

4 PIN SOP 400 V BREAKDOWN VOLTAGE NORMALLYCLOSED TYPE 1-CH OPTICAL COUPLED MOSFET

PS7241-1B

FEATURES

- **1 CHANNEL TYPE:**
(1b output)
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **SMALL AND THIN PACKAGE:**
4 pin SOP, HEIGHT = 2.1 mm
- **LOW OFFSET VOLTAGE**
- **LOW LED OPERATING CURRENT:**
 $I_F = 2 \text{ mA}$
- **SURFACE MOUNT AVAILABLE**

DESCRIPTION

PS7241-1B is a solid state relay containing a normally closed (N.C.) contact on the output side. It is suitable for analog signal control because of its low offset and high linearity.

APPLICATIONS

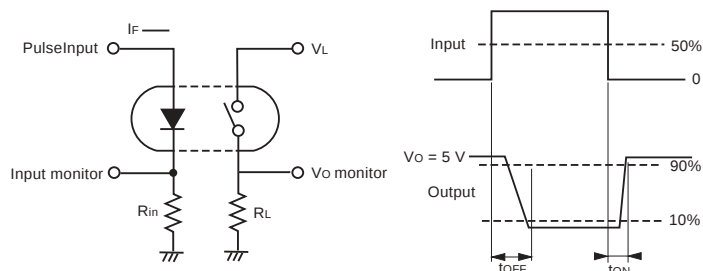
- EXCHANGE EQUIPMENT
- MEASUREMENT EQUIPMENT
- FA/OA EQUIPMENT

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

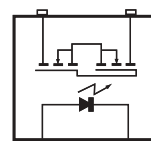
PART NUMBER				PS7241-1B		
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, $I_F = 10 \text{ mA}$	V		1.2	1.4
	I_R	Reverse Current, $V_R = 5 \text{ V}$	μA			5.0
MOS FET	I_{OFF}	Off-State Leakage Current, $I_F = 10 \text{ mA}$, $V_D = 400 \text{ V}$	μA		0.03	1.0
	C_{OUT}	Output Capacitance, $I_F = 10 \text{ mA}$, $V_D = 0 \text{ V}$, $f = 1 \text{ MHz}$	pF		170	
Coupled	I_{Foff}	LED Off-state Current, $I_L = 120 \text{ mA}$	mA			2.0
	R_{ON1}	On-State Resistance, $I_F = 0 \text{ mA}$, $I_L = 10 \text{ mA}$ $I_F = 0 \text{ mA}$, $I_L = 120 \text{ mA}$, $t \leq 10 \text{ ms}$	Ω		24	35
	R_{ON2}		Ω		20	30
	t_{ON}^1	Turn-on Time, $I_F = 10 \text{ mA}$, $V_O = 5 \text{ V}$, $PW \geq 10 \text{ ms}$	ms		0.07	0.2
	t_{OFF}^1	Turn-off Time, $I_F = 10 \text{ mA}$, $V_O = 5 \text{ V}$, $PW \geq 10 \text{ ms}$	ms		0.8	2.0
	$R_{\text{I-O}}$	Isolation Resistance, $V_{\text{I-O}} = 1.0 \text{ kVDC}$	Ω	10^9		
	$C_{\text{I-O}}$	Isolation Capacitance, $V = 0 \text{ V}$, $f = 1 \text{ MHz}$	pF/ch		0.5	

Notes:

1. Test Circuit for Switching Time:



PS7241-1B



ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25 °C)

