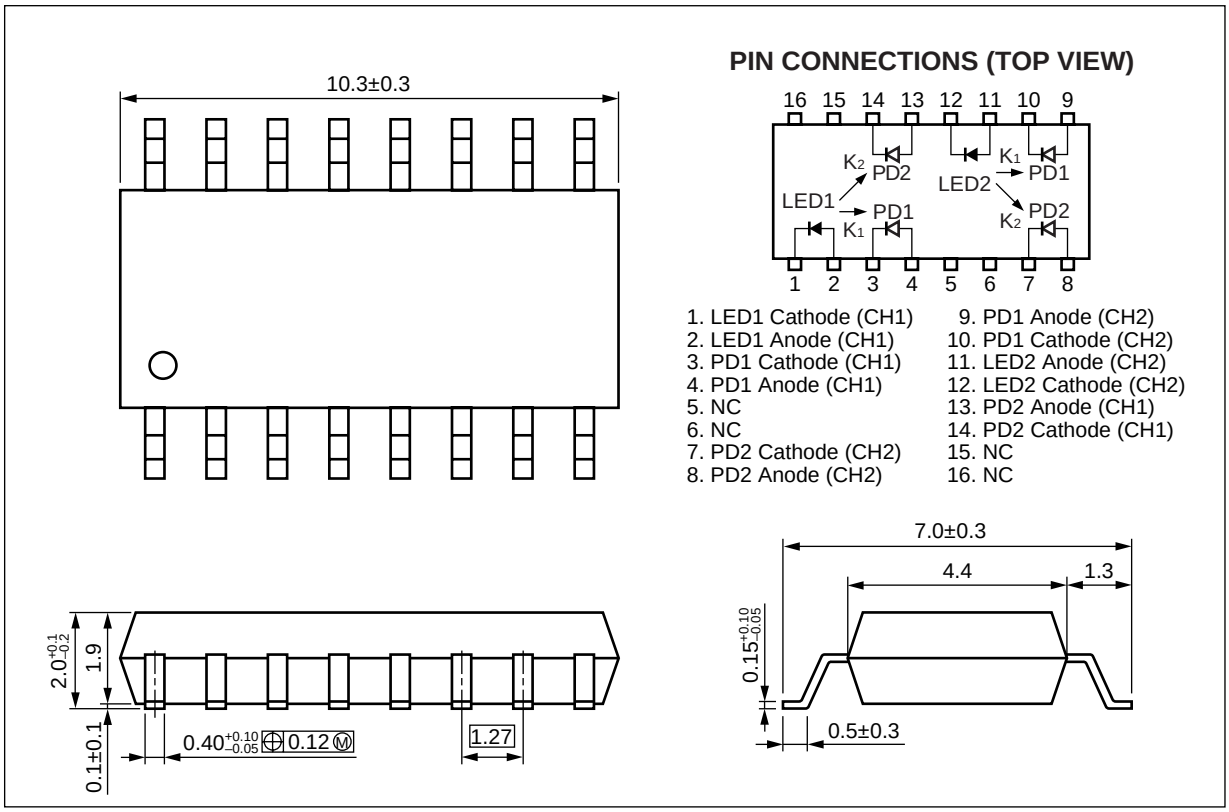
- PCMCIA card
- Notebook PC, PDA
- Modem
- Telephone, FAX

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

Document No. PN10134EJ03V0DS (3rd edition)
Date Published September 2004 CP(K)

The mark ★ shows major revised points.

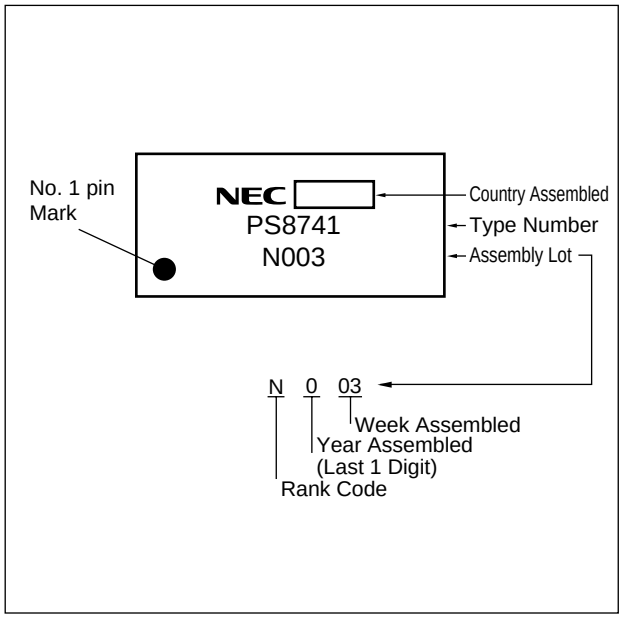
PACKAGE DIMENSIONS (UNIT: mm)



