CEL

Solid State Relay
OCMOS FET

PS7802B-1A

4-PIN ULTRA SMALL FLAT-LEAD, LOW C × R (6.3 pF • Ω) 1-ch Optical Coupled MOS FET

–NEPOC Series–

DESCRIPTION

The PS7802B-1A is a low output capacitance solid state relay containing a GaAs LED on the light emitting side (input side) and MOS FETs on the output side.

An ultra small flat-lead package has been provided which realizes a reduction in mounting area of about 50% compared with the PS72xx series.

It is suitable for high-frequency signal control, due to its low C × R (6.3 pF • Ω), low output capacitance, and low off-state leakage current.

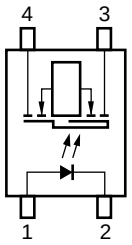
FEATURES

- Ultra small flat-lead package (4.2 (L) × 2.5 (W) × 1.85 (H) mm)
- Low C × R (C × R = 6.3 pF • Ω)
- 1 channel type (1 a output)
- Designed for AC/DC switching line changer
- Low offset voltage
- Ordering number of taping product: PS7802B-1A-F3: 3 500 pcs/reel

APPLICATIONS

- Measurement equipment

PIN CONNECTION
(Top View)



1. LED Anode
2. LED Cathode
3. MOS FET
4. MOS FET

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Document No. PN10725EJ01V0DS (1st edition)
Date Published August 2008 NS

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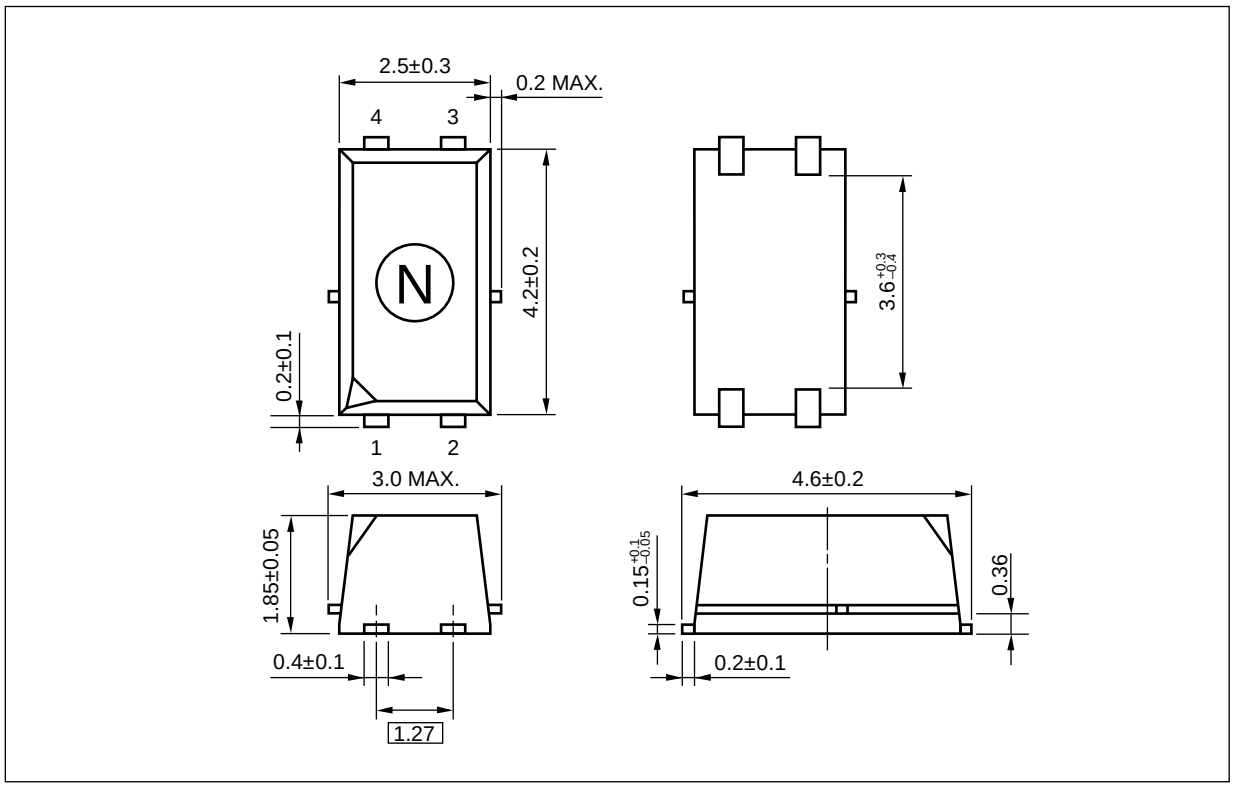
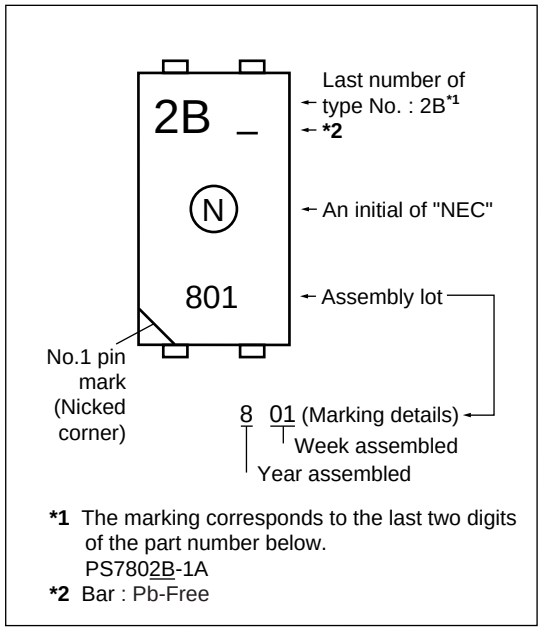
PACKAGE DIMENSIONS (UNIT: mm)



