

4 PIN SOP 3.0 pF LOW OUTPUT CAPACITANCE 1-CH OPTICAL COUPLED MOSFET

PS7200A-1A

FEATURES

- **LOW C X R:**
C X R = 30 pF • Ω
- **LOW OUTPUT CAPACITANCE:**
C_{OUT} = 3.0 pF TYP
- **LOW OFF-STATE LEAKAGE CURRENT:**
I_{LOFF} = 0.1 nA TYP
- **HIGH SPEED TURN-ON TIME:**
t_{ON} = 0.01 ms TYP
- **1 CHANNEL TYPE:**
(1a output)
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **SMALL PACKAGE:**
4 pin SOP
- **HIGH ISOLATION VOLTAGE:**
(BV = 1500 Vr.m.s.)
- **LOW OFFSET VOLTAGE**
- **LOW LED OPERATING CURRENT:**
I_F = 2 mA
- **SURFACE MOUNT AVAILABLE**

DESCRIPTION

PS7200A-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.

It is suitable for high-frequency signal control, due to its low C x R, low output capacitance, and low off-state leakage current.

APPLICATIONS

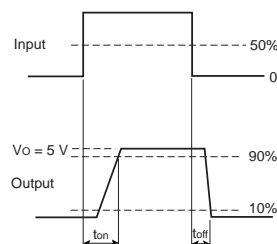
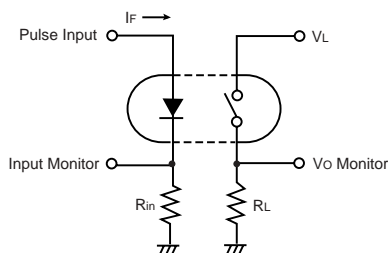
- **MEASUREMENT EQUIPMENT**

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

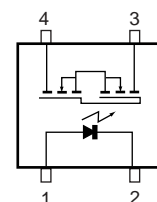
		PART NUMBER		PS7200A-1A			
SYMBOLS		PARAMETERS		UNITS	MIN	MAX	
Diode	V _F	Forward Voltage, I _F = 10 mA		V	1.2	1.4	
	I _R	Reverse Current, V _R = 5 V		μA		5.0	
MOS FET	I _{LOFF}	Off-State Leakage Current, V _D = 40 V		nA	0.1	100	
	C _{OUT}	Output Capacitance, V = 0 V, f = 1 MHz		pF	3.0		
Coupled	I _{Fon}	LED On-state Current, I _L = 100 mA		mA		2.0	
	RON1	On-State Resistance	I _F = 10 mA, I _L = 10 mA	Ω	9.3	12	
	RON2		I _F = 10 mA, I _L = 100 mA, t _s ≤ 10 ms				
	t _{ON}	Turn-on Time ¹	I _F = 10 mA, V _O = 5 V, PW ≥ 10 ms		ms	0.01	0.5
	t _{OFF}	Turn-off Time ¹			ms	0.07	0.2
	R _{I-O}	Isolation Resistance, V _{I-O} = 1.0 kVDC		Ω	10 ⁹		
C _{I-O}	Isolation Capacitance, V = 0 V, f = 1 MHz		pF/ch		0.5		

Note:

1. Test Circuit for Switching Time:



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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 Forward Current ²	A	1
MOSFET			
V _L	Break Down Voltage	V	40
I _L	Continuous Load Current	mA	100
I _{LP}	Pulse Load Current ³ AC/DC Connection	mA	200
P _D	Power Dissipation	mW/ch	100
Coupled			
BV	Isolation Voltage ⁴	Vr.m.s.	1500
P _T	Total Power Dissipation	mW	150
T _{OP}	Operating Ambient Temp.	°C	-40 to +80
T _{STG}	Storage Temperature	°C	-40 to +100

RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

PART NUMBER		PS7200A-1A			
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
I _F	LED Operating Current	mA	2	10	20
V _F	LED Off Voltage	V	0		0.5

