

**ANALOG OUTPUT TYPE**  
**5-PIN SOP PHOTOCOUPLER**

–NEPOC Series–

**DESCRIPTION**

The PS8703 is an optically coupled isolator containing a GaAlAs LED on the light emitting diode (input side) and a PIN photodiode and a high-speed amplifier transistor on the output side on one chip.

This is a plastic SOP (Small Out-line Package) type for high density applications.

**FEATURES**

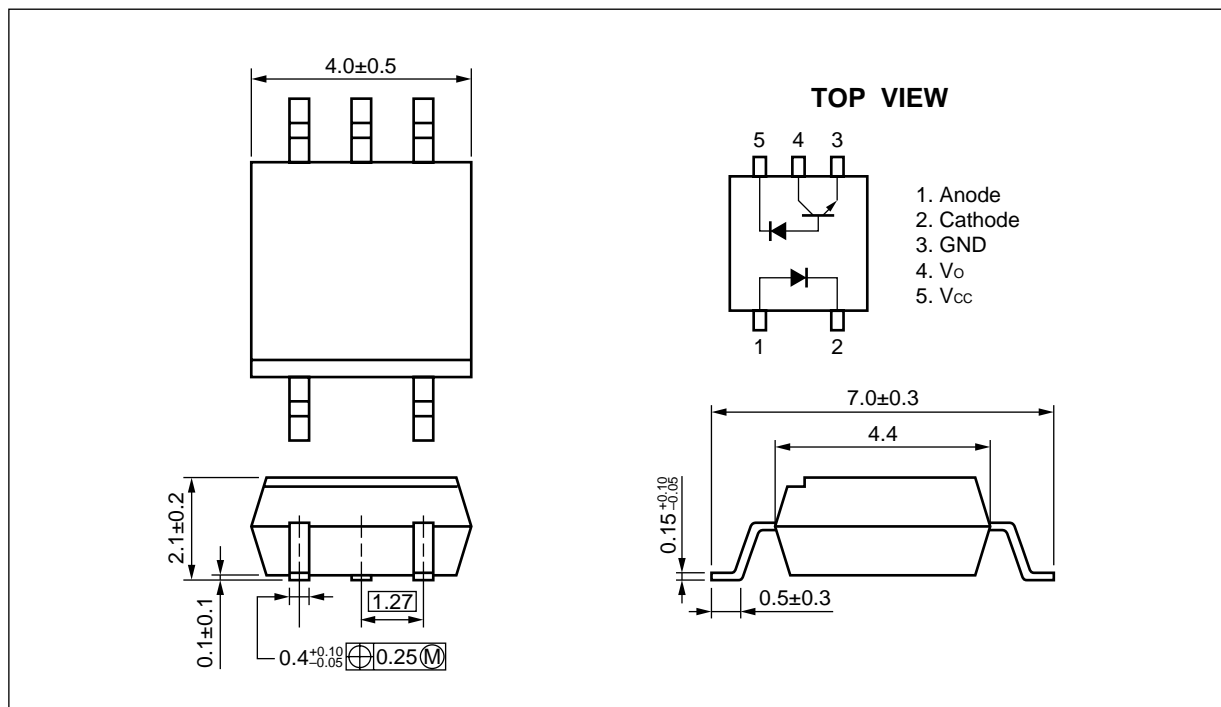
- High supply voltage ( $V_{CC} = 15\text{ V}$ )
- High isolation voltage ( $BV = 2\,500\text{ V r.m.s.}$ )
- High-speed response ( $t_{PHL}, t_{PLH} = 5\text{ }\mu\text{s MAX.}$  (@ $R_L = 4.1\text{ k}\Omega$ ))
- Ordering number of taping product: PS8703-F3, F4

**APPLICATIONS**

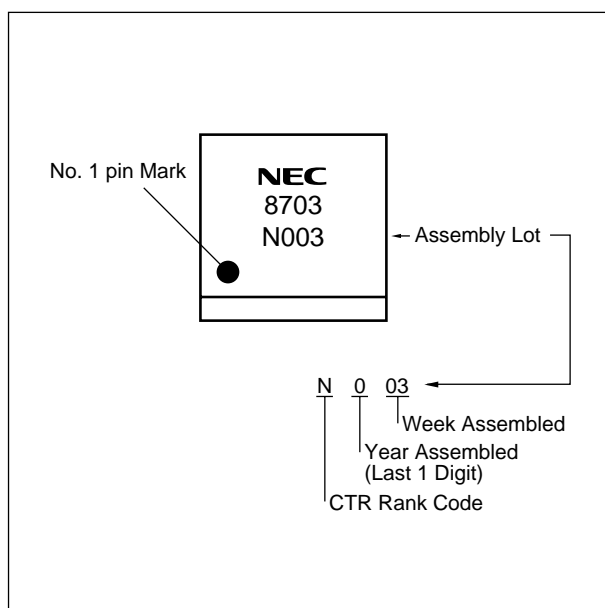
- Computer and peripheral manufactures
- General purpose inverter
- Substitutions for relays and pulse transformers
- Power supply

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PACKAGE DIMENSIONS (UNIT: mm)



