THE DATASHEET OF

PS7141L-1C

www.win-source.net 0086-755-83957316

8 PIN DIP 400 V BREAKDOWN VOLTAGE TRANSFER TYPE 2-CH OPTICAL COUPLED MOSFET

PS7141-1C
PS7141L-1C

FEATURES

- **2 CHANNEL TYPE:**
  (1a + 1b output)
- **LOW LED OPERATING CURRENT:**
  I_F = 2 mA
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **SMALL PACKAGE:**
  8 pin DIP
- **LOW OFFSET VOLTAGE**
- **SURFACE MOUNT AVAILABLE:**
  PS7141L-1C

DESCRIPTION

The PS7141-1C and PS7141L-1C are transfer type solid state relays containing normally open (N.O.) contacts and normally closed (N.C.) contacts on the output side. They are suitable for analog signal control because of their low offset and high linearity.

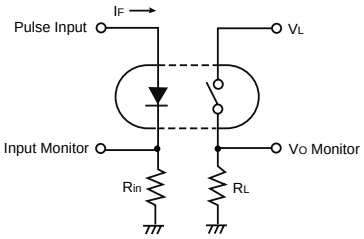
APPLICATIONS

- **EXCHANGE EQUIPMENT**
- **MEASUREMENT EQUIPMENT**
- **FA/OA EQUIPMENT**

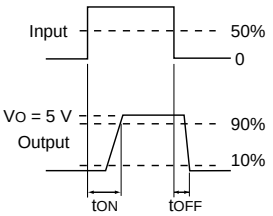
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PART NUMBER					PS7141-1C, PS7141L-1C		
	SYMBOLS	PARAMETERS		UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 10 mA		V		1.2	1.4
Diode	I_R	Reverse Current, V_R = 5 V		μA			5.0
MOSFET	I_{LOFF}	Off-State Leakage Current,	N.O.: I_F = 0 mA, V_D = 400 V	μA		0.03	1.0
			N.C.: I_F = 10 mA, V_D = 400 V				
MOSFET	Cout	Output Capacitance,	N.O.: V_D = 0 V, f = 1 MHz	pF/ch		65	
			N.C.: V_D = 0 V, f = 1 MHz, I_F = 10 mA			185	
Coupled	I_{Fon}	LED On-state Current,	N.O.: I_L = 150 mA	mA			2.0
Coupled	I_{Foff}	LED Off-state Current,	N.C.: I_L = 150 mA				2.0
Coupled	R_{ON1}	On-State Resistance,	N.O.: I_F = 10 mA, I_L = 10 mA	Ω		20	30
			N.C.: I_F = 0 mA, I_L = 10 mA			24	30
	R_{ON2}		N.O.: I_F = 10 mA, I_L = 150 mA, t≤10 ms			16	25
			N.C.: I_F = 0 mA, I_L = 150 mA, t≤10 ms			16	25
Coupled	t_{ON} (N.O.)	Turn-on Time[1]	I_F = 10 mA, V_O = 5 V, PW ≥ 10 ms	ms		0.33	1.0
Coupled	t_{ON} (N.C.)					0.02	0.2
Coupled	t_{OFF} (N.O.)	Turn-off Time[1]				0.03	0.2
Coupled	t_{OFF} (N.C.)					0.20	1.0
Coupled	R_{I-O}	Isolation Resistance, V_{I-O} = 1.0 kV_{DC}		Ω	10^9		
Coupled	C_{I-O}	Isolation Capacitance, V = 0 V, f = 1 MHz		pF/ch		1.1	

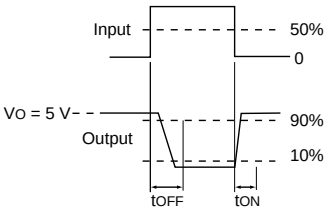
Notes:
1. Test Circuit Switching Time:



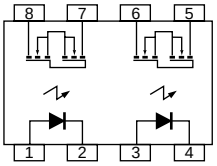
N.O. (between pin 5 and 6)



N.C. (between pin 7 and 8)



PS7141-1C, PS7141L-1C



ABSOLUTE MAXIMUM RATINGS[1] (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	150
I_{LP}	Pulse Load Current[3] AC/DC Connection	mA	300
P_D	Power Dissipation	mW/ch	375
BV	Isolation Voltage[4]	Vr.m.s.	1500
P_T	Total Power Dissipation	mW	850
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)

