



**THE DATASHEET OF  
PS7200U-1A-A**



**4-PIN SOP LOW OFF-STATE LEAKAGE CURRENT  
1-ch Optical Coupled MOS FET**

-NEPOC Series-

**DESCRIPTION**

The PS7200U-1A is a low output capacitance solid state relay containing GaAs LEDs on the light emitting side (input side) and MOS FETs on the output side.

It is suitable for high-frequency signal control, due to its extremely low off-state leakage current, low output capacitance, and high-speed turn-on time.

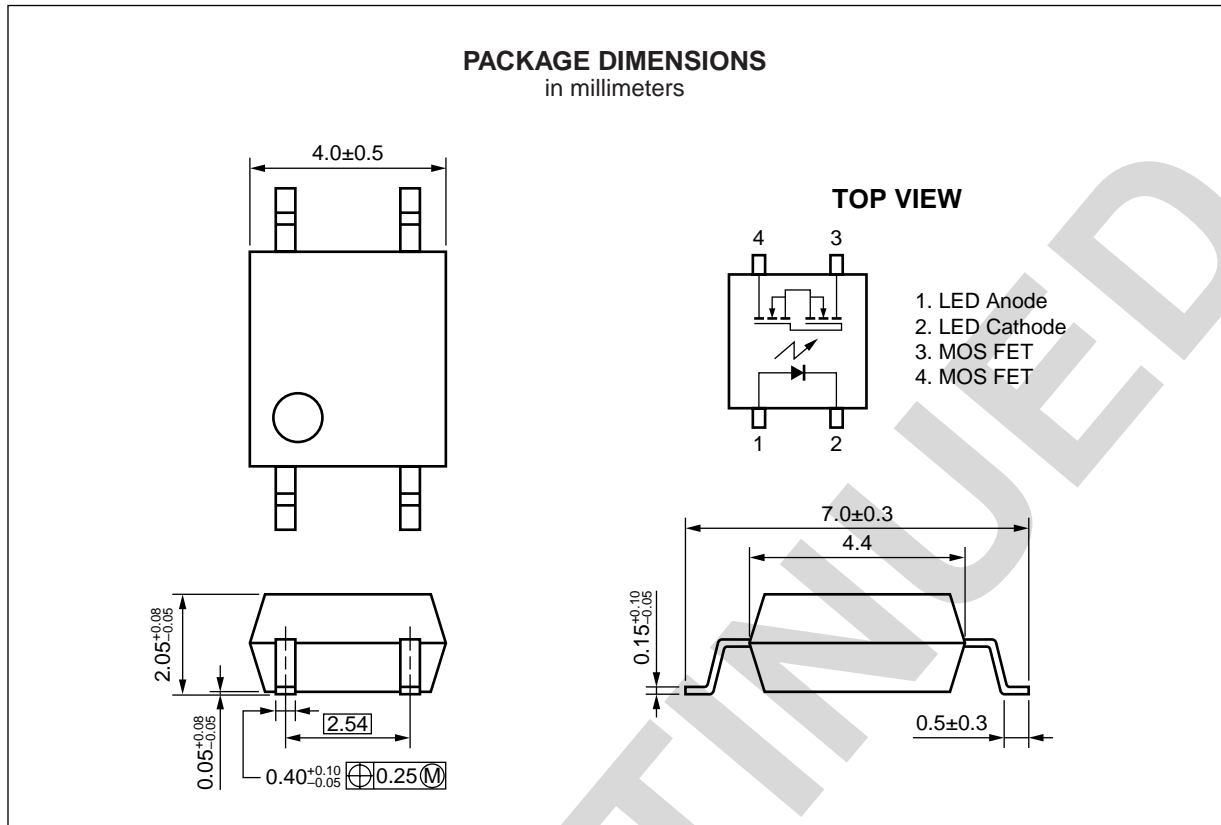
**FEATURES**

- Low off-state leakage current ( $I_{Loff} = 0.1 \text{ nA TYP.}$ )
- Break down voltage ( $V_L = 80 \text{ V}$ )
- High-speed turn-on time ( $t_{on} = 0.05 \text{ ms TYP.}$ )
- Low output capacitance ( $C_{out} = 2.3 \text{ pF TYP.}$ )
- $C \times R$  ( $C \times R = 40 \text{ pF} \cdot \Omega$ )
- 1 channel type (1 a output)
- Designed for AC/DC switching line changer
- Small and thin package (4-pin SOP, Height = 2.1 mm)
- Low offset voltage
- Ordering number of taping product : PS7200U-1A-E3, E4: 900 pcs/reel  
: PS7200U-1A-F3, F4: 3 500 pcs/reel
- Pb-Free product