MARKING



# ORDERING INFORMATION

Part Number	Package	Packing Style	Application Part Number <sup>*1</sup>
PS8703	5-pin SOP	Magazine case 100 pcs	PS8703
PS8703-F3		Embossed Tape 3 500 pcs/reel	
PS8703-F4			

<sup>\*1</sup> 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	I <sub>F</sub>	50	mA
	Reverse Voltage	V <sub>R</sub>	5	V
Detector	Supply Voltage	V <sub>CC</sub>	−0.5 to +15	V
	Output Voltage	V <sub>O</sub>	−0.5 to +15	V
	Output Current	I <sub>O</sub>	8	mA
	Power Dissipation <sup>*1</sup>	P <sub>C</sub>	80	mW
Isolation Voltage <sup>*2</sup>		BV	2 500	Vr.m.s.
Operating Ambient Temperature		T <sub>A</sub>	−40 to +100	°C
Storage Temperature		T <sub>stg</sub>	−55 to +125	°C

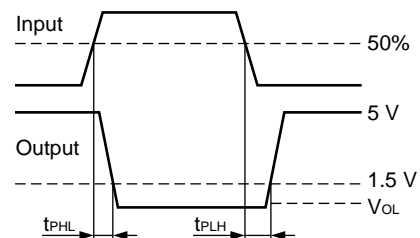
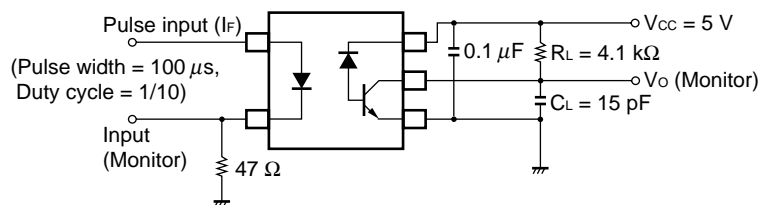
<sup>\*1</sup> Applies to output pin V<sub>O</sub>. Reduced to 0.8 mW/°C at T<sub>A</sub> = 25°C or more.

<sup>\*2</sup> AC voltage for 1 minute at T<sub>A</sub> = 25°C, RH = 60% between input and output.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 16 mA		1.2	1.5	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		15		pF
Detector	High Level Output Current	I <sub>OH</sub> (1)	I <sub>F</sub> = 0 mA, V <sub>CC</sub> = V <sub>O</sub> = 5.5 V		3	500	nA
	High Level Output Current	I <sub>OH</sub> (2)	I <sub>F</sub> = 0 mA, V <sub>CC</sub> = V <sub>O</sub> = 15 V			100	μA
	Low Level Output Voltage	V <sub>OL</sub>	I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 1.1 mA		0.1	0.4	V
	High Level Supply Current	I <sub>CCH</sub>	I <sub>F</sub> = 0 mA, V <sub>O</sub> = open, V <sub>CC</sub> = 15 V		0.01	1	μA
	Low Level Supply Current	I <sub>CCL</sub>	I <sub>F</sub> = 16 mA, V <sub>O</sub> = open, V <sub>CC</sub> = 15 V		90	800	
Coupled	Current Transfer Ratio (I <sub>C</sub> /I <sub>F</sub> )	CTR	I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 4.5 V, V <sub>O</sub> = 0.4 V	10	23		%
	Isolation Resistance	R <sub>I-O</sub>	V <sub>I-O</sub> = 1 kV <sub>DC</sub> , R <sub>H</sub> = 40 to 60%	10 <sup>11</sup>			Ω
	Isolation Capacitance	C <sub>I-O</sub>	V = 0 V, f = 1 MHz		0.4		pF
	Propagation Delay Time (H → L) <sup>*1</sup>	t <sub>PHL</sub>	I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 4.1 kΩ, C <sub>L</sub> = 15 pF		1	5	μs
	Propagation Delay Time (L → H) <sup>*1</sup>	t <sub>PLH</sub>			2	5	
	Propagation Delay Time (H → L) <sup>*1</sup>	t <sub>PHL</sub>	I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 20 kΩ, C <sub>L</sub> = 15 pF		1	15	
	Propagation Delay Time (L → H) <sup>*1</sup>	t <sub>PLH</sub>			7	15	

**\*1 Test circuit for propagation delay time**



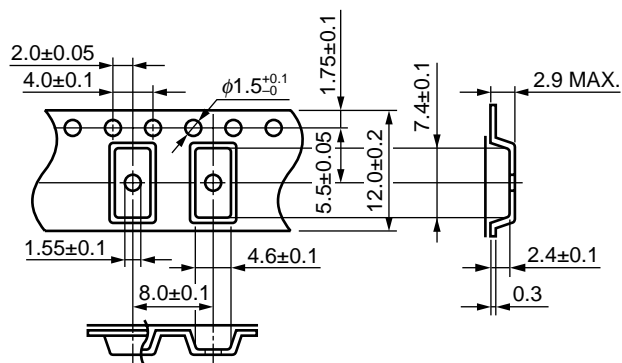
C<sub>L</sub> includes probe and stray wiring capacitance.