MARKING EXAMPLE



***1** The marking corresponds to the last two digits of the part number below.
PS7802B-1A

***2** Bar : Pb-Free

ORDERING INFORMATION

Part Number	Order Number	Solder Plating Specification	Packing Style
PS7802B-1A	PS7802B-1A-A	Pb-Free	50 pcs (Tape 50 pcs cut)
PS7802B-1A-F3	PS7802B-1A-F3-A		Embossed Tape 3 500 pcs/reel

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	5.0	V
	Power Dissipation	P_D	50	mW
	Peak Forward Current *1	I_{FP}	1	A
MOS FET	Break Down Voltage	V_L	40	V
	Continuous Load Current	I_L	240	mA
	Pulse Load Current *2 (AC/DC Connection)	I_{LP}	360	mA
	Power Dissipation	P_D	250	mW
Isolation Voltage *3		BV	500	Vr.m.s.
Total Power Dissipation		P_T	300	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** PW = 100 ms, 1 shot

***3** AC voltage for 1 minute at T_A = 25°C, RH = 60% between input and output
Pins 1-2 shorted together, 3-4 shorted together.

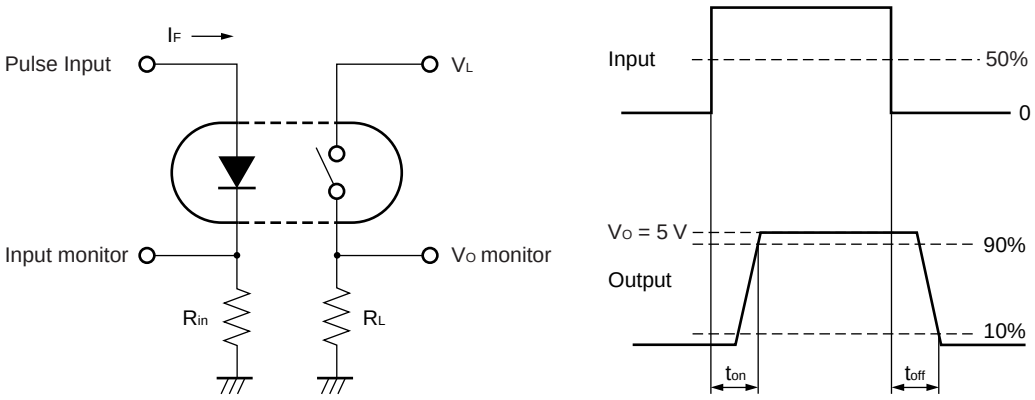
RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	I_F	4.5	5	20	mA
LED Off Current	I_F	0.1			mA