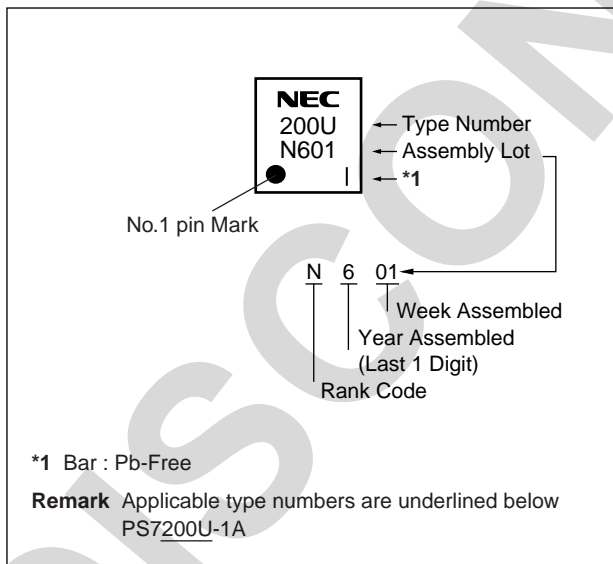
**APPLICATIONS**

- Measurement equipment

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<R> **MARKING EXAMPLE (LASER MARKING)**



<R> **ORDERING INFORMATION**

Part Number	Order Number	Solder Plating Specification	Packing Style
PS7200U-1A	PS7200U-1A-A	Pb-Free	Magazine case 100 pcs
PS7200U-1A-E3	PS7200U-1A-E3-A		Embossed Tape 900 pcs/reel
PS7200U-1A-E4	PS7200U-1A-E4-A		
PS7200U-1A-F3	PS7200U-1A-F3-A		Embossed Tape 3 500 pcs/reel
PS7200U-1A-F4	PS7200U-1A-F4-A		

**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>	5.0	V
	Power Dissipation	P <sub>D</sub>	50	mW
	Peak Forward Current *1	I <sub>FP</sub>	1	A
MOS FET	Break Down Voltage	V <sub>L</sub>	80	V
	Continuous Load Current	I <sub>L</sub>	40	mA
	Pulse Load Current *2 (AC/DC Connection)	I <sub>LP</sub>	80	mA
	Power Dissipation	P <sub>D</sub>	300	mW
Isolation Voltage *3		BV	1 500	Vr.m.s.
Total Power Dissipation		P <sub>T</sub>	350	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 PW = 100 ms, 1 shot

\*3 AC voltage for 1 minute at T<sub>A</sub> = 25°C, RH = 60% between input and output.  
Pins 1-2 shorted together, 3-4 shorted together.

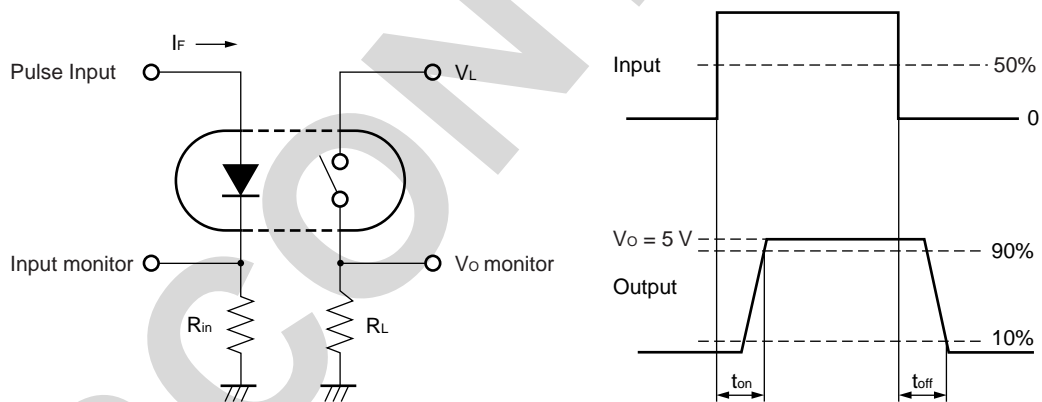
**RECOMMENDED OPERATING CONDITIONS (T<sub>A</sub> = 25°C)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	I <sub>F</sub>	2	10	20	mA
LED Off Voltage	V <sub>F</sub>	0		0.5	V