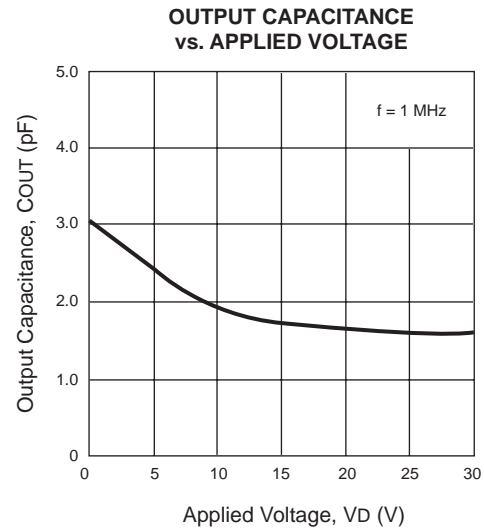
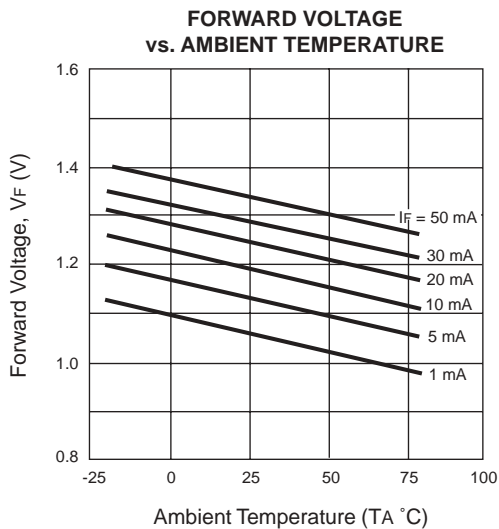
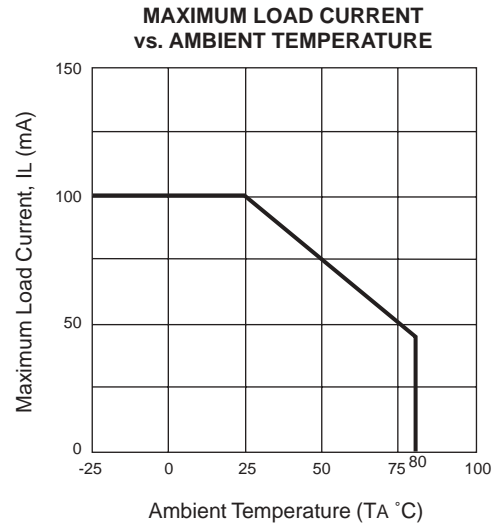
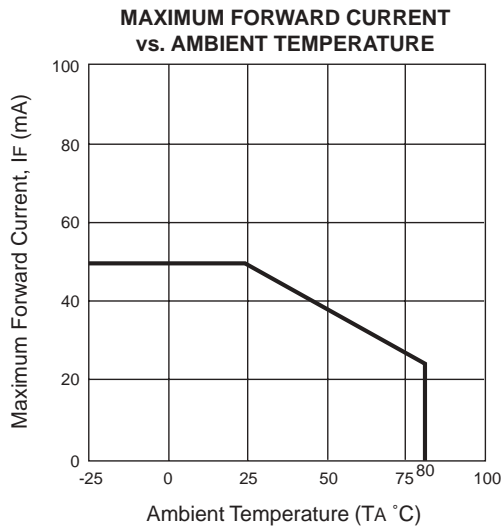
ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING STYLE
PS7200A-1A	4-pin SOP	Magazine case 100 pcs
PS7200A-1A-E3		Embossed tape 900 pcs/reel
PS7200A-1A-E4		Embossed tape 3500 pcs/reel
PS7200A-1A-F3	4-pin SOP	Embossed tape 3500 pcs/reel
PS7200A-1A-F4		

Notes:

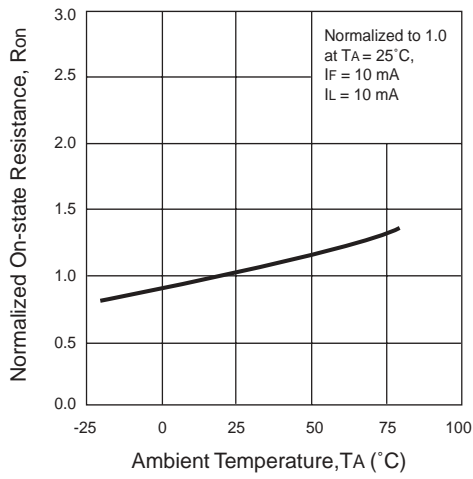
1. Operation in excess of any one of these parameters may result in permanent damage.
2. P_W = 100 μs, Duty Cycle = 1 %
3. P_W = 100 ms, 1 shot.
4. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

TYPICAL PERFORMANCES CURVES (T_A = 25°C)