**USAGE CAUTIONS**

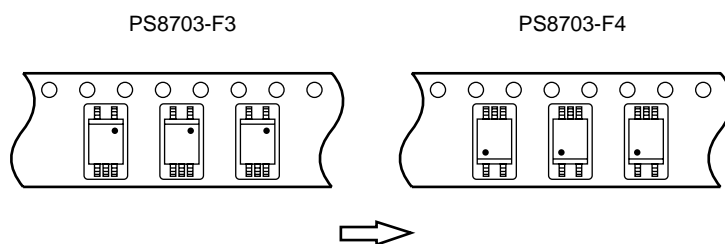
1. This product is weak for static electricity by designed with high-speed integrated circuit so protect against static electricity when handling.
2. By-pass capacitor of more than 0.1 μF is used between V<sub>CC</sub> and GND near device.

TAPING SPECIFICATIONS (UNIT: mm)

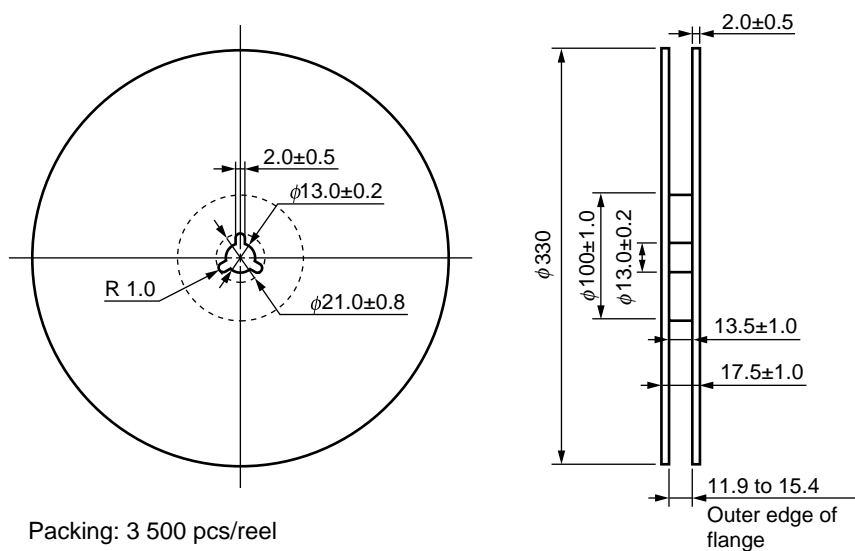
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)

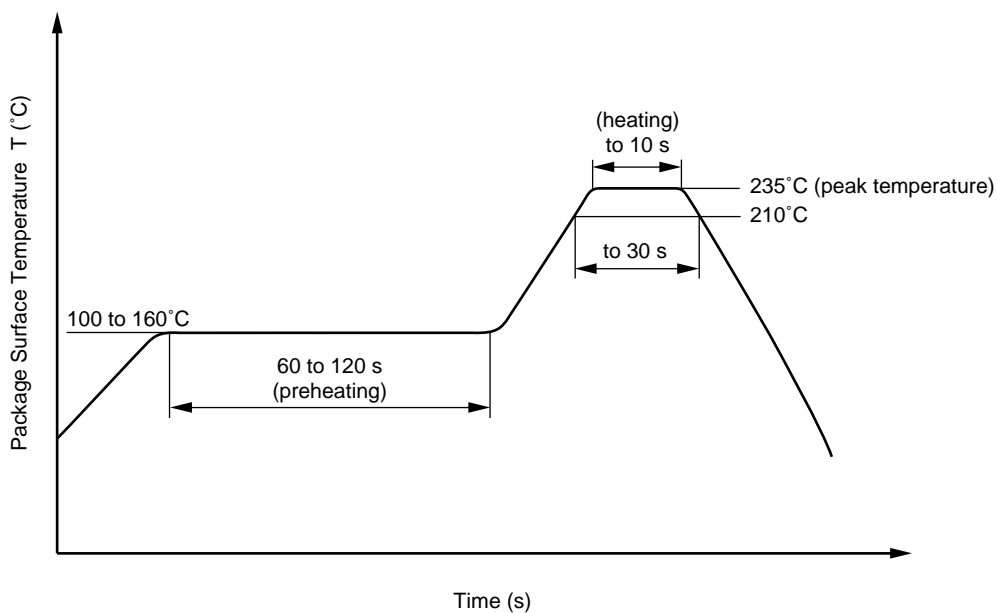


## RECOMMENDED SOLDERING CONDITIONS

### (1) Infrared reflow soldering

- Peak reflow temperature 235°C or below (package surface temperature)
- Time of temperature higher than 210°C 30 seconds or less
- 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) Cautions

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

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M8E 00.4-0110

**SAFETY INFORMATION ON THIS PRODUCT**

<b>Caution</b>	GaAs Products	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> <li>• Do not destroy or burn the product.</li> <li>• Do not cut or cleave off any part of the product.</li> <li>• Do not crush or chemically dissolve the product.</li> <li>• Do not put the product in the mouth.</li> </ul> <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>
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► **Business issue**

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► **Technical issue**

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