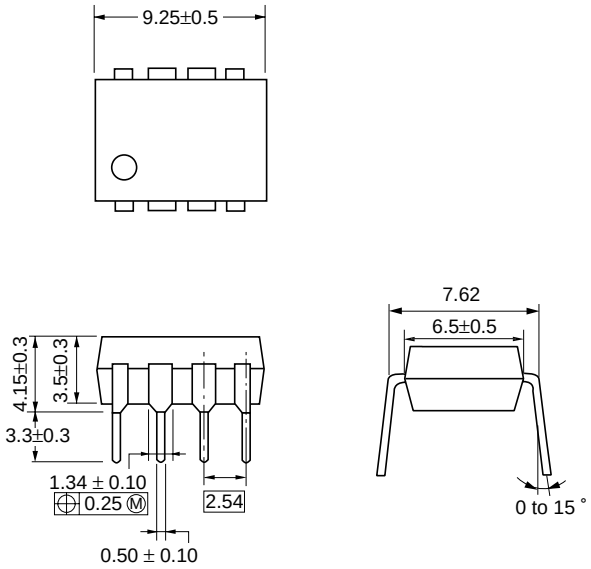
PART NUMBER		PS7141-1C,PS7141L-1C			
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
I_F	LED Operating Current	mA	2	10	20
V_F	LED Off Voltage	V	0		0.5

ORDERING INFORMATION

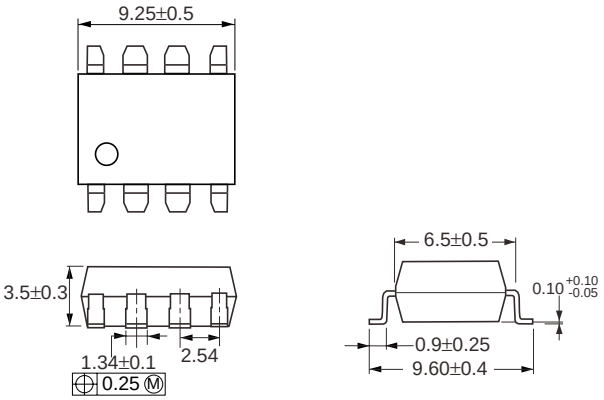
PART NUMBER	PACKAGE	PACKING STYLE
PS7141-1C	8-PIN DIP	Magazine case 50 pcs
PS7141L-1C		
PS7141L-1C-E3		Embossed Tape 1000 pcs/reel
PS7141L-1C-E4		

OUTLINE DIMENSIONS (Units in mm)

PS7141-1C

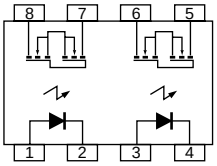


PS7141L-1C



PIN CONNECTION (Top View)

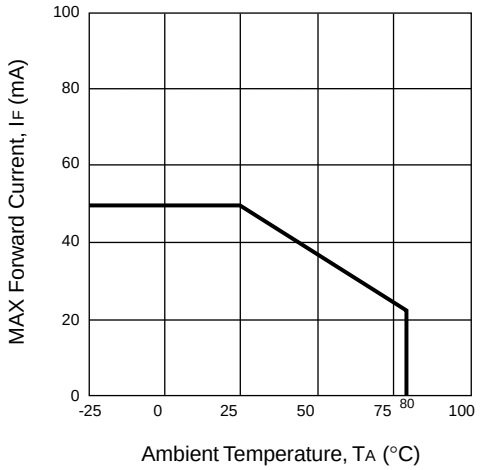
PS7141-1C, PS7141L-1C



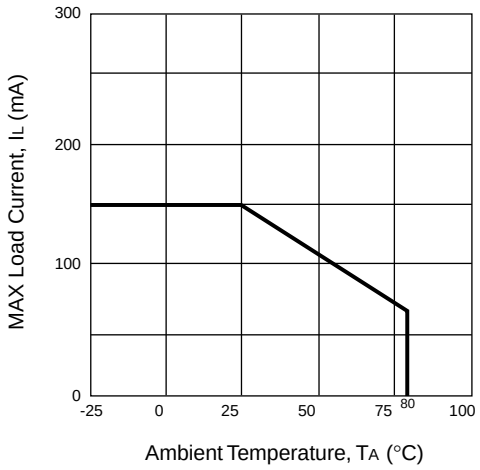
1. LED Anode (N.C.)
2. LED Cathode (N.C.)
3. LED Anode (N.O.)
4. LED Cathode (N.O.)
5. MOSFET (N.O.)
6. MOSFET (N.O.)
7. MOSFET (N.C.)
8. MOSFET (N.C.)

TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

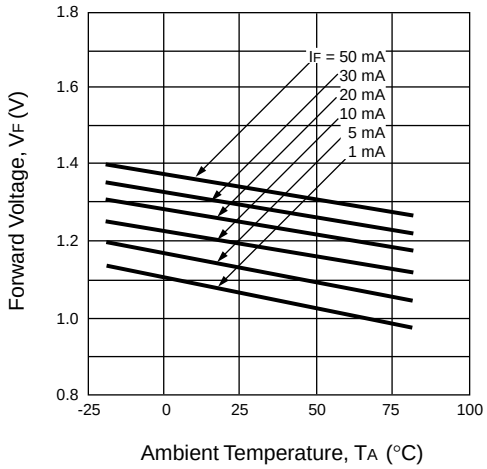
MAX FORWARD CURRENT vs. AMBIENT TEMPERATURE



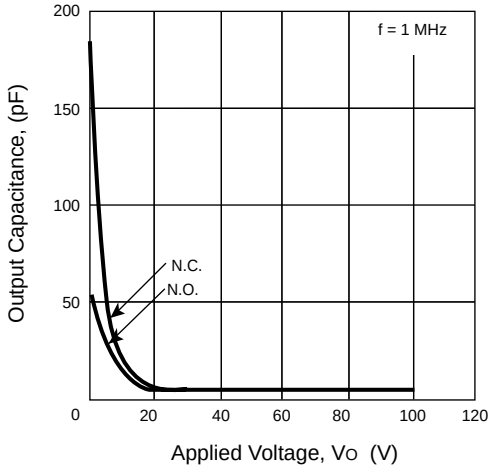
MAX LOAD CURRENT vs. AMBIENT TEMPERATURE



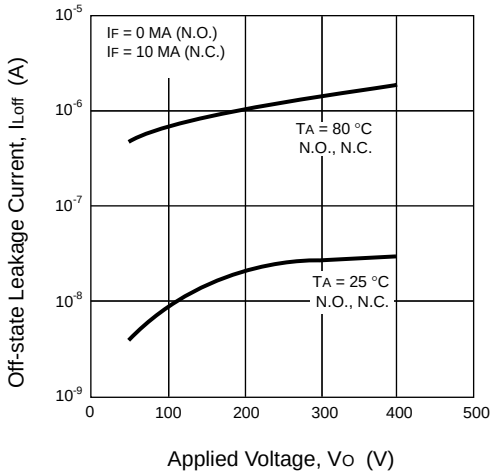
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



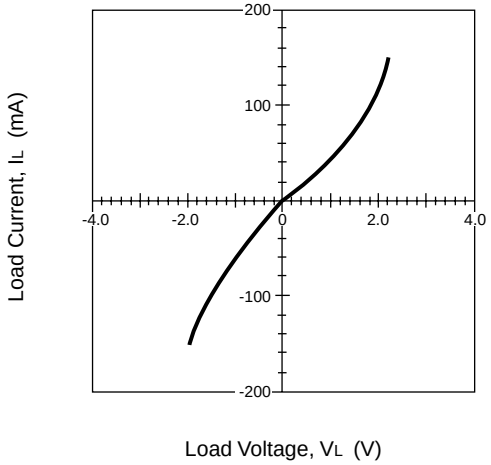
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