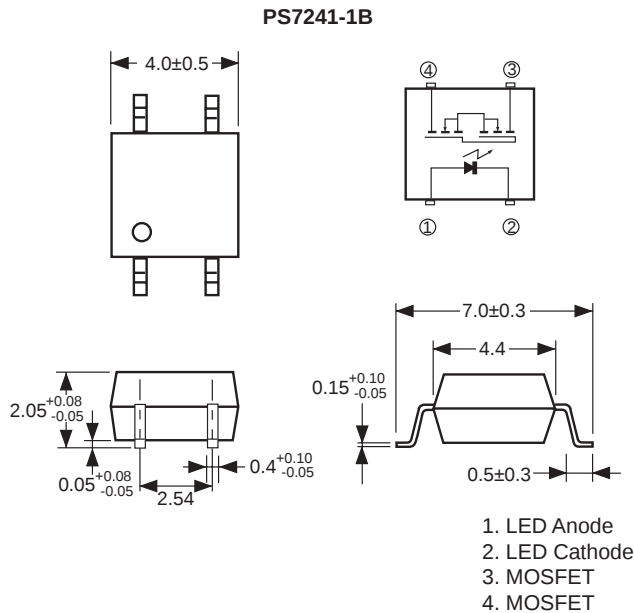
SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
I _F	Forward Current (DC)	mA	50
V _R	Reverse Voltage	V	5.0
P _D	Power Dissipation	mW/ch	50
I _{FP}	Peak Foward Current ²	A	1
MOSFET			
V _L	Break Down Voltage	V	400
I _L	Continuous Load Current	mA	120
I _{LP}	Pulse Load Current ³ (AC/DC Connection)	mA	240
P _D	Power Dissipation	mW	300
Coupled			
BV	Isolation Voltage ⁴	Vr.m.s.	1500
P _T	Total Power Dissipation	mW	350
T _A	Operating Ambient Temp.	°C	-40 to +80
T _{STG}	Storage Temperature	°C	-40 to +100

- Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
 2. PW = 100 μs, Duty Cycle = 1 %
 3. PW = 100 ms, 1 shot.
 4. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

RECOMMENDED
OPERATING CONDITIONS (T_A = 25 °C)

SYMBOL	PARAMETER	UNITS	MIN	TYP	MAX
I _F	LED Operating Current	mA	2	10	20
V _F	LED Off Voltage	V	0		0.5

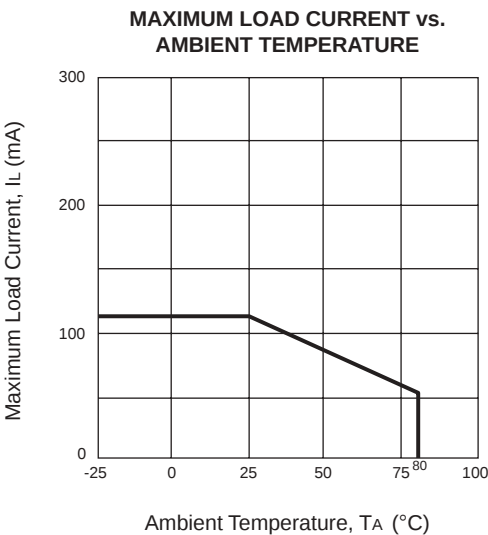
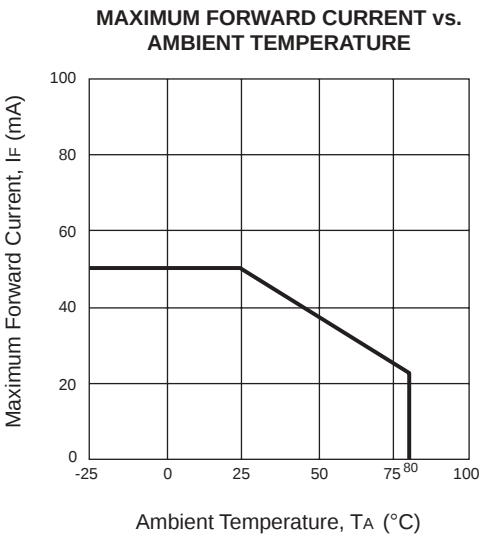
OUTLINE DIMENSIONS (Units in mm)