**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> = 5 mA		1.1	1.3	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 5 V		0.01	5.0	μA
MOS FET	Off-state Leakage Current	I <sub>Loff</sub>	V <sub>D</sub> = 80 V		0.1	1.0	nA
	Output Capacitance	C <sub>out</sub>	V <sub>D</sub> = 0 V, f = 1 MHz		2.3	3.5	pF
Coupled	LED On-state Current	I <sub>Fon</sub>	I <sub>L</sub> = ±40 mA			2.0	mA
	On-state Resistance	R <sub>on</sub>	I <sub>F</sub> = 5 mA, I <sub>L</sub> = ±40 mA		17	25	Ω
	Turn-on Time <sup>*1,2</sup>	t <sub>on</sub>	I <sub>F</sub> = 5 mA, V <sub>L</sub> = 5 V, R <sub>L</sub> = 500 Ω,		0.05	0.5	ms
	Turn-off Time <sup>*1,2</sup>	t <sub>off</sub>	PW ≥ 0.5 ms		0.15	0.5	
	Isolation Resistance	R <sub>I-O</sub>	V <sub>I-O</sub> = 1.0 kV <sub>DC</sub>	10 <sup>9</sup>			Ω
	Isolation Capacitance	C <sub>I-O</sub>	V = 0 V, f = 1 MHz		0.3		pF

\*1 Test Circuit for Switching Time



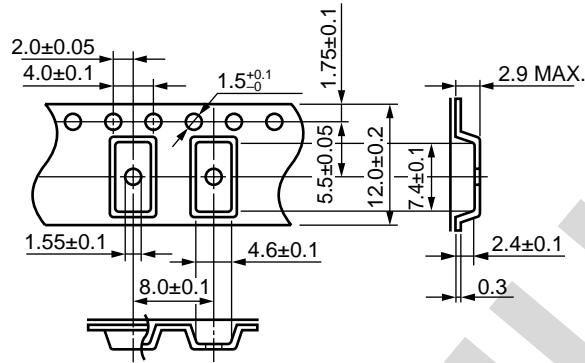
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\*2 The turn-on time and turn-off time are specified as input-pulse width ≥ 0.5 ms.

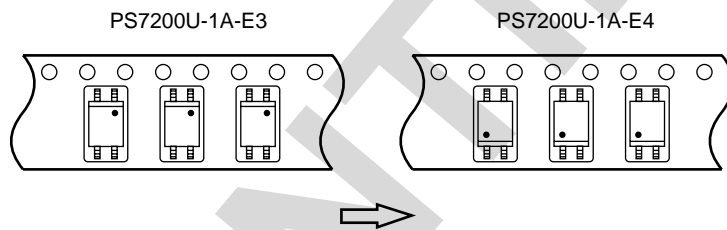
Be aware that when the device operates with an input-pulse width less than 0.5 ms, the turn-on time and turn-off time will increase.

TAPING SPECIFICATIONS (in millimeters)

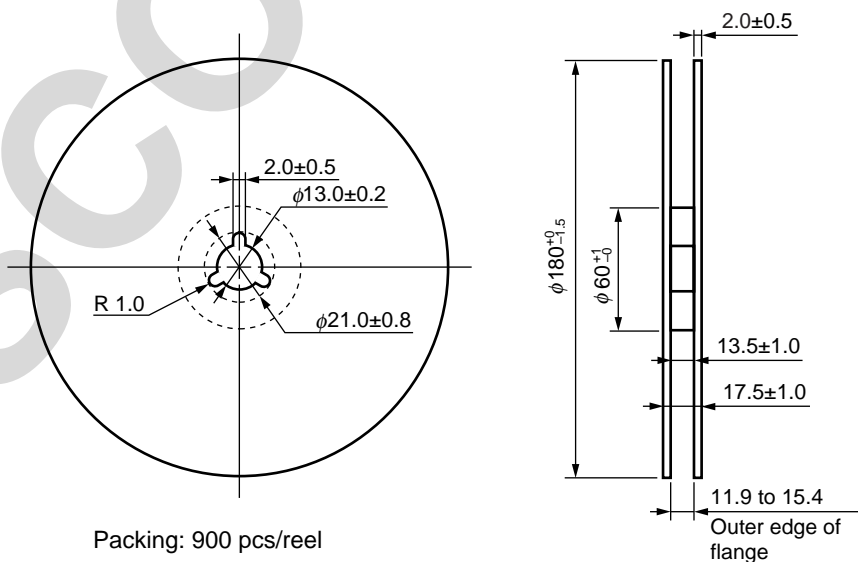
Outline and Dimensions (Tape)



Tape Direction

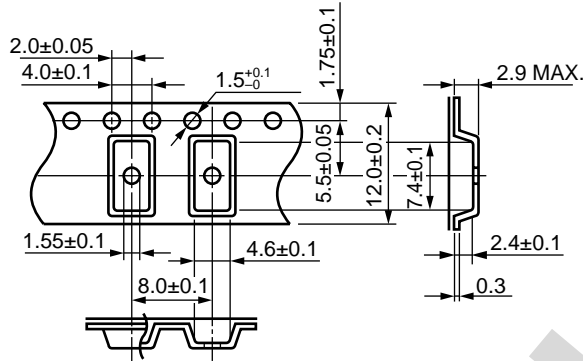


Outline and Dimensions (Reel)