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

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 = 5 V			5.0	μA
MOS FET	Off-state Leakage Current	I_{Loff}	V_D = 40 V		0.1	1	nA
	Output Capacitance	C_{out}	V_D = 0 V, f = 1 MHz, t ≤ 1 s		2.5	3.7	pF
Coupled	LED On-state Current	I_{Fon}	I_L = 240 mA			4	mA
	On-state Resistance	R_{on}	I_F = 5 mA, I_L = 240 mA, t ≤ 10 ms		2.5	3.5	Ω
	Turn-on Time*1, 2	t_{on}	I_F = 5 mA, V_O = 5 V, R_L = 500 Ω,		0.2	0.5	ms
	Turn-off Time*1, 2	t_{off}	PW ≥ 1.0 ms		0.05	0.5	
	Isolation Resistance	R_{I-O}	V_{I-O} = 0.5 kV_{DC}	10^9			Ω
	Isolation Capacitance	C_{I-O}	V = 0 V, f = 1 MHz		0.3		pF

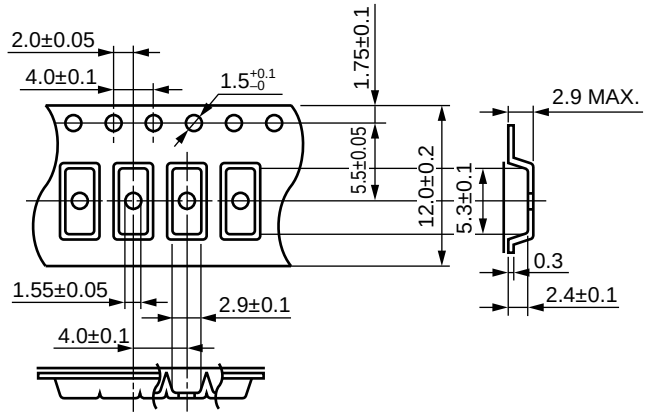
***1** Test Circuit for Switching Time



***2** The turn-on time and turn-off time are specified as input-pulse width ≥ 1.0 ms.
Be aware that when the device operates with an input-pulse width less than 1.0 ms, the turn-on time and turn-off time will increase.

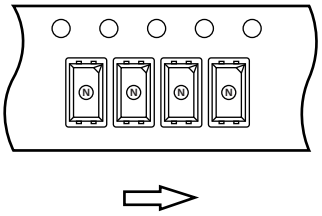
TAPING SPECIFICATIONS (UNIT: mm)

Outline and Dimensions (Tape)