OFF-STATE LEAKAGE CURRENT vs. APPLIED VOLTAGE

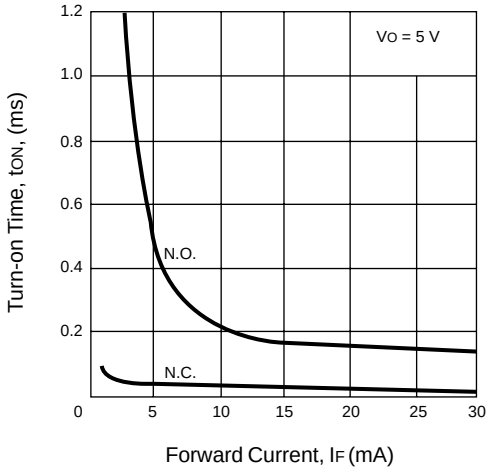


LOAD CURRENT vs. LOAD VOLTAGE

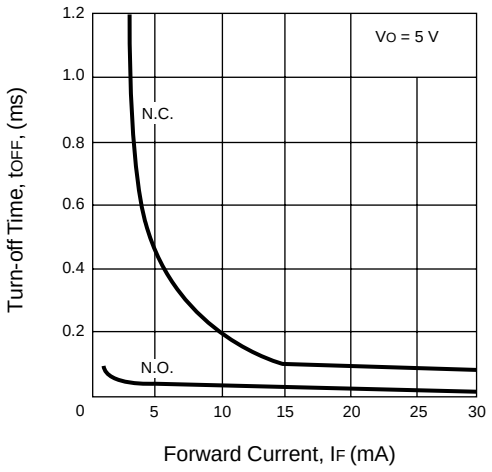


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

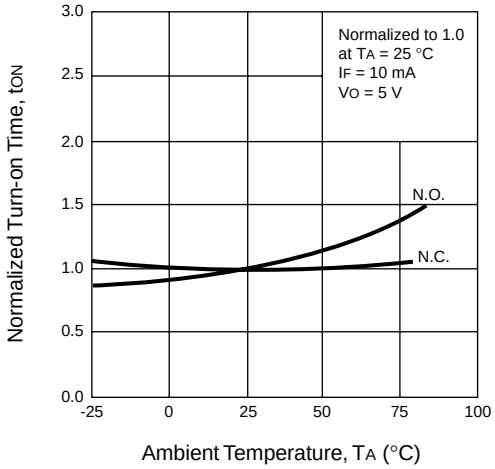
TURN-ON TIME vs. FORWARD CURRENT



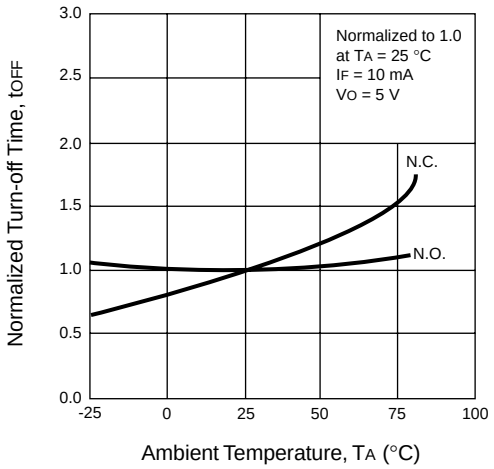
TURN-OFF TIME vs. FORWARD CURRENT



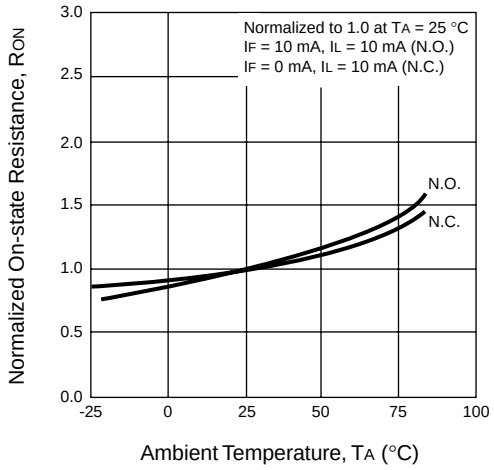
NORMALIZED TURN-ON TIME vs. AMBIENT TEMPERATURE