PIN CONNECTIONS (TOP VIEW)

1. LED1 Cathode (CH1)
2. LED1 Anode (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 Anode (CH2)
12. LED2 Cathode (CH2)
13. PD2 Anode (CH1)
14. PD2 Cathode (CH1)
15. NC
16. NC

MARKING



★ ORDERING INFORMATION

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

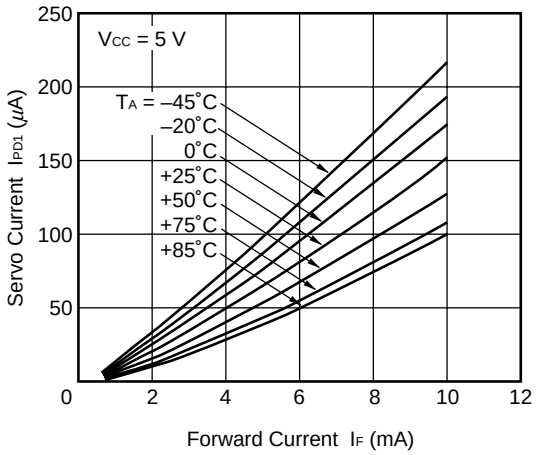
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 5 mA		1.1	1.4	V
	Reverse Current	I_R	V_R = 3 V			10	μA
	Terminal Capacitance	C_t	V = 0 V, f = 1 MHz		30		pF
Detector	Dark Current	I_D	V_{CC} = 5 V, I_F = 0 mA		1	25	nA
Coupled	Servo Gain (I_{PD1}/I_F)	K_1	V_{CC} = 5 V, I_F = 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

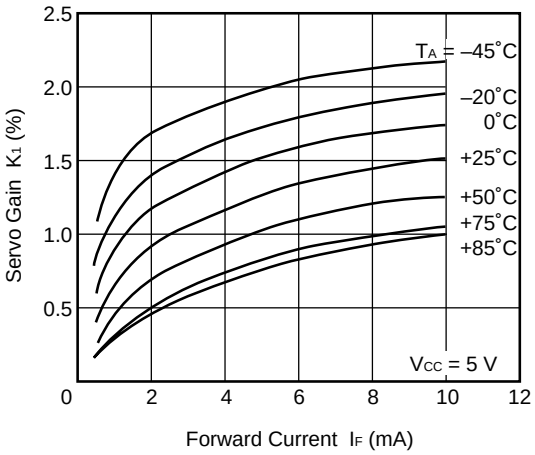
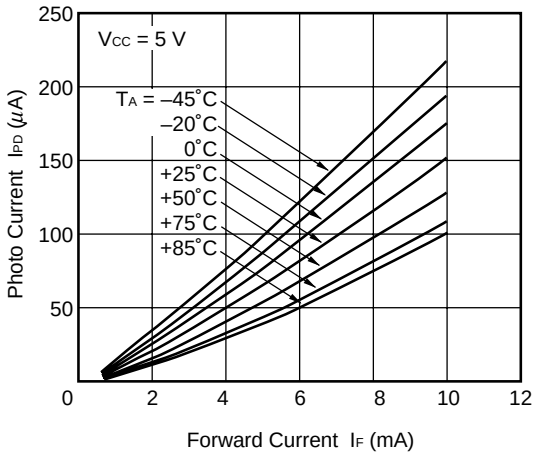
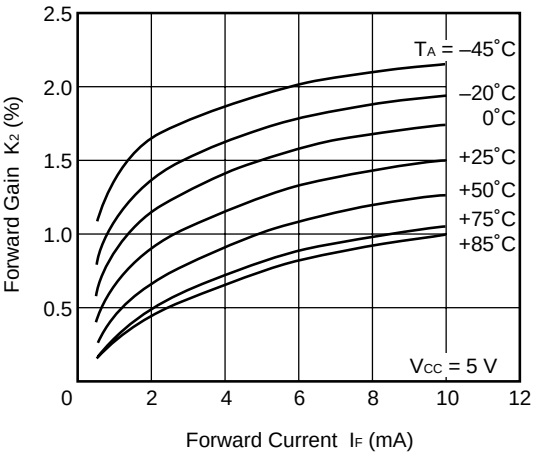