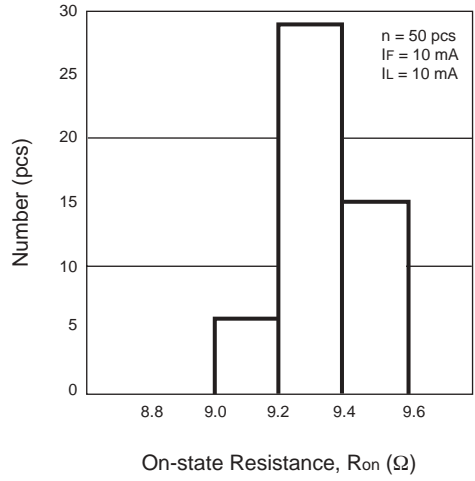


TYPICAL PERFORMANCE CURVES (TA = 25°C)

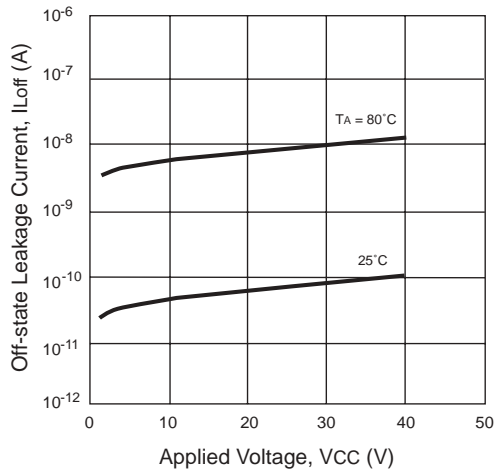
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



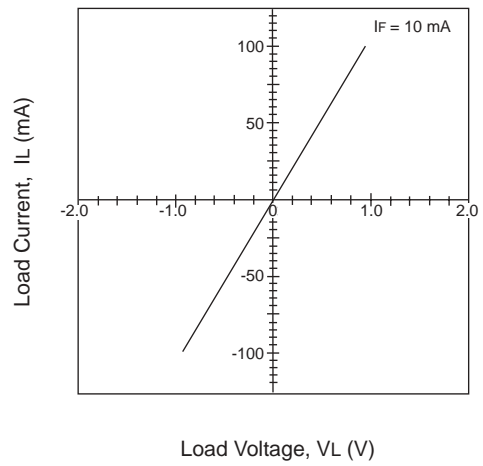
ON-STATE RESISTANCE DISTRIBUTION



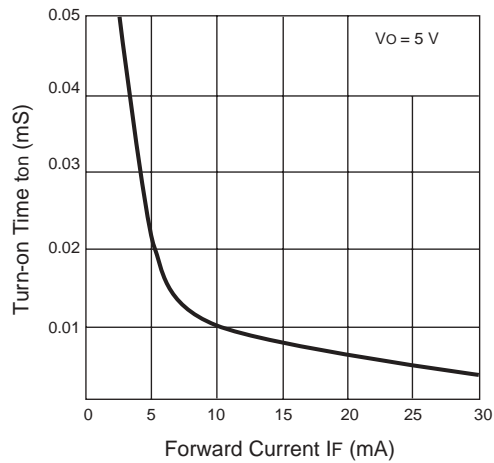
OFF-STATE LEAKAGE CURRENT vs. APPLIED VOLTAGE



