



NEC's HIGH SPEED (200 kbps) ANALOG OUTPUT TYPE 5 PIN SOP OPTOCOUPLER

PS8703

FEATURES

- **WIDE OPERATING Vcc RANGE:**
Vcc = -0.5 to +15 V
- **HIGH ISOLATION VOLTAGE:**
BV: 2500 Vr.ms.
- **HIGH-SPEED RESPONSE:**
tPHL, tPLH = 5 μs MAX (@RL = 4.1 kΩ)
- **AVAILABLE IN TAPE AND REEL:**
PS8703-F3, F4

DESCRIPTION

NEC's PS8703 is an optically coupled isolator containing a GaAlAs LED on the input side and a PIN photodiode and a high speed amplifier transistor on the output side. This is a plastic SOP (Small Outline Package) type for high density applications.

APPLICATIONS

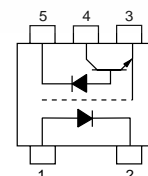
- COMPUTERS AND PERIPHERALS
- GENERAL PURPOSE INVERTER
- SUBSTITUTIONS FOR RELAY AND PULSE TRANSFORMERS
- POWER SUPPLY

ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER				PS8703		
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	VF	Forward Voltage, IF = 16 mA	V		1.2	1.5
	IR	Reverse Current, VR = 3 V	μA			10
	Ct	Terminal Capacitance, V = 0 V, f = 1.0 MHz	pF		30	
Detector	IOH(1)	High Level Output Current IF = 0 mA, Vcc = Vo = 5.5 V	nA		7	500
	IOH(2)	High Level Output Current IF = 0 mA, Vcc = Vo = 15 V	μA			100
	VOL	Low Level Output Voltage IF = 16 mA, Vcc = 4.5 V, IOL = 1.1 mA	V		0.1	0.4
	ICCH	High Level Supply Current IF = 0 mA, Vo = Open, Vcc = 15 V	μA		0.01	1
	ICCL	Low Level Supply Current IF = 16 mA, Vo = Open, Vcc = 15 V	μA		150	800
Coupled	CTR	Current Transfer Ratio (IC/IF) ¹ , IF = 16 mA, Vcc = 4.5 V, Vo = 0.4 V	%	10	23	30
	RI-O	Isolation Resistance, V IN-OUT = 1kVDC, RH = 40 to 60 %	Ω	10 ¹¹		
	CI-O	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	tPHL	Propagation Delay Time, (High → Low) ² IF = 16 mA, Vcc = 5 V, RL = 4.1 k Ω, CL = 15 pF	μs		1	5
	tPLH	Propagation Delay Time, (Low → High) ² IF = 16 mA, Vcc = 5 V, RL = 4.1 k Ω, CL = 15 pF	μs		2	5
	tPHL	Propagation Delay Time, (High → Low) ² IF = 16 mA, Vcc = 5 V, RL = 20 kΩ, CL = 15 pF	μs		1	15
	tPLH	Propagation Delay Time, (Low → High) ² IF = 16 mA, Vcc = 5 V, RL = 20 kΩ, CL = 15 pF	μs		7	15

PLEASE SEE NOTES ON NEXT PAGE.

Pin Connection (Top View)