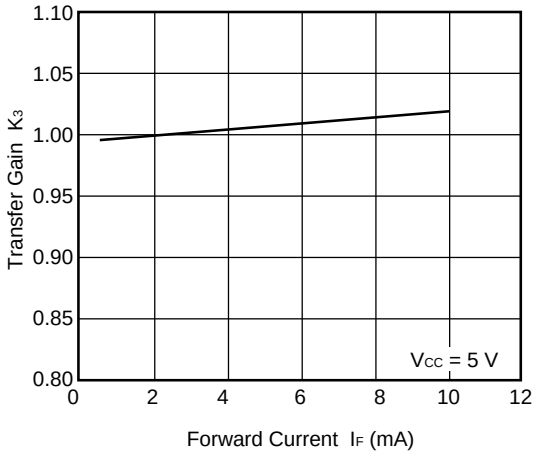
PHOTO CURRENT vs. FORWARD CURRENT



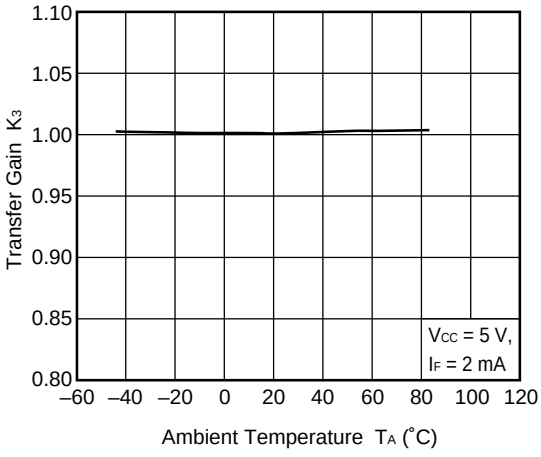
FORWARD GAIN vs. FORWARD CURRENT



TRANSFER GAIN vs. FORWARD CURRENT



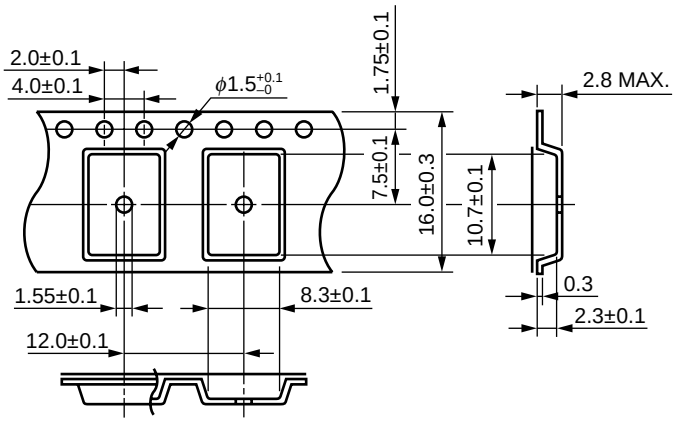
TRANSFER GAIN vs. AMBIENT TEMPERATURE



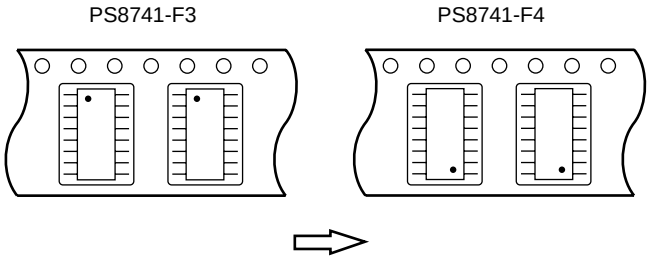
Remark The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (UNIT: mm)