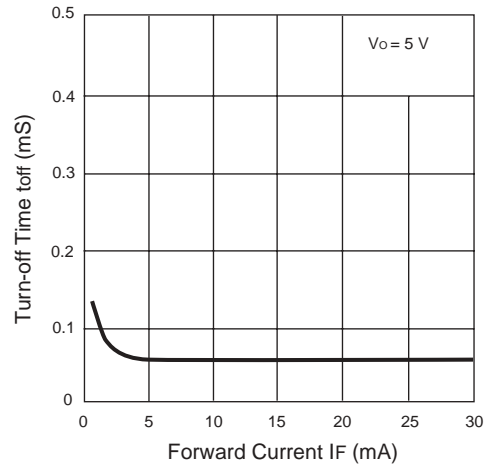
LOAD CURRENT vs. LOAD VOLTAGE



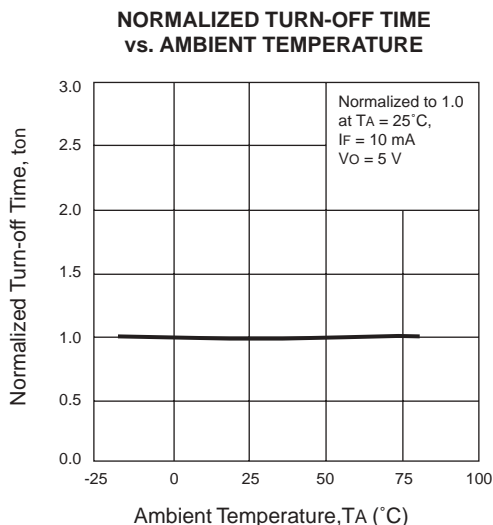
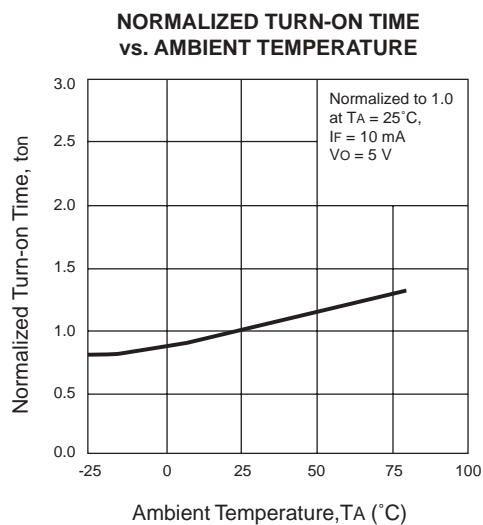
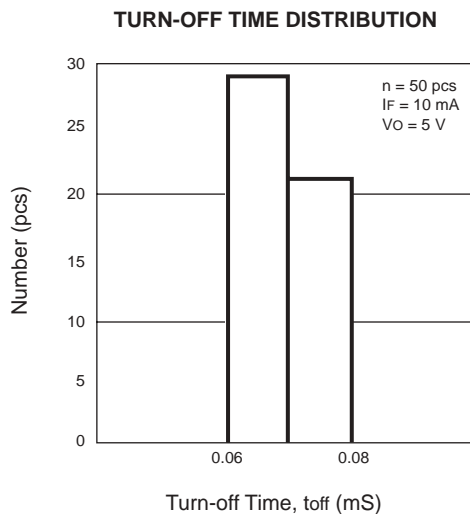
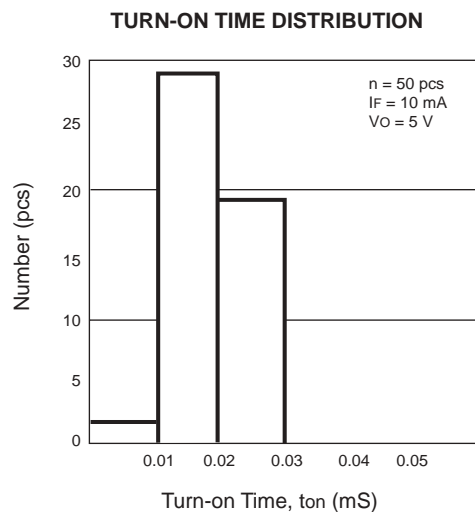
TURN-ON TIME vs. FORWARD CURRENT



TURN-OFF TIME vs. FORWARD CURRENT

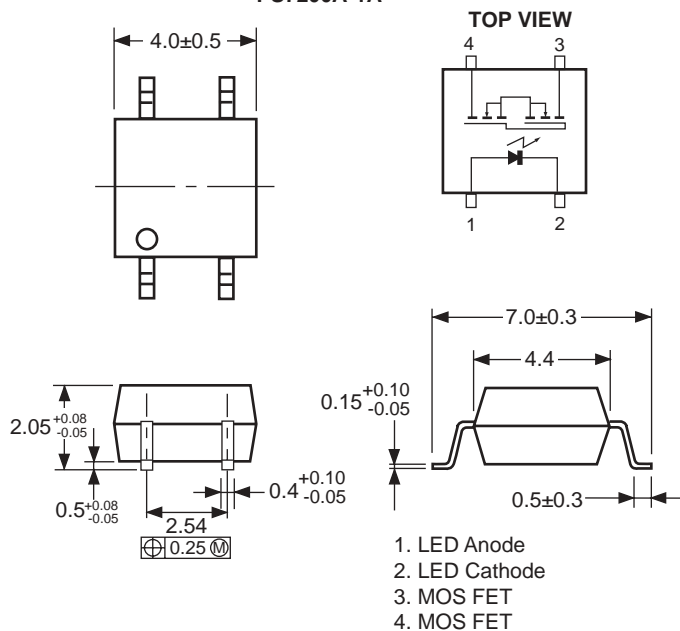


TYPICAL PERFORMANCE CURVES (TA = 25°C)