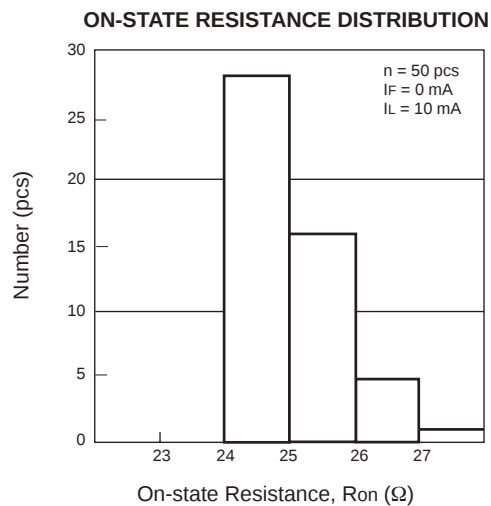
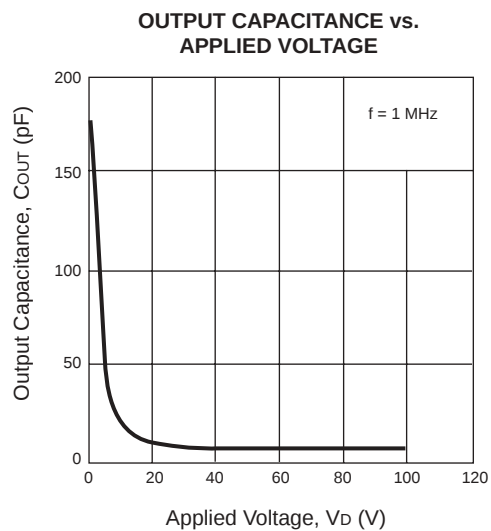
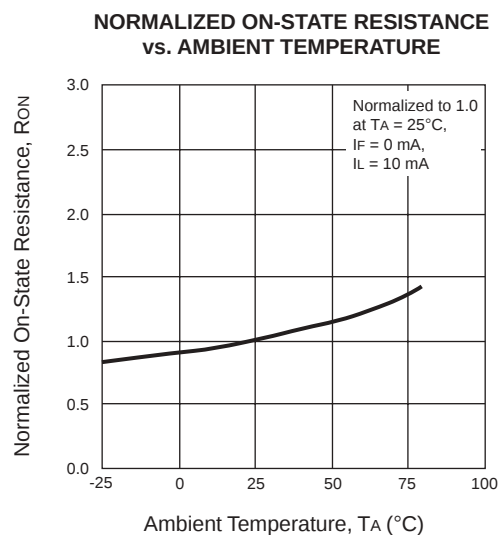
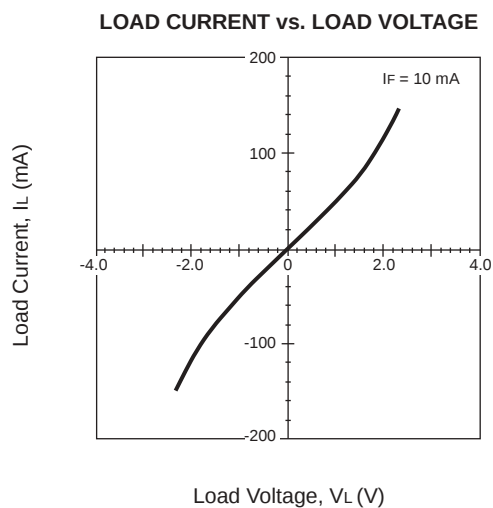
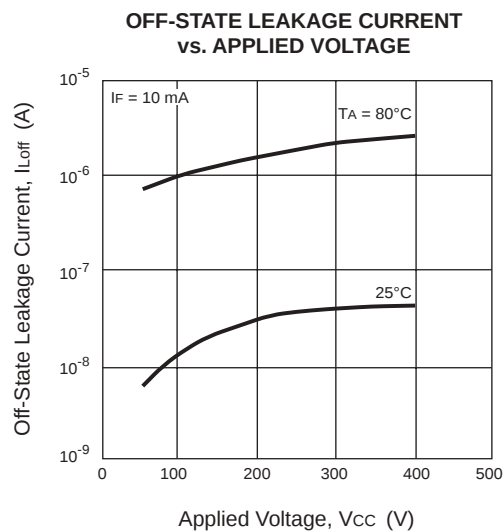
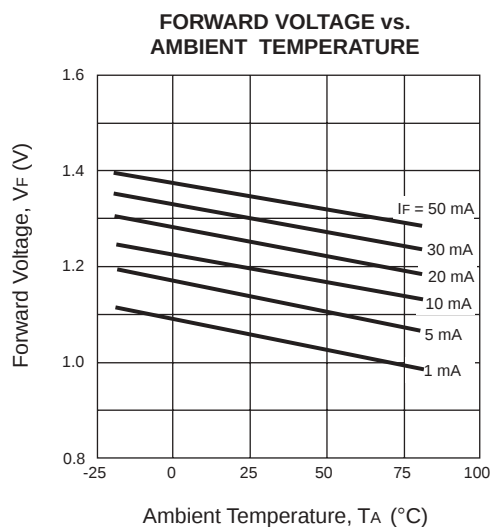
ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING STYLE
PS7241-1B	4-pin SOP	Magazine case 100 pcs
PS7241-1B-E3		Embossed Tape 900 pcs/reel
PS7241-1B-E4		
PS7241-1B-E5		Embossed Tape 1000 pcs/reel
PS7241-1B-F3		Embossed Tape 3500 pcs/reel
PS7241-1B-F4		