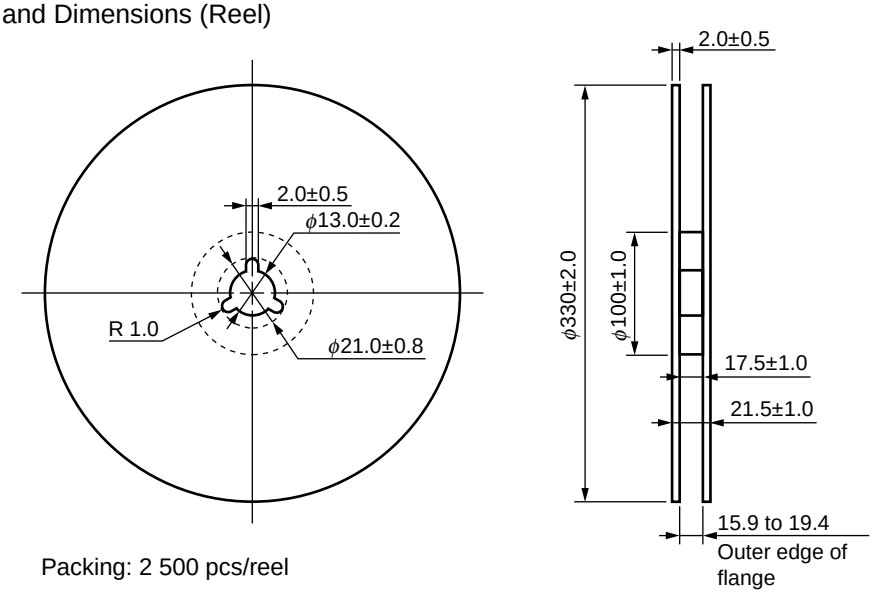
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



Packing: 2 500 pcs/reel

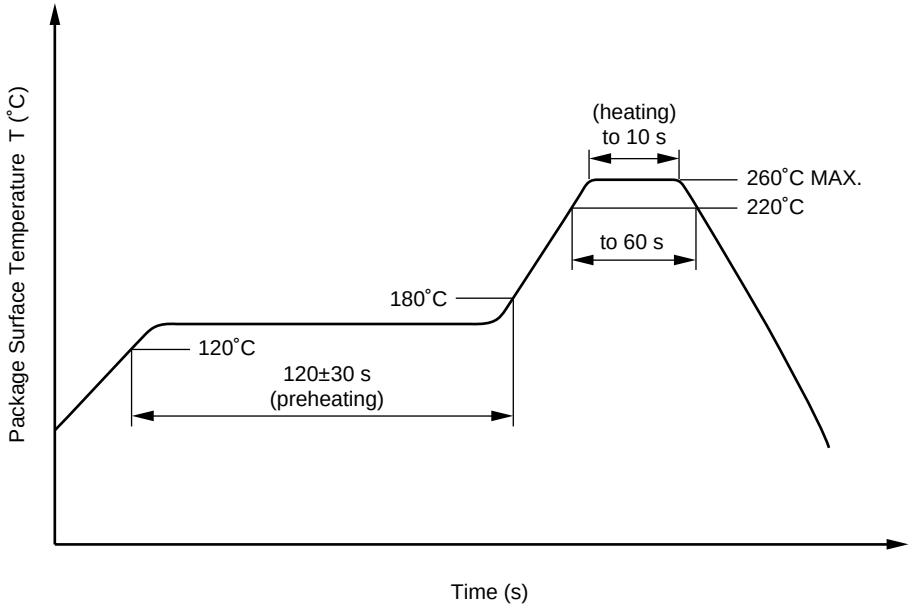
★ NOTES ON HANDLING

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.)

(3) Cautions

• Fluxes

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

CEL California Eastern Laboratories

4590 Patrick Henry Drive
Santa Clara, CA 95054-1817
Telephone: (408) 919-2500
Facsimile: (408) 988-0279

Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
Lead (Pb)	< 1000 PPM	-A	-AZ
		Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

Important Information and Disclaimer: Information provided by CEL on its website or in other communications concerting the substance content of its products represents knowledge and belief as of the date that it is provided. CEL bases its knowledge and belief on information provided by third parties and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. CEL has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. CEL and CEL suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.
In no event shall CEL's liability arising out of such information exceed the total purchase price of the CEL part(s) at issue sold by CEL to customer on an annual basis.
See CEL Terms and Conditions for additional clarification of warranties and liability.