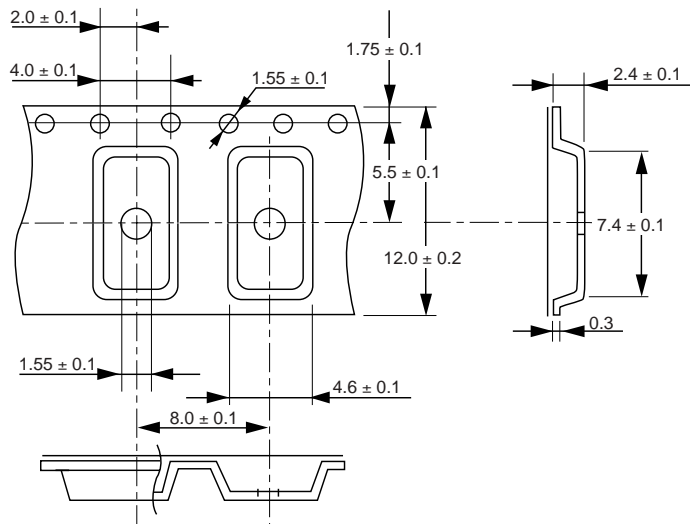
OUTLINE DIMENSIONS (Units in mm)

PS7200A-1A



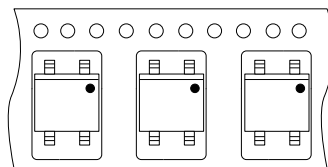
TAPING SPECIFICATIONS (Units in mm)