PS8703

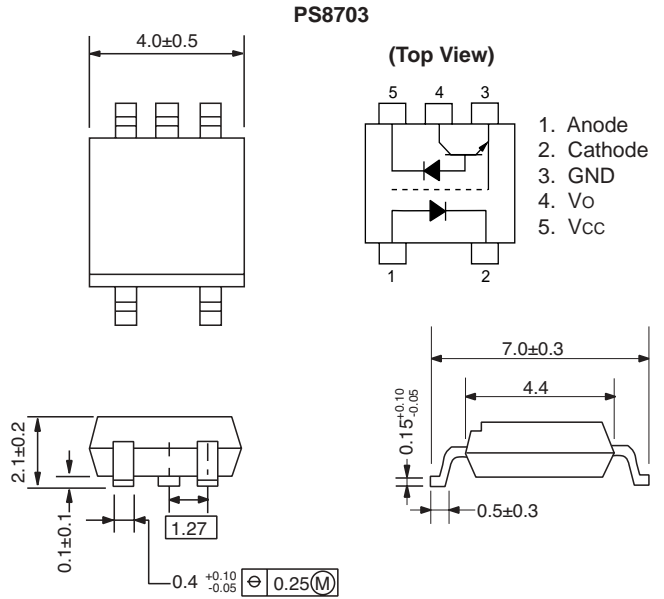
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATING
Diode			
I _F	Forward Current	mA	50
V _R	Reverse Voltage	V	5
Detector			
V _{CC}	Supply Voltage	V	-0.5 to +15
V _O	Output Voltage	V	-0.5 to +15
I _O	Output Current	mA	8
P _C	Power Dissipation ²	mW	80
Coupled			
BV	Isolation Voltage ³	V _{r.m.s.}	2500
T _A	Operating Ambient Temp.	°C	-40 to +100
T _{STG}	Storage Temperature	°C	-55 to +125

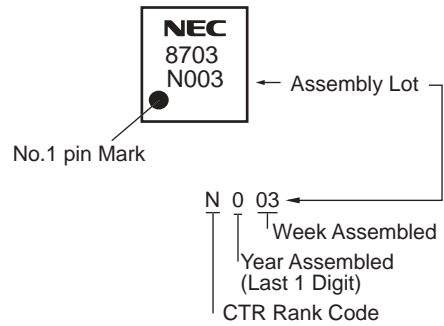
Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- Applies to output pin V_O. Reduced to 0.8 mW/°C at T_A = 25°C or more.
- AC voltage for one minute at T_A = 25°C, RH = 60% between input and output.

OUTLINE DIMENSIONS (Units in mm)



MARKING



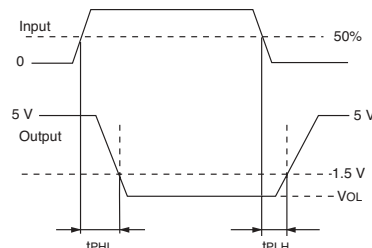
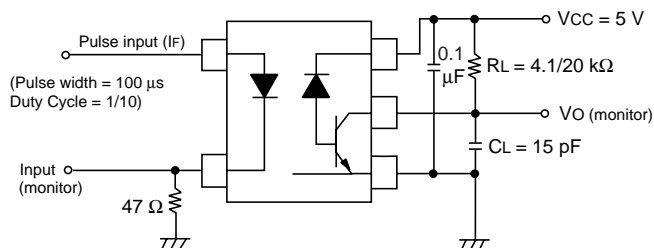
ORDERING INFORMATION

PART NUMBER	PACKING STYLE
PS8703	Magazine case 100 pcs
PS8703-F3	Embossed Tape 3500 pcs/reel
PS8703-F4	

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NOTES:

- CTR rank
L: 15 to 30 (%)
N: 10 to 30 (%)
- Test Circuit for Propagation Delay Time:

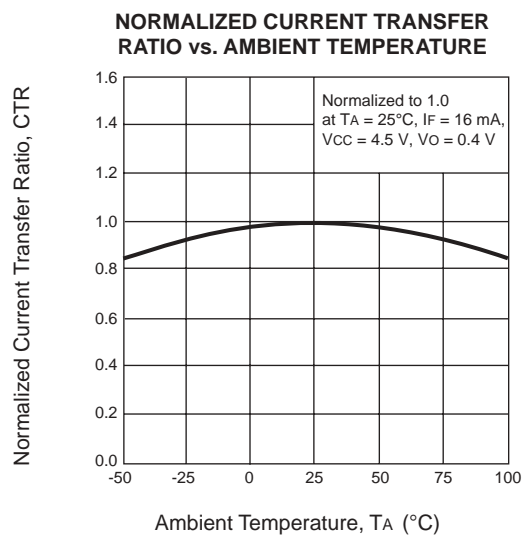
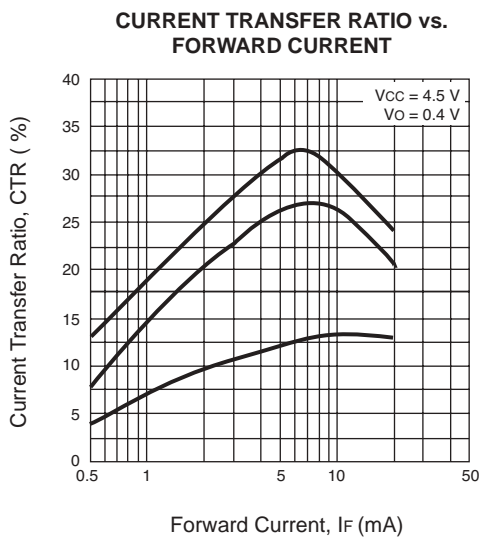
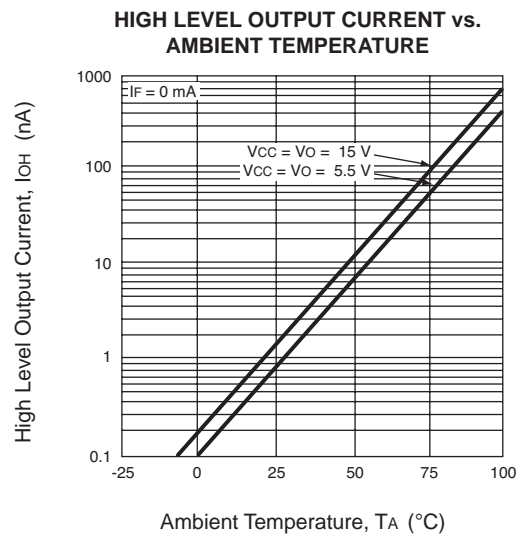
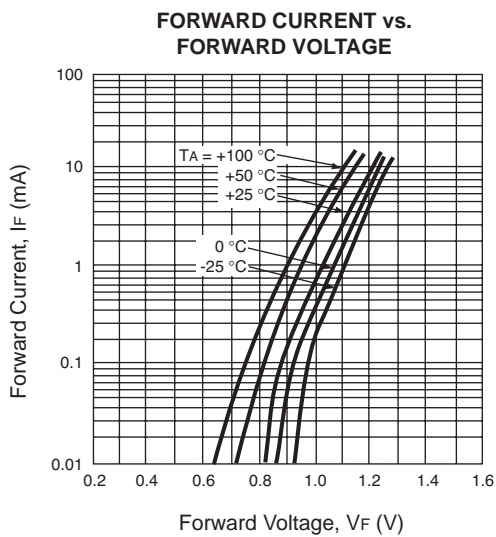
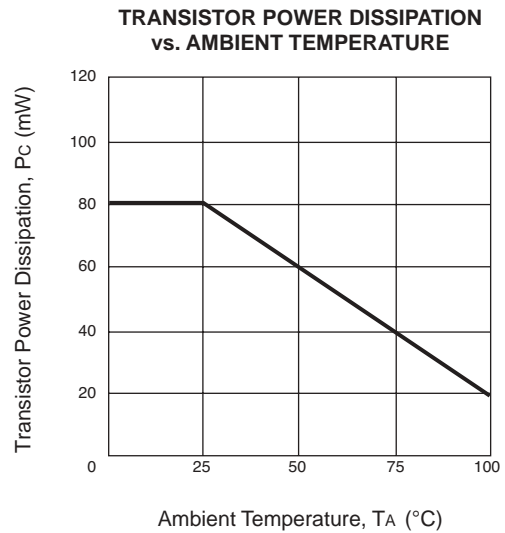
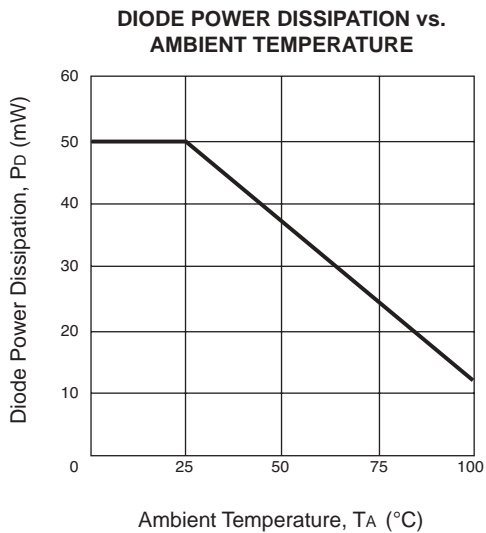