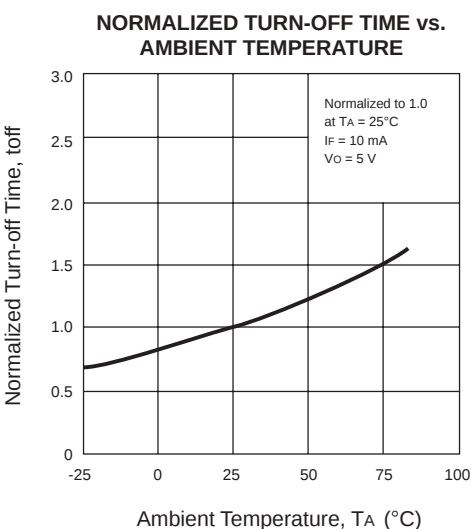
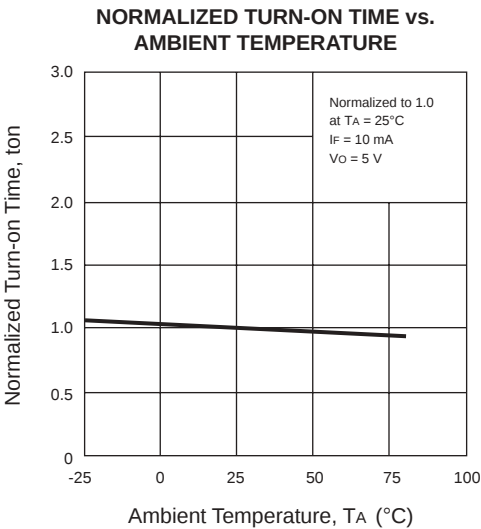
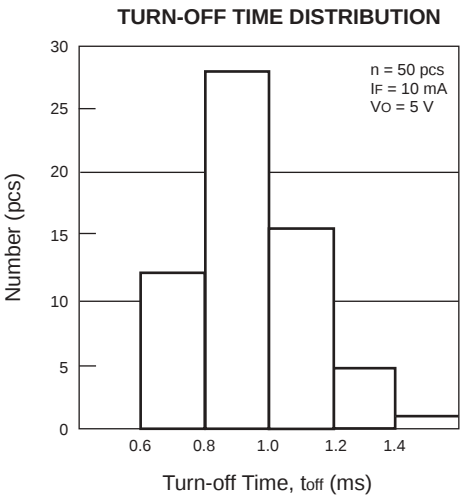
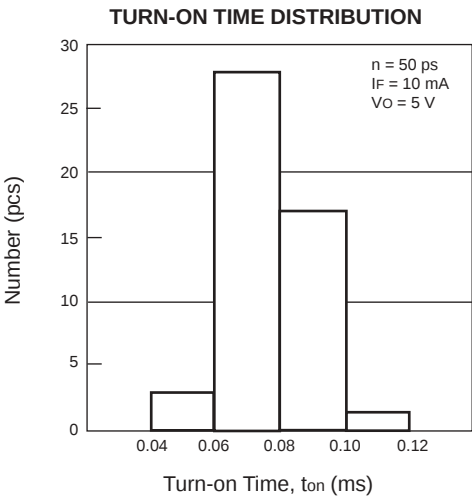
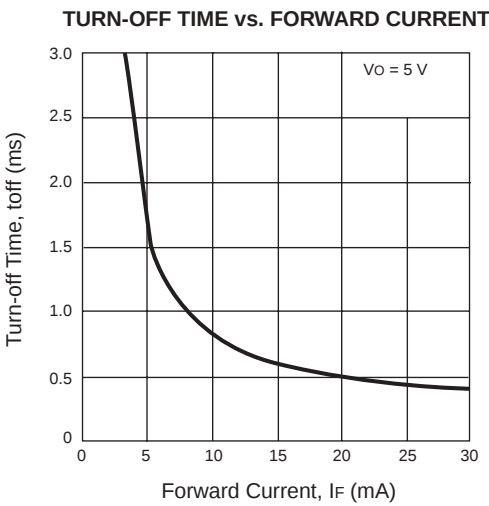
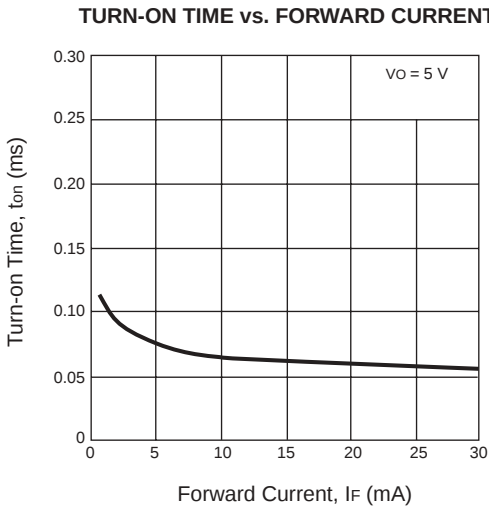
TYPICAL PERFORMANCE CURVES (T_A = 25 °C)