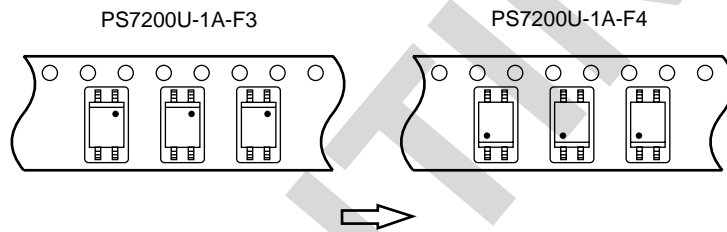


Packing: 900 pcs/reel

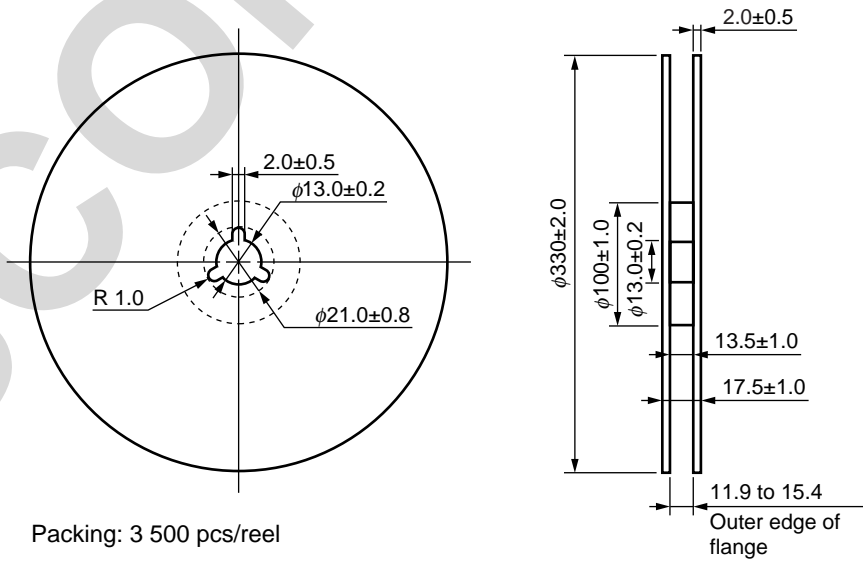
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



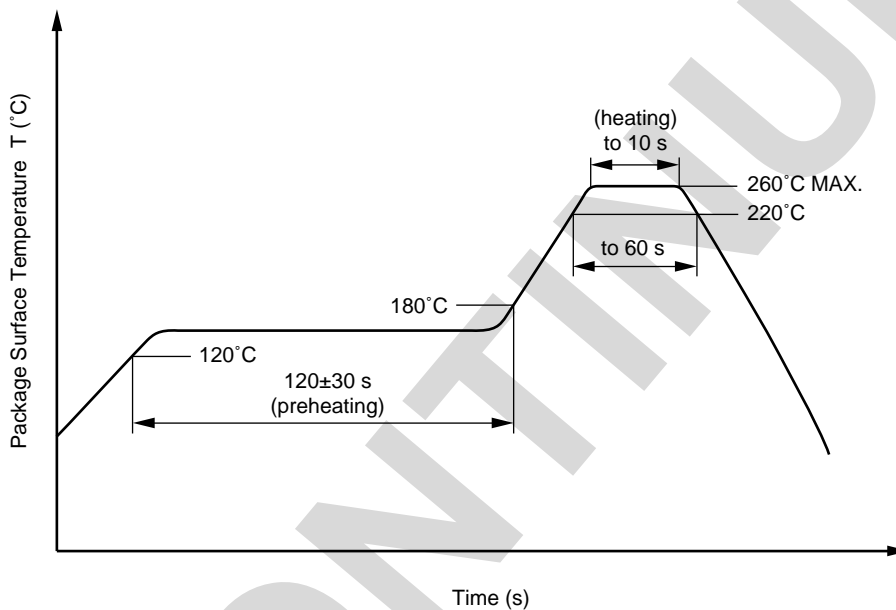
Packing: 3 500 pcs/reel

**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
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

**(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.

**USAGE CAUTIONS**

1. Protect against static electricity when handling.
2. Avoid storage at a high temperature and high humidity.

DISCONTINUED

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► For further information, please contact

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