NORMALIZED TURN-OFF TIME vs. AMBIENT TEMPERATURE

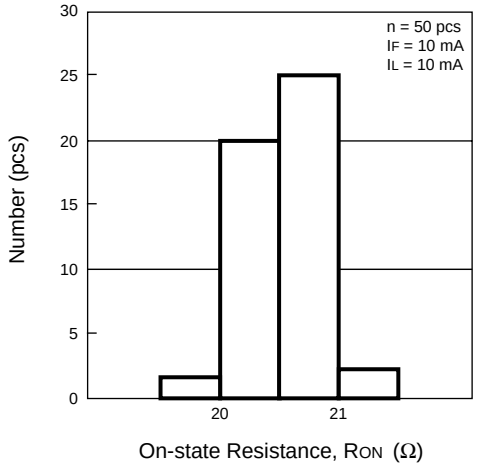


NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE

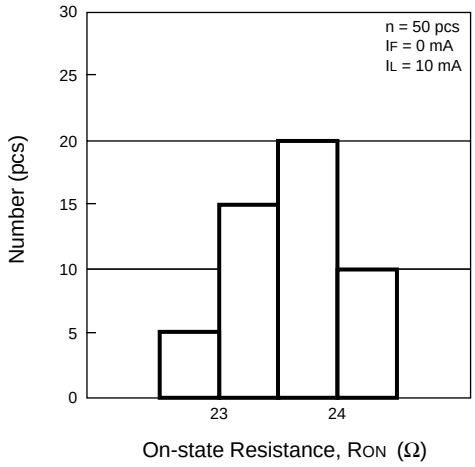


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

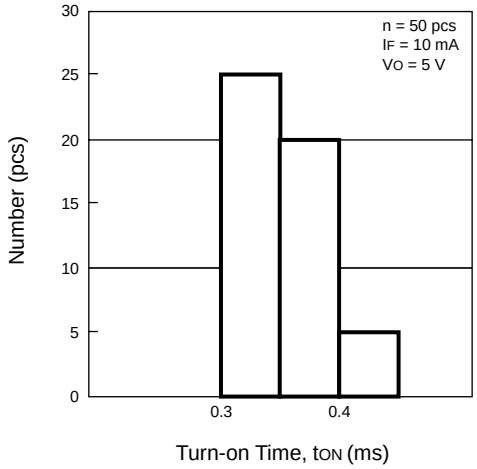
ON-STATE RESISTANCE (N.O.) DISTRIBUTION



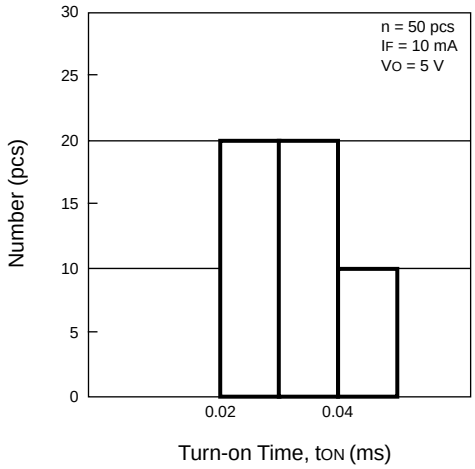
ON-STATE RESISTANCE (N.C.) DISTRIBUTION



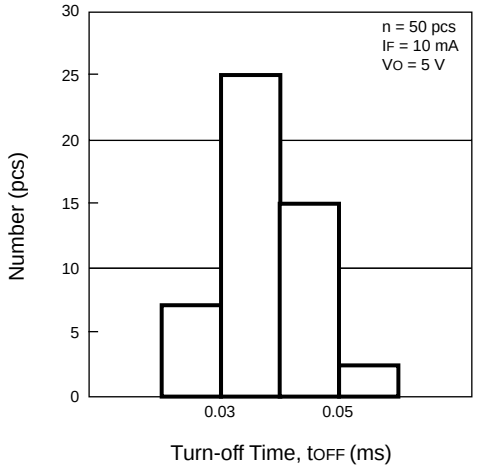
TURN-ON TIME (N.O.) DISTRIBUTION



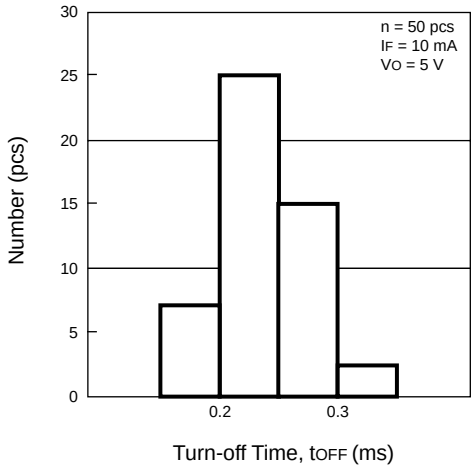
TURN-ON TIME (N.C.) DISTRIBUTION