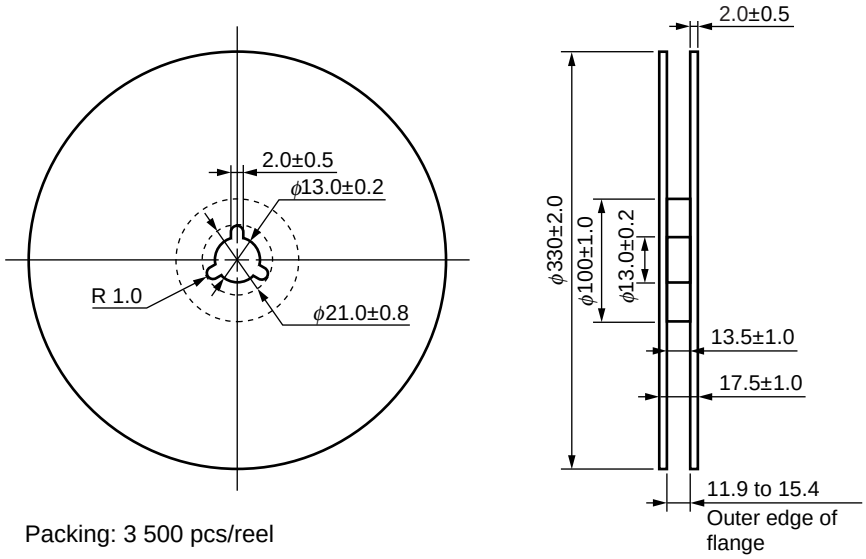


Tape Direction

PS7802B-1A-F3

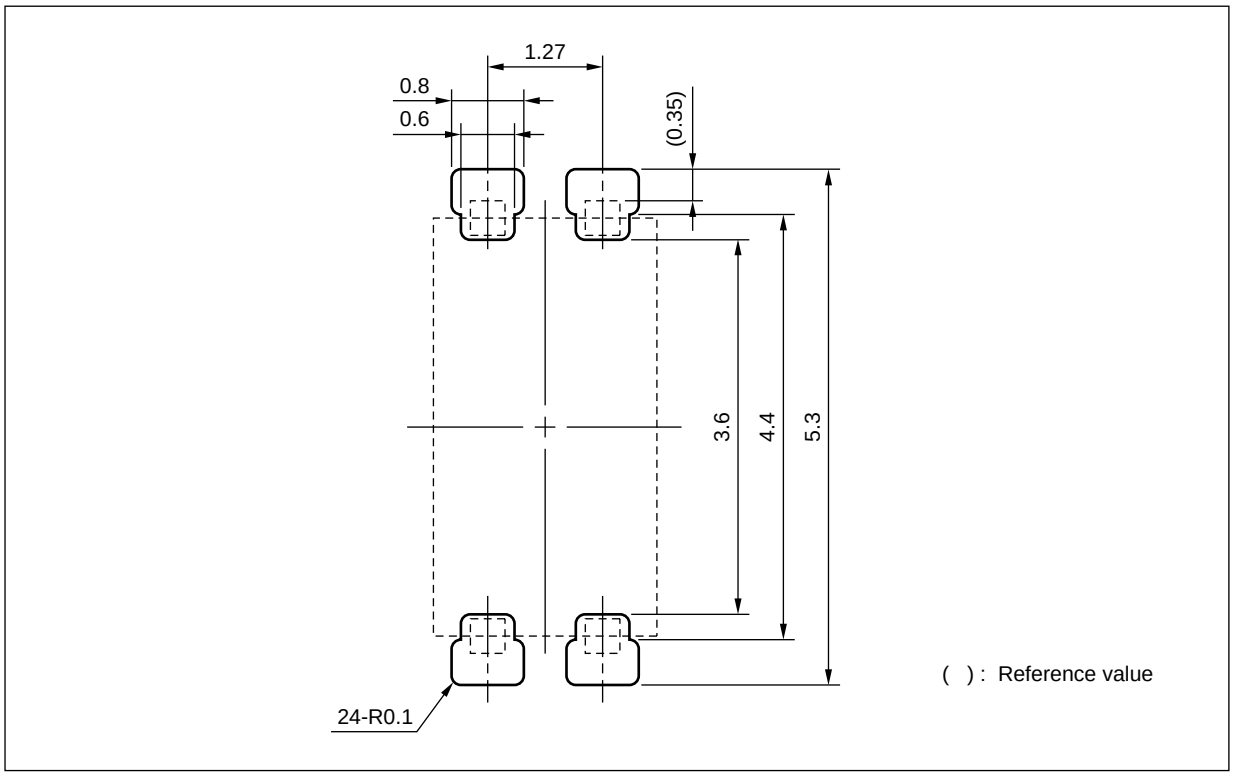


Outline and Dimensions (Reel)



Packing: 3 500 pcs/reel

RECOMMENDED MOUNT PAD DIMENSIONS (UNIT: mm)



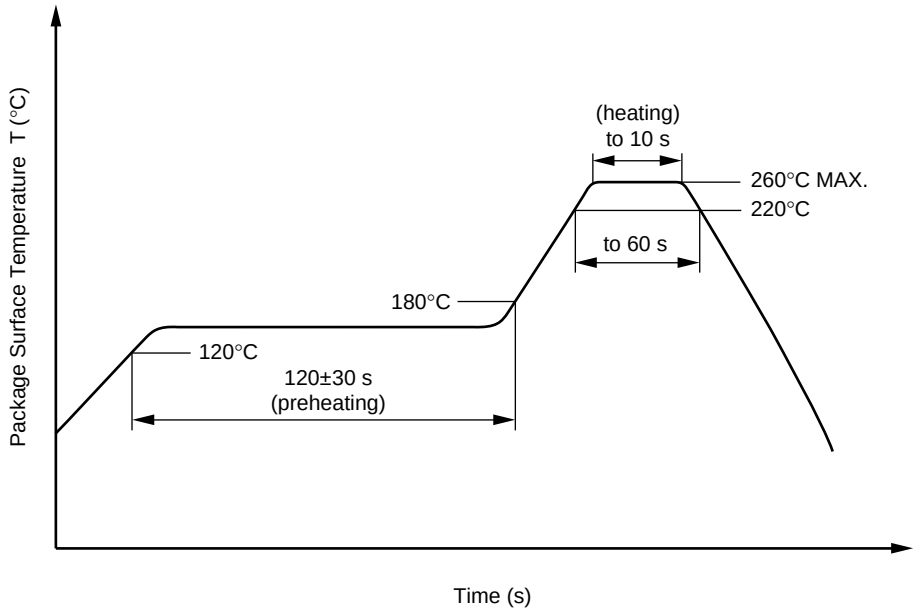
Remark All dimensions in this figure must be evaluated before use.

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.

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M8E 02. 11-1

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