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

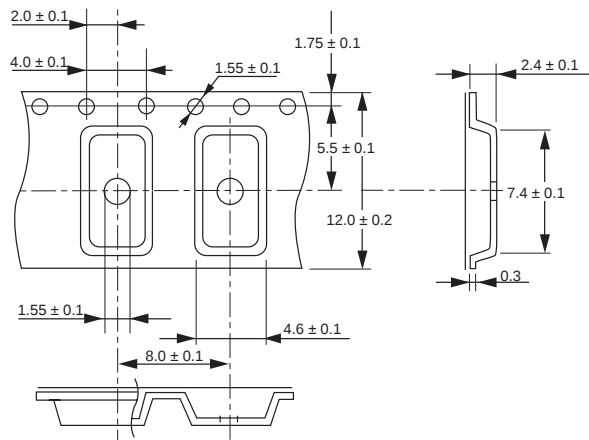


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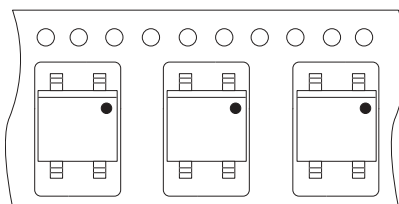
TAPING SPECIFICATIONS (Units in mm)

OUTLINE AND DIMENSIONS (TAPE)

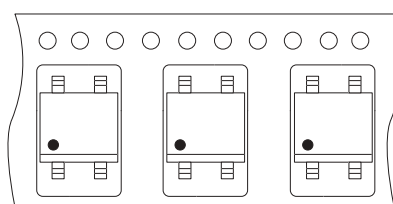


TAPE DIRECTION

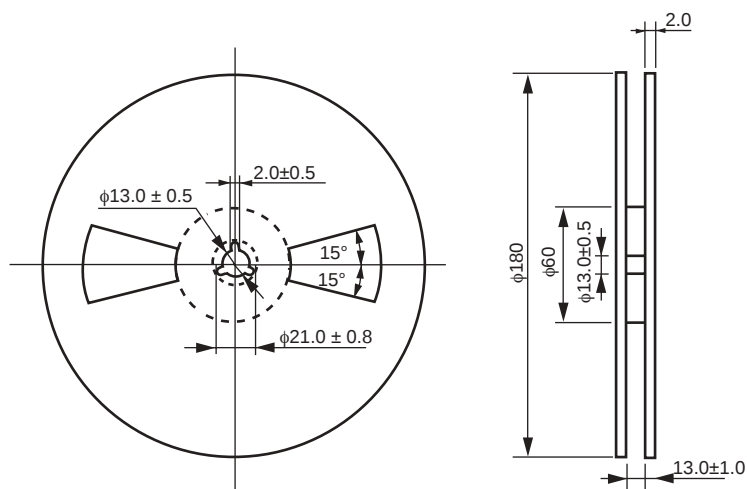
PS7241-1B-E3



PS7241-1B-E4



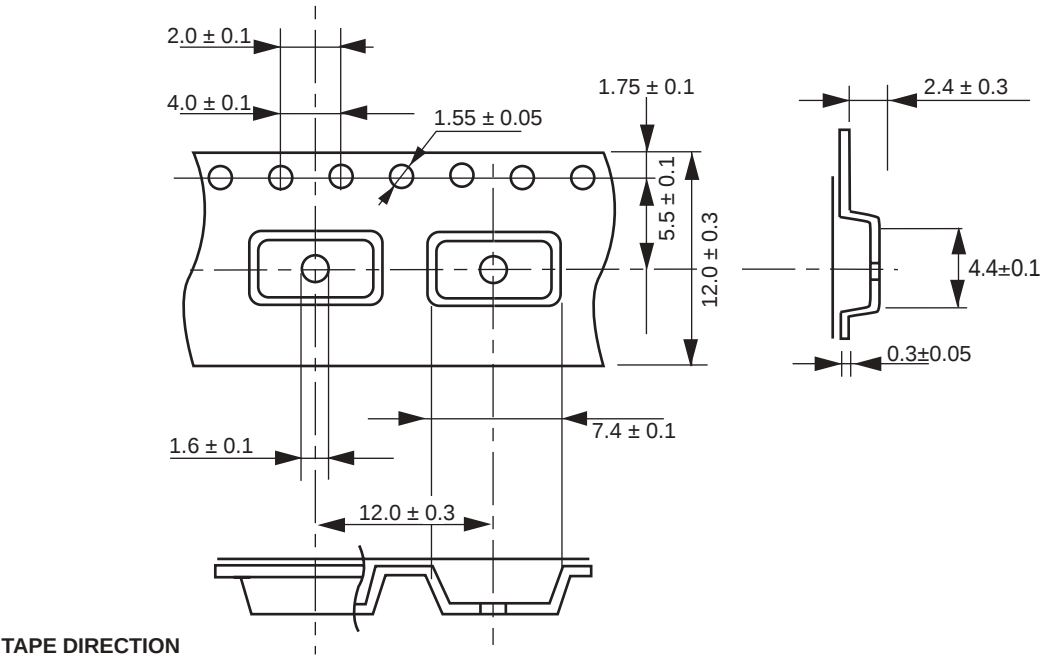
OUTLINE AND DIMENSIONS (REEL)