TURN-OFF TIME (N.O.) DISTRIBUTION

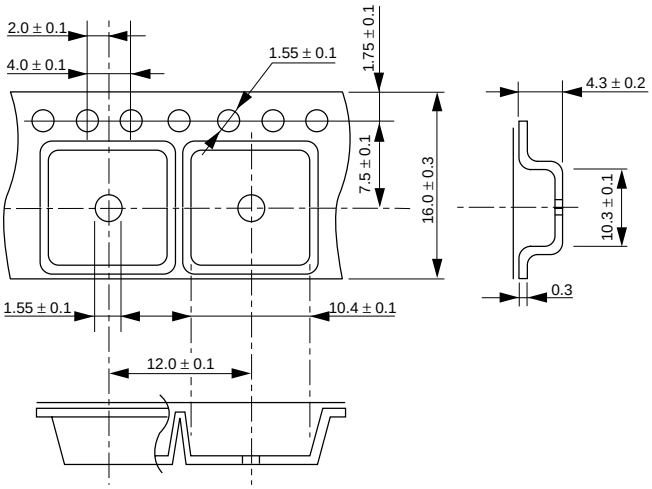


TURN-OFF TIME (N.C.) DISTRIBUTION

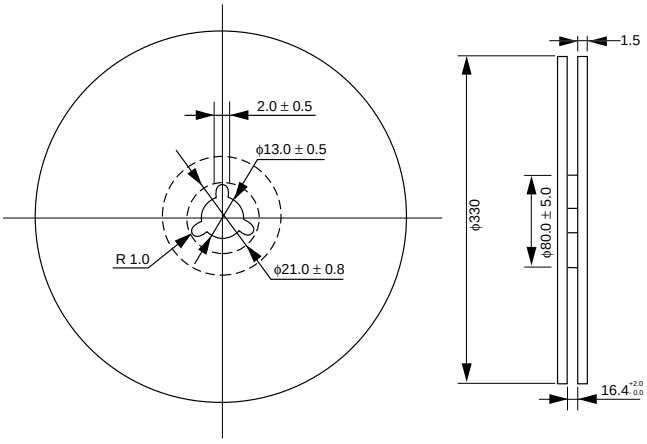


TAPING SPECIFICATIONS (Units in mm)

OUTLINE AND DIMENSIONS (TAPE)



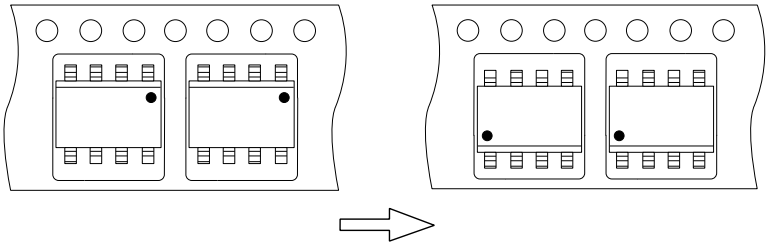
OUTLINE AND DIMENSIONS (REEL)



Packaging : 1000 pcs/reel

TAPING DIRECTION

PS7141L-1C-E3 **PS7141L-1C-E4**

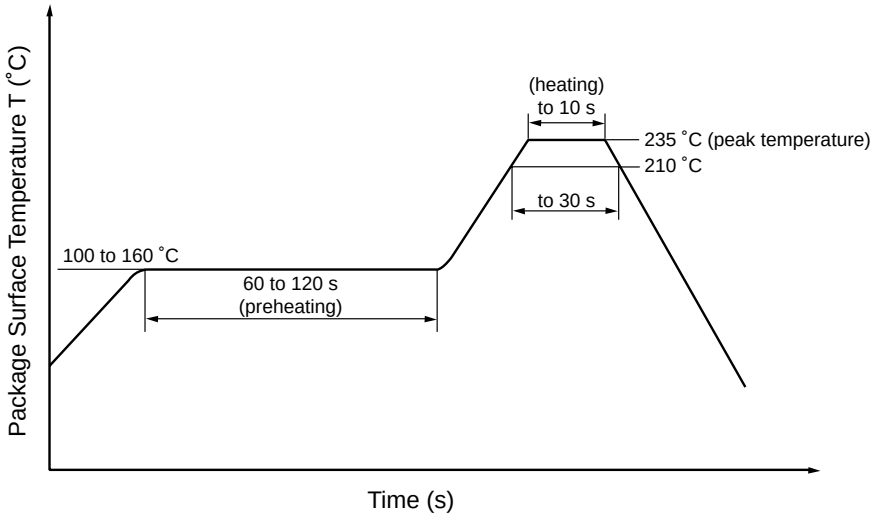


RECOMMENDED SOLDERING CONDITIONS

(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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