*CL includes probe and stray wiring capacitance.

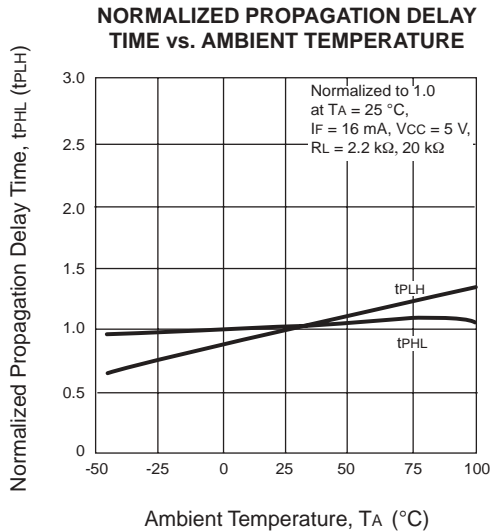
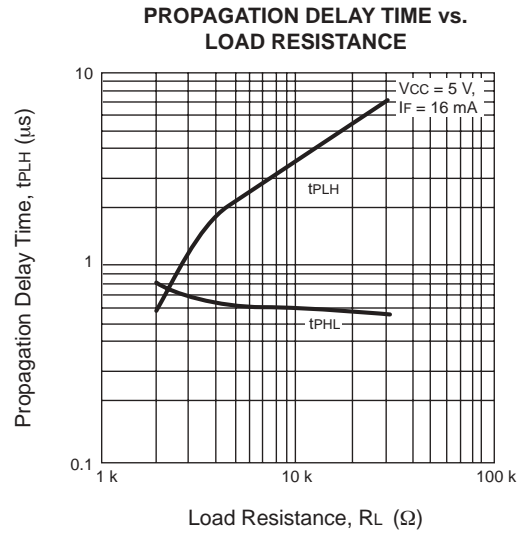
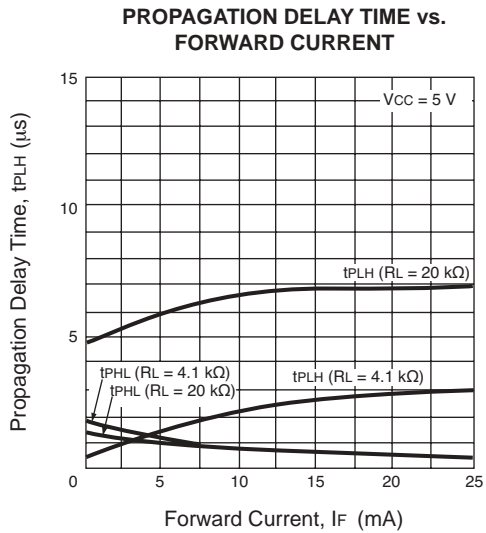
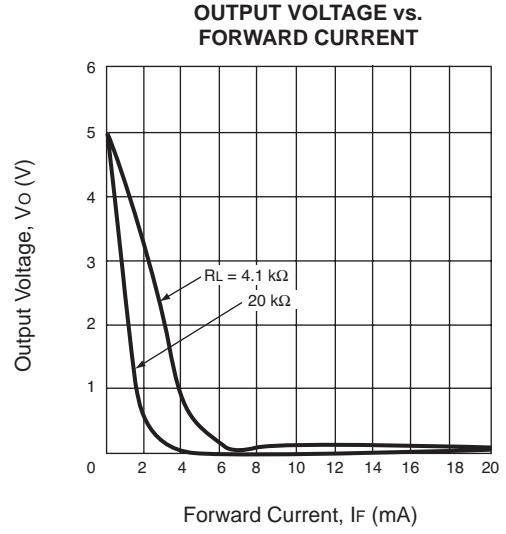
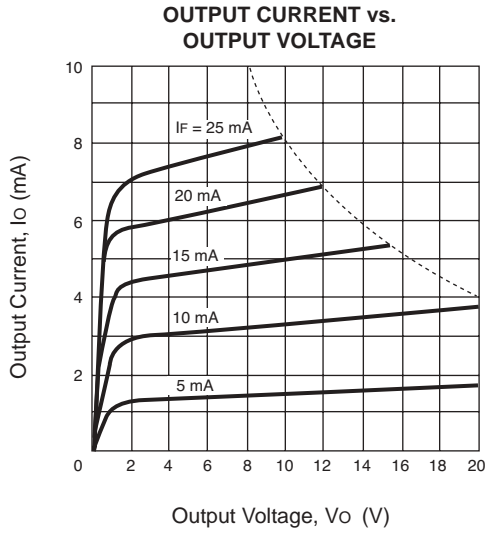
Usage Cautions:

- When handling this product, precautions should be taken against static electricity.
- A by-pass capacitor of $\geq 0.1 \mu\text{F}$ is used between V_{CC} and GND.

TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$ unless otherwise specified)



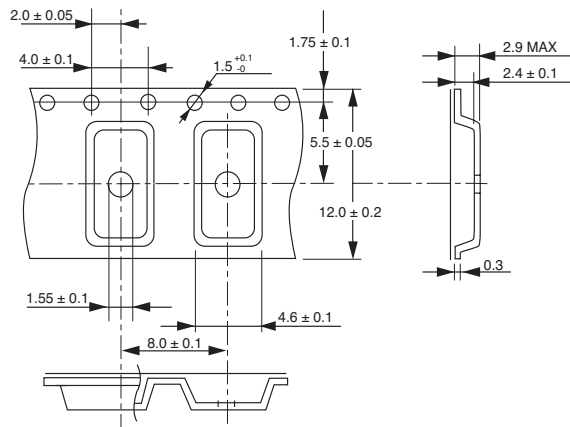
TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$ unless otherwise specified)



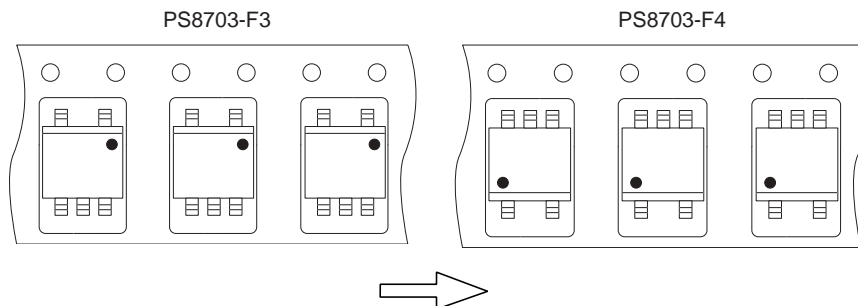
Remark: The graphs indicate nominal characteristics.