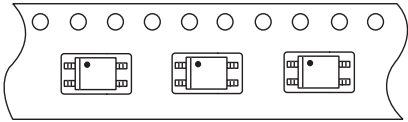
Note: Packing : 900 pcs/reel

TAPING SPECIFICATIONS (Units in mm)

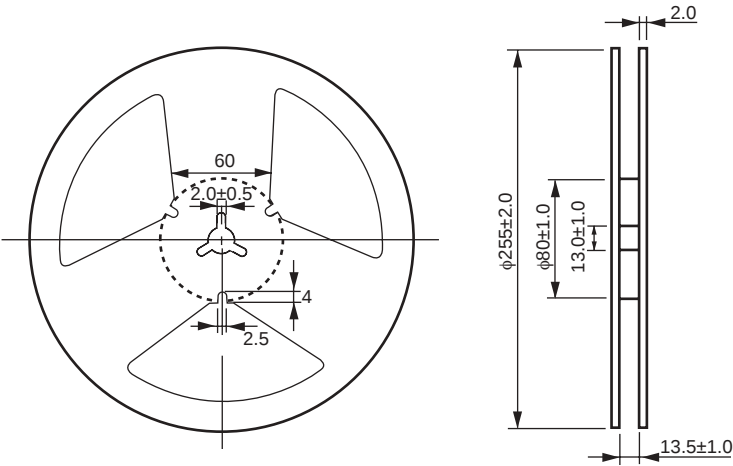
OUTLINE AND DIMENSIONS (TAPE)



PS7241-1B-E5



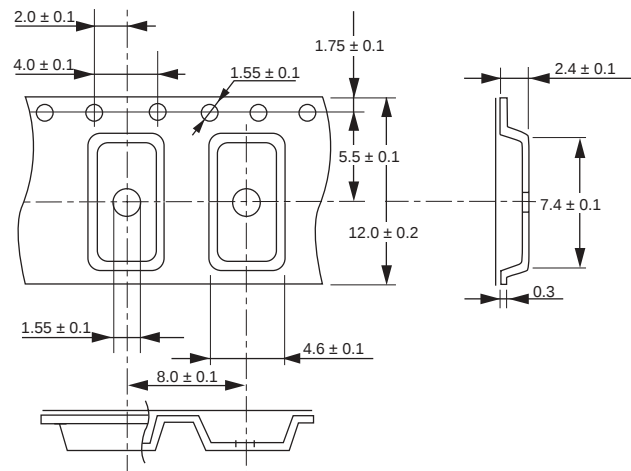
OUTLINE AND DIMENSIONS (REEL)



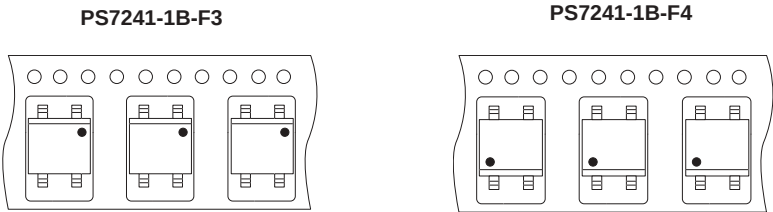
Note: Packing : 1000 pcs/reel

TAPING SPECIFICATIONS (Units in mm)