Tape Outline and Dimensions

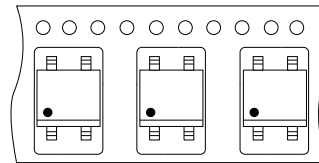


Tape Direction

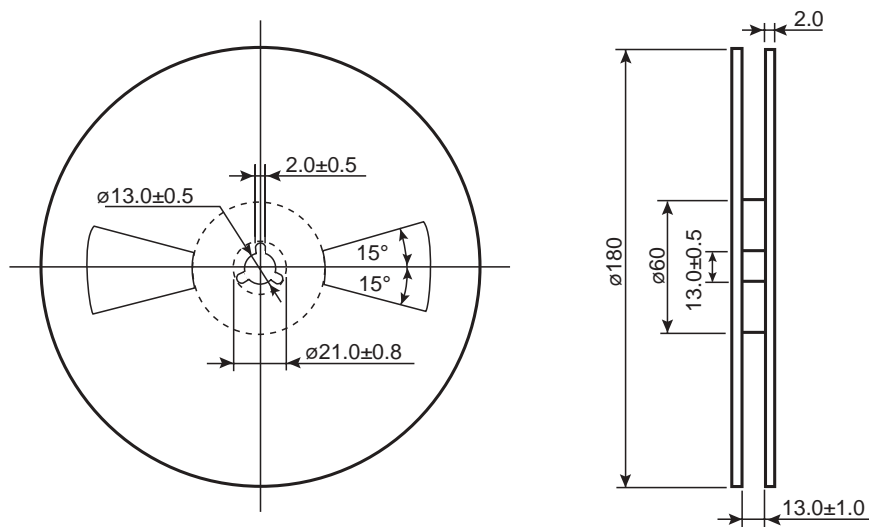
PS7200A-1A-E3



PS7200A-1A-E4



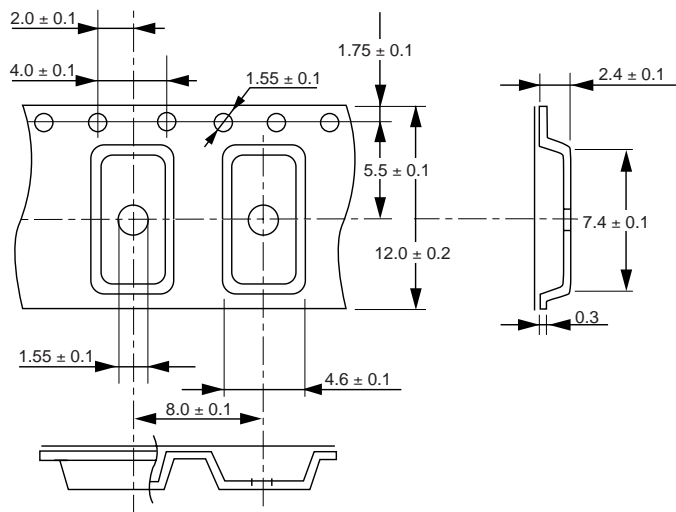
Reel Outline and Dimensions



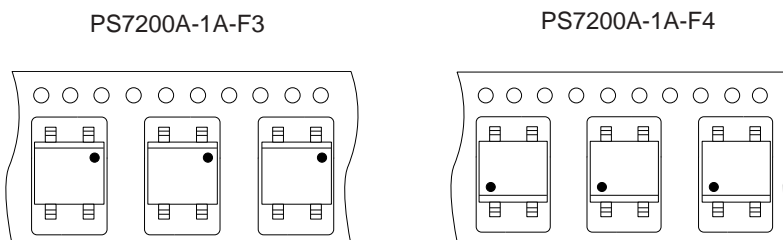
Packing: 900 pcs/reel

TAPING SPECIFICATIONS (Units in mm)

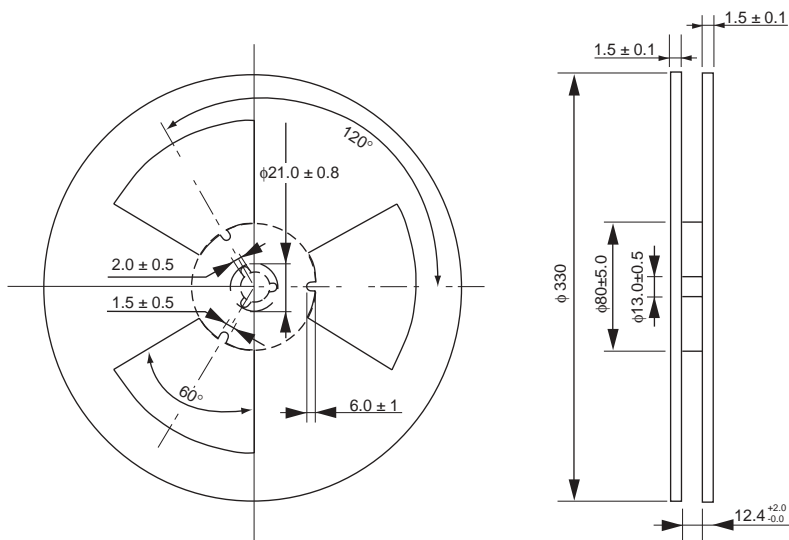
Tape Outline and Dimensions



Tape Direction



Reel Outline and Dimensions

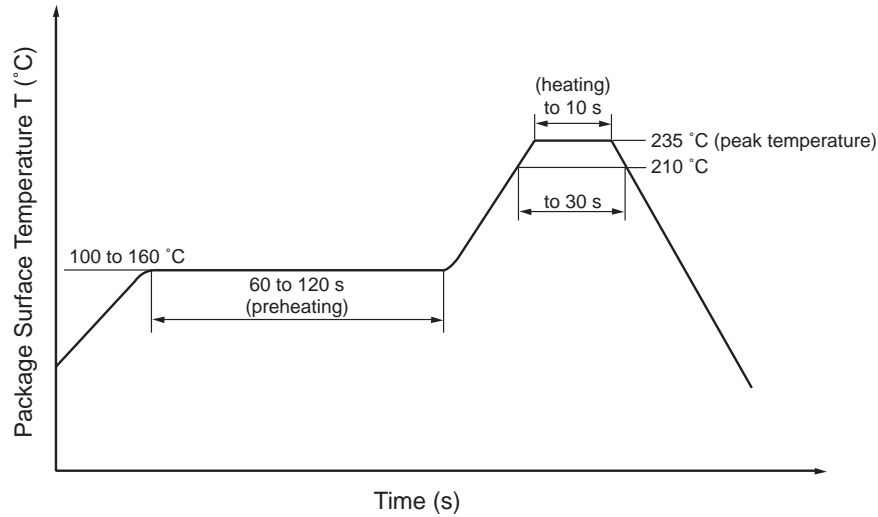


RECOMMENDED SOLDERING CONDITIONS

(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 Two
- 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) 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 maximum chlorine content of 0.2 Wt % is recommended.)

(3) Cautions

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

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