TAPING SPECIFICATIONS (Units in mm)

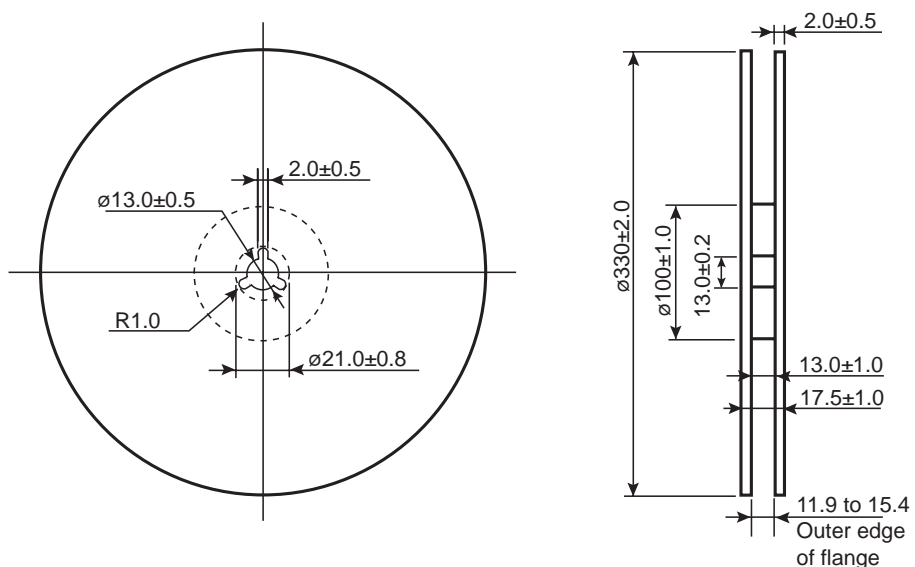
Tape Outline and Dimensions



Tape Direction



Reel Outline and Dimensions

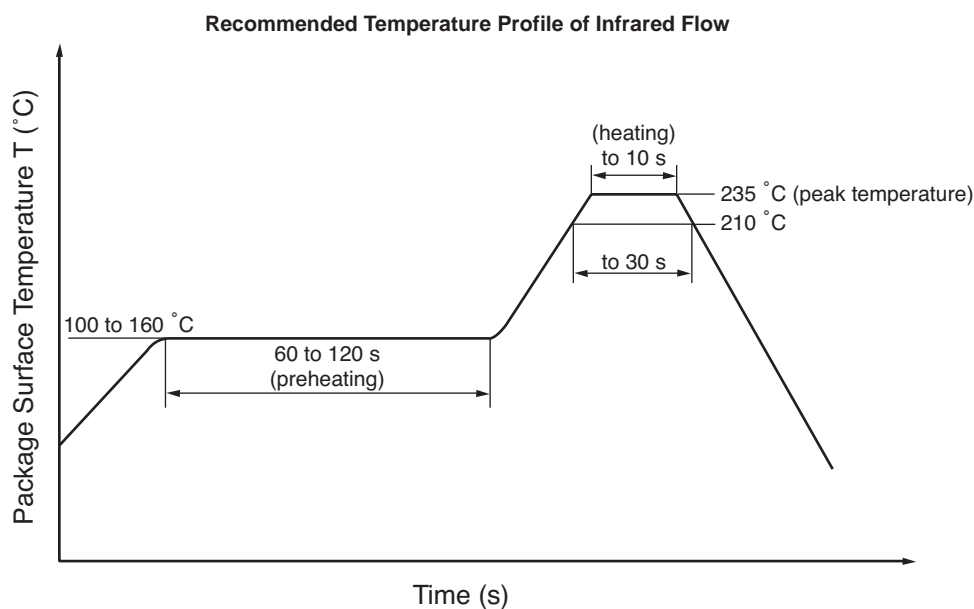


Packing: 3500 pcs/reel

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 max. chlorine content of 0.2 Wt % is recommended)



(2) Cautions

- Fluxes

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

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.