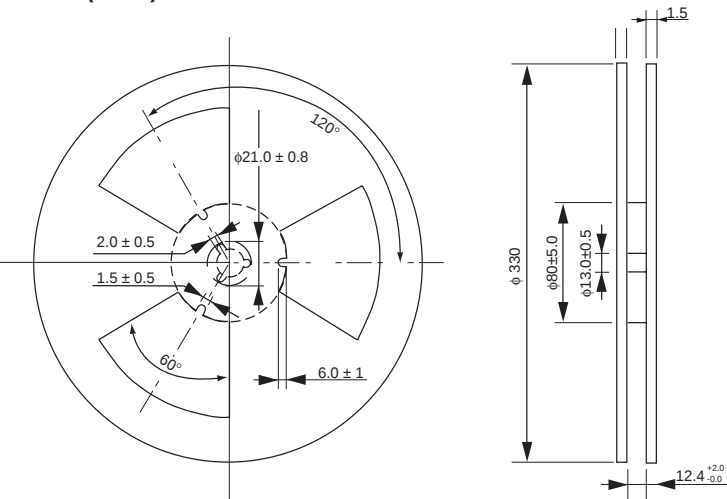
OUTLINE AND DIMENSIONS (TAPE)



TAPE DIRECTION



OUTLINE AND DIMENSIONS (REEL)

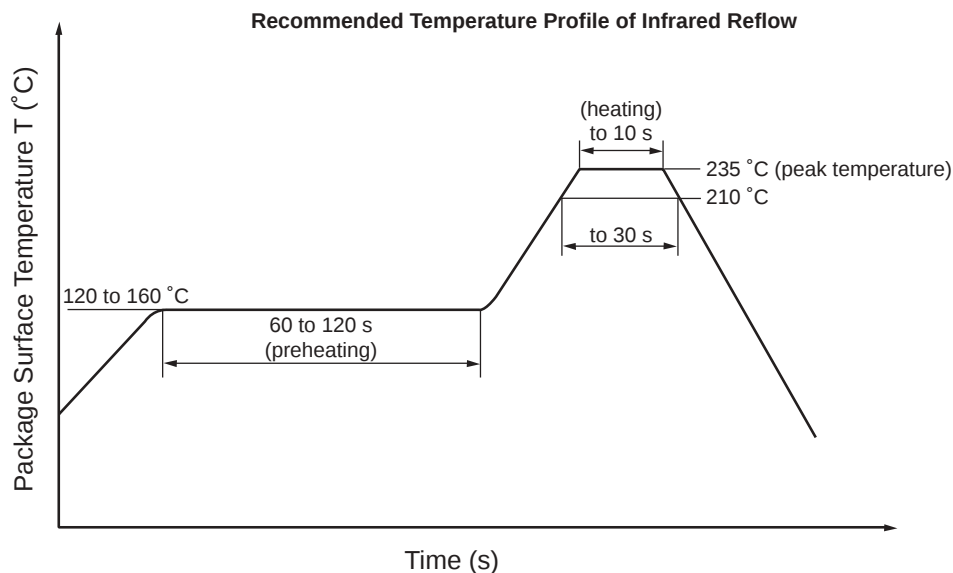


Note: Packing : 1000 pcs/reel

RECOMMENDED SOLDERING CONDITIONS

(1) Infrared reflow soldering

- **Peak reflow temperature**
235 °C (package surface temperature)
- **Time of temperature higher than 210 °C**
30 seconds or less
- **Number of reflows**
Two
- **Flux**
Rosin flux containing small amount of chlorine (The flux with a max. chlorine content of 0.2 Wt % is recommended)



(2) Dip soldering

- **Temperature**
260 °C or below (molten solder temperature)
- **Time**
10 seconds or less
- **Number of times**
One
- **Flux**
Rosin flux containing small amount of chlorine (The flux with a max. chlorine content of 0.2 Wt % is recommended)

(3) Cautions

- **Fluxes**
Avoid removing flux with freon based and chlorine-based cleaning solvents.

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